

# Morphological Features of Novo-Hispanic Grid Cities

## 「格子状街路を持つメキシコの植民都市に関する形態学的研究」

**Author:** 「ゴメス タグレ モラレス、ホセ マルティン」 GOMEZ TAGLE Morales, Jose Martin<sup>1</sup>

**Advisor:** 「藤井 明」 FUJII, Akira<sup>2</sup>

<sup>1</sup> PhD Candidate, Institute of Industrial Science, The University of Tokyo

<sup>2</sup> Prof. Dr., Institute of Industrial Science, The University of Tokyo

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### Abstract

Five centuries ago after the discovering of the “New World” thousands of new cities were designed and built in the American Continent. The phenomenon of the “grid city” started to be developed massively up-to-day. Searching on those cities to create a catalog of a wide number of Novo-Hispanic settlements with regular urban pattern and; based on the graphical comparison of the latest aerial and satellite photographs and a selection of the original collection of the vintage maps/blue prints used to design the cities; the spatial situation and the dynamic multi-timing changes and/or conservation of the urban morphology of streets, squares, and urban blocks of small villages or either ecumenopolis’ urban tissues in the actual Mexican territory and its morphological features are analyzed by digital image processing.

**Keywords:** Grid city; town-planning law; morphological features; Laws for the West Indies; Archivo de Indias; Google Earth.

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### 1 Introduction: The American Continent: the “mecca” of old and new grid cities

*...ET DIXIT QUI SEDEBAT IN THRONO ECCE NOVA FACIO OMNIA.*

*...The one who sits in the throne said: Behold, I am making all things new-  
Book of the Apocalypses.*

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From the first 98 biggest urban areas in the world, 1/3 are in the American Continent where about the 20% were founded by the Spanish Kingdom in the XVI and XVII Centuries. The Spanish and Portuguese crowns owned almost all the American Continent in the “Age of discovering”.

Nowadays, those cities are part of different countries that got their independence in the XIX Century and form new Republics: Mexico City Metropolitan Zone (22.09 millions), Greater Sao Paulo Area (19.09), Southern California Area (17.54), Metro-Manila (16.61), Gran Buenos Aires (13.33), Rio (11.72), Bogota (11.6), Lima and Callao Metropolitan Area (7.74), San Francisco Bay Area (7.53), Madrid (6.16), Dallas/Fort Worth Metroplex (5.9), Houston Metropolitan Area (5.19), Caracas (5.1), Barcelona (4.97), Belo Horizonte (4.92), Santiago de Chile (4.84), Tijuana-San Diego (4.69), South Florida (4.29), Guadalajara (4.01), Valley of the sun Arizona (3.79), Porto Alegre (3.76) and Monterrey (3.68).

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Contact Author: GOMEZ TAGLE Morales, Jose Martin

PhD. Candidate. The University of Tokyo

Institute of Industrial Science. Urban Morphology Lab.

Akira Fujii Lab Cw-701, 4-6-1, Komaba, Meguro-ku, Tokyo,  
153-8505 JAPAN

e-mail: [gomeztag@iis.u-tokyo.ac.jp](mailto:gomeztag@iis.u-tokyo.ac.jp)  
[martingomeztagle@gmail.com](mailto:martingomeztagle@gmail.com)

After the discovering of the “West Indies”, the “New World” or the “American Continent”, as we named nowadays these territories, the European crowns started to colonize them using the figure of “the city” as the physical point to start to populate and explore the richness of the natural and human resources found in the new lands. During the next four centuries after the discovering of the New World the Spaniards were the first to started and uninterrupted process to found new cities counted by hundreds in their “Viceroyalties” in the American territory followed by other crowns as the Portuguese, British, Hollanders and Francs. This was the most important, intense, huge and eager city development of the modern history.

### 2 The non-visible layer: the “Leyes de Indias”

*-Painting is mute poetry, poetry a speaking picture-  
Simonides*

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Basically in Europe the cities doesn’t used the urban planning to generate their cities until the XIII Century. They use to grow spontaneously around the castle or church but to have a very control of the new lands the cities must be (military) organized and controlled. Since the new comers started founding new cities some rules were applied in order to make the simplest pattern or to adapt to the existing urban tissue in some cases.

During the kingdom of Carlos I (or Carlos V) exists a series of regulations that tried to better organize the laws for the new colonies. Was necessary to put out together all the tryouts of regulations and make strong guidelines to control the new lands and was on June the 31<sup>st</sup> of 1573, just 50 years after the conquest of Tenochtitlan and 80 after the foundation of the first city in the New World

when the king Felipe II promulgated a law called “Ordenanzas del Descubrimiento y Poblacion dadas por Felipe II” (Rules of the discovering and population given by Phillip the 2<sup>nd</sup>, considered the first urban code of the Modern Era) regarding to how must be the parameters to design the cities and control the people and discovers in the New World. The main characteristic of the Hispanic City, besides the grid pattern (Fig. 1), was the Plaza Mayor that works as a “Civic Center” for the city as well as the “heart” of it. Surrounded by magnificent buildings gives the main character to the Hispano-American cities.



Fig. 1. Flat perspective of Buenos Aires, Argentine.

### 3 Research: From the non-visible to the visible: The grid cities in Nova-Hispania

*-The cities conserve in its sub-soil the meticulous registry of its history, and in its urban tissue the fingerprints of its evolution- Archeological Museum of Seville.*

Its squared or rectangular module urban mesh defines a grid city. In the Americas in the center of the grid there is a void public area called “La Plaza”. It uses to be the central point of the city that can be considered to evaluate it in terms of symmetry and mirroring.

Since the conquest, the Spanish Crown started to develop thousands of new settlements over the American territory (911 cities that are known to have been created between 1492 and 1810), but even several cities were founded by the same rule, their urban evolution reaches wide ranks of physical development after centuries. Some small towns (specially near the coast) already disappeared due to the migration of its people to better lands; some others still remain as their original stage while their foundation due to its ultra-low economic development (specially in the country side); in the case of Mexico City, after re-shaped the city over the old Aztec Empire Capital’s ruins –Tenochtitlan- new streets, buildings and life started following and says that surpassed the European urban lifestyle standards. This city was considered at that time better city than Madrid, Barcelona, Paris or even Venice due to its beautifulness and magnificence. But not only Mexico City, but also Guadalajara, Puebla, Matamoros, Valladolid de Mechoacan, Veracruz,

Campeche and many others were superior in architecture and urbanism compared to the magnificent cities they left in Europe.

From 1519 to 1823, 170 cities were founded or re-founded in the Mexican Territory. The colonial cities use to have the elements mentioned by Felipe II in the “Leyes de Indias” and, as are written in the rules, the

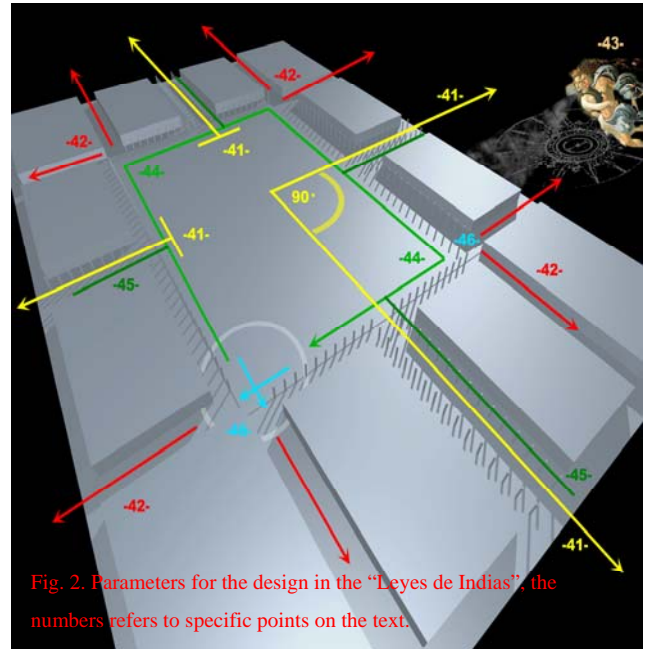


Fig. 2. Parameters for the design in the “Leyes de Indias”, the numbers refers to specific points on the text.

main points are:

- (1) Plaza centralized / open public space
- (2) Straight streets / traced by “cord and ruler”
- (3) Regular blocks semi-rectangular, rectangular or square shaped / prisms
- Main public buildings around the central plaza (as the Church or (4) Cathedral, (5) Government Palace, (6) Commerce colonnade and (7) Royal Houses.

In the Ordinances can also be found features regarding to the orientation, green belt around the city or specific measurements for the Central Plaza.

Based on this we should search visually what information (analogue or digital) shows these characteristics and make our selection of grid cities considering that we need both: the old of the settlement and the nowadays-city views with the aim to evaluate the accuracy of the implementation of the urban design dictated in the Leyes de Indias. (Fig. 2)

### 4 Analysis of the visual comparatives of each selected urban patterns

*-The perceived city, which is in the mind of the chroniclers, actually is rather different that the real city of the cartographers. It has a difference like a metaphor that is poetry and an equation that is mathematics.*

*Eugenio Pérez Montás.*

The aim of this thesis is to make a visual re-integration matching old maps of 22 selected cities/towns in order to

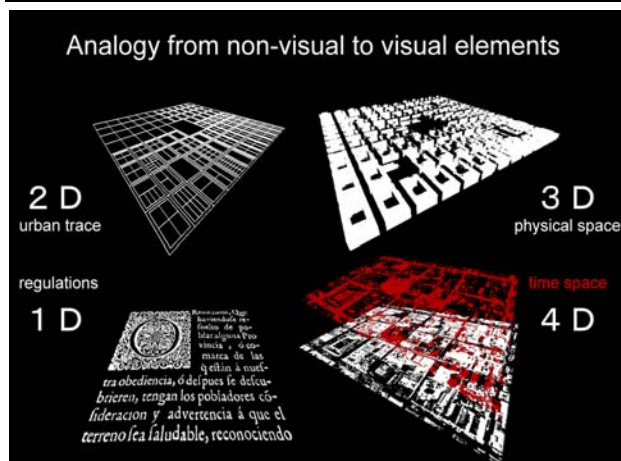
compare them visually and do some comment/analysis about the hypothetical grid city to the real city using our digitized images and photographs of the sites.

For this we have basically two processes that we called “from the one-dimension towards the two dimensions” (1D-2D) and “from the three dimensions to the fourth dimensions” (3D-4D). We called 1D to the Leyes de Indias that are composed just by literature. From the lecture of the Ordinances we plan to create theoretical model 2D to apply on it some points to understand the guidelines gave in this law. 3D means the physical space of the grid city and finally matching the layers using two stages of time (the old maps of a city and the up to date satellite views) we will try to understand the urban features generated by the Ordinances and its application to the Mexican territory. (figs 3&4.)

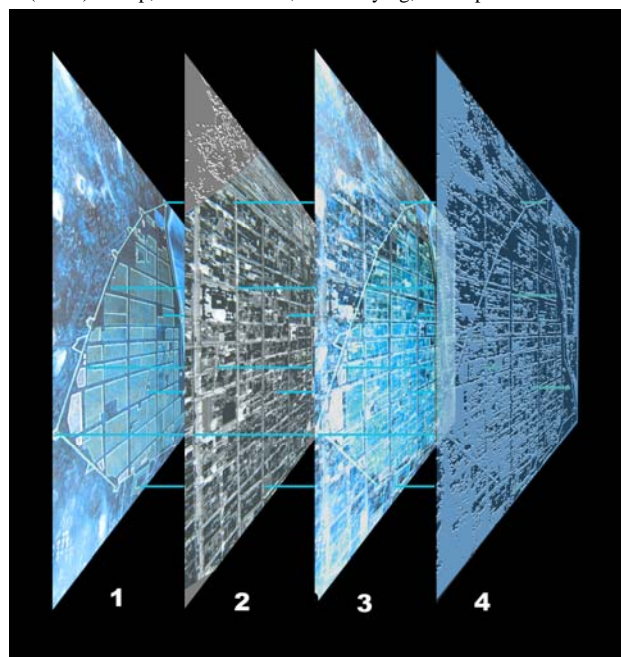
### 5 –Conclusions

*-Nostalgia is the poetic awareness of our personal past, and since the artist's own past is the mainspring of his creative potential, the architecture must listen and heed his nostalgic revelations-*

Luis Barragan.



Figs. 3&4. (up) Analogy that will be used as our methodology regarding to the four dimensioning elements mentioned in this text (down) 1-map, 2-satellite view, 3-overlaying, 4-comparison.



To comprehend our contemporary culture it is necessary to travel to the past to understand its roots. We tried to catch the evolution of the urban pattern visualizing the elements of the city. It is not interesting to say that the “Historical Urban Center” of the Mexican cities (or the downtown) has not many differences as the one was planned four or five hundred years ago. The interesting thing could be to say that, even five hundred years ago the city center were regulated by the same Ordinances, the inhabitants, governors and all the players on the field, reading in their own way the flexibility of the law, the design and the concept of it was different, making the cities grew at their own ratios. The destiny of the cities after its foundation was definitely difficult to imagine. Many grid cities in Mexico have similar conditions while others have different “tonalities” or “flavors” but works over the same scheme. And that was a very important point of equilibrium of the Ordinances, which gave the basis but also were flexible in order that each place finds its own identity. Actually all the cities that were designed based on this rules have their own elements, their own materials, styles and spaces, making them unique and, even sometimes similar. They possess their own personality.

As everything, the grid city scheme imposed by the Spaniards in the Americas suffers its own “evolution” or “revolution” since its conceptualization. For example there is not written regulations about the density, the proportion of settlers, specifications about the height of buildings, etc.- and this was the best point of the Ordinances that allows to choose to have in each place their own decisions. The Ordinances merely were the point to start guidelines, not necessarily parallels but in the same direction. Even they have some features that can be recognized and count in a list, their locality gives a particular physiognomy derivate from the way to be of the settlers that define, built, modified, edify, transform and write its own history; what I mean, there is not one city equal to another.

In the case of the Mexican cities, even some of them are located closer one to the other; we can say that each one is a “parallel world” inside the same universe. Magnificent cities as Guadalajara, Mexico City or Puebla could be similar to San Luis Potosi or Queretaro, and different from Veracruz or Campeche. Campeche could be similar to Veracruz but not to Candelaria de Azanza. And Candelaria de Azanza, Burgos y Soto La Marina, even they were “almost the same” in their first years, they are totally different nowadays. In some way, all of them seem similar because their urban features, their perfect squared blocks or simply their straight streets. The urban grid can has different measurements, different scales, different proportions, but from the air is an exquisite pattern that make us to intricate inside its linear space of voids and solids... and in Latinamerica, but specially in the Nova-Hispania has its better examples