Las Leyes de Indias: Observations of its Influence on the Physical Space in the Latin American Colonial Cities

by

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Submitted to the Department of Architecture on January 16, 1980, in partial fulfillment of the requirements for the degree of Master of Architecture in Advance Studies.

ABSTRACT

This Thesis involves an analysis and a description of the structure of physical space of the Latin America Colonial Cities. The section of the document known as Leyes de Indias which deals with the urbanistic norms and the prescriptions for the laying out of the colonial cities, and the cities founded within the first three centuries of the colonial period, are the most important elements of this thesis.

Several issues are to be discussed throughout the work and the most important ones are:

The social and political context underlying the building up of the vast network of new cities in Latin America, The characteristics of that network and the means to control its development.

The colonial city as resulting from the application of such means of control, or in other words, of the prescriptions contained in the Laws of Indias. The changes produced by contra-
dictions on what was prescribed by those Laws and identified through a systematic observation of the available sample of cities. The reasons behind those changes.

The relevancy of this work in terms of the current trends of development of Venezuelan cities. The process oriented and the product oriented views of this issue.

Finally, the material is presented in two major parts containing, the first, an analysis of the context and the objectives from where the Laws of Indias were derived, of the hypothesis concerning the sources from where the Spanish planners drew those urbanistic norms, and, a description of the structure of physical space as prescribed by the Laws of Indias.

The second part contains the description of the structure of physical space, and the substantiation of that description, as resulting from the application of the prescriptions and norms contained in the Laws. The substantiation is made through previous studies from Latinamerican, European and Northamerica authors. The conclusion of this second part and at the same time, of the whole work, is a recopilation of those issues and of various speculations concerning their relation with today's city.

Thesis Supervisor: Anne Vernez-Moudon
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INTRODUCTION

Venezuelan cities, like most other Latin American cities, have developed from a type of urban structure which because of the circumstances surrounding its origin (discovery of the New World, creation and expansion of the Spanish Empire), and of the success of such a type in being able to grow and change throughout different social, economical and political contexts have deserved continuous intellectual interest. Most of the studies dealing with the evolution of the Latin American city have in one form or another made reference to what is known as the document of the Laws of Indias (Leyes de Indias, Fuero Indigena).

The variety of issues the document dealt with have allowed for social, economical and political studies to rely upon it. The scope of the document is important to be understood as it controlled the institutional, economical and social life of the community by determining the structure of its institutions, the repartition of land, of slaves, etc. Actually, the part of the Laws of Indias dealing with the physical environment of those communities, with its laying out and development, is only a minor one, a few pages of the document. Still, its impact on
Today's Latin American cities is stronger than the rest of the document's parts as the institutional, economical and social structures have changed while the physical one remains as a decisive feature of these cities.

The recognition of the importance of understanding the physical structure of the Latin American cities and in this case, of the Venezuelan cities, has produced quite an interest in the task of dealing with this physical structure. It is also a recognition for the need to balance the variety of studies dealing with the social, economical and political structure of these cities, with studies of their physical structure, of the forces behind that structure and how they interrelate through time producing the changes from which the cities have evolved.

The current situation of Venezuelan cities which can be described as one of an extremely high physical development has also awakened interest in finding ways of dealing with the conflicts and opportunities created by this development. Perhaps, the most important sector of these cities, the traditional center (casco central) has suffered the strongest impact from this development. The intensity of the activities taking place in it along with the subsequent increase of building density have created such a congestion ranging from the visual to the vehicular which has reduced the environmental qualities of the area and which, as in the case of large cities such as Caracas, Maricaibo, Valencia, has changed its character and order.

1Street views of Valencia and San Carlos, Venezuela (10)
It should here be explained that, the understanding of the physical structure of the Venezuelan cities of colonial origin in its first stages of development, in other words, during the colonial period, is to be made through the study of the Latin American colonial cities. It is an assumption taken in this work that the description of the structure of physical space that shall be here made is one which is valid for the Latin American colonial cities in general. It is not a theory but rather a possible hypothesis as the quality and availability of information as well as time did not make possible the testing of a hypothesis but only to suggest the possibility of one.

Experiments deal with intervention into what is explored. Observation leaves the world as we find it, and is the beginning of all research. It is not just seeing: it is seeing with detachment -- the suspension of knowledge and certainty. It is curiosity, before the question is asked. The answer is the end of observation and the beginning of theory. The theory leads to understanding, and understanding makes us see the world as we could not see it before. It allows us to see more, which may lead again to observation.

Observation leads to a record -- a sketch, a photograph. But the record is not "an observation," but rather the beginning of an answer!1

The usefulness of such a hypothesis lies in that it opens up possibilities for speculation about the evolution of the

1 Habraken, N.J., "Notes of a traveler".
cities in study about the order of their physical structure which have affected its development throughout the years. Through the understanding of that implicit order we realize the limitations or potentials of such physical structure to accommodate the time's requirement. A study of the limitations and potentials of the same structure as present in today's cities and with today's requirements, needs an understanding of how the original structure has changed through time, how it has been affected by different socio-economic and political conditions and how it has affected them in their translation into a physical reality. For instance, the development of the private vehicle as a mode of transportation has affected greatly the environmental conditions of large cities in Venezuela, especially in the traditional centers where its network of streets, by its dimensions (85x85 meters) increases the congestion to extreme levels of discomfort, increases the areas of parking therefore reducing the open areas for recreational uses, etc. However, at the same time the network's limitation is affecting transportation policies by forcing cities to increase public transportation, of pedestrian movement better suited for its structure. These are suggestions, clues, derived for the implicit order of its own structure.

So, given the necessity and importance of understanding the evolution of the city, the most important objective of this thesis is then to produce a description of the Latin American city, at the period corresponding to the colony. It is the
first one of various periods in which the city is to be analyzed should we be interested in the evolution of the city. It is by freezing its development at different points in time that we understand what its physical structure was, its elements and the rules controlling their interrelationship. Choosing the periods is in itself an important decision and one of the bases for that decision is the socio-political and economical context where the city is developing. Changes in that context may produce changes in the structure becoming one of the periods of study. In the case of the Latin American cities of colonial origin the first of such periods is obviously that of the colony.

The writing of the description of the structure of physical space is another important element of this work. The method to be used is based mainly on the work of Anne Vernez-Moudon on the city of San Francisco where an analysis of its physical structure is made. The use of different scales as an analytical device to describe the structure is perhaps the fundamental concept underlying the method.

The scales we shall deal with in this work are only those of the grid, the block and the building. The scales of the site which deal with natural and man-made features such as rivers, highway, mountains, orientation, etc., and the scale of the rooms are out of the scope of this thesis. The reason for this is that the information through which we would make the description is not reliable enough.
The usefulness of this subdivision by scales lies in that it is capable of dealing with the changes in the structure of the city as each scale may do at a different pace. The lower scales such as those of the buildings change faster and more often than that of the block and especially than that of the grid. In this way this method does allow for an observation and recording of the evolution of the city as for example what has changed, what element and at what scale. The cities in study are a very good example of the changes occurring at the lower scales of the structure of the city. Throughout their four centuries of history, the grid, the framework, has been kept almost intact (except perhaps for the width of the streets) while the buildings and in turn the block have changed tremendously. The scales are also useful in helping us determine what the Laws defined in terms of the physical structure of the city and what that structure was as founded in the cities which are to be under observation. This differentiation is what organizes this work; from it we shall determine what the structure of the Latin American colonial cities were. The concept underlying this organization shall be discussed further in the following section of the thesis.

Next in the method we have the description and recording of the relations or rules controlling how the different scales interrelate as well as the elements within the same scale do. It should be mentioned that the elements are to be classified functionally at the scales of the block and the building (resi-
dential buildings, religious buildings, etc.), as the concern is with the structure of physical space. Those relations are to deal with the morphological characteristics of position and form of the various elements. These two parameters allow us to establish a classification according to the relative position of an element with respect to others at the same scale and with respect to the scales above and below. Also, the shape of the element can help us to establish another classification.

Through these concepts by which the elements are classified by their morphological characteristics and by their scale relationship we can systematically execute a study of the city through time so as to understand the evolution of its physical structure. At each period of study, the elements' characteristics are then identified and then changes.
THE LAWS OF INDIA

This part is to be divided into two major sections. The first one consists of an analysis and description of the conditions which determined the issuing of the document of the Laws of Indias, of what its objectives were, of its origin and most important, of its role in the building up of the vast network of new cities erected by the Spaniards during their colonization of Latin America.

The second section consists of the description of the structure of physical space as prescribed by the urbanistic regulations contained in the Laws. It is a case of translating into graphics what those prescriptions defined in terms of the positional and formal characteristics of the various elements of the city. In this section, the material shall be organized in the following manner: The graphical observations are to be shown before the Laws from where they were derived.

The main reason for having this organization of the material is that, in many cases, a single Law contains several prescriptions dealing with several elements at different scales. The graphical observations give to the reader a framework, a structure through which the understanding of what the regulations of the Laws defined.
THE DOCUMENT OF THE LAWS

THE CONTEXT

To understand the nature and objectives of the document known as the Laws of Indias, requires an understanding of the situation in which the Spanish Crown found itself by the time the West Indies were discovered. The year was 1492 and it was not only the date when Columbus set foot on American land, but also the date for the surrender of Boabdil, Califa of Granada, which meant the end of the 700 year occupation of Spain by the Arabs and of the reconquest. This also meant the reunification of the kingdoms of Aragon, Leon and Castilla under the dominance of the latter whose monarchs, Fernando and Isabel, became rulers of the whole of Spain. The political power derived from this reunification, plus the support of the church's authorities, produced a symbiosis allowing the new Kingdom to build up the structure capable of dealing with the sudden enterprise of controlling a whole new empire.

The way the reconquest was made had a tremendous influence on what the Crown envisioned for the control of the new territories. As the reconquest lasted for the same 700 years of the occupation, it was the siege of city after city which gave the reconquest its character. Military camps were laid out adjacent to the city in siege, where the kings and court lived and handled all the affairs of warfare and kingdom; this is especially true.

1 Reo, John Williams, "the making of Urban America"
for the last part of the reconquest such as in the case of Granada itself. As those seiges lasted in some cases for years, they developed into cities with Santa Fe as the best example of this phenomena where Fernando and Isabel directed the seige of Granada.

The result of this type of territorial control is a network of cities serving as defensive posts along lines of communication and supplies. Each town had an area of influence for self-support and for expansion. The new colonies followed this type of territorial control, of setting posts along communication lines connecting the port cities with those inland. This mode seemed also particularly well suited where the territories were totally unknown and the population possibly hostile to the newcomers. This whole strategy allowed for gradual control by connecting any new city to an existing one; in this way, supplies through these communication lines were made possible.

These strategical precedents in defining a network of cities may have been reinforced by others of a more social nature such as the settlers who thought of the city when they ventured going to the New World. According to Richard Morse, this has been an ever present incongruity in the institutional history of Latin America, because the most important production mode was exploiting the agricultural resources. He continues explaining that the only farming communities in Latin America were almost exclusively those of non-Europeans, such as the highland Indians in some regions, or descendents of African
slaves in the Caribbean. He finally argues that the rural emigrant to the New World "was sufficiently exposed to city life, at the two terminal points of the crossings if nowhere else, to change whatever peasant outlook he may have had."

Another precedent was the idea of the city as a symbol of Empire, underlying a dogma of political power spread during the 1500's by the rulers of Renaissance Europe. The city was to be differentiated from the countryside by the type of activities, population, and most important of all, by its geometrical design. The city was to be identified with the aims of civilization. In the specific case of the New World, the Spanish had to show the magnificence of their new cities to demonstrate to the native population the supremacy of their culture.

Morse makes another important observation with respect to the idea of the city as the result of political dogma, when he explains that the geometrical design was not unknown in the Middle Ages, corroborated by the Bastides, but that "the rationally conceived master plan, reflecting more of imperial or even an assumed universal order than of local need and function, was a Renaissance product."

One last note about the separation of city and countryside resulting from political dogma is the building of the palace of Charles V inside the fortress of the Alhambra. When Fernando and Isabel the monarchs moved into the fortress immediately after their occupation of Granada, they set their quarters up in the

2 Morse, Richard M., "Some characteristics of Latin America Urban History."
3 Ibidem.
4 Chueca Goitia, Fernando & Torres Balbas, Leopoldo., "Planos de Ciudades Iberoamericanas y Filipinas Existentes en el Archivo de Indias?"
5 Op. cit. Morse, Richard M.
Alhambra itself, and from there they dispatched all matters concerning their kingdom. Granada became the first capital of the new Spain. However, with the coming of a different temperament like Charles V, realizing the new empire's power and extension and alliance with other European kingdoms (Charles V was German), the Royal Palace had to be something reflecting the power and importance of the new empire. Obviously, the grace, delicacy and elegance of the Alhambra could not fit this image of world power and a decision was made to build a new palace right next to the existing Alhambra. Designed and built by a disciple of Michelangelo, the Palace of Charles V contrasted by its form and proportions with the irregularity of the group of Alhambra buildings.

THE IMPLEMENTATION

We should now consider the size of the territories to be controlled along with the strategy to do so (network of cities). It became clear for the implementation of the intended control a regularization of procedures, norms and instructions was essential. From the beginning, the Spaniards were preoccupied with the dimensions of the enterprise. Many cartographers were sent out to survey the new territories. Soon the need for regularizing every bit of their colonial system of government became obvious to them. Regularization included not only the political, religious and social institutions, but most important, the physical structure of the cities to be founded. In such a
way the Crown would be able to manage the whole empire by pre-
scribing how the networks and its cities were to be laid out and
built.

This regularization of the whole system of colonial govern-
ment responded also to the centralized government of the Spanish
Crown. Decisions for internal or external matters within the
kingdom depended almost exclusively on the Crown's approval.
Where certain functions were relegated such as in the Council of
Indias, decisions were superceded by the central authority of
the King. The Spanish colonies were not only economically de-
pendent, but were, most of all, politically dependent; as
Zawisza notes, "the origin of the hispanoamerican cities as ex-
ploitative and political organisms, weakening its material
foundations for subsistency and development, makes their life a
distressing one." The relative independence of decisions the
English colonies in America enjoyed, at least in economic terms,
was something a local colonial government in the Spanish terri-
tories would not have dreamed of having.

The series of practices evolving from the regularized con-
trol of the new territories were recompiled in 1573 by Felipe
II into the document of the Laws of Indias. Those practices,
were given in the form of instructions to the settlers during
the first century of the colonial period. Again, the centrali-
ization of the decision-making helped to accomplish this recompi-
lation. The Council of Indias, an institution managed by rep-
resentatives of the state and the church and located in Sevilla,

6 Zawisza, Leslaw M., "Fundación de las ciudades His-
panas"
was charged with the handling of colonial affairs; every instruction and every decision came from that institution, making recompilation possible. The Council was located in Sevilla because it had access to the Mediterranean Sea through the once navigable Guadalquivir River. This made possible the departure of expeditions from Sevilla and the direct contact between the Council and future settlers instructing them how to lay out and build their cities.

THE REPARTITION OF THE LAND

As already mentioned, the Laws of Indias regularized the decisions about the control of the territory and the physical structure of the cities. However, the Laws were to take into account another factor, that of the repartition and distribution of land within the city and surrounding. The importance of this factor was that in the American colonies land was the property of the Crown and not of feudal lords. This meant land could then be the property of the settlers by disposition of the Crown itself.

Not only the issue of land repartition concerned the settlers in the sense that, contrary to the feudal societies, they had the opportunity of obtaining status through control of the land, "Space rather than time became the leading factor in the American experience." Other parties were also involved in this process. These parties were political, religious and commercial institutions. Their arrangement within the city would give an
idea of the structure of power to be imposed on the colonial societies. This could be used to describe the emphasis put on the location of the different institutions with respect to one another and with the city itself. It was made by distributing pieces of land defined through legal means.

To insure the control of this process of land distribution they had to create a framework, one which could be described in legal terms and which would allow for the building up of the city. The framework would represent a process of layout rather than a type of city, where enough flexibility would allow for changes and variations without destroying the coherence of the frame itself.

The gridiron plan resulting from the process of layout is here to be used so as to illustrate the effectiveness of the Laws in controlling the whole colonial process. Its usefulness as a convenient method of surveying and subdividing the land cannot be denied. This type of plan has been described as a "work-a-day jobbing of a land surveyor," as a product of militarism, colonial land ownership, as symbolic of greed for land values and even as an inferior type of city plan. However, it is a plan which can be laid out by laymen, soldiers, etc, without training in surveying. In the Spanish colonies, the majority of the settlers and those charged with laying out the cities were in this category. To solve the settlers problems in quickly building up a city, there was not and perhaps is not a more expeditious way to do it.

8 Pearson, Norman., "The Prairie Town and the Canadian Scene"
Greek, Roman, Medieval and Renaissance societies have applied the gridiron plan to solve their various problems (1, 2, 3, 4), not only those related to militaristic strategies of defending and controlling the cities, but also as Pearson writes, "to provide convenient and simple methods of land division, with sites easy to develop; to allow the development of new lands and new resources as quickly as possible; easy growth of settlements from their foundation; easy communications; and easy expansion of existing settlements which needed to grow."

As can be seen, the gridiron was a type of plan to be used, not just a simple layout that could be easily controlled. More and more we realize that the Laws of Indias was a document prescribing how a layout should be made, rather than a document prescribing the form of a city, i.e., its physical structure. The Laws' major objective was that of defining the position of the different activities through a framework (the gridiron plan).

THE PROCESS VS. THE PRODUCT

So far, we have tried to determine the real objectives of the Laws, in relation to their context and implementation. We can say at this point that the Laws of Indias were designed to control the process rather than the product. The Laws defined a hierarchization of steps in the process of layout and related them to the different elements involved such as the settlers and the institutions. Should we relate this issue to the intention of this work, that of observing the influence of the Laws of
Indias on the physical structure of the Latin American colonial cities, and we would realize that it is necessary to differentiate between what was prescribed by the Laws and what finally was made resulting from the application of the instructions contained in the Laws and which were transformed or complemented by the traditional building practices of the settlers, by their know-how, by their cultural and intellectual background, and by their social organization.

This distinction between what was made explicit through the Laws and what was implicit through their application is a fundamental concept in the organization of this work. It explains the difference between the Laws as defining the process (laying out the city), and their application as defining the product (the city). The process, that by which the settlers were to lay out their cities, had to be made explicit because it was not part of their urban experience. Most of those settlers came from smaller towns like Ronda, Sandujar, Osuna, Arcos de La Frontera, where the physical structure corresponded to that of the Medieval city or to the Arabic city of irregular layout.

Besides prescribing the laying out of the cities, the Laws also made references to the positioning of certain activities i.e., buildings within the laid out grid. The definition of the formal characteristics of the buildings, the blocks, and also of the elements of the grid such as the plaza, the streets and the arcade, was largely conditioned by the settlers interpretation of the planners prescriptions which were vague or non-
existent when referring to this point. A complete physical
description should define the positional and formal characteristics
of the various elements at the different scales. It would
serve as a model from which to draw conclusions about the physi-
cal features of the Latin American colonial cities.

It is important to understand this differentiation between
the Laws of Indias and their application, to understand the
necessity of defining the result of their application so as to
be able to describe the physical structure of the cities under
study. Should this not be understood and we may perhaps make
the mistake of considering that because of changes produced by
the application of the Laws on some of the elements, the Latin
American colonial cities were not laid out following the urban-
istic norms contained in the Laws of Indias as some authors seem
to argue.11

The plans of most of the cities under study followed in
its essentials (the gridiron plan, the position of the main
plaza, the position of the institutional and religious buildings,
the differentiation between the center of the city and the rest)
the process of layout as prescribed by the Laws. Changes in the
formal characteristics of the elements (plazas, streets, build-
ings, etc.) are of secondary importance in determining whether
or not the norms contained in the Laws were applied throughout
the Spanish Empire. Without any doubt we can affirm that the
Latin American colonial cities were laid out following the pre-
scriptions of the Laws of Indias if we understand the latter as

11 Gasparini, Graciano & Posani
Juan Pedro.,"Caracas a través
de su Arquitectura"
defining a process and not a product. Their application did define the product.

THE HISTORICAL SOURCES

There are several hypotheses as to the sources and possible origins of the instructions contained in the Laws of the Indias. Therefore, this work is not intended to be a treatise about the origin of the Laws but rather to be a reinterpretation of them in light of the differentiation between the specification of a process and a product.

The concept of the origin of the Laws as resulting from a variety of sources is reinforced by the observation of the colonial city as defined by a layout derived from the Roman practices, and further transformed by the influence of the Medieval military cities (Bastides) of Santa Fe and of the "juderías" of Granada, Sevilla and Cordoba. Attempting to explain the origin of the Laws from a single theory or source would be an oversimplification. The recompilation to be made here should, whenever possible, try to identify what each source is referring to, the process or the product or the both of them.

A first reference can be made to the Roman Camps which could already be found in the Spanish peninsula very early on during the expansion of the Roman empire (5). The building of settlements in the province of Iberia such as those of Corduba and Valentia, was of great importance as it reflected its polit-
ical relevance. The Roman practices of laying out cities, called castrametation practices, survived through the Middle Ages thanks to works such as the "Rei Militaris Instituta" of Vegetius and most important, to the use of those castrametation practices throughout those same Middle Ages. In Spain, according to Chueca Goitia and Torres Balbas, those practices were used in laying out "navarran" villages during the XII and XIII centuries and amongst those villages we have Puente La Reina, Sanguesa and Viana. In the area of Plana de Castellon, we have Almenara and Castellon built between the XII and the XIV centuries. In Andalucia we have the towns of Puerto Real and Santa Fe, layed out during the XIV century.

Another reference, which is indirectly related to the castrametation practices, is the influence the Spanish planners received from the revival of different treatises during the first century of the colonial period which corresponded to the European Renaissance. Those treatises all drew on the Roman and Greek experience, particularly the "Ten Books on Architecture," Vitruvius, which contained a series of city planning concepts for the laying out of cities. Another one of those treatises, based itself on Vitruvius is Alberti's. Both works relied on the execution of the layout, on the location of the city, on the position of the different institutions within the urban framework. The formal characteristics of different elements described in both treatises are secondary should we relate them to the Laws of Indias. It cannot be argued that the plan proposed by

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13 Morse, Richard M., "Some characteristics Of Latin America Urban History?"
14 Ibidem.
15 Chueca Goitia, Fernando & Torres Balbas, Leopoldo., "Planos de Ciudades Iberoamericanas y Filipinas Existentes en el Archivo de Indias?"
16 Reps, John Williams., "the making of Urban America".
17 Ibidem.
Vitruvius is directly related to the gridiron plan of the colonial city in terms of form. Vitruvius proposed a radio-concentric type of plan based on the Rose of the Winds (6), however, if we consider the positioning of the elements within the city, we find remarkable similarities, also we find them in terms of the attitudes toward the choosing of a site, the way the town is to be supplied, the differenciation of the center from the rest of the settlement, functionally and formally, the connection of that center to the gates; the positioning of secondary open space.

The experience that Spanish planners had in the building of cities, could not have been translated into the Laws of Indias without having more comprehensive sources to rely upon, the availability of the works of Vitruvius and Alberti was a certainty. This is not only true for the document of the Laws itself but more so for the first instructions given to the settlers, well before they were recopilled. Those first instructions were comprehensive enough so as to assure the correct execution of the layout.

As an example of the instructions given prior to the writing of the Laws, we have those given to the expeditionary Pedrerias Davila in the year of 1513 containing specifics about the location of the settlements for defense, for the provisioning of ships as well as for their protection; the location of inland cities with respect to existing rivers, the availability of pack animals; the direction of the wind; the closeness to

18 Reps. John Williams., "the making of Urban America".
19 Ibidem.
water supplies and rich soils. In content, if not in form, these instructions were extraordinarily similar to those contained in the Laws of Indias. They were applied to the city of Panama in the year of 1519 and as part of them we can read: "...let the city lots be regular from the start, so that once they are marked out the town will appear well ordered as to the place which is left for a plaza, the site for the church and the sequence of the streets; for in places newly established, proper order can be given from the start, and thus they remain ordered with no extra labor or cost; otherwise order will never be introduced."

A detailed study of the similarities between the Laws of Indias and the work of Vitruvius would help to clarify and illustrate the relationship between the first instruction, the Laws and their Vitruvian influence. Stanislawski made a comparison of some paragraphs from the Laws with some of Vitruvius, we have decided to make a transcript of that comparison here because of the value it has in terms of the analysis made, and the extrapolation of that comparison with the first instructions given to Pedrerias Davila.

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20 Morse, Richard M., "Some characteristics Of Latin America Urban History."

21 Ibidem.
VITRUVIUS

I cannot too strongly insist upon the need of a return to the method of old times. Old ancestors, when about to build a town or an army post, sacrificed some of the cattle that were wont to feed on the site proposed and examined their livers. If the livers of the first victims were dark-coloured or abnormal, they sacrificed others, to see whether the fault was due to disease or their food. They never began to build defensive works in a place until after they had made many such trials and satisfied themselves that good water and food had made the liver sound and firm.

For fortified towns the following general principles are to be observed. First comes the choice of a very healthy site. Such a site will be high, neither misty nor frosty, and in a climate neither hot nor cold, but temperate; further, without marshes in the neighbourhood. For when the morning breezes blow toward the town at sunrise, if they bring with them mists from marshes and, mingled with the mist, the poisonous breath of the creatures of the marshes to be wafted into the bodies of the inhabitants, they will make the site unhealthy. Again, if the town is on the coast with a southern or western exposure, it will not be healthy, because in summer the southern sky grows hot at sunrise and is fiery at noon, while a western exposure grows warm after sunrise, is hot at noon, and at evening all aglow.

These variations in heat and the subsequent cooling off are harmful to the people living on such sites.

LAWS OF INDIA

In selecting the province, region, and area that is to be settled, always keep in mind that it should be healthful, which can be known by the number of healthy old people and youths of good constitution and color, and by the number of healthy animals of good size, and by the healthy fruits and other provisions.

Do not select the places of great elevation, since the winds are bothersome, and the service and transport are difficult, or very low places, for they are usually insalubrious; select places of intermediate elevation that enjoy fresh air—especially coming from the north and south—and if there are mountains or hills near the site, they should be to the east or to the west, and if for some reason a place of considerable elevation must be chosen, see to it that it is in a place that is not subjected to fogs; if the site is by a river, it should be placed to the east, so that the rising sun touches first upon the town before it touches the water.

22 Stanislawski, "Early Spanish Town Planning".
After insuring on these principles the healthfulness of the future city, and selecting a neighborhood that can supply plenty of food stuffs to maintain the community, with good roads or else convenient rivers or seaports affording easy means of transport to the city, the next thing to do is to lay the foundations for the towers and walls.

...Let the directions of your streets and alleys be laid down on the lines of division between the quarters of two winds.

On this principle of arrangement the disagreeable force of the winds will be shut out from dwellings and lines of houses. For if the streets run full in the face of the winds, their constant blasts rushing in from the open country, and then confined by narrow alleys, will sweep through them with great violence. The lines of houses must therefore be directed away from the quarters from which the winds blow, so that as they come in they may strike against the angles of the blocks and their force thus be broken and dispersed.

The size of a forum should be proportionate to the number of inhabitants, so that it may not be too small a space to be useful, nor look like a desert waste for lack of population. To determine its breadth, divide its length into three parts and assign two of them to the breadth. Its shape will then be oblong, and its ground plan conveniently suited to the conditions of shows.

Having selected the site for the town, it must be in an elevated place, where there are healthy conditions, protection, and fertile lands for farming and pastures, fuel and building materials, good water, natives, convenience of transport, of easy access, open to the north wind. If it be on the coast, care should be taken that it be a good harbor and that the sea should be neither to the south nor to the west; if this is not possible, do not place it near lagoons or swamps in which are poisonous animals and polluted air and water.

...The four corners of the plaza face to the four principal winds, because in this way the streets leaving the plaza are not exposed to the principal winds, which would be of great inconvenience.

The plaza should be a rectangle, prolonged so that the length is at least half again as long as the width, because this form is best for celebrations with horses, and for any others that are to take place.

The size of the plaza should be proportionate to the population, taking into consideration that in Indian towns, since they are new and intended to increase, the plaza should be designed with such increase in mind. It should not be less than two hundred feet in width and three hundred feet in length, nor greater than eight hundred feet in
The Greeks lay out their forums in the form of a square surrounded by very spacious double colonnades, adorn them with columns set rather closely together, and with entablatures of stone or marble, and construct walks above in the upper story. But in the cities of Italy the same method cannot be followed, for the reason that it is a custom handed down from our ancestors that gladiatorial shows should be given in the forum.

Therefore let the intercolumniations round the show places be pretty wide.

Basilicas should be constructed on a site adjoining the forum and in the warmest possible quarter, so that in winter business men may gather in them without being troubled by the weather.

If the city is on the sea, we should choose ground close to the harbour as the place where the forum is to be built; but if inland, in the middle of the town.

Having laid out the alleys and determined the streets, we have next to treat of the choice of building sites for temples, the forum, and all other public places, with a view to general convenience and utility.

length and five hundred and thirty-two in width; a good proportion is the intermediate size of six hundred feet in length and four hundred feet in width.

All around the plaza and the four principal streets that start from it there should be colonnades because of the great convenience that they offer to the merchants who gather here; the eight streets that leave from the four corners of the plaza are not to have colonnades that would block their juncture with the plaza.

If the town is a port, the main plaza should be at the harbor (desembarcadero). It should be in the middle of the town in inland places.

For the cathedral, parish church, or monastery there is to be the first assignment of solares after the streets and plazas are laid out.

Then mark out the places for the palace, the town hall, the customs house, and the arsenal.
...For the temples, the sites for those of the gods under whose particular protection the state is thought to rest and for Jupiter, Juno, and Minerva, should be on the very highest point commanding a view of the greater part of the city.

The treasury, prison, and senate house ought to adjoin the forum, but in such a way that their dimensions may be proportionate to those of the forum.

The cathedral of inland places should not be placed at the plaza, but at some distance...and so that it can be seen from all sides, because it lends greater adornment and authority, and arrange it in such fashion that it is raised above the ground level so that it will be approached by steps. Near it on the main plaza the palace, the town hall, and customs house should be built so that they do not detract from the cathedral but give it greater importance.

So far, we have considered the different sources as defining more the process, the explicit part as prescribed by the Laws. Now, we should consider the Medieval military towns as a major source in defining the part of the Laws which deals explicitly with the formal characteristics of certain elements such as the plaza, the arcades; with the conception of the city as a product. It cannot be said these Medieval towns served as the only basis for the implicit practices we have referred to previously, as most of the settlers came not from these towns of regular layout but as said, from towns of irregular layouts. It may be a matter of levels, whereas the definition of the formal characteristics of the plaza was necessary, as it was introduced as an unknown type to those settlers, however, it was not necessary to make explicit precise instruction concerning how to build a house, as the models to be used were part of that cultural baggage of the settlers to which we have already referred.
Among these Medieval towns, we should consider the French Bastides and their Spanish counterparts; the seige towns of the Spanish reconquest (7). Among the latter, Santa Fe is the most important source (8). It is considered by several authors as the probable genesis for the cities in the New World. Reps affirms it very well may have been, since it was the place where the monarchs, Fernando and Isabel, handled all matters concerning the colonies. Morse affirms that Santa Fe may have been the model for the laying out of Santo Domingo, on the island of Hispaniola. In 1502, the Governor, Nicolas de Ovando, transferred the city to the right bank of the river Ozana where the first checkerboard plan in the New World was laid out. Chueca.
Goitia and Torres Balbas make a direct comparison between Santa Clara in Cuba and Santa Fe and Villereal in Spain (9), where the form of the plazas follow the same patterns.

The last group of sources is of a more speculative nature, because their relation with the Laws, whether in terms of defining the process or the product, is difficult to be clearly established. One of the reasons for this problem is that these sources are attributed to developments during the Renaissance, and their use by Spanish planners is doubted by several authors. Morse, among them, considers these influences as having a more symbolic value as well as for the whole Italian humanism on the development of the peninsula in general. However, these sources are of enough intellectual interest to be mentioned as the possibility of them having influenced the Spanish authorities cannot be denied.

The first of these sources is described by Reps as deriving from the military character of the early Spanish settlements. He writes that the Spanish were in contact with not only the treatises of Vitruvius and Alberti, but, more directly so, with theories of encampment through their involvement, as allies of the Kingdom of Naples during the Italian wars. He continues with the argument that Machiavelli's Arte dell Guerra, which contained encampment plans similar to Santa Fe, was available in Spain not long after its publication in 1521. Also, in 1530, the work of Polybius describing the castratetion practices was
published, and later in 1555, Guillaume du Choul published another one which as translated into Spanish by 1579 is used by Reps to show the interest in the subject by the Spaniards.\textsuperscript{25} Another type of source was that produced by the Italian architects of the Renaissance like Filarete, Cataneo Scamozzi (10), whose city plans showed features existing on the new cities of the colonies. Among those features we have the position of the plazas concentric to that of the principal one, the differentiation of the center, not only functionally but also formally.

Finally, we shall make reference to another Renaissance idea, that of the parterres, which derives from the garden design of the Renaissance villas by Pliny.\textsuperscript{26} These gardens were geometrically arranged into a kind of grid pattern, where the resulting beds or parterres were not dimensionally similar, nor were the types of plants on each one of them. Within each parterre a different pattern of paths was designed. Reps writes that in the design of these gardens we can find the same concepts and techniques advocated by the Renaissance architects for the new cities such as the use of major and minor axes, the planning of plazas at intervals to enhance the formal variety of the place, the use of uniform facades. The implication here is not that the new cities of the Renaissance were copied from these garden parterres, but that, the same design philosophy and techniques of layout were equally accepted for both, garden and town.

\textsuperscript{25}R. Reps, John Williams,, "the making of Urban America".

\textsuperscript{26}Ibidem.,
To end this section of the historical sources of the Laws of Indias we shall mention one last hypothesis which according to Galantay has generally been overlooked. The concept was described by the Franciscan encyclopedist Eiximenis published in 1484. Galantay argues that the Council of Indias dominated as it was by the different monastic orders, was influenced in the shaping of the instructions by the theological speculations about the ideal Christian city as written by Eiximenis.

He specified a square town of 64 blocks which could accommodate about 10,000 inhabitants (11). The town was to have a central plaza surrounded by central buildings and the cathedral with four monasteries each one dominating a plaza, defining four barrios. Galantay affirms the plan had similarities with the 5x5 and 7x7 square plan of the Latin American colonial central plaza was to be rectangular, but where the cathedral was to be located away from the central plaza, in a quiet place, away from the noise and animation of the plaza.

27 Galantay, Ervin Y., "New Towns: Antiquity to the Present"
THE OBSERVATIONS

The pages to follow will describe the fundamental rules/relations of the town's elements as defined by the process of layout. Those relations will be classified by the position and form of the elements. Whenever indicated or regulated by the Laws those relations will be dimensioned.

The description does not follow the process of layout, but will be made based on the elements defined by the process at different scales, in this case that of the grid (plaza and streets) and that of the building (residential, religious, institutional and commercial). The scale of the block is not defined by the Laws nor that of the arrangement of rooms/spaces within the buildings, and the scale of the site, which is given greater consideration by the Laws is only briefly referred to in this work, but first, a plan of the city as defined by the prescriptions of the Laws is shown. It is an abstraction showing the fundamental layout for the inland cities.

From the previous sections we can conclude that the Laws of Indias were a legal instrument used by the Spaniard coloners to lay out their cities and organize their socio-economic, religious and political institutions. Its fundamental intention was to describe the process by which the settlers were to lay out their cities and the elements they should take into account.
So, if the Laws are to be described in terms of the physical structure, explicitly regulated, the process of laying out the towns should be described previous to that of the elements and their relations of position and form. The description is to be made in a sort of chronological fashion illustrated by diagrams.

The first step in the process was the definition of the position of the major plaza within the town, whether the latter be inland or on the seacoast. The second step was the laying out of the streets according to both the major plaza and the grid's positional and dimensional characteristics. The difference in the interpretation of the first two steps produced the extraordinary variety of the town's plans as they determined the fundamental structure, the interpretation of the layout process created the formal types and not vice versa.

The next and third step was the positioning of the secondary plazas in the grid. It was not clearly differentiated from that of the laying out of the streets and it conditioned or was conditioned by the positioning of the religious and institutional buildings. The impossibility of determining what came first, the streets or the buildings in defining the secondary plazas' position is at least graphically resolved by positioning first the plazas and then the religious buildings and the institutional-commercial buildings respectively. The positioning of these buildings as well as of the residential
ones was controlled by the assignation of lots, and although neither the lotification nor the lot's characteristics were explicitly defined, it was the common practice to do it in such a way as the foundation plans would show it.

The final step was that of positioning the residential buildings. The continuation of the process depended as it was mentioned above on the assignation of lots and their mapping in the plans. That positioning was defined by that of the other building types as they were clearly separated in character as well as in their impact on the structure of the town. Few references are made to the form of the houses and they are intended to avoid abuses and mismatches which may bring conflicts into the layout process.
THE INLAND CITY
as prescribed by the laws
THE STRUCTURE OF PHYSICAL SPACE
## SCALE OF THE GRID

### PLAZAS

<table>
<thead>
<tr>
<th>Relative Position</th>
<th>FORM</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Shape</td>
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</tbody>
</table>
| (1,2).1.12... | "The main plaza, whenever a beginning is to be made, if the town is situated on the seacoast, should be made at the landing place of the port."
|                   | "If the town lies inland, the main plaza should be in the middle of the town."
|                   | "The four corners of the plaza shall face the four principal winds." |
| (3).1.18... | "Here and there in the town smaller plazas shall be laid out, such that everything may be distributed in good proportion for the instruction of religion."
| (3,4).1.18... | "The plaza shall be of an oblong form." |
| (5)... | "The plan of the place shall be determined, and its plazas, streets and building lots laid out exactly." |
| (6)... | "Here and there in the town smaller plazas shall be laid out, in good proportion."
| (7)... | "The plaza shall be of an oblong form, which shall have at least a length equal to one and a half times the width."
| (8)... | "The size of the plaza shall be proportioned to the number of inhabitants."

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
</table>

Comments:

The only reference of position with respect to the site’s elements is that of the major plaza when the town is located inland or on the seacoast (1, 2). The rest of the references to the site’s elements are more related to matters of health prevention, supplies, access, etc., so as to assure the continuity of the settlement in time.

This first comment also illustrates the vague definition of rules, such as in the case of regulating the position of the secondary plazas by the "good proportions for the instruction of religion" (Law 118), which makes it difficult to interpret in existing terms (3, 4).

In terms of form, the difference in the definition of the main plaza's rules and those of the secondary plazas, along with the difference in their positioning in the grid, may very well be a reflection of the intention of defining a distinct civic and religious center with the main plaza as a stage, differentiated from the rest of the open spaces of secondary importance.

With respect to the secondary plazas, what the laws intended was to avoid odd shapes which would make difficult the relation with other elements, such as those of the grid and the different building types. The "exact layout" (a cordel y regla) for all elements of the towns structure (Law 110) produced the necessary regularization by defining an orthogonal intersection (5, 6). Still, there was room enough for variations in size, especially in the secondary plazas which added complexity to the physical structure of the colonial towns (6).
Comments.

The grid is defined by the arrangement of streets. The way they depart from the major plaza as prescribed in Laws 110, 117 and 114, and the type of intersection and intervals defined by the "exact layout" (orthogonal intersections at regular intervals of 100 varas), created the fundamental structure framing all other elements and rules (1, 2, 3).

The functional differentiation defined in Laws 110 and 114 (main streets vs. streets) is not supported by a formal one in terms of width, setback, etc.; furthermore, the way the regulations were stated seemed to imply a regularization of types by dimension (4). However, the existence of arcades (4, 5) in the main streets produced a difference whatever the width may be, allowing us to define two types of streets by form, the main ones departing from the middle of the major plaza (4) and the rest.

The basic dimensional reference is that of "exact layout" where a module of 100x100 varas is defined (85x85 meters approximately). This module corresponds to the grid's dimensions of many Latin American cities of colonial origin such as those of Valencia, Caracas and San Carlos in Venezuela. Although it cannot be considered an absolute dimension it is a good enough indication of the grid's possible dimensions.

This 100 varas module (250 approximately) conflicts when meeting with the major plaza and the latter follow those dimensions defined in Law 113 (6). This mismatch produces a rectangular module departing from the sides of the plaza creating a differentiation in intervals (7).
# Scale of the Building

## Residential Buildings

<table>
<thead>
<tr>
<th>Position</th>
<th>Form</th>
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</thead>
<tbody>
<tr>
<td>Relative Position</td>
<td>Shape</td>
</tr>
<tr>
<td>(1,2).126...</td>
<td>&quot;Building lots shall not be assigned to individual persons in the plaza....shops and houses shall be built for merchants.&quot;.</td>
</tr>
<tr>
<td>(1,2).127...</td>
<td>&quot;The other building lots shall be distributed by lot to the settlers, those lots next to the main plaza being thus distributed.&quot;.</td>
</tr>
<tr>
<td>(3).133...</td>
<td>&quot;They shall arrange the building lots and edifices placed therein in such a manner that the rooms of the latter may enjoy the air of the south and north as these are the best.&quot;.</td>
</tr>
<tr>
<td>(4).133...</td>
<td>&quot;The building of the houses of the whole town generally shall be so arranged that they shall serve as a defense and fort.&quot;.</td>
</tr>
<tr>
<td>(5).133...</td>
<td>&quot;Each house in particular shall be so built..., and shall have yards and courts&quot;.</td>
</tr>
<tr>
<td>(6).134...</td>
<td>&quot;They shall try so far as possible to have the buildings all of one form for the sake of the beauty of the town.&quot;.</td>
</tr>
</tbody>
</table>

The only rule of position that could be defined is that of no residential buildings will be positioned in the set of blocks immediately adjacent to the major plaza (1, 2). This rule and the fact that the center of the city was to be differentiated not only functionally but also formally, allowed to define successive rings (inner and outer rings) departing from the major plaza (1, 2) making it clearer and easier to describe the positioning of any element. This differentiation by rings would not be affected by changes in the form or dimensions of the plaza, which is very advantageous when considering that the variations occurred in the application of the Laws. The rule of position could then be defined as the residential buildings to be positioned in the outer ring, except of course, for the specific places where other building types were positioned away from the plaza.

Should we now try to relate positionally this building type with respect to other types, we would find it is not possible due to the lack of regulations within the Laws in terms of lotification patterns and building-lot relations.

All rules concerning the formal characteristics of the residential buildings of the other types are more indications than norms (3, 4, 5, 6), even the first diagram (3) is a speculation based on the characteristics of the colonial towns rather than an explicit statement of the Laws.
Comments.

A differentiation is made in terms of position depending on the town's inland or coastal location (1, 2). This affects the positioning of the Cathedral with respect to the grid, the elements of the grid, and the other building types. In the inland towns, the principal plazas becomes the determinant factor in positioning the religious buildings (4), especially the Cathedral, however, because the position of the secondary plazas was not precisely defined, that of the religious buildings can be defined only in terms of being positioned in the outer ring, and with respect to the grid's elements and the other building types.

Another problem in trying to define the rules of position is that of sometimes the distinction between the town's site location (inland or seacoast) is not made clear enough as in the case of Law 118 (3, 4). In this case we have to presuppose the Law is making reference to both types of towns and as such we define those rules.

The formal characteristics are defined only in relation to other elements, producing a detached type of building (5, 6). These characteristics contrast sharply with those of the residential buildings which are of a more continuous fabric, creating in this way two very distinctive images (man-divinity). Apparently, no formal references are made in the inland towns with respect to the religious buildings but only for the Cathedral (7); therefore, it shall be considered that Law 120 regulates the formal characteristics of the buildings in both types of towns (inland or seacoast).

### RELIGIOUS BUILDINGS

<table>
<thead>
<tr>
<th>POSITION</th>
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<tr>
<td>Relative Position</td>
<td>Shape</td>
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</table>

(1, 2). 119... "As for the temple of the Cathedral, if the town is situated on the coast, it shall be built in part so that it may be seen on leaving the sea."

(3, 4). 118... "Here and there in the town smaller plazas shall be laid out, in good proportion, where are to be built the temples of the Cathedral, the parish churches, and monasteries, such that everything may be distributed in good proportion for the instruction of religion."

(4). 120... "For the temple of the Cathedral, the parish church, or monastery, building lots shall be assigned, next after the plaza and streets."

(5). 124... "The temple in inland towns shall not be placed on the plaza but distant from it."

(6). 116... "Building lots shall not be assigned in the plaza where are placed the buildings of the church."

(7). 124... "In order that it may better embellished and have more authority it must, if possible, be built somewhat elevated above the ground in order that steps will lead to its entrance."
### INSTITUTIONAL

<table>
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<tr>
<th>POSITION</th>
<th>FORM</th>
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<tbody>
<tr>
<td>Relative Position</td>
<td>Shape</td>
</tr>
<tr>
<td>(1,2).121...</td>
<td>&quot;After that a site and location shall be assigned for the royal council and cabildo house and for the custom house and arsenal near the temple&quot;.</td>
</tr>
<tr>
<td>(3).123...</td>
<td>&quot;They shall arrange the building lots and edifices placed thereon in such a manner that the rooms of the latter may enjoy the air of the south and north as these are the best.&quot;.</td>
</tr>
<tr>
<td>(4).124...</td>
<td>&quot;The hospital for the poor... shall be built facing the cold north wind and so arranged that it may enjoy the south wind.&quot;.</td>
</tr>
<tr>
<td>(5,6).126...</td>
<td>&quot;Building lots shall not be assigned to individuals persons in the plaza where are placed the buildings of the church and royal houses.&quot;.</td>
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### COMMERCIAL BUILDINGS

<table>
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<tr>
<th>POSITION</th>
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<tbody>
<tr>
<td>Relative Position</td>
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<tr>
<td>(4,5).126...</td>
</tr>
<tr>
<td>(6).122...</td>
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</tbody>
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The reference made in Law 126 is necessary in order to define the rules of position of the institutional buildings (royal house and cabildo), this is because of the relative vagueness of the other references (1, 2). In the seacoast towns, the position is related to that of the Cathedral (1) but not to the plaza, which does not allow us to establish precisely whether the institutional buildings are on the blocks adjacent to the plaza or if the Cathedral is between the two. In the inland towns, as the Cathedral is not positioned with respect to the plaza, that of the institutional buildings is made with respect to the plaza directly (2). However, the term used is still too vague, "near by" (Law 124), which takes us back to the usage of Law 126 to precisely indicate the positioning of the institutional type as being right on the major plaza (inner ring). This in turn, does not contradict any of the other two references.

As for the residential buildings, some references are made to the form of this building type (3). However, it is so vague we can just indicate it in terms of possible areas where the building should be placed.

The difficulty in defining a positional rule for the commercial buildings, producers of filth (polluters), lies in that the rule is established with respect to the elements of the site, with no intermediate step (6). The situation changes when dealing with the non-polluting commercial buildings, as their position is related to the major plaza (inner ring), without any differentiation caused by the town's location (inland, seacoast) (4, 5).
ROYAL ORDINANCES FOR NEW TOWNS

San Lorenzo, July 3, 1573. I the King. Ordinances for discoveries, new settlements, and pacifications. 28

II. Having made the chosen discovery of the province, district and land which is to be settled, and the sites of the places where the new towns are to be made, and the agreement in regard to having them preceded, those who go to execute this shall perform it in the following manner: On arriving at the place where the town is to be laid out (which we order to be one of those vacant and which by your ordinance may be taken without doing hurt to the Indians and natives, or with their free consent), the plan of the place shall be determined, and its plazas, streets and building lots laid out exactly, beginning with the main plaza. From thence the streets, gates, and principal roads, shall be laid out, always leaving a certain proportion of open space, so that although the town should continue to grow, it may always grow in the same manner. Having arranged the site and place that shall have been chosen for settlement, the foundation shall be made in the following manner.

III. Having chosen the place where the town is to be made, which as above said must be located in an elevated place, where are to be found health, strength, fertility, and abundance of land for farming and pasturage, fuel and wood for building materials, fresh water, a native people, commodiousness, supplies, entrance and departure open to the north wind. If the site lies along the coast, let consideration be had to the port and that the sea not be situated to the south or to the west. If possible, let there be

28 Nuttall, Zelia. "Royal Ordinances concerning the Laying out of New Towns"
no lagoons or marshes nearby in which are found venomous animals and corruption of air and water.

112...The main plaza whence a beginning is to be made, if the town is situated on the seacoast, should be made at the landing place of the port. If the town lies inland, the main plaza should be made in the middle of the town. The plaza shall be of an oblong form, which shall have at the least a length equal to one and a half times the width, inasmuch as this size is the best for fiestas in which horses are used and any other fiestas that shall be held.

113...The size of the plaza shall be proportioned to the number of the inhabitants, having consideration to the fact that in Indian towns, inasmuch as they are new, the population will continue to increase, and it is the purpose that it shall increase. Consequently, the choice of a plaza shall not be less than two hundred feet wide and three hundred feet long, nor larger than eight hundred feet long and thirty-two feet (sic) wide. A moderate and good proportion is six hundred feet long and four hundred feet wide.

114...From the plaza shall run four main streets, one from the middle of each side of the plaza; and two streets at each corner of the plaza. The four corners of the plaza shall face the four principal winds. For the streets running thus from the plaza, they will not be exposed to the four principal winds which cause much inconvenience.

115...The whole plaza round about, and the four streets running from the four sides shall have arcades, for these are of considerable convenience to the merchants who generally gather there. The eight streets running from
the plaza at the four corners shall open on the plaza without any arcades and shall be so laid out that they may have sidewalks even with the street and plaza.

116...The streets in cold places shall be wide and in hot places narrow; but for the purpose of defense, where horses are to be had, they are better wide.

117...The streets shall run from the main plaza in such wise that although the town increase considerably in size, no inconvenience may arise which may cause what may be rebuilt to become ugly or be prejudicial to its defense and commodiousness.

118...Here and there in the town smaller plazas shall be laid out, in good proportion, where are to be built the temples of the Cathedral, the parish churches and the monasteries, such that everything may be distributed in good proportions for the instruction of religion.

119...As for the temple of the Cathedral, if the town is situated on the coast, it shall be built in part so that it may be seen on leaving the sea, and in a place where its buildings may serve as a means of defense for the port itself.

120...For the temple of the Cathedral, the parish church, or monastery, building lots shall be assigned, next after the plaza and streets and they shall be so completely isolated that no building shall be added there except one appertaining to its commodiousness and ornamentation.

121...After that a site and location shall be assigned for the royal council and cabildo house and for the custom house and arsenal near the
temple and port itself so that in times of need the one may aid the other. The hospital for the poor and those sick of non-contagious diseases shall be built near the temple and its cloister; and that for those sick with contagious diseases shall be built in such a place that no harmful wind passing through it, may cause harm to the rest of the town. If the latter be built in an elevated place, so much the better.

122...The site and building lots for slaughter houses, fisheries, tanneries, and other things productive of filth shall be so placed that the filth can be easily disposed of.

123...It will be of considerable convenience if those towns which are laid out away from the port and inland be built if possible on the shores of a navigable river; and the attempt should be made to have the shore where it is reached by the cold north wind; and that all trades that give rise to filth be placed on the side of the river and sea below the town.

124...The temple in inland towns shall not be placed on the plaza but distant from it and in such a place that it may be separated from any building which approaches it and which has no connection with it; and so that it may be seen from all parts. In order that it may better embellished and have more authority, it must, if possible, be built somewhat elevated above the ground in order that steps will lead to its entrance. Nearby close to the main plaza shall be built the royal houses and the council and cabildo house, and the custom house so that they shall not cause any embarrassment to the temple but lend it authority. The hospital of the poor who shall be sick of non-contagious diseases, shall be built facing the cold north wind and so arranged that it may enjoy the south wind.
125...The same arrangement shall be observed in all inland places which have no shore provided that considerable care be given to providing the other conveniences which are required and which are necessary.

126...Building lots shall not be assigned to individual persons in the plaza where are placed the buildings of the church and royal houses and the public land of the city. Shops and houses shall be built for merchants and these shall be the first to be built and for this all the settlers of the town shall contribute, and a moderate tax shall be imposed on goods so that these buildings may be built.

127...The other building lots shall be distributed by lot to the settlers, those lots next to the main plaza being thus distributed and the lots which are left shall be held by us for assignment to those who shall later become settlers, or for the use which we may wish to make of them. And so that this may be done better, the town which is to be laid out should always be shown on the plan.

128...Having made the plan of the town and the assignment of building lots, each of the settlers shall set up his tent on his plot if he should have one. For this purpose the captains shall persuade them to carry tents. Those who do not possess tents shall build their huts of such materials that can be obtained easily, where they may have shelter. As soon as possible all settlers shall make some sort of a palisade or ditch about the plaza so that they may receive no harm from the Indian natives.

129...A commons shall be assigned to the town of such size that although the town continues to grow, there may always be sufficient space for the people to go for recreation and for the cattle to be pastured without
...Adjoining the commons there shall be assigned pastures for the work animals and for the horses as well as for the cattle belonging to the slaughter houses and for the usual number of cattle which the settlers must have to some goodly number according to ordinance, and so that they may also be used as the common property of the council. The rest of the land shall be assigned as farm lands, of which lots shall be cast in proportion to the amount, so that there shall be as many farms as there are building lots in the town. And should there be irrigated lands, lots shall be cast for them, and they shall be distributed in the same proportion to the first settlers according to their lots. The rest shall remain for ourselves so that we may assign it to those who may become settlers.

The settlers shall immediately plant all the seeds they take with them and all that they can obtain on the farm lands after their distribution. For this purpose, it is advisable that they go well provided; and in the pastures especially all the cattle that they take with them and all that they can collect so that the cattle may begin to breed and multiply immediately.

The settlers having planted their seeds and made arrangements for the cattle to a goodly number, and with good diligence (from which they may hope to obtain abundance of food), shall commence with great care and activity to establish their houses and to build them with good foundations and walls. For that purpose they shall go provided with molds or planks for building them, and all the other tools for building quickly and at small cost.
133...They shall arrange the building lots and edifices placed thereon in such a manner that the rooms of the latter may enjoy the air of the south and north as these are the best. The buildings of the houses of the whole town generally shall be so arranged that they shall serve as a defense and fort against those who may try to disturb or invade the town. Each house in particular shall be so built that they may keep therein their horses and work animals, and shall have yards and corrals as large as possible for health and cleanliness.

134...They shall try so far as possible to have the buildings all of one form for the sake of the beauty of the town.

135...The faithful executors and architects and persons who may be deputed therefore by the governor shall be most careful in the performance of the above. They shall hurry the labor and building so that the town may be completed in a short time.

136...Should the natives care to place themselves under the defense of the town, they must be made to understand that it is desired to build a town there not in order to do them any harm nor to take their possessions from them, but to maintain friendship with them and to teach them to live in a civilized manner, to teach them to know God, and to teach them His law, under which they shall be saved. This shall be imparted to them by the religious, ecclesiastical persons, and persons deputed therefore by the governor and by means of good interpreters. By means of all good methods possible, the attempt shall be made to have the town laid out with their good will and consent. However, should they not consent after having been summoned by various means on different occasions, the settlers shall lay
out their town, but without taking anything that may belong in particular to the Indians and without doing them other hurt that what may be necessary for the defense of the settlers and so that the town should not be molested.

137...Until the new town shall have been completed, the settlers shall try as much as possible to avoid communication and intercourse with the Indians and shall not go to their towns and shall not amuse themselves nor give themselves up to sensual pleasures in the land. Neither shall the Indians enter the precincts of the town until after it has been built and placed in a condition of defense, and the houses so built that when the Indians see them they shall wonder and understand that the Spaniards settle there for good and not for the moment only; and so that they may fear them so much that they will not offend them and shall respect them so much as to desire their friendship. When they begin to build the town, the governor shall assign some one person to take care of the sowing and cultivation of the land with wheat and vegetables of which the settlers may immediately make use for their maintenance. He shall also see that the cattle are put out to pasture where they shall be safe and where they shall cause no hurt to the cultivated land nor to anything belonging to the Indians; and so that also the town may be served, aided, and sustained by the aforesaid cattle and their young........
THE APPLICATION OF THE LAWS

The description of the structure of physical space as produced by the application of the Laws is to be as in the case of the Laws, first, graphically recorded and then, the sources from where those observations were derived are to be exposed.

However, there shall be a fundamental difference between both sections and it is that, in this, The Application of the Laws, the order of the scales in the graphical description is to be different than in that of The Sources. While in the former the order goes from the larger scale to the smaller, from the grid to the block and to the building; in the latter the order is changed as the scale of the building precedes that of the block. The reason for this is that the block is the least defined of the scales and it was actually composed by what was determined at the scale of the building and framed by the grid.

The plan shown on the next page is an abstraction of the layout produced by the application of the Laws. Only the layout for the inland cities is shown as most of the material used dealt with this type of city, still, several references shall be made to the coastal cities but only of a secondary character.
THE INLAND CITY
as resulting from the
application of the laws
The Structure of Physical Space
SCALE OF THE GRID

PLAZAS

POSITION

<table>
<thead>
<tr>
<th>Relative Position</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) ... Should the city be located by the sea, the main plaza is to be made on the edge of the city adjacent to the landing place of the port.</td>
<td><img src="image1" alt="" /></td>
<td><img src="image2" alt="" /></td>
<td><img src="image3" alt="" /></td>
<td><img src="image4" alt="" /></td>
<td><img src="image5" alt="" /></td>
</tr>
<tr>
<td>(2) ... Should the city be located inland, the main plaza is to be made in the center of the city.</td>
<td><img src="image1" alt="" /></td>
<td><img src="image2" alt="" /></td>
<td><img src="image3" alt="" /></td>
<td><img src="image4" alt="" /></td>
<td><img src="image5" alt="" /></td>
</tr>
<tr>
<td>(3) ... In the coastal cities the secondary plazas are to be placed in the outer ring.</td>
<td><img src="image1" alt="" /></td>
<td><img src="image2" alt="" /></td>
<td><img src="image3" alt="" /></td>
<td><img src="image4" alt="" /></td>
<td><img src="image5" alt="" /></td>
</tr>
<tr>
<td>(4) ... In the inland cities the secondary plazas are to be placed in the outer ring.</td>
<td><img src="image1" alt="" /></td>
<td><img src="image2" alt="" /></td>
<td><img src="image3" alt="" /></td>
<td><img src="image4" alt="" /></td>
<td><img src="image5" alt="" /></td>
</tr>
<tr>
<td>(5) ... Should the city expand over the original 7x7 grid, the secondary plazas/nodes shall be arranged in the form of successive sub-rings within the outer ring.</td>
<td><img src="image1" alt="" /></td>
<td><img src="image2" alt="" /></td>
<td><img src="image3" alt="" /></td>
<td><img src="image4" alt="" /></td>
<td><img src="image5" alt="" /></td>
</tr>
</tbody>
</table>
**PLAZAS**

**FORM**

<table>
<thead>
<tr>
<th>Shape</th>
<th>Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1,2,3,4)... The main plaza is to have an orthogonal shape, which may vary from square to oblonged (rectangular) as it occupies one or two modules of the grid.</td>
<td>(5,6)... The secondary plazas are to have an orthogonal shape which may vary from square to oblonged depending on the section of the module of the grid it occupies.</td>
</tr>
<tr>
<td>(7)... The main plaza is to occupy no less than a module and no more than two modules of the grid. The secondary plaza is to occupy no more than one module. The module has a dimension of 100x100 varas = 85x85 meters = (axa).</td>
<td></td>
</tr>
</tbody>
</table>

![Diagram of plazas](attachment:plazas_diagram.png)
### STREETS

#### POSITION

<table>
<thead>
<tr>
<th>Relative Position</th>
<th>Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)... The position of the street is determined by the &quot;exact layout&quot; (cordel y regla) which produces a checkerboard plan with intersection at right angle.</td>
<td>(4)... The dimension is defined by the &quot;exact layout&quot; (cordel y regla). The module mnx is equal to 100x100 varas (85x85 meters).</td>
</tr>
<tr>
<td>(2,3)... The streets do not depart from the plaza but are part of the already defined grid.</td>
<td>(5,6)... Should the city be on the coast, the dimension of the streets (b) is smaller than that of the inland cities.</td>
</tr>
</tbody>
</table>

Once the dimension of the streets (b) has been defined, it is kept throughout the city.
**STREETS**

**FORM**

| Shape | (1)... Should the city be on the coast, the street is narrower than in those cities inland. |

**ARCADES**

**POSITION**

| Relative Position | (2,3,...) The shape of the street is regularized throughout the whole city, whether by the sea or inland. |

| Form | (5,6)... The arcades are to be located in both the inner and the outer ring.  
In the inner ring they are to surround the main plaza. In the outer ring they are to surround the secondary plazas.  
It surrounds from one to four sides of the plaza. |

| Shape | (7)... The street level is to be one story high and could have from one to three stories on top. |
**SCALE OF THE BLOCK**

**RESIDENTIAL BLOCK**

<table>
<thead>
<tr>
<th>Relative Position</th>
<th>Shape</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)... The residential blocks are to be placed on the outer ring.</td>
<td></td>
</tr>
<tr>
<td>(2)... Should the block be located next to a secondary plaza and the side facing the latter shall have no different setback for its whole length nor shall be different than the setback of the rest of the blocks facing the plaza.</td>
<td></td>
</tr>
<tr>
<td>(3)... Should the block be located next to other blocks and there shall be no different setback in its four sides.</td>
<td></td>
</tr>
<tr>
<td>(4)... Should the block be located next to a secondary plaza and the side facing the latter shall have larger buildings/volume.</td>
<td></td>
</tr>
<tr>
<td>(5)... Should the block be located next to a secondary plaza and the side facing the latter may or may not have arcades.</td>
<td></td>
</tr>
<tr>
<td>(6)... The arcade does produce a different setback at the ground level.</td>
<td></td>
</tr>
</tbody>
</table>
**RESIDENTIAL BLOCK**

<table>
<thead>
<tr>
<th>Shape</th>
<th>Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1,2) The residential block is formed by the aggregation of the corner and midblock buildings producing a closed block.</td>
<td>(6) The block's dimension corresponds to that of the grid's module where (axa = 100) x100 varas = 85x85 meters.</td>
</tr>
<tr>
<td>(3,4) The residential block is to have a band of built space facing the street or the plaza while the inside of the block is left as a margin.</td>
<td></td>
</tr>
<tr>
<td>(5) The patios are to be located in the margin (inside of the block) and are not to be shared by more than one building</td>
<td></td>
</tr>
</tbody>
</table>

![Diagrams](image)
## SCALE OF THE BUILDING

### RESIDENTIAL BUILDING

#### POSITION

<table>
<thead>
<tr>
<th>Relative Position</th>
<th>Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1,2,3) ... Should the building be positioned in a corner lot and it shall not have any setback with respect to the street or plaza (front setback) nor to the adjacent building (side setback). This building type shall be denominated corner building.</td>
<td>(4,5,6) ... Should the building be positioned in a midblock lot and it shall not have any setback with respect to the street or plaza (front) nor to the adjacent building (side). This building type shall be denominated mid-block building</td>
</tr>
<tr>
<td>(1,2) ... In both cases, that of the corner building and the mid-block building, as there are no setback, the dimension of the building correspond to that of the lot.</td>
<td></td>
</tr>
</tbody>
</table>

![Diagram 1](image1)

![Diagram 2](image2)

![Diagram 3](image3)

![Diagram 4](image4)

![Diagram 5](image5)

![Diagram 6](image6)
RESIDENTIAL BUILDING

FORM

Shape

(1,2)... The corner building is described as of a continued type. It shall have two sides open and adjacent facing the street.

(3,4)... The corner building is to have a band of built space facing the streets while the rest of the building is left as a margin.

(5,6)... The patio is to be located between the set of rooms facing the street (built area) and the adjacent houses, in other words in the margins.

A minimum of one patio is to be in the building and the closest to the front of the building shall be considered as the main patio.
RESIDENTIAL BUILDING

FORM

Shape

(1,2)... The mid-block building is described as of a "continued" type. It shall have one side open to the street. In case it may have two sides open (rear patio), they are always opposite or at least not adjacent.

(3,4)... The mid-block building is to have a band of built space facing the streets while the rest of the building is left as a margin.

(5,6)... The patio is to be located between the set of rooms facing the street (built area) and the adjacent houses, in other words the margins.

A minimum of one patio is to be in the building and the closest to the front of the building shall be considered as the main patio.
THE SUBSTANTIATION

the scale of the grid

As mentioned in the introduction and as seen through the observations of the position and form of the grid's elements, there were no radical differences between the Laws and their application at this scale. Perhaps the only differences are in terms of the formal characteristics of the main plaza with the resulting changes on the arrangement of the streets in the center of the city. The relatively small degree of change illustrates the fact that the grid had to be explicitly regulated, instructed because of the lack of previous exposure to this type of plan, and because it was the most important urban feature to control in order to achieve the socio-political objectives. The changes in the plaza and the streets were not due to changes in the process of layout but rather to on-site simplifications of the product. It became a practical priority to avoid complications in the layout because it was more important to have the settlement stable and capable of being defended, an even more important issue when considering the lack of expertise of the settlers in building a city.

It could be argued, however, that even though the changes were quantitatively few, the impact they produced on the city's plan was of some significance in terms of the differentiation between the center of the city and the rest of it (the inner
and the outer ring). In that sense one has to rely more on the functional differentiation and on the building types to recreate the intentions of the Laws. Still, we have to describe these changes, even though few show the influence of practices un-instructed and unrecompilated.

THE PLAZA. ITS POSITION

Now, let us start the substantiation of the observations, considering the plaza as the essential feature and the most important element of Latin American colonial cities. Its formal hierarchy, expressed by its central location, is reinforced by a socio-economic hierarchy which needed a vital center for its own expression. The polifunctional character of that center by the aggregation of the most important institutional activities is what creates that vitality. This social focality had several consequences and among them we can mention the value position acquired as a determinant of social status, "There, close to the plaza, were established the wealthier neighbors who built their houses. Farther away the less wealthy were distributed," and as a determinant of access to services and to amenities, as every important event of the city took place in the plaza (1). A social differentiation was produced as well as a formal and a functional one. A social order was imposed onto the physical structure of the city and as the former corresponded a great deal to a feudalistic social organization, -- if not in form

1 Chueca Goitia, Fernando & Torres Balbas, Leopoldo., "Planos de Ciudades Iberoamericanas y Filipinas Existentes en el Archivo de Indias?"  
2 Frontado, Guillermo. "The Laws of Indies"  
3 Romero, Jose Luis. "Latinoamerica: Las ciudades y las ideas"
it did in content -- it made possible this differentiation; as Romero notes, "the invasion was conditioned by the European society, printing its character on the protagonists, fixing the objectives of the action, projecting its old problems to America."

As illustrations of the referred vitality of the center, of their socio-political focality we have here two different quotes. The first one is from Romero's history of ideas in Latin America and the second one is a description by de Mesa and Gisbert of the evolution and growth of the city of La Paz, Bolivia, during the colonial period.

"In the layout the main plaza was an open and empty space as all others; the pillory was the first thing to be built, and very soon the market started operating there, the plaza became the plaza and consolidated this position when buildings were erected at its edges, government buildings, the church and perhaps, the jail. With all that, the plaza was the center of social communication for the city...."

"Among the most important elements of the urbanism of La Paz, we find the main plaza as the vital center of urban life. Throughout the life of the Virreinato, the happiest and saddest events of the city took place in this urban space. It witnessed the solemn celebrations organized during the XVI century in commemoration of the crowning of the new Castilian Kings, and later the funerals organized in due respect for their deaths.

4 Romero, Jose Luis, "Latino-America: Las ciudades y las ideas"
5 Ibidem.
Panamá, Panamá. 1748 (1)
Several processions went through it, such as those of La Virgen del Carmen, La Merced, San Ignacio, San Agustín, San Juan de Dios, Santo Domingo, San Francisco, ... there in the main plaza took place the important ceremony of the waving of the royal standard with the crown’s arms and that of the city; it was the most important civil ceremony. When the streets accessing the plaza were closed, sorterías and bullfights took place. The natives danced and the market was held there. Also the main plaza was the stage for the execution of justice by the city’s authorities...  

Going back to the issue of the central position of the plaza and relating it to the observations, we find that in every case, the position of the plaza was that determined by the Laws of Indias. In the coastal cities the plaza remains at the edge of the city, facing the sea (2) or river as can be seen in the cases of Buenos Aires (3), La Havana (4) and Campeche (5). In the inland cities the plaza remains in the middle of the city (6) as can be seen in cases like Caracas (7), Antigua (8) and Guadalajara (9). It should be noted that in some cases the expansion of the city is such that the original 5x5 or 7x7 grid has disappeared and that expansion, due to topographical obstacles has not always been symmetrical (10), which may confuse the identification of the position of the plaza. In that sense, the latter is made with respect to the original 7x7 grid (11), otherwise, there would be no other reference from which to derive the positioning of the plaza.

6 de Mesa, Jose & Gilbert, Teresa. "La Paz en el siglo XVIII."
In contrast to the case of the rules defined by the Laws of Indias, the observations deduced from the application of the Laws have been framed within the 7x7 grid even before this was defined by the arrangement of the streets. One of the reasons for doing this is more practical than anything else, and it is that the understanding of the observation is made easier as the positional relations are expressed more clearly. The other reason, which supports the first one conceptually, is based on the regularity of the whole grid caused by the change in the form of the plaza. This is no longer the point of departure of the city, it may be so in terms of laying out the city but not in determining the formal characteristics of the grid. What happens could be described as the opposite to what Morse describes as "...the streets cease to be lines of centripetal forces which creates the plaza by their confluence. On the contrary, they radiate to the limit of the motive power of the organism of the city...." In the application of the Laws, the streets' arrangement determines the form of the plaza by their confluence, by their centripetality, therefore it makes sense to utilize the grid previous to its definition.

Dealing with the secondary plazas required that we reintroduce the differentiation of inner-outer ring. This is possible at this time because, even though changes in the form of the main plaza may diffuse its uniqueness within the grid; weakening the differentiation between the center and the rest of the city; still, the functional distribution establishes an

7 Morse, Richard M., "Some characteristics Of Latin America Urban History"
impact on the scale of the building which accounts for the necessary differentiation. It is important to mention here that, this inner-outer ring classification is not an arbitrary one but one reflecting the power structure and its relation to the socio-political context of the new cities. In this way it is possible to have a deeper understanding of how and why the structure of the physical space of the city is determined.

The use of the 7x7 grid to describe the position of the secondary plaza as in the outer ring (12) makes sense if we consider the fact that is related to the position of the institutional and religious buildings whose plazas are staging, and which can not either be determined precisely (13). The instruction "...everything may be distributed in good proportion for the instruction of religion." applies for both the plazas and the buildings, and which is so vague it keeps us from being more precise than stating that the secondary plazas are to be positioned in the outer ring. One marginal note here and it is that by defining this position for the secondary plazas, indirectly we are establishing their positional relation with the main plaza which is to be in the inner ring. In such a way we begin to understand what the structural relations are between the different elements, still of the same scale, but through the analysis with those of the scales of the buildings and the block.

This relation activity-plaza will help us to explain why at the time of the foundation of the city, no secondary plazas

8 Galantay, Ervin Y., "New Towns: Antiquity to the Present?"
9 Nuttall, Zelia, "Royal Ordinances concerning the Laying out of New Towns"
were usually present. Observing some of the city's plans such as those of Caracas (14) and Mendoza (15) we realize the strength of this pattern and its recurrency. The reason for it lies in the lack of functional complexity which would have determined the presence of activities with their subsequent plazas. Also, size and population had an influence in this matter as more plazas were needed to stage public life and social communication of the expanding city. Maps dating from about the XVIII century, such as those of Caracas (16), and Guatemala (17) show the appearance of plazas throughout the city; in many cases they seem to be spatial indicators of an important building-activity, such as a monastery or a church, and not planned open spaces. From the chronicles of Pimentel, Governor of Caracas in the XVII century, we read that two lots located just a block away from the main plaza, were given to the Dominique monks in 1610 upon the express condition that each one of them had to be kept vacant. The intention was that they were to be used as a public plaza for the convent. In the actual Caracas, this plaza is the one known as San Jacinto.

Two comments about the secondary plazas are now to be made. The purpose is to relate this description with the historical sources of the Laws and with the influence of the political and economical role of the city on its spatial structure. The first comment relates the position of the plazas in the outer ring to those plans of the renaissance designed by Filarete and others, where a radioconcentric disposition of the
secondary plazas (18) have a certain similarity to their positioning in the Latin American colonial cities. This is a speculation of a more conceptual character, because the plan types cannot be formally compared but they can illustrate a similar concept of the relation between the secondary activities and their plazas with the principal ones with their main plaza. The second comment is about the city of Guadalajara (19) which, by the time the plan was drawn, was already a regional center of tremendous importance attracting many different institutions such as religious orders, schools, seminaries, etc. Most of those institutions required a plaza to indicate its importance and for reasons of functional distribution they were located in the inner ring. The spatial result, as it can be seen in the plan, produced such a complexity which disarticulates spatially the main plaza. However, it is important to recognize this case was more the exception than the rule in terms of the position of the secondary plazas, although it is a very good example of the influence of the socio-political context onto the city.

A final note with respect to the secondary plazas should be made when considering the expansion of the original 7x7 grid. It is that the plazas and the institutions they are staging as becoming nodes of activity spread around the city. In many cases the position of these nodes around the edges of the early city, determined that the nodes acquired an area of influence which grew along with the expansion of the city. For example, according to Galantay, the monasteries should be

\[1\] Morse, Richard, et al., "The Urban Development of Latin-America"
located at the edges of the cities during different stages of growth, so that no matter whether the growth was symmetrical or not, the nodes would appear in a sort of successive fashion, of radioconcentric expansion, and, along with their areas of influence they became identifiable communities with the original plaza as the focus of life and activity. These cellular units through time acquire a recognizable social, cultural and in some cases, political identity. Many of them still exist in our cities and are known as urban barrios.

In order to describe the position of these nodes we have to expand the outer ring for as long as that of the grid, otherwise the formal and functional differentiation between the center and the rest of the city would be so weakened that it would become meaningless. Should we try to identify each one of those nodes as an autonomous ring without any connection with the rest of the nodes outside the inner ring we would be disintegrating the coherence of the grid, of the structure, by isolating the different parts of the city. We consider the nodes as being positioned in the outer ring (along with their areas of influence) in the form of successive sub-rings (20), of cellular units. Interesting examples of these barrios are found in the actual Caracas, where cases such as those of La Pastora and San Jose, conserve a certain degree of identity within the expanded grid even though pressures from the development produced by an increase of density have threatened to destroy that identity and peculiarity. This is especially

12 Galantay, Ervin Y., "New Towns: Antiquity to the Present"
true for the last two cases as a few years ago La Pastora was declared a historical monument and its development frozen in time.

Valencia in Venezuela, is another interesting case where the area of Santa Rosa, at the southern edge of the traditional center, possesses a definite identity within the city. Its plaza, surrounded by the church, the school and shops, is really the focus of this community. However, between this area and the main plaza's area of influence there is no other node, except for the minor one of Candelaria. The result is that, this undefined part of the grid has become a no man's land where the impact of non-conforming usage such as those of polluting and noise producing industries, has been felt the most. This case also illustrates the necessity of describing the position of these barrios or nodes by using the inner-outer ring differentiation. The lack of definition of the expanded grid in terms of the sub-rings within the outer one, would have diffused the otherwise defined relation between the center of the city and the rest of the grid, if we had not used the inner-outer ring categorization.

THE PLAZA. ITS DIMENSION

Contrary to the case of the Laws, the plaza is the result of the arrangement of streets and not the point of departure for the layout of the city. This produced a basic change in the form of the plaza because it depends on how many modules
of the grid it occupies. The reasons behind this are, as mentioned already, the lack of expertise, of training of the settlers in laying out cities which led them to avoid the complications created by what was prescribed in the Laws in terms of the form and dimensions of the main plaza and its relation with the departing streets. The dominant element is the grid and not the plaza, at least formally. We have to remember that the functional differentiation shall always account for the primacy of the plaza.

THE FORM OF THE PLAZA

The shape of the main plaza changes from square to rectangular as it occupies one or two modules (21). Actually, the plaza being square is the usual case as with all the cases it is so we can draw those of conception (22), La Plata (23), Talavera de Madrid (24) and Antigua (25). The dimension of the main plaza then poses no great problem as it is defined by the grid, it simply follows the dimensions of the latter where we have modules of 100x100 varas or 85x85 meters (30). The formal and dimensional characteristics of the secondary plazas are harder to describe since they have a range of shapes and dimensions going from a piece of the block where there is staged a monastery, parish church, to the whole block in cases where is staged an important institution such as a Cathedral (31). The observations then will have a just indicative character trying to give an idea of the possibilities in terms of

13 Chueca Goitia, Fernando & Torres Balbas, Leopoldo. "Planos de Ciudades Iberoamericanas y Filipinas Existentes en el Archivo de Indias".
the shape and dimensions the secondary plazas had. The only feature to be specifically pinpointed here is that, as prescribed by the Laws, these plazas were to avoid odd shapes which may bring complications in their relationships with other elements of the city.

THE STREETS. ITS POSITION

Next in the description of the characteristics of the grid's elements is found the streets. The application of the Laws in the American territory changed the nature of the streets as defined by the process of layout, into one which because of the simplification of that process and the availability of sources from which the settlers drew images of how the city should be, produced a different conception of how to make the layout and how the elements were to relate to each other. Still, the streets continued performing up to the socio-political intentions of the Spanish Crown such as in the regularization of the plan so as to achieve the homogenization of the process of territorial control, the distribution of land
among the settlers and institutions, the separation of those settlers from the native population, and the definition with the least possible ambiguity of the public and private realms. The streets were designed and thought of as pedestrian channels of movement, not as formal types such as boulevards or alleys with a specific position. They were designed as fields of public action, as public realms.

As we go onto the references to a position as contained in the observations, immediately the issue of undifferentiation of the grid establishes the trend of the discussion. Because the main plaza no longer defines the departing point for laying out the city, we have to rely almost exclusively on the instruction of laying out the city exactly (a cordel y regla) as defined by the Laws of Indias (32). The observations are shown more as a product where "the checkerboard pattern of straight streets with intersections at right angles" as quoting from Reps or in other words, the exact layout, defines the positioning of the streets with respect to one another.

Several plans are shown here in order to illustrate the recurrence of the undifferentiated grid, in other words, of the relative position of the streets. The plans are those of conception (22), La Plata (23), Talavera de Madrid (24), and Antigua (25). As always, exceptions to that simplification of the grid resulting not from explicit practices but from lack of exposure, expertise and tradition are now found, such as in
Santa Clara (26), Panama (27), Manajay (28) and San Juan Bautista de la Ribera (29). They show a differentiated grid because of changes in the form of the main plaza and most important, in the way the streets depart from it. In this type of plan it makes sense to utilize the distinction between the inner and the outer ring in defining the positional and formal characteristics of the streets. However, these cities are, as stated, exceptions. As exceptions they do not have an impact on the definition of the observations which by no means implies that these cities lack interest or should not be considered within the context of this work.

Another type of unusual situation was where within the undifferentiated grid, variations in the size of the main plaza brought about the differentiation between the center of the city and the remainder of it; the inner and the outer ring distinction. The general rule is that the main plaza occupies one module of the grid as indicated in the observations describing the application of the Laws. However, in case this plaza occupies two of those modules as in the city of Barinas (33), and San Fernando de Bexar (34) the positional discipline of
the observations made in the application about the relative position of the streets with respect to the other elements are themselves considered valid. Variations of the kind here mentioned responded to bursts of economic growth in certain areas which was reflected in the cities by having public spaces of more ambitious dimensions.

THE STREETS. ITS DIMENSION

The dimensioning of the grid plan is simplified by the changes in the form of the main plaza. The resulting tartan grid follows the dimensions established by the exact layout which as already defined, determined a separation of 100 varas or 85 meters between the streets (35). Again, it is important to mention that this dimension is not an absolute one but merely an indicator of the grid's dimensions, more so, an average. Whatever variations occur they are within a range close to this average. To corroborate this observation we shall refer to sources such as the description made by Francisco Depons around 1804 where he writes that "the streets of Caracas, as those of any modern city, are straight, oriented to the four cardinal points, separated for about three hundred feet and about twenty feet wide." One final note about this issue is that by considering the dimensioning described above as an average rather than an absolute figure, we can cope with the difficulty of determining the exact dimension of the plans because in many cases it was not defined whether the reference

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15 Gasparini, Graciano & Posani, Juan Pedro, "Caracas a través de su Arquitectura"
was made as from the street's axes or from facade to facade. 

To give dimensions to the formal characteristics of the streets brings the same problems already mentioned, besides, we suffer from a lack of sources dealing with this issue. Few cases make mention of the street's dimensions, such as the above mentioned of Depons, and the description of Caracas by the traveler and merchant Joseph Luis Cisneros, who in his book "Descripción exacta de la Provincia de Venezuela," published in 1764, writes that "In this large city its straight streets are of ten varas in width..." and finally the foundation plan of Caracas where it is indicated that the streets of the city are to be of thirty-two feet. However, there are not enough cases which draw a conclusive observation about the width of the street. Even more, the term exact layout as defined by the Laws applied more to the dimensioning of the blocks but not of the streets.

There are factors, however, which may help define at least a possible range or an average. One, as prescribed by the Laws and as applied in almost all cases, is that once the dimension of the street was defined, it was repeated throughout the city. Not only can we note this from plans already shown (22, 23, 24, 25) but from existing cities such as Valencia (36), San Carlos (37) and Guanare (38), where the regularity of the grid is complemented or reinforced by the dimensions of the streets. Perhaps an average could be defined representing a range into which most cases would fall. If so, we could
speculate that a certain range, not prescribed by the Laws of
Indias or anywhere else, was present when the layout of the
city was made. This would imply that a series of implicit
practices derived from know-how, traditions, etc., were used
in determining the width of the street.

THE FORM OF THE STREETS

Continuing with the issue of street form we now have to
take into account the influence of the regularized grid as it
produced that the main streets no longer exist, therefore, the
difference between the main streets and the rest is not found
in the observations of the application of the Laws (22, 23, 24,
25). A major change is that, as will be explained later, the
arcades no longer are alongside the streets as was the case
with main streets, they are now found only facing the plazas.
This contributed more to the regularization of the streets, of
its formal characteristics. The only exception found from the
available sources is Antigua, where can be identified a differ-
ent type of street, perhaps a boulevard type.

In a sense we can say at this point that the dissimilarities
between what was stated in the Laws and their application,
in terms of street characteristics, were caused by the simpli-
fication of the layout. The application followed largely what
was prescribed in the Laws. This returns us to the issue that
the grid had to be explicitly regulated in order for the
authorities to control and for the settlers to understand.
A final observation regarding the streets is the reduction of complexity in the layout because of its simplification. An expression of this might be the types of intersection as compared to the ones resulting from what was prescribed in the Laws and the ones resulting from their application. It could be said that the changes in the form of the plaza and the way the streets departed from it, determined a decrease of complexity as the variety of intersections was reduced. However, not only these changes were responsible for the increase or decrease of complexity. The aggregation of blocks, as in the cases of Guadalajara (9), produced unexpected situations which may have incremented the complexity of the city. It should be mentioned here that we do not pose any positive or negative connotations in the use of expressions such as increased or decreased complexity.

THE ARCADES. ITS POSITION

The use of arcades became a relatively unusual feature of Latin American cities. Its appearance depended on the intensity of the economic activities of the city and the area as it would determine the building of shops to which the arcade was their stage. The result was only important regional centers could afford the construction of arcades, and in most cases they were restricted to the main plaza, the focal point for all activities of the city. Therefore, even though the presence of arcades was prescribed by the Laws ( ), the economical and political
context of the city was what finally determined whether or not arcades were to be built. It could be concluded that arcades were an optional feature since they were not essential in achieving the overall objectives of the process of territorial control.

The definition of the position of the arcade requires that we have to consider the regularization of the grid, the non-utilization of the main streets. In this respect the arcades were to be present on the plazas (39). Guadalajara (40), Antigua (41) show the arcades on the main plaza and in the latter we have illustrations of the arcades being on the secondary plazas, more specifically on the plaza of the Cathedral as it was separated from the main plaza following the prescriptions of the Laws of Indias.

In terms of the inner-outer ring differentiation we then could classify the arcades as being in the inner ring surrounding the main plaza and on the outer ring concentrated on the secondary plazas (39); as already discussed its position in this outer ring cannot be determined with precision. A final note about the arcades is that from the sources we have it can be described as a one story arcade with one to three stories on top (42).
THE RESIDENTIAL BUILDING.

The definition of the characteristics of the residential buildings was a secondary issue in the process of laying out and building up the colonial city. As explained, the Laws' primary objectives were the repartition of land and the creation of an identifiable urban structure where residential buildings were considered to be superceded by institutional buildings and spaces. The Laws which make explicit references to the residential buildings do so in such a way that their basic concern is the relationship between the public and the private realms and not the precise definition of their formal and positional characteristics.

A recurrent factor to be considered when making observations of this building type is the overlapping of the implicit and of the explicit determinants. The need for defense (Law 133) and for the uniformity of the form (Law 134) were imbeded within the traditional conceptions of residential settings in Spain. The predominance of implicit practices in determining the characteristics of each building type in particular was determined by the generality of the instructions as given in the Laws and, most important, by the concentration of the
colony's affairs in the area of Andalucia which enabled most of the settlers to communicate with each other following common traditions.

During the first two centuries of the colony, all trade was made through the ports of Sevilla and Cadiz. The extraordinary influence left by the Islamic culture during the seven century occupation was transferred to the new cities in the New World, not by royal mandates but by settlers who came from the smaller towns of Andalucia. Those residential areas, shaped by the Islamic and Jewish influence, were the ones called the juderías. Among the better known we have those of Sevilla, Cordoba and Granada. Their major characteristics are the sharp definition of the private and public realms and the continuity of the perimeter even though the block is usually very irregular in shape. For whatever reasons it came about (defense, climate, culture), it became a pattern of social organization, of a relationship between the public and the private sector with an identifiable physical expression.

On another scale, we have that those houses in the juderías had an internal distribution of spaces reflecting the social organization of those communities where a succession of privacy increased toward the back of the lot. This succession was controlled by the patios in the same way as the houses in the new cities would. Formally, the influence of the "arte sintetico andaluz," with its freedom of shape translated into

17 Weiss y Sanchez, Joaquin., "Arquitectura Cubana Colonial"
architectural form, may have given flexibility to this internal configuration, allowing for an extraordinary but disciplined variation in plans.

The overlapping of these patterns of tremendous arabic influence at this scale of the building, with a regularized grid, gave to the architecture of the New World its unique character. The explicit practices prescribed by the Laws tried to change the traditional ways of laying out cities and carried within the wisdom of the planners. Molding those explicit practices were the traditions, know-how of the settlers, and the implicit practices which made possible the adaptation of the prescriptions to the settlers lifestyle. The best illustration of this we find here in the observations of the residential buildings where many examples (13, 14) from different cities will allow us to identify the strength of their formal and positional patterns.

ITS POSITION

The observations about the position of the residential buildings need, in order to be understood and connected to the structure of the physical space of these cities, a classification which relates the type of lot to the type of building. The position of the building, on this scale, is made with respect to its position on the block. The scale of the block would then establish the relationship with the grid's elements. So, the first task is to define a classification of lot types.
by their intrablock position; within this first classification the buildings are then described by their relations of setback, both bidimensionally and whenever possible tridimensionally.

The classification of lot types depends on the different patterns of land subdivision, in other words, of the lotification patterns. From them we can define a corner type of lot and one in the mid-block. The former was generated out of the original cruxiform subdivision, and the latter from the more complex subdivision produced by the pressures of development. This classification allows us to define in turn another one of the residential buildings by corner and mid-block types. This difference is not arbitrary nor purely geometric but responds more to an implicit value in position because the houses located in the corners or facing a plaza expressed a higher social status or political predominance. The first step should then be an explanation or description of the different lotification patterns and of how and from where they were derived.

Because of the lack of references from the Laws of Indias we have to depend on foundation maps, survey plans and available literature in order to define and describe those patterns of land subdivision. In that sense we shall refer to the plans of Caracas (1), Mendoza (2), Beunos Aires (3) and Talavera de Madrid (4) to define one of the patterns; that of the cruxiform subdivision. The recurrence of this type is seen through most of the foundation plans for a large part of the colonization period. From among the literature we find the

18 Weiss y Sanchez, Joaquin., “Arquitectura Cubana Colonial.”
1 Caracas, Venezuela. 1578 (4)
2 Mendoza, Argentina. 1562 (1)
3 Buenos Aires, Argentina. 1583 (1)
4 Talavera de Madrid, Argentina. 1668 (1)
description Zawisza makes of the block subdivided in four parts, one for the "capitulador" (the leader of the group) and the other three to be distributed to the rest of the settlers. Meanwhile, Morse describes the colonial Lima which contained 117 blocks, each subdivided into four lots.

This pattern of cruxiform subdivision, however, was characteristic only of cities in early stages of development, most of the plans showing this subdivision corresponded to actual foundation maps. But soon after the foundation, those original lots were further subdivided, speculative opportunities derived out of this more complex pattern of land subdivision which had lots in the corner and the middle of the block. Already in the XVII century, no house in Caracas occupied a fourth of a block, a development which could be generalized to most other colonial cities, and also institutionalized by the early XVIII century in the foundation of agricultural settlements such as those of Dolores (5) and Camargo (6) and El Horcon (7). The documents of Phillipe de Neve, Governor of Upper California, written in 1781, contained instructions relative to the foundation of Los Angeles, where lots that were to measure 60 feet wide by 120 feet wide, showed this type of noncruxiform subdivision as becoming a widespread practice. As example of the decisive influence of this trend in the development of today's Latin American cities of colonial origin we have plans of the cities of San Juan (8), Caracas (9) and Valencia (10), where the existing lotification
patterns were determined by the process established during their colonial development and well into the XX century. Those practices of land subdivision are still being used which is one of the factors involved in the present development of the areas (traditional centers).

Now, let us go into the description of the position of the residential buildings which are related to the corner type of lot. There are some basic relations which have to be determined in order to properly describe the position of the houses; they are those of the front, side and rear setbacks. The sharp division of realms (public and private) defines no setback on any side on the lot (11). This produces a box-like type of building occupying the whole lot. The implicitness of this determinant is reinforced by a more explicit one, that of Law 133, which because of defensive purposes produced a compactness in the city's fabric.

This compactness can be illustrated by showing the plans of several houses (12) and also by references from authors like Jose Agustín Oviedo y Banos who described the houses in Caracas so dilated in their sites, meaning that it occupied the whole lot. The strength of this pattern can also be illustrated by the case where a patio was located next to the street. To maintain the separation between public and private, a party wall was built high enough to give the impression of a built area behind it. However, the usual case is where the patio was totally surrounded by built areas so the box-like type of

20Gasparini, Graciano & Posani Juan Pedro, "Caracas a través de su Arquitectura"

21Ibidem.,
San Juan, Puerto Rico. (6)
1543-1773 (6)
Houses of Antigua, Guatemala.

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building is what best represents the relation building-lot, bidimensionally and tridimensionally.

The same positional relations of front, side and rear setbacks are applied to the case where the residential buildings are positioned on the mid-block type of lots (13). The same explicit and implicit factors control that relationship, such as those of defense, public and private realms. The box-like building with no setback on any side is what best represents the outcome of this positional relation. Several plans illustrate here the characteristics of this building type of this lot (14).

ITS DIMENSION

The criteria of classification for the dimensioning of the position of the residential buildings should again be described in terms of whether they are in the corner or in mid-block. However, there are tremendous difficulties in substantiating any dimension as most of the sources, plans, illustrations, do not make any reference to dimensions.

Two parameters should be used though, the area of the lot and its front length, their importance lying in the impact they may have on the internal configuration or distribution of spaces and built areas of the buildings (12, 14). Should the setbacks be known we would be able to determine the buildings dimensions. As in this case of the colonial Latin American cities when there is no setback then the one of the building
(dimension) corresponds with that of the lots. But as also mentioned there are difficulties in determining the dimensions of the lots. Among the few cases where information is available we have the map of the foundation of Caracas where it is written that the solar of each house has seventy varas each side. However, we have to remember that this type of lotification does not correspond to the one observed as the intended in the application of the Laws of Indies. The more complex lotification with corner and mid-block lots would be even harder to define with the available sources, even a range of dimensions would be difficult as the diversity of lots would not make it possible. The plans of San Juan (8), Caracas (9) and Valencia (10) serves as a good illustration of this problem.

THE FORM OF THE RESIDENTIAL BUILDING. ITS SHAPE

Should we deal with the formal characteristics of the residential buildings we realize that the relation building-lot determines again the classification through which the observations were made. Within each one of the intrablock positions the building may occupy, the terms describing the formal characteristics are as follows: detached, continued and composed (15). As the relation is made with the lot it reflects the setbacks or separation between the buildings and the detached type covers the cases where the building has all sides open, the continued type has from one to two sides open which
should be adjacent or opposite. Finally, the composed type which results from the mixing of any of the other types.

There is another classification which is related to the internal configuration of the buildings. It describes the distribution of solids and voids. What this classification implies is an observation of the distribution of rooms and their connection to the types defined by the first classification. The expression of these observations is made in terms of built areas, open areas and margins, the latter being defined as the area where the distribution of the solids and voids, of the built and open areas is not determined.

The first type of building to be described is the one classified as continually occupying a corner lot (16). Should we look in detail into examples of corner houses we find that they are always of a continued type where the position of the patios determined whether more than two sides were open. As the exact positioning of the patio cannot be established it was considered that this building type could be described as having two sides open, adjacent, and facing the streets. House plans illustrate this characteristic (12) as well as references from the time's chroniclers and historians. Among them we have the writings of the chronicler Francisco Cervantes de Salazar, who in 1554, described Mexico city where he speaks of houses "built so regularly and evenly that none varies a finger breadth from another." The only reference from the Laws comes
from Law 134 where it prescribes that "have all buildings of
one form for the sake of the beauty of the town."  

The internal configuration of this can be described as
a succession of solids and voids from the street to the back
of the building. The social space overlapped to this physical
space required a greater privacy toward the back of the house
as the servants quarters, the kitchen, the stables, etc., were
located there. The formal rooms faced always the street as
there were social codes such as the one about the number of
windows facing the street revealing how wealthy the family was.

The graphical description of the internal configuration
shall be made in terms of the built areas and the margins.
However, we have to consider not only the arrangement of rooms
by the social structure of the family but the series of pre-
scriptions made in the Laws. The overlapping of the instruc-
tion by which the rooms were to be oriented toward the North
and the South, (Law 133), and the arrangement of rooms follow-
ing social codes produced an arrangement of built areas open
to the East and West but only toward the patios (17). The
lack of definition for the position of those patios takes us
to consider the rest of the building as a margin. A more
detailed observation of the houses plans (12, 14) would allow
us to see that the first void next to the rooms facing the
streets is the main patio while the second void is considered
to be the rear garden, which is secondary and can be trans-
formed into smaller yards. The main patio is surrounded in

23 Nuttall, Zelia., "Royal Ordinances concerning the Laying
out of New Towns"
the corner houses by at least three sides of built area, the forth side could also be a party wall to another patio or the rooms of the adjacent house. All of these illustrate better the need for using a margin to describe the internal configuration of the colonial house.

The second type of building is the one classified as a continued type occupying a mid-block lot (18). The same observations with respect to the corner type of house can here be used to explain the definition of its internal configuration. The succession of solids and voids, the social organization pushing the formal rooms to the side facing the street and the orientation North-South following the instructions of the Laws.
The graphic description is again made in terms of built areas and margins with the first facing the street and the rest of the building as a margin (19). Again, the first void from the street is considered to be the main patio; according to the width of the lot this patio could be surrounded on all four sides by built areas. However, the most usual case is when this patio is surrounded on three sides by built area and on the fourth by the party wall from the adjoining patio or by the next house.

Finally, from the positional relations we can infer that as the building has no setbacks and in both cases, in the corner and the mid-block types, the building is continued, the dimension of the building coincides completely with that of the lots and also as already established is not possible to do it so, therefore the dimensioning of the building types will not be attempted here. The same problem occurs with the internal configuration of the houses as the dimensioning of the built areas and the margins would require a separate work which would have to deal with plenty of verifiable sources so as to define any absolute figure or even an acceptable range of dimensions. Neither the scope nor the spirit of this work covers a research of that kind so it will be left as a possibility for future enquiry.
THE RELIGIOUS BUILDINGS

Contrary to the case of the residential buildings, where the study of their relation to the lotification patterns helped determine what was to be defined at the scale of the block, we shall only describe here some of the positional and formal characteristics of the religious buildings. No information was available in terms of the relation building-lot and the lotification patterns where buildings of the same type, except for the residential ones, were located in the same block. In most cases we find that a building type, whether it is a church or a monastery, showed different arrangements within the block and different formal characteristics than the rest of the buildings of the same type, not only in the same city but more so if compared to the same type in different cities. By way of illustration we show here plans of various cities (1) where we can easily observe the variety above implied. The Laws of Indias themselves do not offer any amelioration to this problem because it only states in Law 120 that "...for the temple of the Cathedral, the parish church, or monastery, building lots shall be assigned,...". No further references are made, so by means of the Laws it is not possible to determine what is to happen at the scale of the block.

We should go on to the identification of the positional characteristics of the religious buildings and we find that a series of changes were produced by the practices we have referred as implicit. Imbeded in tradition, culture or political

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24 Nuttall, Zelia, "Royal Ordinances concerning the Laying out of New Towns".
intentions, these practices are made visible when describing the application of the Laws. The best known of such cases is that of the position of the Cathedral which changed from a location distant from the main plaza (2), to a position adjacent to the latter, more specifically, to the block located on the east side of the plaza. This change followed a tradition of the Spanish cities of regular layout in terms of its closeness to the plaza (see the plans of the Spanish bastides in Part 2), and also a liturgical orientation where the altar was to face toward Jerusalem, toward the East. The facade of the Cathedral should then face the sunset, the West (2). This liturgical orientation became such a strong rule of position that it is made explicit in many documents. Among them we have the document of the foundation of Los Angeles by Governor Phillipe de Neve who in 1781 described "...The front of the plaza looking toward the east shall be reserved to erect at the proper time the church." 26 One final note to be made with respect to the main plaza so as to reinforce its distinctive civic character, its being the focus of activities.

Other religious buildings such as the monasteries, convents and parish churches followed more consistently the rules of position as defined by Laws 118 and 120. Again, their interrelationship with the secondary plazas is the basis for determining their position on the grid and with respect to the main plaza, arcades, residential buildings. The vagueness of the reference from the Laws "...everything may be distributed

25 Chueca Goitia, Fernando & Torres Balbas, Leopoldo., "Planos de Ciudades Iberoamericanas y Filipinas Existentes en el Archivo de Indias"
in good proportion for the instruction of religion...\textsuperscript{26}, as well as the variety of locations as shown in the illustrations (1) makes it impossible at this stage and with the scope of this work, to determine precisely the position of the religious buildings other than the Cathedral. Perhaps, the only references from the available information that would allow us at least to suggest a position for the monasteries are, on one hand, the studies of Chuica Goitia and Torres Balbas in which they state that the position of the monasteries and convents was to be on the extremes of the grid, responding to what was customarily done in the "extramuros" foundations in Spain.\textsuperscript{27} On the other hand, we have the study of Galantay who notes that the monasteries were to be located at the edges of the grid, therefore, the secondary plazas were to be located there too.\textsuperscript{28} The references of the nodes or urban barrios as generated from the relation activity-plaza (see the scale of the grid) are also based on these sources. A final note about the formal characteristics of the religious building type, including the Cathedral, the parish churches, the monasteries, the convents, is that several plans (4) of these building types are to be shown here so as to give an idea of the variety produced within recognizable patterns of organization as dictated by liturgical organization or by the patios or by the relation with the streets. However, to systematically describe and record these observations in a structured fashion would be a whole work of its own. It reaches out of the scope of this thesis.

\textsuperscript{26} Nuttall, Zelia. "Royal Ordinances concerning the Laying out of New Towns."

\textsuperscript{27} Chuica Goitia, Fernando & Torres Balbas, Leopoldo., "Planos de Ciudades Iberoamericanas y Filipinas Existentes en el Archivo de Indias."

\textsuperscript{28} Galantay, Ervin Y., "New Towns: Antiquity to the Present."

\textsuperscript{4} Religious buildings of Antigua, Guatemala. 1543-1773. (6)
THE INSTITUTIONAL BUILDINGS

As with the religious buildings, no information was readily available so as to determine the lotification patterns through which we may have been able to describe the main characteristics of the institutional buildings at the scale of the block. We shall only make a few observations as to some positional and formal features of the building types. No relation building-block, no classification by intrablock location can be established without precise information, less of the internal configuration of the building. The case of the block in Antigua (5) which shows several institutional buildings together is a good example as we cannot identify any recognized pattern of collective organization of arrangement of solids and voids.

Now, the building's references from the Laws as with regard to their position within the city and with respect to elements of it were also followed consistently. Just two comments are added as derived one, from Chuica Goitia and Torres Balbas who as with the case of the Cathedral established that the Cabildo or Royal House or Audiencia is a building to be located on the block situated on the north side of the main plaza (6); this prescription followed also the traditions of the Spanish cities of regular layout. The second comment to be made is with respect to the hospitals whereby it is usually to occupy a whole block and it is to have a "T" configuration, however, its edges with the streets are always sharply defined.

29 Chuica Goitia, Fernando & Torres Balbas, Leopoldo., "Planos de Ciudades Iberoamericañas y Filipinas Existentes en el Archivo de Indias"
by the building of walls or minor building areas. The importance of the hospitals is a fact recognized by many authors, among them we have Hardoy who describes as a policy of the Kings to build a hospital or to assign a plot for that purpose in every new Spanish city. Finally, as with the religious buildings, a variety of plans (7) is shown here so as to give an idea of the formal characteristics as well as of the internal configuration of some of the institutional buildings. Again, it is not intended as a systematic observation but just as an illustration.

30Hardoy, Jorge E. & Aranovich, Carmen., "Urban Scales & Functions in Spanish America Toward the Year 1600: First Conclusions?"

7University of San Carlos, Guatemala. 1773. (6)
the scale of the block

THE RESIDENTIAL BLOCK

This is the most difficult of the scales to be described as no direct reference is made in the Laws nor from the sources in general. Whatever observations are made are the result of bringing information from the scales of the grid and of the buildings. This interrelationship is defined by the way the building type is placed on the grid following the rules of adjacency dictated by the pattern of lotification which itself

1 Caracas, Venezuela. Plan by Francisco Depons at the beginning of the XIX century. (4)
2 La Havana, Cuba. 1776 (1)
3 San Rafael de Rozas, Chile (1)
is determined from the way the repartition of land was made. It could be said this scale is the product of the adaptation resulting from the fitting of the implicit practices (culture, tradition, building know-how), within the gridiron plan coming our of the process of layout which was defined as the explicit part of the interrelationship. It was an accommodation of a plan, the settlers in general had not previously experienced. In this sense, this scale of the block is perhaps the best example we could use to illustrate how the structure of the physical space of the Latin American colonial cities could be completed by observing the series of implicit practices which complimented or contradicted the explicit instructions given in the Laws in such a way that the former became the norm, the goal.

ITS POSITION

Should we then get into the description of the positional and formal characteristics of the different block types, which as already mentioned, are classified functionally into residential, institutional, commercial, and mixed-use blocks, and we shall realize that the simplification of the process of layout affected the characteristics of the block types, most of all the formal. The lack of speculation of this kind by the planners or settlers, along with the importance given to what could be called the urban structure of the city (the results of the arrangement of public spaces and institutional buildings)\(^3\), responded to the intentions of the Spanish Crown in the sense of creating a defi-
nite image of power structure. This was perhaps the reason behind drawing, in many cases, just the major buildings (Cathedral, Cabildo) and leaving the rest as "poché" (1, 2, 3), which would corroborate our argument that the Spanish planners did not intend to define the positional and formal characteristics of the different block types.

Now, in order to define the observations about the position of the residential block, we have, on one hand, to rely on the inner-outer ring differentiation and on the other hand, rely on what was prescribed by some of the Laws, especially when explaining why the residential blocks were not intended to be in the inner ring. One final note before going into the specifics and it is to be remembered that we are dealing only with the inland cities.

The principal source to define the situation in the inner ring are the Laws of Indias. Should we consider some of the instructions concerning the residential buildings and we would find what may seem contradictions between some of the Laws. Like Law 126 which reads "Building lots shall not be assigned to individual persons in the plaza where are placed the buildings of the church and royal houses and the public land of the city," and from which we could interpret immediately that no residential building was to be positioned in the inner ring. However, a contradiction is presented to us when reading Law 127 "...the other building lots shall be distributed by lot to the settlers, those lots next to the main plaza being thus distributed..."
and when analyzing the maps of Caracas (5), Mendoza (6), Buenos Aires (7) and San Juan Bautista de La Rivera (8), where residential buildings forming residential blocks are positioned right next to the main plaza.

Nevertheless, should we look at the plan of Guadalajara (40.1) and we would recognize immediately that no residential blocks are positioned next to the main plaza because of the number of institutional buildings and commercial buildings (arcades) positioned there. The observation that could be drawn from here is that while the maps of Caracas, Mendoza, Buenos Aires and San Juan Bautista de La Rivera show the early stages or foundation plans of those settlements (see the dates of the maps), not enough activities were present in terms of institutional buildings which would represent a certain functional complexity. The positioning of residential blocks next to the main plaza was then more a response to the need of enclosure of the plaza and the concentration of settlers for defensive purposes.

Guadalajara, instead, was at the time (1745) an important regional center which drew not only commercial activities that were to go to the surroundings of the main plaza, but most important, institutional activities. There was no space for the residential blocks, as the possibility to be located in the center of the city became a prerogative of the religious and political powers and not of the citizens. The differentiation of the center from the rest of the city is corroborated by this case of Guadalajara and by the intentions of the Laws (power
structure). For the purpose of the observations this previous reasoning is what supports our decision of considering the residential block as not being positioned in the inner ring.

The result of this differentiation center-settlement was the pushing of the residential blocks to the outer ring.

THE FORM OF THE BLOCK. ITS SHAPE

The next thing we have to consider is the influence that the position of the block, with respect to the elements of the grid, may have on the formal characteristics of the residential blocks. As the latter is not positioned on the inner ring, the description is to be made relating the block to the secondary plazas and to the streets so as to establish what would be the results in terms of setback and height produced by the characteristics of the grid and which could not be accounted for in the scale of the building.

First, let us consider the relation with the secondary plaza, and the linearity of the facade, the sharp division between the public and the private realms (13) resulting in the block not having setbacks on the side facing the plaza. So strong was this pattern that the only dialogue established was that of larger houses located in this position resulting from the status-bound determinant for the settlers houses (14). Usually, the wealthier people built their houses right next to the plazas or as close as possible, as those in La Havana, Cuba,
where the magnates of the sugar, tobacco or coffee industry preferred the public plazas such as those of Plaza Nueva, where the Cathedral was located, and as it was separated from the main plaza it was considered to be a secondary one. The residences of the elite tended to form a homogeneous circle around the plaza (15) but in any case they determined a different setback for the whole length of the block.

Again, this separation of public-private, this linearity of the facade (16) is the major characteristic of the relation block-street. There is no setback along the street nor difference between one side and the other, whether adjacent or facing one another (17). A good example of the setback undifferentiation is the existing Viejo San Juan in Puerto Rico (18), where in spite of time, the regularity of the blocks, setback is illustrious of the strength of the pattern.

The description of the influence on the formal characteristics of the residential block by the way the buildings were arranged is to be made by differentiating the arrangement of solids and voids within the block. In making the description the formal types resulting from analyzing the blocks this way needs to be categorized. In this sense, we have that those categories are: open block (19), closed block (20) and composed block (21). As their diagrams show, the categorization deals mainly with the shape of the perimeter and the internal distribution of solids and voids. It is important to mention that these categories reflect, as in the case of the setback,
18 San Juan, Puerto Rico. (8)
16 Caracas, Venezuela. Drawing by Ruis from the end of the XIX century. (4)
Analysis of the evolution of
the block. "Revitalizacion
y estructuracion del Centro
de Santiago". Imre Halasz,
et al.

22 Buitron, Mexico 1590 (1)
24 San Teodoro de Colla, Peru.
1788. (1)
23 Campeche, Mexico 1663 (1)
a social organization as well as the distribution of land and realms. They are not an abstract entity without meaning, as a mere geometrical categorization would be. Something which we consider of real interest and related to the categorization above mentioned, are the plans of the cities of Buitron (22), Campeche (23) and San Teodoro de Colla (24), where the planner drew what seems to be a solid-void diagram, and where perhaps the most impressive feature is the utilization of such diagrams to show the regularity of the perimeter of the block, the undifferentiation of setback and, as the case of Campeche shows, the achievement of such features through the consolidation of the city. Those blocks close to the center show the tightness of the fabric while those far from the center show a series of detached houses.

However, it is necessary to understand this categorization and its impact on the form of the blocks by recognizing the catalyzing element of the relation grid-block-building which is the pattern of lotification controlling that relationship. The block is generated by a series of buildings on different types of lots. As a basis for the observations about the block's shape we shall consider of more relevance the type of subdivision containing corner and mid-block types of lots, as it does correspond to the more complex type of subdivision substantiated already at the scale of the building.

After this understanding of the relation building-lot as defining formally the blocks, let us describe the arguments
through which we arrive at the observation that the residential blocks are not to be of an open but of a closed type. First of all, as observed at the scale of the building, the distribution of solids and voids within the different lot types along with the defined pattern of lotification (25), would in principle not allow for the open block type to have appeared. However, it was the first one present in the cities when they were not yet consolidated and the process of land subdivision had not started or had not been completed as can be seen in the plan of Campeche (23) and of Santiago (26). In other cases the land owner kept a large piece of land, usually the corner lot such as in the case of the house of Los Arcaya in Coro, Venezuela, and the lot was not wholly occupied. Nevertheless party walls were built on the edges next to the streets to maintain the separation between the private and the public realms and the continuity of the line of facade. However, this case is more the exception than the rule, what remains clear is that the open block is not the appropriate type to describe formally the residential block.

The composed type of block is not also appropriate since the changes in volumetry in the houses of the colonial cities were more the result of aggregated development with no major impact on the configuration of the perimeter of the block nor the internal arrangement of solids and voids, than of a clear intention, whether explicit or implicit, in defining different types of volumetric configurations. This block type would be a
lot more useful in describing the formal characteristics of today's buildings and blocks, where the vertical differentiation of elements is of essential value to be described as it forms the basis of the block type.

Finally, the closed type is then the one describing more accurately the formal characteristics of the residential block. It results from the aggregation of the building types following the dictates of the lotification patter (27). Its characteristics can be described tridimensionally as a box-like element (30, 32) where the perimeter is continued and well defined (separation of realms); and bidimensionally as a built area surrounding the perimeter of the block and a margin completing the inside of the block (28, 29). The built area and the margins describe, on one hand the strict definition of the blocks perimeter by social traditions already explained at the scale of the building, and on the other hand, the impossibility of defining a precise position for the courtyards of the houses also explained at the scale of the building. Also, the relation building-lot, where the former occupied the whole of the latter, the lotification determined that no semiprivate or collective open space was to be located inside the block. A figure-ground diagram, as that of the block in San Juan (31), shows the arrangement of the courtyards of the different houses and as can easily be observed the need to define a margin.
This last paragraph is to be like a marginal note about the dimensioning of the positional and formal observations of the residential block. The major problem is the substantiation of those observations in the sense of finding reliable sources with indications about dimensions. In terms of position, as this block type occupies the outer ring, it is not possible and it is not necessary to define any dimensioning, but, in terms of form, the situation changes as it is easier to determine, on one hand, the dimension of the grid, and on the other hand, the lack of setbacks or difference in setbacks between the sides of the block posing no complications on the definition. What finally would be dimensioned is the box-like element (33) as the internal configuration cannot be determined. One final observation to be made is that no changes or differences were produced dimensionally because of the block being located next to a secondary plaza or surrounded by streets, again we are referring to setbacks.
ISSUES AND SPECULATIONS

In this the last part of the thesis, we shall recall some of the most important issues discussed throughout the exposed material. The title of this part was thought adequate as the intention of the author is for the reader to establish his own conclusions by providing him with a greater understanding of how and why the Latin American colonial city came into being. Whatever issues are here brought up are just a reflection of this intention rather than an attempt to arrive at undisputable conclusions, which because of the available bibliographical material would not have been possible anyway.

One of the ways this work could be comprehended is by pointing out its emphasis on the understanding of what the document of the Laws of Indias really was and how it related to the development of the colonial cities. The differentiation between the Laws and its application as defining the process and the product, the explicit and the implicit, is the most important issue and at the same time, the most important contribution of this thesis. We had, on one hand, the planners, the Crown and the monastic orders defining a process which would respond to the political and economical objectives of the enterprise, and
by which the cities were to be layed out. On the other hand we had the settlers who had to interpret the instructions of the Laws while responding to not only the site's conditions, but most important, to their image of what a city should be, to their implicit order of things.

For several reasons described throughout the work such as affinity of culture, geography and social composition, that image was shared collectively and actually had a stronger impact on the city than that of the planners. The observations of the cities and buildings' plans and the available literature on the topic, allowed us to recognize the similarity of the changes on what the Laws prescribed, to speculate about the idea of a collective image. It could be said the planners well understood the existence of this collective image, of this collective agreement on what the city should be, and because of this they designed the Laws as a process which would enforce the control of the territory, the repartition of land. The emphasis on the laying out of the grid, of the plazas and streets and of the important institutional buildings, is a reflection of this understanding. The lower scales of the structure of the city such as that of the buildings are vaguely mentioned as to their formal characteristics, only their position is controlled as the collective image would do so with the rest.

This issue of the dominance of the collective image is
also important where dealing with the variety of sources from where the Laws were drawn. Perhaps, the major disagreement among the various authors, that of the Renaissance influence could now be explained. On one hand, it could be said, this influence is present on the city as layed out following the prescriptions of the Laws (1), but on the other hand, the simplification of the layout resulting from the application of the Laws (2) would indicate the opposite. The explanation of this contradiction may go as follows: The first group of cities where influence came from the castrametation practices in lay-ing out Roman Camps, from the French Bastides and from the Spanish military cities, had a simplified, a regularized layout which was the major difference of image between the planners and the settlers who came mostly from small towns of Medieval or Arabic layout.

However, during the period between the issuing of the instructions to Pedrorias Davila in 1512 and the issuing of the Laws in 1578, the Renaissance influence did have an impact on the planner's conception of the city being reflected in a more complex layout while at the same time, the cities founded during this period became in turn, the collective image or at least, the most convenient way to lay out the city, to build the houses. What resulted from this was that the cities founded after the issuing of the Laws had a similar if not the same layout and physical structure as those founded prior to the issuing of the Laws. The influence of the Renaissance thought
on the document of the Laws as undeniable, is real. However, as it did not correspond with the collective image, its translation into the cities was not possible with the exception of a few cases like Santa Clara and Panama.

Another way to approach the issue of the differentiation between the Laws and its application, between the process and the product, is by relating it to current trends of development of Venezuelan cities of colonial origin. For that matter we shall briefly relate to a research paper written by Harry Frontado where he deals with some of the problems affecting the urban structure of these cities. In that paper he refers to the idea of the urban environment as the result of a process whose elements are the stages of urban planning and of its im-

1 Frontado, Harry., "Los permisos de Construccion y el Desarrollo Urbano".

1 Inland city as prescribed by the Laws of Indias.
2 Inland city as resulting from the application of the Laws.
plementation, the zoning ordinances. The interrelationship between those elements determine or at least affect deeply the environmental qualities of a city. In his work, the author deals specifically with the issue of identity (image) of the urban environment which is affected by the adequacy or inadequacy of the relation between the stages of urban planning and implementation.

In his prescriptions of how to deal with this issue, the idea of decomposing the city into politically autonomous sectors connected by city scaled services, where each one of those sectors (3), with a particular social and economical composition, would develop its own identity or structure is what is of interest to this thesis. Through the division by sectors, the process by which the urban environment is defined is then particularized responding to not only the socio-economic context of the sector but to the physical one. It is an implicit recognition of the collectivity's intervention in the shaping of their environment through the particularization of the process.

It is at this point where we can learn from the process by which the Latin American colonial cities were developed. The strength of the collective image as defining the product was recognized in that process. Both the planners' and the settlers' conception of the city was made part of the process with the structure of physical space of the city resulting from it. The Laws of Indias were then a framework defining a
Subdivision of Caracas by sectors. (3)
higher scale of the structure (the grid) where the lower ones (the block and the building) develop. The beginning of a framework is then offered by this decomposition of the city in autonomous sectors. The next step would be to determine, on one hand, the translation of that framework into a physical reality, in other words, what scales and elements are to be controlled and by whom, and on the other hand, to find the appropriate means for the collective image to develop.

Still, there is one thing that should be mentioned here and it is that even though what was previously discussed is of a speculative nature, it is important to clearly understand that the socio-political structure of the colonial period was of greater simplicity if compared with today's structure. The process of defining the urban structure would have to respond to a more complex situation where the achievement of a collective image may be rather difficult. The number and variety of conflicting interests would be the reason for it. The different socio-political structure would perhaps determine a difference about what to control, what scales to deal with and what is to be the collectivity's domain.

A different approach for the understanding of this thesis is that of relating the description of the structure of physical space of the colonial city, in other words, the description of the product as resulting from the application of the Laws, to the issue of preservation and continuity of the built environment. This issue has to be dealt with most carefully as
the intention here is not to propose a reproduction of the
original structure, but rather a reinterpretation of it in
light of today's context. As discussed earlier, the social and
political context have changed as has the meaning of the origi-
nal spatial structure in terms of the collective image.

Still, it is important to make the original structure
explicit as it becomes one more element in the formation of the
new collective image. In our case, this thesis offers what may
be a model of spatial structure for the sector defined as the
traditional center. It is a sector where layers of history are
present, where events of the past and present are represented
in the arrangement of spaces and buildings. In this sense it
is the sector of the city where the issue of preservation
becomes more relevant and where the making explicit of the
original structure and how it changed through time becomes
essential in trying to rediscover the implicit order of that
structure.

This rediscovering may also be a matter of rediscovering
a series of qualities of this type of structure which are not
necessarily related to the issue of identity. The rediscovery
should not be a matter of nostalgia, of cultural naiveness,
but rather should be thought of as a possible alternative or
approach in cases where the traditional center, due to pressures
of development or any other reason, may be reaching its break-
ing point where it can no longer respond to new demands of
building types, of traffic movement, of use. It is the case of cities like Caracas, Valencia, Maracarbo in Venezuela, and for that matter in most other Latin American capitals.

Leslie Martin, in his article about the grid, writes about the capacity of this type of layout, of its limits in responding to new demands and new necessities. One of the alternatives he proposes is to go back to what he calls: the old framework, and from there try to derive new ordering principles which may open up new opportunities for development. It is an alternative which is asking just for a better understanding for what we have, which understands the city as an instrument of social and cultural communication. The description of the structure of physical space of Latin American colonial cities here exposed becomes a model or a reference from which to draw alternatives.

The work of Imre Halasz on the development of the traditional center of the city of Santiago in Chile illustrates the rediscovery of qualities of the existing structure as the basis for the new proposal. Even though it is not a historical preservation oriented work it draws upon the original structure to understand the character of the city and, by a process of identification of new requirements and trends, produces the necessary transformation so as to adopt the concepts to the new social context.

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2 Martin, Leslie. & March, Lionel., "Urban Space and Structures".

3 Programa de Investigaciones Arquitectónicas y Prácticas Profesionales & Halasz Imre et al., "Revitalizacion y Estructuracion del Centro de Santiago"
The most important aspect of Halasz's work is the return to pedestrian oriented areas by creating a network which thanks to the scale, the rhythm and the character of the colonial grid, is of such quality that it can be intensified while still being a positive component of the center of the city. Not only this, but the capacity for change, formal and functional, without losing its discipline, makes the colonial grid an extraordinary framework for development as it has been recognized in Halasz's work.
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ILLUSTRATIONS


(2). de Mesa, Jose. & Gilbert, Teresa., "La Paz en el siglo XVIII", Boletin del Centro de Investigaciones Historicas y Esteticas, Facultad de Arquitectura y Urbanismo, Universidad Central de Venezuela, Junio 1975, N°20.


(10). Photographs by Guillermo Frontado. 1978