



Delft University of Technology

BOSS Study tour 2002, Mexico

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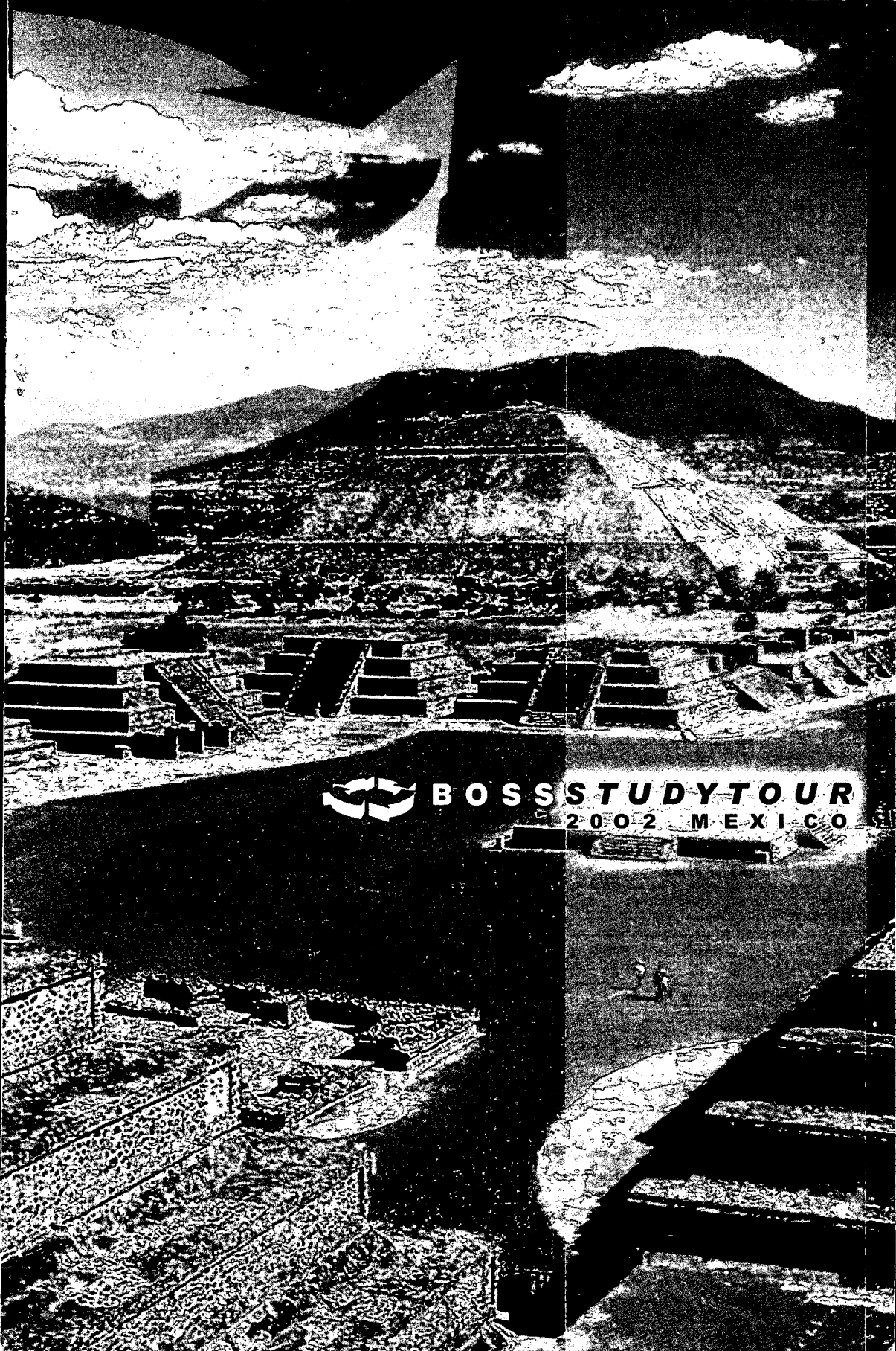
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BOSS STUDY TOUR
2002 MEXICO

BOSS Studytour 2002

MEXICO CITY

June 28 - July 14

BOSS

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Preface

Since several years the Department of Real Estate and Project Management of the Faculty of Architecture at the TU Delft, has enriched itself with a yearly study tour. This tour, which is organized by the students' organization: Building Organization Student Society (BOSS), gives the participants the opportunity to enlarge their educational experience by doing research abroad. Every year the students search for a leading theme that is recent on the one hand and challenging on the other.

That is why we have selected Mexico City as the destination of the BOSS study tour 2002.

Mexico City is a good example of a mega-metropolis, with all its problems and possibilities, as will become clear by reading this report. We stayed in Mexico City from the 28th of June till the 14th of July with a group consisting of twenty students and two teachers.

The preparations for our visit to Mexico City started months before we left. The participants prepared themselves by researching and informing each other on topics like politics and economics as well as religion and history.

During the study tour research has been done on five central themes: urban (re)development, ground policy, infrastructure & logistics in building construction, investments and actors and interactions.

The research was based on preset goals formulated by the students, and the results are described in the different chapters on the following pages. In addition to this our teachers were specifically interested in Mexican architecture as can be read in the second chapter, after the summation of some facts and figures of Mexico City.

Although our preparations made us well prepared for the visits of organizations and projects, the contents of this report can not be considered more than a description of our experiences. In the final chapter these are translated into some concluding remarks. A description of the visits during the tour can be found in appendix A.

We would like to thank all the people that contributed, directly or indirectly, to making these visits possible and unforgettable.

The study tour 2002 and this report could not have been realized without the enthusiasm of the participants, which are listed in appendix B. Besides the students we want to take the opportunity to thank our teachers Dr. Ir. D.J.M. van der Voordt and Dr. Ir. J.J. van Meel, for their guidance in Mexico City and their dedication to this report.

Finally we thank our sponsors that are listed in appendix C, without whom the BOSS study tour 2002 to Mexico City, would not have been possible.

BOSS Travelling Committee 2002

Carolien Driessen
Marijn de Hoog
Egbert Oosterhoff
Bert-Jan Scheffer
Merel Zorge



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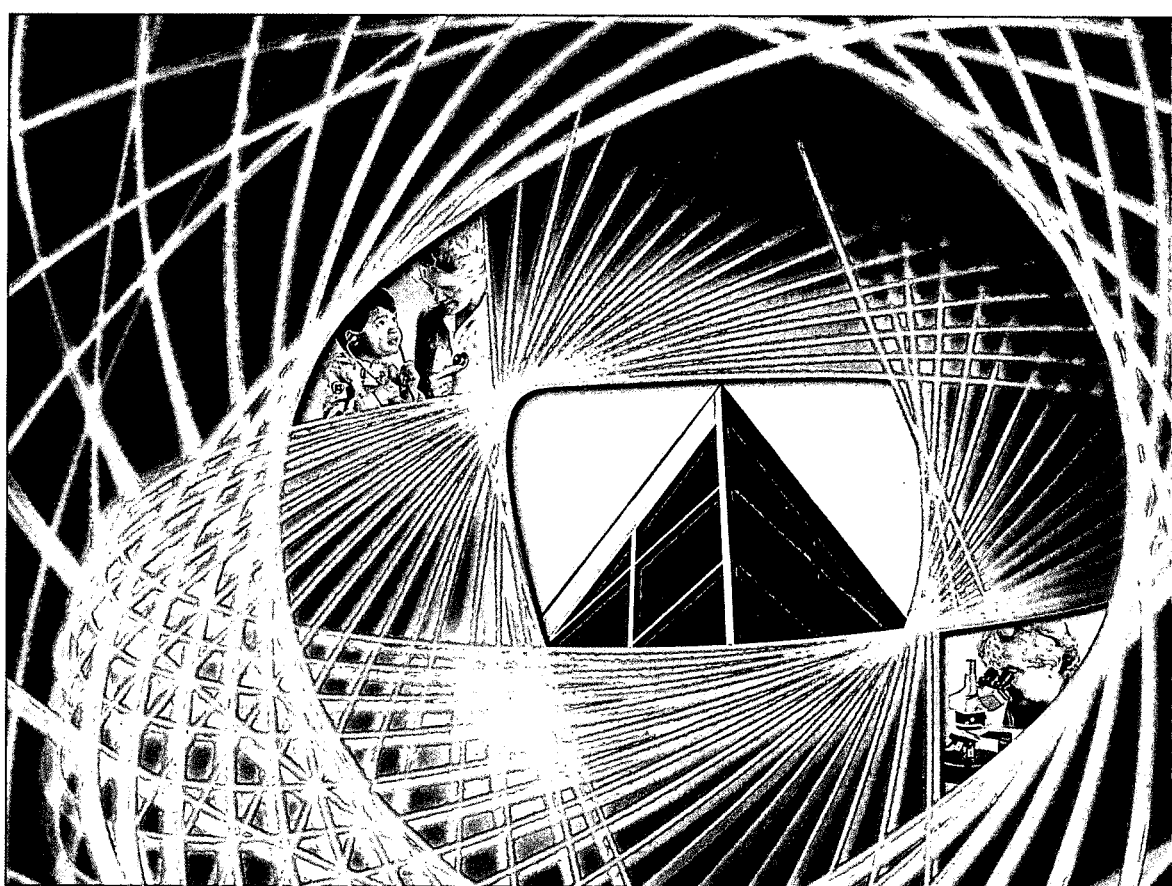
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- EINDHOVEN
- UTRECHT
- ZWOLLE

De gezondheidszorg in Nederland is van buitengewoon hoog niveau, zowel voor de 'cure' als voor de 'care'. Dit geldt voor algemene en psychiatrische ziekenhuizen, verpleeg- en verzorgingshuizen, instellingen voor verstandelijk gehandicapten, geestelijke gezondheidszorg en revalidatiecentra.

Om de kwaliteit binnen de gezondheidszorg te waarborgen en verder te optimaliseren, is het mede noodzakelijk goede voorwaarden te scheppen. Voorwaarden op alle gebieden, waarbij voorzieningen als huisvesting en installaties belangrijke zaken zijn.

KPMG Bouwmanagement Gezondheidszorg denkt met u mee.

KPMG Bouwmanagement Gezondheidszorg ondersteunt organisaties in de zorgsector in hun huisvestingsproblematiek. Onze medewerkers zijn niet alleen gespecialiseerd in het realiseren van de benodigde voorzieningen, maar hebben ook een uitgebreide ervaring en kennis van de procedures en de zorginhoudelijke aspecten.

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Wij zijn er trots op dat wij samen met onze klanten een bijdrage kunnen leveren aan een vergaande ontwikkeling en professionalisering van de gezondheidszorg. Waar zorg blijft mensenwerk. Wilt u meer informatie? Neem dan contact op met Jan de Laat, directeur KPMG Bouwmanagement Gezondheidszorg, Telefoon: 040-250 2444

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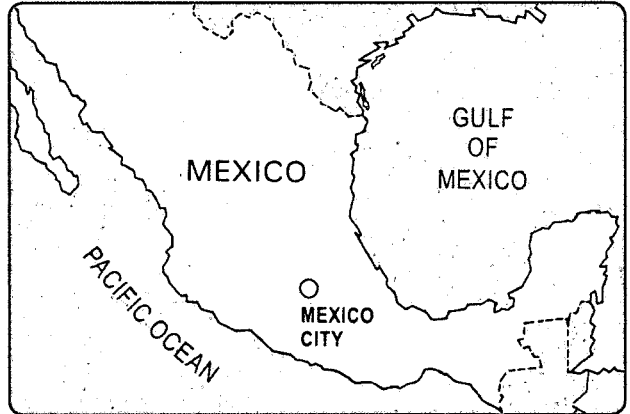
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1 Mexico City – Facts and Figures

Theo van der Voordt

General

Capital of Mexico (100 million inhabitants), the 14th largest country in the world
 Area of Mexico: 1,96 million km², about 47 times the size of the Netherlands
 Area of Metropolitan Zone: about 1,37 km²
 Area of Mexico City or Distrito federal: about 6,70 km²
 Situated in the Valley of Mexico, a highland basis, at an elevation of about 2350 m



Demography

Number of inhabitants: 20 million people (all metropolitan area: 22-25 million)
 Population growth 1990-1995: 1.9%; 1995-2000: 1.4%
 Density: 130 inhabitants per ha
 Average number of persons per house 4.35
 Official language: Spanish
 Most of the Mexican population is less than 30 years old, with little education (7,6 year average)

History

14th century: foundation of Tenochtitlán, city of the Aztecs
 1519: Conquest by Spain (Hermán Cortes)
 1810: Civil war to fight for independence
 1821: Independence
 1823: Foundation of the Mexican republic
 1845: War with the USA, loss of California, Arizona, New-Mexico and Texas
 1862: Conquest by France
 1877-1910: dictatorship of Porfirio Diaz
 1910: Revolution led by Pancho Villa, Emiliano Zapata and others
 1917: End of civil war; new constitution
 1985: The big earthquake (over 20.000 people died)

Economics

Monetary unit: Peso (10 Pesos = about 1 Euro)
 1994: North American Free Trade Agreement (NAFTA) with US and Canada
 1999: free-trade agreement with the European Union

Inflation: reduction from 159% (!) in 1987 to 8% (!) in 1994; 51,9% in 1995 (economic crisis); 26% in 1996; 9,6% in 2001

Economic growth: 7% in 2000, 3,5% in 2001

Foreign investment about 10 billion USD per year

90% of Mexican export goes to the USA (particularly Texas, California, Michigan, Indiana and Illinois)

About 60% of the Mexican pupation is poor; 36% is extremely poor; 25% lives below minimum life standards; the average income level (8000 USD a year) is above the maximum (3000 – 4000 USD) of being considered a developing country that can apply for international funding.

Politics

Mexico is divided in 5 regions with 31 states, with their own constitution, taxes and governor, but all under the power of the Federal District.

The Metropolitan Zone of Mexico City is integrated in two different political and administrative entities: Mexico City or Distrito Federal divided in 16 political divisions (delegaciones) and 37 municipalities of the State of Mexico. Both demarcations have their own local government.

1929–1989: only one party represented in the parliament (National Revolutionary Party or Partido Revolucionario Institucional)

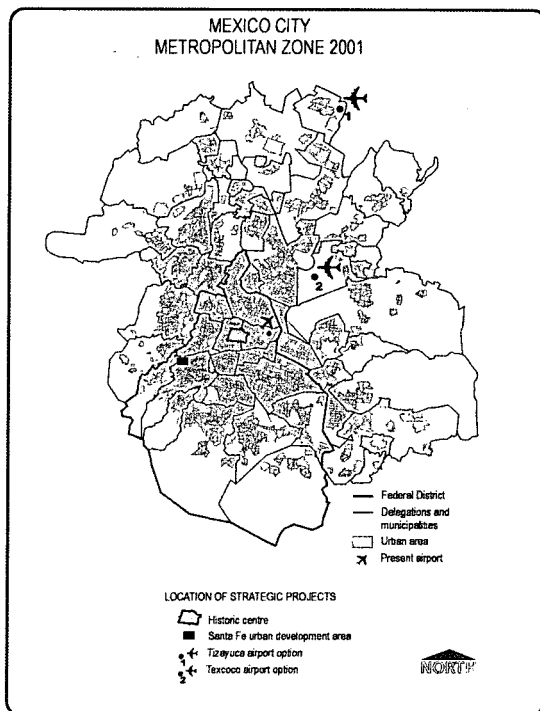
1989: first governor elected from the opposition

1994: PRI loses 24 seats

2000: first president elected from the opposition (Vicente Fox Quesada of the Partido Acción Nacional)

Executive power: president (directly elected for a period of six years) + cabinet (15 ministers, 3 state secretaries, 1 attorney-general)

Legislative power: parliament i.e. senate (Camara de Senadores, 500 persons) + House of Commons (Camara de Diputados, 118 persons)



Mexico City Metropolitan zone

	House of Commons	Senate
Partido Revolucionario Institucional	209	60
Partido de Accion Nacional	208	51
Partido de Revolucion de Democratica	68	17
Partido Verde Ecologista de Mexico	11	
Rest	4	

Since 1997 the mayor of Mexico City has been elected by the people.

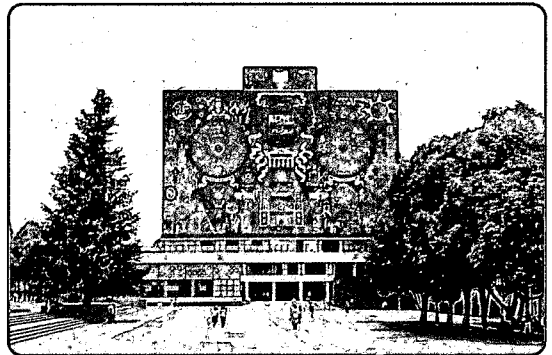
2 Architecture

Pi Kolbye
 Juriaan van Meel
 Theo van der Voordt

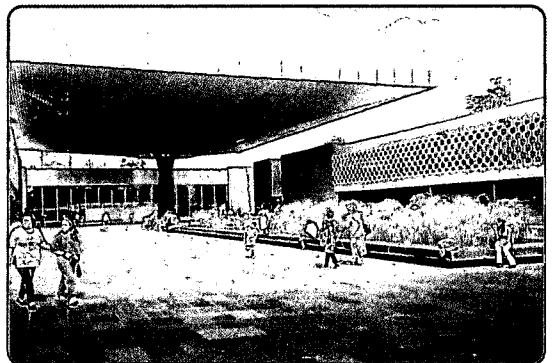
Although the main focus of the study tour was on real estate and project management, as members of a Faculty of Architecture we were also very interested in Mexican architecture. What are past and present dominant architectural styles? Is there a particular Mexican architectural style, and if so, what are the main characteristics? Is teaching architectural and urban design in Mexico similar or different from the curriculum in Delft? Based on site visits, discussions at different universities and some additional references we give here our observations.

2.1 Mexican architecture

Throughout the history Mexico has always had strong traditions in architecture – from the Aztec pyramids to the Medieval monumental buildings until the modern architecture of today. In many cases, Mexican architects try to combine traditional Mexican architectural features with new styles, materials and techniques. A good example from the 1950's is the UNAM university campus. Basically the campus is designed according to the principles of the modern movement: lots of concrete, steel and glass; buildings on 'pilots'; lots of open and green spaces between the different buildings. At the same time, however, we see some very clear Mexican features. For example, the faculty buildings are situated along a main axe – an area of green spaces and ball fields - inspired by the planning of the Aztec cities. The buildings themselves are designed in a modern style, but decorated with traditional Mexican symbols and images to make references to the Pre-Hispanic traditions and history.



*Universidad Nacional Autónoma de México (UNAM)
 Masterplan designed by Mario Pani and Enrique del
 Mora, 1950-1952.*



*Museo Nacional de Antropología e Historia
 Designed by Pedro Ramirez Vázquez, Jorge
 Campuzano and Rafael Mijares, 1963-1964.*

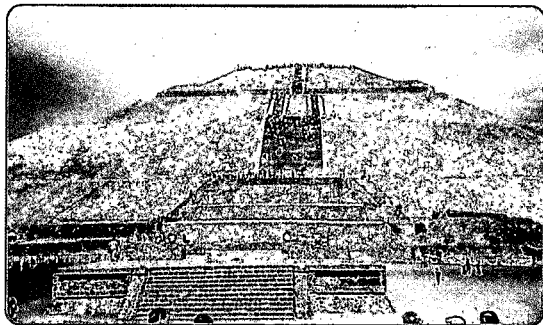
A more contemporary example is the museum of anthropology. The layout of the museum is clearly inspired by the traditional Mexican architecture in the way the spaces are organized around an inverted patio. A totem in the middle of the patio symbolizes the traditional culture, and a waterfall helps you to locate yourself throughout the museum by the sound.

2.2 A brief tour through history

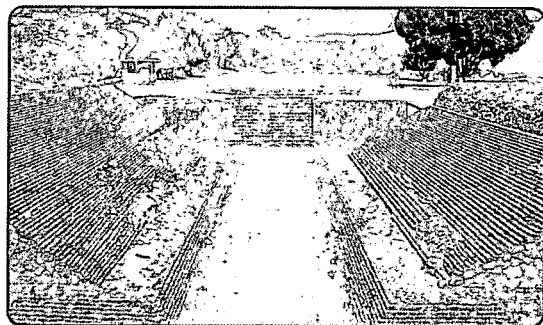
In order to be able to trace the roots of Mexican architecture, we make a short tour through different periods.

Pre-Hispanic

At sites near Mexico City like Teotihuacán, Tula and Cacaxtla, one can find fairly intact large sections of pre-Hispanic cities. Their ceremonial centers with great stone pyramids and palaces, used by the religious and political elite, were designed to impress. Pyramids usually functioned as the bases for small shrines on their summits. Three of the biggest pyramids in the world are within reach of Mexico City: the Great Pyramid of Cholula near Puebla, and the Pyramid of the Sun and the Pyramid of the Moon (about 150 AD) at Teotihuacán. In the 7th century the heart of Teotihuacán was burned and the city was plundered and abandoned. Nevertheless, its influence on later cultures was huge. Many of its Gods such as the feathered serpent Quetzalcóatl, symbol of fertility and life itself, and Tláloc, the rain and water god, were still being worshipped by the Aztecs nearly a millennium later.



Pyramid of the Sun

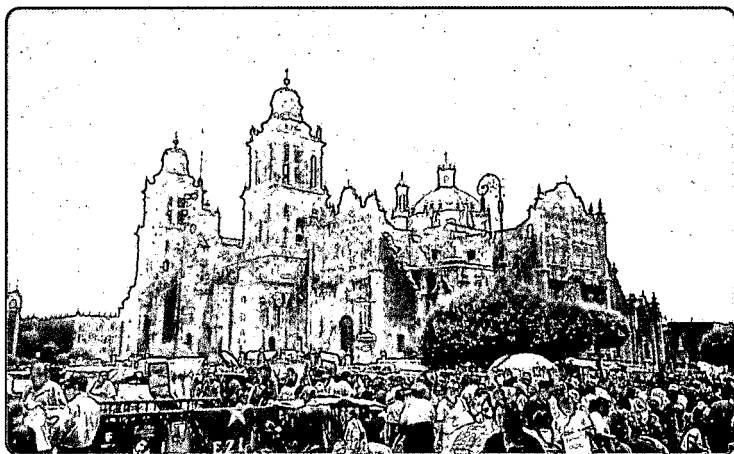


Ancient place for ballgames

The Aztec's buildings were relatively simple. They were designed to awe by their grand scale. The Maya in Mexico's south-east paid much more attention to aesthetic detail. Teotihuacán's typical 'talud-table-ro' style, in which pyramids and other structures were built with alternating sloping (talud) and upright (tablero) sections, was copied by later Mexican cultures. Substantial remains of pre-Hispanic ceremonial centers can be seen at the Templo Mayor, the main temple of Aztec Tenochtitlán, off Mexico City's central square Zócalo, and elsewhere in the city at Tlatelolco, Cuiculco, Tenayuca and Santa Cecilia Acatitlán. Archaeologists established the location of the Templo Mayor in the first half of the 20th century. The decision to excavate it was made in 1978 after electrical workers discovered an 8-ton stone-disk carving the Aztec goddess Coyolxauhqui ('She of Bells on Her Cheek'). The Templo Mayor is on the exact spot where the Aztecs saw their symbolic eagle with a snake in its beak perching on a cactus – still the symbol of Mexico today. The Museo Nacional de Antropología exhibits several models and replicas of buildings and parts of pre-Hispanic buildings.

Colonial

With the arrival of the Spaniards in Latin America, a new architecture was introduced in Mexico. Government buildings, residences and churches were all being built according to Spanish standards. Existing architectural symbols of earlier local rulers were in many cases demolished. One of the Spaniards' first pre-occupations was to replace pagan temples by Christian churches. Mexico City's cathedral stands on part of the site of the Aztecs' Teocalli, which was the center of Tenochtitlán –and according to Aztec's belief - of the entire universe. The Metropolitan Cathedral or Catedral Metropolitana was built between 1573 and 1813. Its size of 109 by 59 meters is evidence of its importance among Mexican churches. The existing building replaced an earlier cathedral, built between 1524 and 1532 on the southern part of the present site. With a three-naved basilica design of vaults on semicircular arches, the cathedral was built to resemble those in the Spanish cities of Toledo and Granada. Parts were added or replaced over the years. As a result the cathedral is a compendium of the architectural styles of colonial Mexico. The grand portals facing the Zócalo were built in the 17th century in baroque style. The tall north portals, dating from 1615, are in Renaissance style. The upper levels of the towers were added at the end of the 18th century. The exterior was finally completed in 1813, when architect Manuel Tolsá added the clock tower topped by statues of Faith, Hope and Clarity, and a great central dome, all in neo-classical style.



Zocalo and Cathedral

The Plaza de la Constitución, more commonly known as the Zócalo, was paved in the 1520s by Cortés with stones from the ruins of the Teocalli and nearby Aztec buildings. With each side measuring over 200 meters it's one of the world's largest city plazas. Many of the fine mansions, churches and plazas were created during the 300 years of Spanish rule. Most were in basically Spanish style, but with local variations. From this period are for instance the courtyards of the Museo de la Secretaría de Hacienda y Crédito Público, the Museo Nacional de las Culturas, the Museo Franz Mayer, the Palacio de Iturbide and the San Ángel Inn.

The Spanish mark on Mexico City's architecture can be followed through time. Buildings of Mexico City show the same changes and variations in architectural style as in the occupier's home country. Just like in Madrid or Barcelona, you can find Renaissance, Baroque and Neo-Classic buildings.

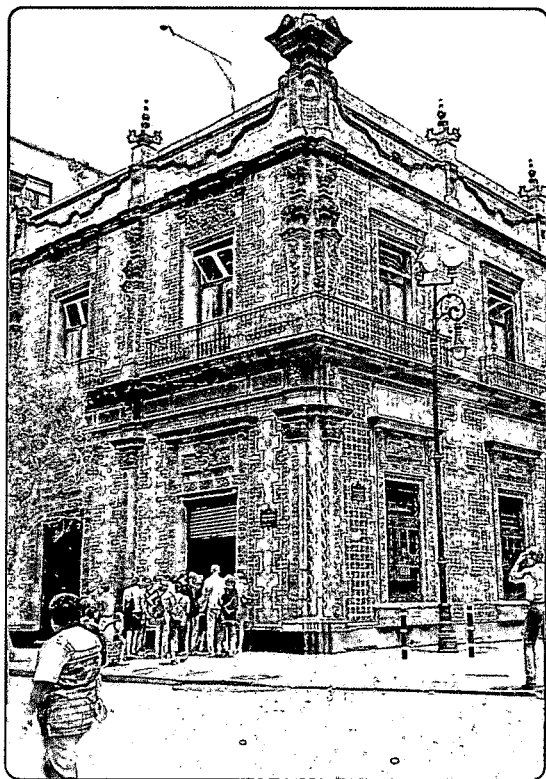
Renaissance

This style dominated in the 16th and 17th centuries. It emphasised ancient Greek and Roman ideals of harmony and proportion. Columns and shapes like the square and circle predominated. The usual Renaissance style in Mexico was Plateresque (from *platero* = silversmith), named after the silverware ornamentation. Plateresque was commonly used on façades, particularly church doorways, which had round arches bordered by classical columns and stone sculpture. A later, more austere Renaissance style was called Herresque, named after the Spanish Architect Juan de Herrera. Mexico City cathedrals min-

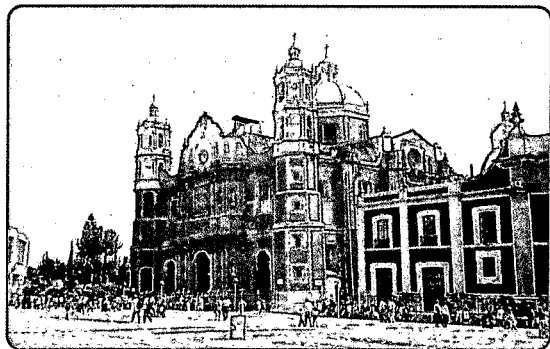
gle Renaissance and Baroque styles. The influence of the Muslims who ruled large parts of Spain until the 15th century can also be seen in Mexico. The 49 domes of the Capilla Real in Cholula almost resemble a mosque.

Baroque

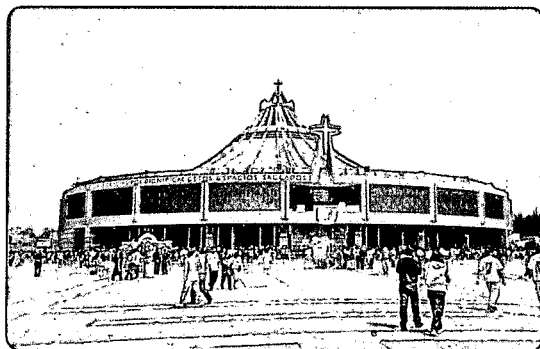
The Baroque style reached Mexico in the early 17th century. It was a reaction against the strictness of Renaissance styles. It combined classical influences with other elements to evoke dramatic effects rather than pure proportion. Hallmarks are curves, colour, contrasts of light and dark, and elaborate decoration. Painting and sculpture were integrated within architecture, most notably in ornate, often enormous altarpieces. Mexico City's more restrained baroque buildings include the Iglesia de Santo Domingo and the Palacio de tur-bide in the Centro Histórico, and the Antigua Basílica de Guadalupe. The Altar de los Reyes in the Catedral Metropolitana is one of the country's most extravagant pieces of baroque carving. Mexican baroque reached its final form, Churrigueresque, between 1730 and 1780. Named after the Barcelona carver and architect José Benito de Churriguera, it was characterized by riotous surface ornamentation with a typical 'top-heavy' effect. Outstanding Churrigueresque stone carving appears on churches such as the Sagrario Metropolitano and Templo de Santísima. Mexican Indian artisans added a profusion of detailed sculpture in stone and colored stucco to some baroque buildings. Arabic influence continued with the popularity of colored tiles (azulejos) on the outside of buildings, notably on Mexico City's Casa de Azulejos.



Casa de Azulejos



Basilica de Guadalupe, old.



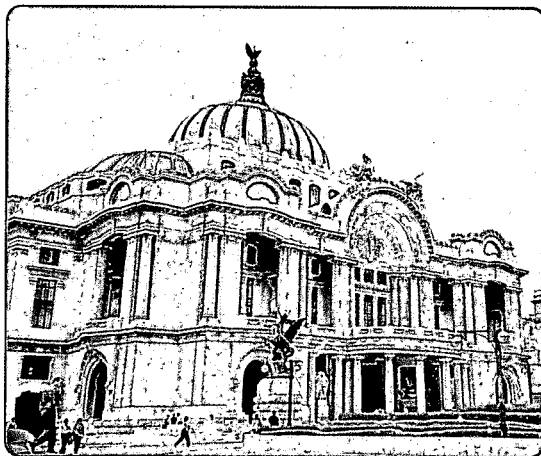
New basilique

Neo-classic

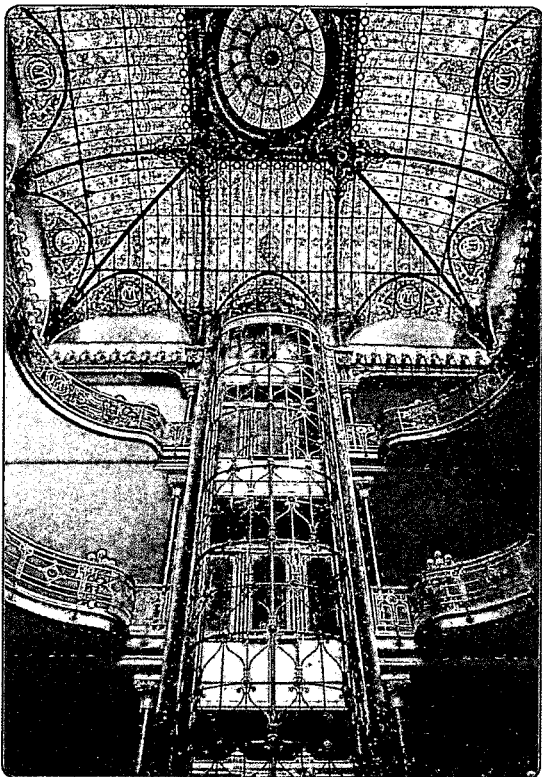
The Neo-classical style was another return to Greek and Roman ideals. In Mexico it lasted from about 1780 to 1830. Spanish-born Manuel Tolsá was the most prominent neo-classical architect and sculptor. Apart from the dome and clock tower of the Catedral Metropolitana, his works include the Colegio de Minería, and the equestrian statue El Caballito outside the Museo Nacional de Arte. Another example of the neo-classical style is the Alhóndiga de Granaditas in Guanajuato.

Toward the end of the 19th century many buildings copied French or Italian modes. The marble Palacio de Bellas Artes is one of the buildings from this era. The Correo Mayor (Central Post Office) and the Museo Nacional de Arte were built in the style of Italian Renaissance palaces. The 1910

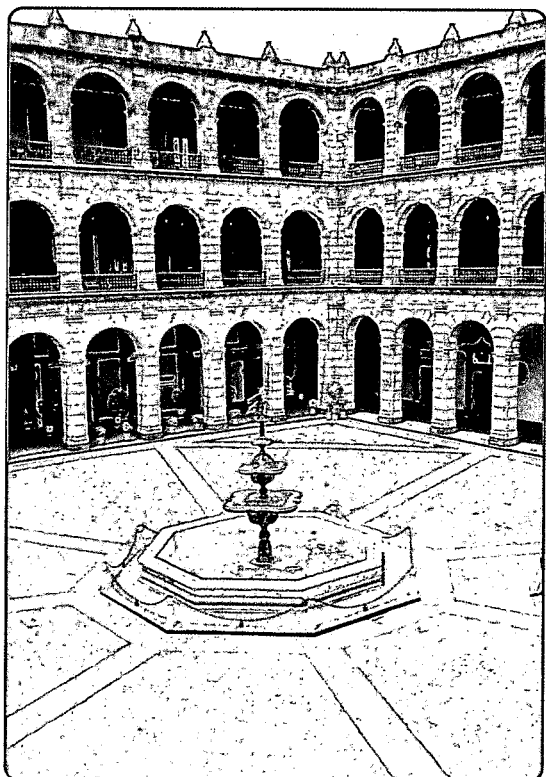
Monumento de la Revolución (El Angel) on Paseo de la Reforma is kind of neo-neo-classical.



Palacio de Bellas Artes



Grand Hotel

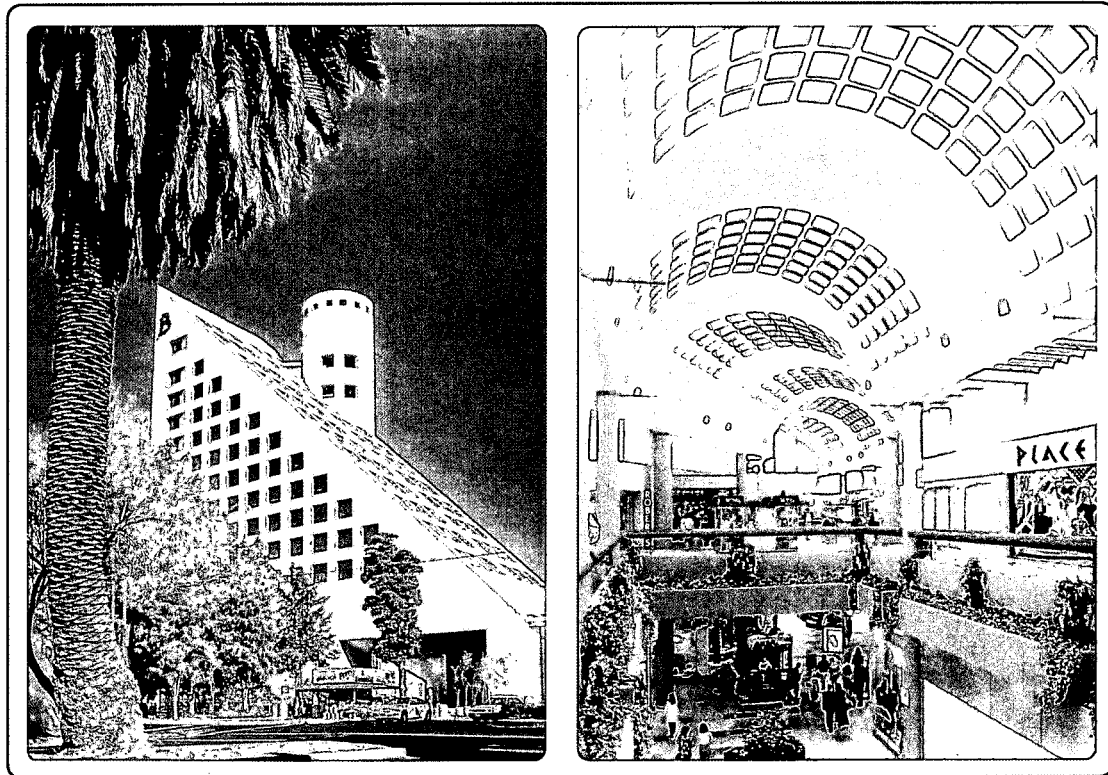


Palacio Nacional

After the revolution of 1910-1921, Art Deco appeared in buildings like the Lotería Nacional and Frontón Mexico. Later there was an attempt to return to pre-Hispanic roots in search for a national identity. This trend was known as Toltecism. Many public buildings exhibit the heaviness of Aztec or Toltec monuments. It culminated in Mexico City's UNAM University campus of the early 1950s, where many buildings are covered with colorful murals.

2.3 Contemporary architecture

Within the recent architecture in Mexico City there seem to be two main directions. One direction is obviously inspired by the architecture of Luis Barragán and is more or less copying his architectural principles and use of colors. Especially Ricardo Legoretta and Sordo Madaleno were strongly influenced by the Barragán architecture. They both use clear references to Barragán in their design, but in a much more commercial way, with big spaces and complex, large-scale programs. The commercial architecture expressing money, prestige and power is mainly used in the developing commercial areas like Santa Fe and in a couple of places in the city center, whereas smaller and more modest housing projects are built in areas like the Condesa. The second dominant direction in modern Mexico is particularly inspired by the European and American contemporary architecture. These more 'international style' buildings are rather monochromatic. The materials are mostly raw concrete, steel and glass. The architects Gonzales de León, Alberto Kalach, Higuera y Sanchez, and Ten Arquitectos (Enrique Norten y Bernardo Gomez-Pimienta) and many others are practicing this style.



Two projects of Sordo Madaleno Arquitectos. Left: Palacio de Hierro Department Store and Corporate Offices. Right: Plaza Satélite Shopping Center

Luis Barragán (1902-1988)

One of the 20th century's most influential Mexican architects is Luis Barragán, the 'architect of light and silence'. He is still a source of inspiration for the architecture of today, and many architects are somehow influenced by his strong principles. Well-known projects are for instance his own house (1947), the Chapel of the Sacramentarian Capuchins in Tlalpan (1955), the Satellite City Towers at Queretaro Highway (1957) and the residential subdivisions of Las Arboledas (1959), Los Clubes (1963) and San Cristobal (1967). In 1976 there was a great exhibition of his work in the New York Museum of Modern Art. In 1980 he received the prestigious Pritzker Architecture Prize for his oeuvre of over a 100 projects between 1927 and 1981. Since 1994 an exhibition of Barragán's complete works travels all over the world.

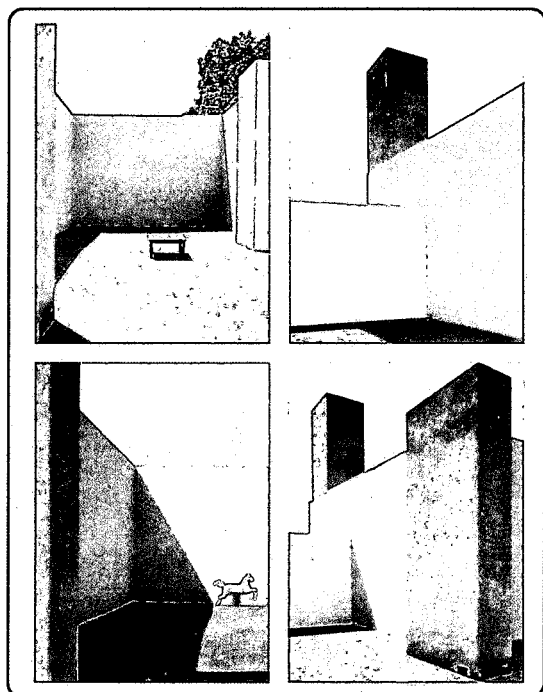
Barragán was strongly inspired by the traditional Mexican farms and villages of his youth, and also by people such as the painter Jesus Reyes, the German sculptor Mathias Goeritz, and the French painter and landscape architect Ferdinand Bac. In 1924 he visited the gardens of La Alhambra in Spain, which brilliantly composed spaces, fountains and water channels have had a lasting effect on his work. Another influence on his work has been the Moorish architecture of North Africa, especially Morocco. These influences can be seen in his first period (1927-1936), before he left his native Guadalajara and moved to Mexico City. In the next short period (1936-1940) his designs were influenced by the architecture of the International Style, especially by Le Corbusier whom he briefly met in 1931 and 1932. The buildings he designed in this period were mainly villas in a functional style with strong references to Le Corbusier – most of them built in the Hippodrome, Condesa and Cuauthemoc neighbourhoods. But his later projects – which are also the best known – show his own curious expressions of the traditional Mexican architecture. According to this tradition, Barragán used the wall as the most important element in his buildings. He regarded the wall as a plane - vertical or horizontal - and emphasized the importance of the meeting of the different planes – wall to wall; wall to roof; wall to ground etc. Also the penetrations of the walls were highly controlled, in order to create a light source, a view or an entrance. He played with the thickness of the plane in relation to the light openings to influence the experience of the space. Other important issues in Barragán's work are the control of light and the use of colors. He often manipulated the color of the light by using colored filters in front of the light openings. Most of the planes in a building were white, but to influence the light and the atmosphere of a space he added very strong colors - pink, blue, yellow, orange – to some of the planes. The color green was never used by Barragán in the buildings themselves, only in nature. He used nature as the wild element of his architecture and only vegetation in green colors – never colored flowers. In that way the wild element was still very controlled. He also used water as a horizontal or vertical plane – ponds, waterfalls – as a quiet and reflective element and for its pleasant sound. Like the traditional Mexican architecture, Barragán often made use of patios. Most of his houses were introvert and directed to the patios rather than the street. The patios themselves were also introvert with a view only to the sky. They were a part of the overall organization of spaces and were regarded as rooms on the same level as the inside spaces. The patios appeared on different levels – in the shape of a garden, a balcony or a roof terrace. Barragán also worked a lot with dimensions and contrasts in his architecture. To manipulate the experience of a space he emphasized contrasts such as low/high; narrow/wide; dark/light in the design and organization of the spaces.

One can see Barragán's principles very clearly in his own house and atelier in the Tacubaya neighborhood. It represents a subtle elaboration of that part of Mexico's provincial architecture Barragán loves so much: its ranches, villages, and convents. The design is introvert and pervades a deep feeling of serenity. Its façade is almost blank, except for entrances and a large window that Barragán has, over

the years, partly walled off, so that from the inside only the sky can now be seen. The double height living room is modulated and articulated by low walls which do not reach the ceiling. These partitions create areas of mellow shadows and zones of diffused light. Materials are left in their natural state. Roughly plastered walls and volcanic rock tiles are juxtaposed to polished wooden floors, fabrics, and velvety carpets. The largest window is at the end of the living room that is facing the garden. By this the house and the garden are inextricably bound together. The garden is enclosed on all sides, high walls on three sides and the fourth defined by the houses' rear façade. On one side of the garden is a small patio, enclosed on all four sides, too. A low fountain runs along one wall, receiving the water slowly dripping through a square wooden log. Barragán's masterful control of planes is particularly evidenced in the strong walls defining the terrace, enclosing it. Each wall is given independent identity through color treatment or the articulation of adjoining planes.

International style

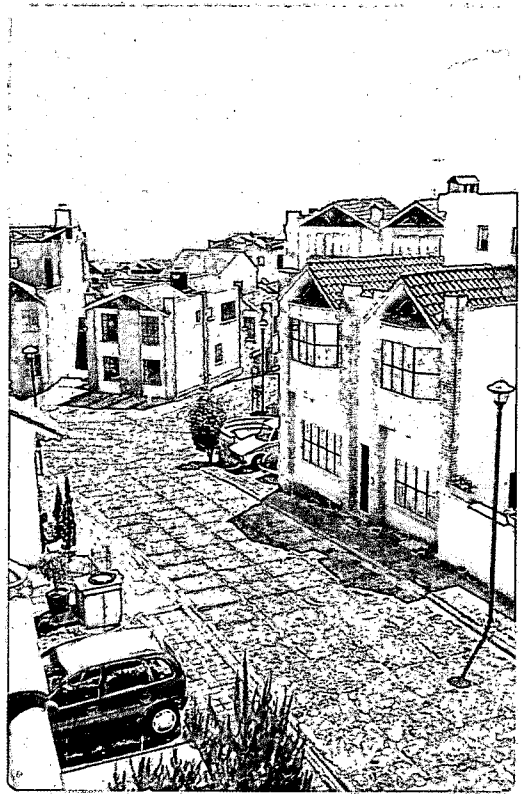
In the early twentieth century, the dominant architectural style was neo-Classicism, with strong influences of the fin-de-siècle Eclecticism. At that time new systems and construction materials appeared, allowing the erection of new-style buildings. However, as a consequence of the Mexican Revolution of 1910, for some years all important construction in the nation was suspended. It was not until the third decade of the 20th century that a new Mexican architecture appeared in projects realized by the younger generation. The period after the revolution turned out to be favorable for breaking with the authority of historical models and nineteenth century European tastes. Thanks to books and magazines, the projects of the Modern Movement became known in Mexico very quickly, as were the innovations of the Chicago school and Frank Lloyd Wright. At that time there was a need for a new theory in order to redefine the traditional concepts of function and form and search for a contemporary architecture which would avail itself of European and North American advances, but would adapt them to local needs. In 1927 José Villagrán García, who had directed one of the courses at the National school of Architecture, inaugurated a Chair of Architectural theory. He tried to combine the new postulates of Functionalism with practice, establishing the foundation for a methodology in design. In 1925 he had built a Health Care Center in Popotla. While retaining some elements of Art Deco, this building can be seen as an example of Functionalism, without forgetting the ideas of nineteenth-century theoreticians. In his long tenure of the Chair of Architectural Theory (1927-1957), José García was the teacher of several generations of architects. Among his first students were Enrique del Moral, Juan O'Gorman, Juan Legaretta, Auguste Pérez Palacios and Enrique Yanez.



Barragán House

Contemporary high-income housing

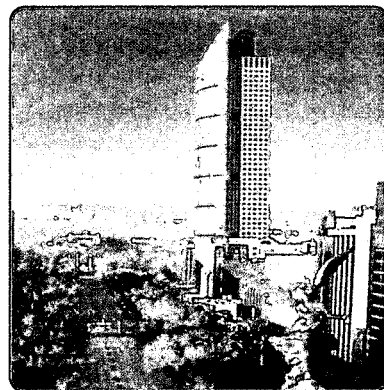
Throughout the city we have seen 'gated communities': groups of apartments for high-income families, protected from the outside world by guards and fences. One of the most interesting projects that we visited was built for people working in the television business. The project covers 120 single family houses with floor spaces of about 180 m² and prices of about 150.000 US dollars. The site is subdivided according to a master plan, but it gives clients and architects lots of freedom in terms of architectural design. Prospective homeowners can buy a piece of land and hire an architect to design a house. As a result, the project shows many different (historic) styles. Interestingly, all houses have some clear 'Mexican' architectural characteristics in common: the use of strong colors, interesting transitions between spaces, special attention to daylight and small patios. The residence that we visited was designed by Alejandro Garzón Abreu of G+A estudio de arquitectura y diseño. This project revealed another typical characteristic of Mexican housing: the extensive use of manual labor. In contrast to the Netherlands, Mexican clients seem to have a dislike of prefabricated constructions. According to Abreu, prefabrication is considered as 'low quality'. After all, the use of crafts men has a long history in Mexico and a large amount of skilful (and cheap!) craft men work is still available. This can be considered an obstacle to the professionalization of the building industry. At the same time, however, it is the reason why the Mexicans are able to maintain a high quality in the use and treatment of materials and details.



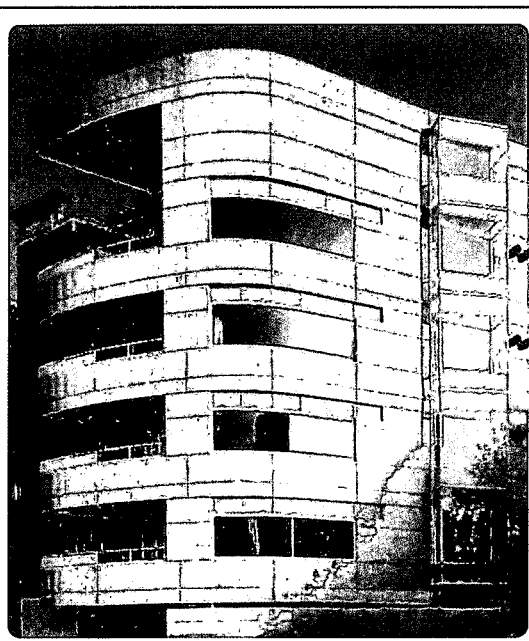
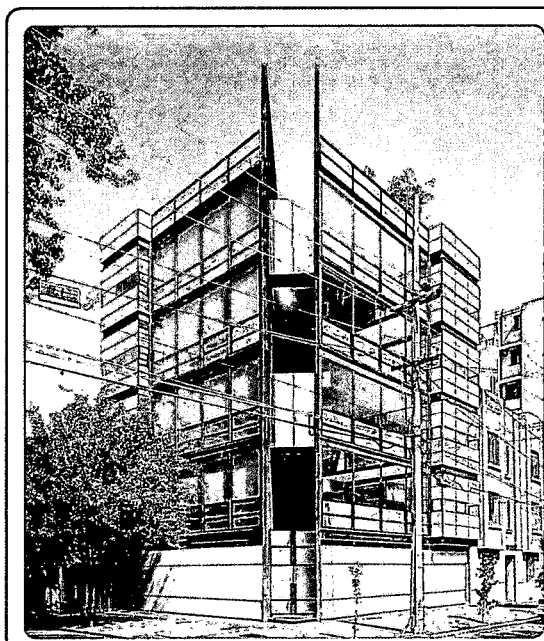
At the end of twentieth century, Mexican architecture is strongly influenced by economic changes. The NAFTA-agreement of 1994 led to a mushrooming of work for Mexican architects, particularly in offices, hotels, housing and education. Foreign firms poured investment into the country and local firms picked up the lions share, as agreements to allow North American architects to practice in Mexico (and vice versa) could not be ratified. Under the administration of Jorge Gamboa de Buen, Mexico City's planning director, several important programs were started, all of them implemented by Mexican firms. Among

them are Santa Fe (a large urban development with multi-national offices, hotels, a commercial center, and an educational zone for international schools), and the redevelopment of the historical city center. However, in the 1994/95 crash, direct foreign investments in the construction sector fell from 61 million USD a year between 1990 and 1994, to 16 million USD in 1995. One international company to pull out was Reichmann International, which had backed Ricardo Legoretta's 1993 master plan for a new major business development at Alameda Park. This international development included buildings by Cesar Pelli, Aldo Rossi and Fumihiko Maki. But this project never took place. Nevertheless Reichmann International is still in the front, e.g. as the developer of the Torre Mayor, Mexico' City's tallest (250 m) office tower under construction.

In 1998 Enrique Norton won the first Mies van der Rohe Prize for Latin American Architecture with his Televisa media center. Norton's office TEN (Taller de Enrique Norton) is the master planner for one of the country's highest-profile projects today, the JVC center in Guadalajara. Norton and his client Jorge Vergara, a vitamin pill tycoon, have commissioned Coop Himmelblau, Daniel Libeskin, Zaha Hadid, Carme Pinos, Jean Nouvel and Philip Johnson among others to design individual buildings.



Modern architecture in Mexico City



Buildings designed by Higuera y Sanchez Architectos. Left: Chilpancingo Building. Right: Edificios Veracruz II

2.4 Education and position of Mexican architects

In the early nineteenth century, the National School of Architecture was the only educational institution in the country where that discipline was taught. In 1931 the Superior school of Engineering was established by a group of radical professionals. In 1936 it became part of the National Polytechnic Institute, founded at that time. The original courses sought to abolish all contact with history and aesthetics, favoring the use of technology and industrial solutions. Also, in Guadalajara, there was the Free School of Engineering, which offered its graduates the opportunity to become architects by taking some extra courses and writing a thesis. One of the students was Luis Barragán, although he did not graduate as an architect at the end, but instead made a long trip through Europe. Nowadays people who want to become an architect can go to a large number of private and public universities to apply for a Bachelors degree. One of them is the Tech de Monterrey, a private university with campuses spread all over the country. We visited the campus Estado de Mexico, that counts 300 students. Another, well-known, private school of Architecture is located at the Universidad Ibero-Americana that has a beautiful campus in the Santa Fe area. The Facultad de Arquitectura of the Universidad Nacional Autonoma de Mexico (UNAM) is one of the largest public universities. When all faculties are taken into account it counts a total of 130.000 students. Students applying for a position here must have excellent results on high school (at least 8,5 on average). The architectural curriculum takes five years (ten semesters), with lectures and above all design studios. Although the curriculum of the various campuses may differ in regard of time and energy spent to technological courses and theoretical issues. Most schools of architecture focus on teaching architectural design and don't have a research program. Only a few universities have a Masters program or a PhD-program. The UNAM has 30 MS-programs (one of them in Real Estate) and two PhD-programs. At Tech de Monterrey one can do a MSc program by combining courses from 27 faculties, but one has to choose one faculty for writing the final thesis.

In Mexico architecture is perceived as a luxury. That's why several architects develop their projects at their own risk. It was remarkable that we met several architects with a firm including a real estate section, e.g. Sordo Madaleno Architects and Higuera + Sanchez. The latter also includes a construction consultancy firm. Javier Sanchez himself holds a bachelors degree in architectural design and a Masters degree in real estate. Nowadays there seems to be a trend towards a further task division between consultants (focusing on efficiency and feasibility) and architects (focusing on perceptual qualities).

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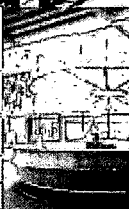
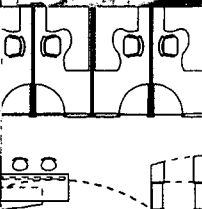
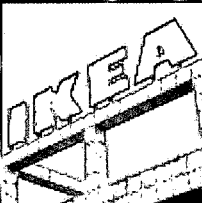
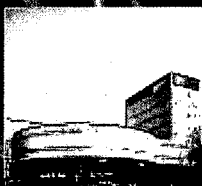
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3 Urban (re)development

Marjolein Geerards

Geert Fiolet

Redevelopment is a rather large topic to discuss in a single chapter. Mexico City is too large and complex to describe all of its aspects. For that reason we will focus on five specific aspects that we regard as interesting and important in Mexico City: revitalization of the inner city (1), care for monuments and cultural treasures (2), mixed use (3), the gap between poor and rich (4) and sustainability (5). It is important to note that for many subjects there was a lot to find out and even more information to gather and to compare. Some times, however, it has been difficult to generate objective information because, for example, the opinions of the experts we met were contradicting. These difficulties underline the complexity of redevelopment in Mexico City.

3.1 Inner city revitalization

You might say that the center of Mexico City is the heart of the nation. Here you can find the main tourist attractions, ministries, headquarters of international companies, hotels and shops. It is also a part of the city that suffers from many problems. During the last decades, many businesses have left the city to more spacious and safe locations outside the center. The same goes for people with higher incomes that prefer to live in places where there is more space, less pollution and less criminality. As a result, the inner city seems to fall into a degeneration process. The Mexican government tries to change this development by making plans to revitalize the center. For example, by building new modern towers on the Reforma, the inner city tries to compete with new buildings in Santa Fe. They hope to get more employment and activity back into the center. By doing so, the government also tries to make the area more safe. This is very important for tourism –a main source of income for lots of Mexicans. Furthermore, the government would like to stop the peripheral growth of the city that is endangering the green areas on the hills that surround the city.

One of the main problems of the inner city are its many empty buildings. For the government it is difficult to deal with this problem. On the one hand, the authorities do not want old buildings to be broken down, especially when they originate from the 17th century or before. They would prefer these buildings to be redeveloped, incorporating new functions. On the other hand the ministry of urban planning has told us they do not make plans for empty buildings. They tend to make new plans that leave the existing buildings the way they are. One of the reasons is that the government does not have sufficient financial means to buy these buildings from their private owners and redevelop them themselves. Another problem is that the government is also involved in developments outside the city center such as the Santa Fe project that competes with the city center. From the experts that we talked to, we got a rather unclear picture of the government's priorities:

Architect Sanchez told us:

"There are other problems that have a higher priority. The government prefers people to invest at the border of the city instead of the center. They don't want any more building-

activity in the center. There are a lot of problems with redevelopment because of the continuing change of rules. I had to change the design for a four-stories building because the rules for building height were changed in the middle of the process. This was because of a change of government."

ING said about the development of Santa Fe:

"The government is keeping the service level of Santa Fe low on purpose to make it more attractive for investors to invest in the center. There are some buildings that have to create their own water supply. Also the roads are always in poor condition. There is no public transportation and the subway can't be created because of geological reasons."

But not only the government played a role in the many difficulties that come along with redevelopment. A lot of the problems can be explained by the way Mexican investors and building owners handle their property:

- People who own a building may not be interested in selling, because they are rich –and do not depend on the profits of their real estate. Furthermore they might be more interested in ground speculation than rental income.
- Buildings can be family-owned instead of owned by individuals or corporations, making it difficult to make any decisions about sale or renovation.
- People may prefer owning a building instead of having its worth in money, because of inflation.
- Buildings are likely to have been built with cash instead of loans, so there is no pay-off and owners only have to pay taxes (which are low).
- Multinationals have high accommodation standards (asking for e.g. Internet, air-conditioning etc.) and most existing buildings do not match this demand. For them, it is cheaper to build a new building than to renovate an old one. This is one of the reasons why many old, sometimes historic, buildings are being demolished.
- Many investors develop buildings for the market, starting projects before users have been found or contracted. In a weak market, these buildings stay empty for a long time.

3.2 Care for monuments and cultural treasures

When (re)developing real estate in Mexico, care for monuments and cultural heritage is a crucial issue. In Mexico City you can find remains of all times, ranging from pre-Colombian temples to 19th century art-nouveau hotels. Monuments are important because it is clear that Mexico's tourism does not only come from its sunny beaches, but also from its many historic remains. And tourism is crucial for Mexico's economy as many people rely on the expenditure of tourists for their income. This is one of the reasons why government law protects historic monuments. The other reason is that Mexicans are proud of their past. They restore and retain monuments. They continue digging in the ground to discover more, which is certainly there. Both private and public organizations are paying for this.

Still, protecting cultural heritage is not without problems. Some buildings are clearly monuments, such as palaces and churches. The Government may own those buildings, and give them a new function, such as museums and federal offices (housing has not been that successful). It is more difficult, however, when buildings are privately owned and of more recent origin, say the start of the twentieth century. For private owners it is not very attractive to put great effort in protecting these buildings because

se redevelopment is more expensive than demolishing it and building a new project. As a result, the only buildings that are preserved are buildings from the 16th and 17th century and further back. More modern architectural face the risk of being demolished.

Also when developing a completely new project, you may encounter the issue of cultural heritage. It is very well possible to touch upon historical remains when working on the foundations of a building. In one of the projects we visited they found archaeological remains when they started digging. As a result, the construction process was stopped for several weeks. Unfortunately, the costs of steel doubled during this period, endangering the profitability of the project. The architect and the construction company split the loss, but it is clear that such findings can be problematic.

3.3 Mixed use

Mixed use projects seem to be quite new in Mexico City, but it is rapidly gaining more attention. Both government and the private market have become aware that mixed use may be a crucial ingredient for success. For example, the combination of office and residential development can result into more vibrant and safe neighborhoods. It may provide a welcome deviation from the monofunctional developments of the 1970s that resulted in office areas that were deserted after six o'clock when business people were replaced by the homeless.

From an investors point of view, mixed use can reduce the risk involved in a project. It is, for example, interesting to take a look at the Reforma 222 project in the heart of the city. In this project, the developer is constructing a shopping mall with houses and offices. One of the planned towers in the project is designed in such a way it could be build as an office tower or a residential tower –depending on the market. The flexibility and multi-use character of the plan reduce the investor's risk. Other projects combine cinemas, shops and cafes. Especially in large scale developments such as Santa Fe there is plenty of room for mixed use. In the Santa Fe project a former wasteland is turned into a high class area for (high-income) housing, education (private university), working (offices) and shopping and lunch facilities.

3.4 Gap between poor and rich

Mexican society can be characterized by a huge gap between the rich and the poor. This gap has a strong physical impact on the layout of the city. Poor people tend to live in the east and north of the city and the rich people in the south and east. It is clear that in particular the large poor areas present large problems for the Mexican society with a high criminality rate, poor infrastructure, inadequate sewage, etc.

The growth of the poor areas of the city comes from rapid urbanization. Lots of families are still moving from poor rural areas to the city, looking for work and better living circumstances. At the borders of the city, they tend to build themselves a little house (illegal) and put a fence around it. For the government these settlers are a problem. When these people have established themselves in self-made homes, it is very hard to move them, even though the ground is not theirs. Even legally it is very hard to change this situation. There is even a rule that states that when a family is living on a plot for over ten years, it automatically becomes their property. When shanty towns have to disappear because of new development, government has to try to relocate people by offering them new land or money, but this isn't always possible. It was told to us that in the government, some people can be characterized as 'coyo-

tes', corrupt people who sell land to people, which isn't theirs. They collect the money and then disappear. This causes a lot of problems.

In Santa Fe, the governmental development corporation (Servimet) had to pay people to leave. A lot of people have left the area and used the money to find a new place. Yet, over 5000 people are still living there, although they were paid to move.

Generally, the geographical division between poor and rich has been a natural process and the government has no policy or ambition to change this. The gap is too large to combine housing of different sorts of incomes—as we are used to in the Netherlands. An example of how Mexican government deals with this problem can be seen in the development of the new airport. The authorities of Mexico City planned a new airport at the west part of the city. They chose that location because it was one of the very few large open areas in the city (it was a lake). As a result, rich people have to cross the poor area (two hours by car) to get to the airport. The question rises if this is a well-planned location. At one side it can be a 'puller' for companies to settle there and in this way it can upgrade this poor part of the city. But at the other hand the traffic congestion is likely to grow. Rich people (or rather: those with sufficient resources to travel) may grow hesitant to use the new airport because they fear being robbed on the way over.

3.5 Sustainability

When developing or redeveloping buildings you also encounter environmental issues. Both the demolition and the construction of buildings produces a lot of waste material. Materials may be toxic or hard to recycle and buildings may be unhealthy or using too much energy. For this reason, many governments try to reduce the environmental impact of buildings. Obviously this is not always easy, especially when—again—financial resources are limited. In Mexico City, other problems are clearly more important. The environment is simply not of enough importance to spend much time and money on. Other problems, say putting a decent roof above Mexico's many poor inhabitants, are more pressing. As a result, stringent rules for the use of specific materials and use of waste materials are rare. Furthermore rules for the use of energy in buildings are absent.

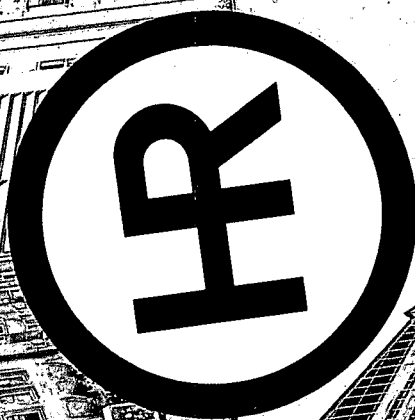
It is very interesting to see, however, how construction companies do recycle a lot of building materials. The necessity to reduce costs, results in the reuse of, for example, concrete formwork or crushed stones for foundations and roads. We have also seen that construction workers produced their own tools from old materials such as steel pipes.

One of the most visible environmental problems of Mexico City is the air pollution. The city's infamous smog even affects the design of buildings. In most new buildings developers have to invest heavily in air-cleaning installations that filter smog out of the air. Furthermore, the facade is likely to be made of special materials that are easy to clean.

More structural solutions for the city's smog problem are difficult. Fumes remain above the city because it is surrounded by hills. To deal with this problem, government has come up with special rules. One of them is about the use of cars. For example, people with even end-numbers on their car plates cannot drive on Monday. Furthermore, every half-year all cars have to be checked on their pollution-level. A car's fume exhaustion has to be below a certain level. Otherwise they are not allowed to drive anymore. This rule is heavily checked.

■ HILLEN ROOSEN □

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4 Ground Policy

Wouter Boon

Annemarie van Helvoirt

Suzanne Tol

Mexico has about 100 million inhabitants, of which over 20 million people live in the capital Mexico City. To manage such a huge number of people in one metropolis, a clear policy with sound rules are essential. In Mexico legislation exists on different scale levels, including federal laws, state legislation, and regulations by municipalities and private organizations. In this chapter we focus on rules related to ground policy. How do the Mexicans deal with their land? What is the price per square meter? How much do land prices differ between locations in the inner city, in suburbs and at the country side? In short: does Mexico City have a ground policy? Based on preparatory search on the internet and review of literature, and raising questions during lectures and field trips, we will give here our observations on the way Mexico City deals with her grounds.

4.1 Legislation

Mexico is divided in 31 federal states, each with their own government and governor. Each government applies its own rules and legislation. As a consequence a lot of things work at cross-purposes. At the moment the president of Mexico, Vincente Fox, belongs to the Partido de Accion Nacional (PAN), but the mayor of Mexico City is from the Partido de Revolucion de Democracia (PRD). The national rules and systems often disagree with the rules of Mexico City. One might say that Mexico City is a state in a state. For example, when the president wanted to have Mexico in the same time zone as the United States (because this is more in favor of the trade), the mayor of Mexico City decided to keep 'his' city in the old time zone. It took some time to harmonize both regulations. Within Mexico City there are also different policy levels, but those are less autonomous.

4.2 Geology and archaeology

Mexico City is built over a lake, that is why the ground exists mostly of layers of clay. In case of an earthquake, waves move through the clay to the surroundings. At some places the soil was even lowered 40 cm. Because of the soft soil, 60 meter long concrete piles are necessary in order to gain the stability for tall buildings. But elsewhere the ground exists of hard lava stone. That's why the construction of underground facilities such as a metro is quite expensive. The last big earthquake dates from 1985. It destroyed many buildings in Mexico City. The results can still be seen in bad pavements. The fear for earthquakes was a strong psychological factor in the development of the city. Nowadays the resistance to construct high-rise buildings seems to be decreased.

Mexico is a country with a great cultural-historical value. Even today many art-treasures are being excavated. One of our hosts, an architect who showed us a Gated Community, told us that construction is always proceeded with great caution when archaeological treasures are found. The Mexican inhabitants embrace the principle of preserving the art-treasures. The Mexican government wants to break up more ground to excavate more art-treasures. The architect told us that once he reported an interesting archaeological discovery to the institution that is concerned with the preservation of the past. The construction was stopped immediately and the site was closed off for three months to be able to do archaeological research. The contractor almost went bankrupt. According to the Cámara Mexicana de la Industria de la Construcción (CMIC), contractors can not insure themselves against unpredictable misfortunes such as archaeological excavations or bad weather. In the Netherlands, too, there are strict rules with respect to archaeological research.

4.3 Planning policy

In The Netherlands spatial planning on a national level is steered by the "5th note of town and country planning". Urban planning by provinces and municipalities has to fit within the rules of the Ministry of Housing, Spatial Planning and the Environment that is responsible for the 5th note. At first sight Mexico City evokes the impression of an overcrowded and unstructured city, where one may built anything and everywhere. But this is not the case. According to the Secretario di Desarrollo Urbano y Vivienda (Department of Town and Country Development & Planning), the municipality is working on a clear planning policy. The government aims to re-develop the old historic city center. They want to attract more people to live in the center, decrease vacancy and stimulate the recycling of empty buildings. One of the planning issues is to allocate zones for high- rise buildings, avenues, green areas etc. In the center restrictions for building heights are applied. Investors don't need to pay sky-rights to the local government. In the neighborhoods also some rules are applied. An illustration of this is the story of the Mexican architect Xavier Sanchez. During the construction of one of his projects, the development plan of the concerning district was changed. Subsequently the building had to be lowered to four floors. In The Netherlands this would not be possible; it takes a very long time to change a development plan.

A clear example of a planned urban development is the area of Santa Fe (see also below). The government owns only 15% of the land here. Re-development is impossible without private investments, so the area is developed in co-operation with private companies. As such it is an example of public-private partnership. Servimet, a municipal organization, is responsible for the development. The Secretario the Desarrollo Urbano y Vivienda is the executive company. Higher departments and the national government only have to approve the plans.

Another institution that is engaged in urban (re)development is the Ministerio di Turismo. Because tourism is very important in Mexico City, they try to redevelop the city center by upgrading the so-called cultural corridor from the Chapultepec Park to the old center (see also the chapter on infrastructure). Furthermore they want to stimulate Mexican people to move back to the city center. Just like cities such as Chicago, Boston and New York, particularly high income families tend to move to the suburbs in order to avoid criminality, crowdedness, noise, and traffic jams. The cultural strip is developed by both the local government and private companies. The local government improves the infrastructure and street lighting and cleans up the avenues. The private companies provide investments and built new office buildings such as the Torre Mayor and new hotels such as the Sheraton Hotel.

In order to reduce the ongoing growth of Mexico City, no extensions at the outskirts of the city are allowed. Actually Mexico City does not even have the possibility to grow, because of the surrounding steep mountain sites. The population does not take full account of the planning rules, especially in the slums. They just take building materials into the forest and within a night they built a wall around a lot. Then the government pursues an policy of 'what the eye doesn't see, the heart doesn't grieve about'. People start to build simple houses. No measurements are taken by the government to stop this confiscation of land by civilians.

4.4 Building permits

Building permits are rigidly regulated by law in Mexico, but not everyone complies with the rules. That's why a few years ago the government founded Secodam to take care of the supervision of the fulfillment of the building permits. This institution is housed in Chihuahua. According to the Cámara Mexicana de la Industria de la Construcción (CMIC), a kind of Chamber of Commerce for contractors, Secodam operates strict rules with respect to technology and administration. Secodam not only inspects constructions, like the Construction- and Building department in the Netherlands, but does also other kinds of inspections. They also audit companies like Pemex, the main oil company. It is remarkable that several institutions and companies we spoke with, did not know Secodam at all. And if they did, they were not aware of the exact task and the responsibilities of Secodam. According to our hosts, several buildings in Santa Fe have been built without a building permit. The government gives them a hard time. For example, the Optima III building of Shell was built three of four floors too high. They decided to link the height of the building to the building next to it. However, the other building was built three stories too high, according to the building permit. Probably the three stories in the Shell building will be removed. 70% of the hillside behind the TEC de Monterrey is being built without a building permit. The reason seems to be that particularly poor people are forced to built without a permit. When a house is not finished yet, one does not have to pay taxes. The suburbs are an excellent expression of this rule: many houses are not finished.

In the Netherlands, building plans – both for new buildings and refurbishing existing ones - have to be approved by a municipal committee with respect to its aesthetics and the fitting within the site, the so-called 'Welstandscommissie'. In Mexico City a similar committee exists since about three years, under the responsibility of the governmental Departamento de Construcción de Edificio. In contrast to the Netherlands, the demands of the committee do not apply in the whole inner city. The focus is on materials and colors.

4.5 Ownership and confiscation of land

According to the Secretario de Desarrollo Urbano y Vivienda, only 15% of the land of Mexico City is owned by the government. Most land is privately owned. There is only a minor system of concessions. One example is the Centre the Exposiciones y Convenciones las Americas, a large event and congress center, where the land is in concession. This situation is totally different from the Dutch situation, where concessions are used by almost all cities to provide finances continuously and also to stop speculation. Besides, the municipality is more autonomous in adapting zoning plans. Because of the low amount of governmentally owned land, confiscation of land could be a tool to speed up urban (re)development of land when the owner does not want to co-operate. In the Netherlands this is a rather common policy. Mexico seems to have a similar system, but it is not applied very often because it takes too much time.

But it is applied in the development of infrastructure. Then 5 - 10 % of all land is being confiscated. The local government tries to get hold of pieces of land by using different sources. For example, in order to be able to built the new airport, the government tries to buy the land at the very low price of seven pesos per square meter (about 70 eurocents). But the present inhabitants do not accept this price. The government still struggles with them.

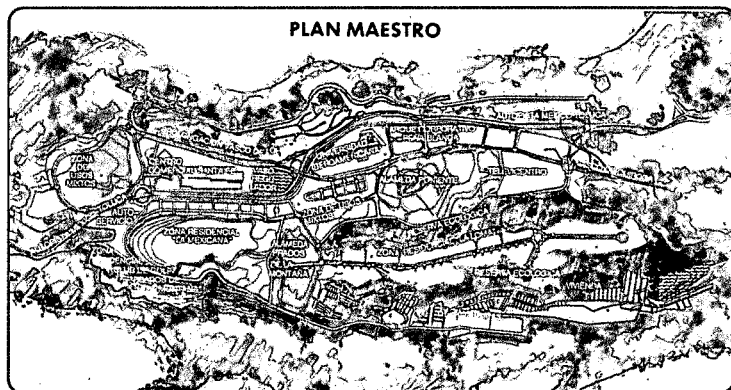
A remarkable rule (or habit) is, that confiscation of land by civilians is more or less tolerated. When an inhabitant has passed through a 10-year-border of living on a piece of land of which he is not the rightful owner, he becomes the owner. The government is often not able to control this. Sometimes land gets 'stolen'. It may occur that a person represents himself as the owner of the land for sale. He may sell the land for a very low price, using false documents. When the rightful owner discovers this too late, he cannot force the new inhabitants to move. He can only prosecute the seller of his land, but this is a very time consuming effort. When the inhabitants live there for over 20 years, they even have the right to call themselves the owner of the land.

4.6 Prices of land

In Mexico City the prices of land vary from 800 USD to 5000 USD per square meter at high quality sites such as the site of the Torre Mayor, the tallest office tower in Latin America. A usual price for office development is about 1200 USD per square meter. The average price of the land in Santa Fe is 1000 USD/m²; the price depends on the building density and varies between 800-1500 USD. This is even higher than in the city center of Dallas. In Amsterdam, at the south axis – an urban development project with huge bank buildings etc. - prices of land vary between 1000-1700 USD per square meter. In general, prices in housing areas are 40% lower than those of offices. But gated communities can have very high land prices, too. The one we visited cost 1000 USD per square meter. ING Commercial America has introduced leases of buildings. All buildings in Santa Fe are for lease, both offices and apartments.

The rental prices for offices vary also strongly: A top location such as Torre Mayor costs 250 –290 USD per square meter. Buildings with a lower quality cost 200 - 250 USD per m² per year. This is quite similar as in Amsterdam, where rents range from 160-330 USD per square meter rental floor area. Rental prices of upper floor levels are often higher because of the view.

The price of an apartment for sale of about 100 sq.m. is 1000 –1500 USD per sq.m. A problem is that banks don't provide a mortgage, so prospective tenants have to pay cash. Though it is understandable why the financial situation of banks in Mexico City is quite bad. They do not give credits.



Santa Fe: Plan Maestro. In total 815 ha, of which 215 ha ecological area, 57 ha huge office towers, 30 ha commercial area, 31 ha educational facilities etc.

4.7 Santa Fe

An impressive example of urban development is the area of Santa Fe. This former mining area – also used to dump garbage – is now being turned into a high quality area with a mix of functions, such as office buildings, a private university, residential apartments, shopping malls and leisure facilities. The total area is about 815 ha. The area aims to attract international companies and high income residents. About 25% of the building site is allocated to greenery; 20% is residential area, 55% of the site is allocated to offices and all kinds of facilities. According to some of our hosts, Santa Fe is overbuilt.



Santa Fe, old situation: former mining area and garbage belt

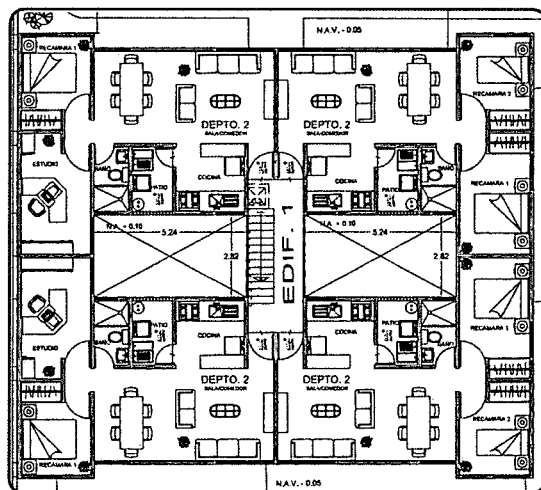
Servimet is the state project developer. They co-operate with private investors. The master plan has been designed by Lejoretta, who won the design contest between five invited architects. The project started in 1985 and will be finished in 2020. Servimet has been founded to speed up the planning process. Servimet got the land partly for free (the part that was owned by the government). Money for the development of Santa Fe was raised by selling the land. It was said that most of the land was owned by a former president. One of the first occupiers of Santa Fe was a private university. The former site of this university (Condesa) was too small. Besides the building was partly destroyed during the earthquake of 1985. That's why the government donated a piece of land to them in Santa Fe. Next the big Televisa company was attracted by donating the land they needed for only 1 peso / m² (Pera Blanca). With these two early occupiers, further development of the area became more easy. It raised enough confidence for other investors to participate in the development of Santa Fe. The government started to construct the infrastructure. Then the land was sold. However, public transport in Santa Fe is quite poor (see also the chapter on infrastructure). For technical reasons (hard soil, a too high level) a modern metro net is economically not feasible.

4.8 Social housing

In Mexico there is a geographical division between poor people (most of them living in the east and north) and rich people (most of them living in the west and south). There is no policy to mix these areas. It is considered as a natural situation. In the Netherlands high land prices and high taxes are used by the government to develop housing for low income families. In Mexico City, social housing seems to be less well developed, but it is up coming. A lot of work is done by the Instituto Vivienda del Distrito Federal. This institute was found by the local government only two years ago, as a part of the Secretario the Desarrollo y Vivienda. In the past the government never established this kind of institutions. The target group of the Instituto Vivienda include inhabitants of Mexico city with an income of 180-800 USD per month. The institute builds flats and single family houses. Its aim is to build 20.000 flats and 40.000 houses in the next two years. The houses of the Instituto Vivienda are 40 to 55 m² large and are built for approximately 20.000 USD: 14.000 USD for building costs and 6.000 USD for the

land and extra facilities. The investments are paid by the institution. Prospective tenants have to pay 15% of their monthly income during a period of 30 years or less if the amount of money has been paid back completely. After this period they will be the owner of the house. This is extremely important for them, because at older age most people have no income anymore. Also the ministry of Urban Development & Planning is developing plans for the social sector. They develop 15.000 new houses for the social sector, financed by themselves. There are also private companies who build social housing, but for higher incomes. Prices vary between 30.000 and 35.000 USD.

The Mexican situation is completely different from the Dutch situation. In the Netherlands it used to be common to have over 50% of people renting a house in the social sector. Nowadays this percentage is decreasing, both because more people can afford to buy a house and because of the reduction of governmental influence in favor of the free market.



Plan of a social housing project: Proyecto San Antonio

4.9 Conclusion

At the start of this chapter we asked ourselves: does Mexico City have a ground policy at the moment? Now we can say: yes, it has. However, many rules are not followed in practice, as we saw in the paragraph on building permits. In the Netherlands government control is much more strict. But it is expected that Secodam will play a more powerful role in the future. Furthermore it was amazing to notice that the appraisal of aesthetics is also less strict than in the Netherlands. We may also conclude that the government of Mexico City is putting a lot of energy and money into urban (re)development, preparing zoning plans and working on a revitalization of the city the past 15 years. Many beautiful projects have been finished already and many are still under construction. Preparing zoning plans is not yet centrally organized. Different institutions are dealing with this issue.

With the development of Santa Fe the government tries to give a new impulse to their ground policy. By donating land or selling it cheap to important institutions, they are attracting investors to participate in the development of an area. By doing this they earn money for new developments in the social sector.

The re-development of the city will continue only when the economic situation of the country will be stable. Of course big re-developments are only possible with the money of the private parties and foreign investors.

Concessions do not seem to have a future in Mexico. Particularly for poor people, owning a small piece of land is their only security in life. For the same reason people prefer to buy a house and are not willing to rent. Maybe concessions will be used more often in big projects such as conference centers or office buildings that are financed by foreign investors.

Finally we may conclude that the prices of land are very high in Mexico city. Higher than in other big cities in the world, while the income per inhabitant is lower.

5 Infrastructure

Annemieke Thissen

Vincent Verheijdt

Mexico City is one of the biggest cities in the world. The smog, caused by industrial and heavy traffic activities and strengthened by the cities' location in a bowl between the mountains of the Sierra Madre, is a big problem. Now the natural border of the mountains is reached, it is a good time to review the current situation of the infrastructure of this metropolis. How does the infrastructure of such a big metropolis function? How does Mexico City anticipate on future developments?

5.1 Current situation

Everyday the present infrastructure is heavily used by thousands of minibuses and taxis and more than four million cars. In spite of the crowded image and many traffic jams, the infrastructure seems to work quit well. This is remarkable, because maintenance is relatively low, mainly because of the low tax income. Moreover there is no clear policy and poor synchronization between the governmental agencies that are responsible for the infrastructure of Mexico City. Municipal organizations have to take into account all kinds of influences of the federal government and the autonomy of the different states of Mexico and Mexico City. We also noticed an unclear road signing policy and a complicated road plan, especially for the foreign road users. Nevertheless the Mexicans themselves seem to find their way rather easily through the metropolitan area.

In order to reduce the traffic congestion and the smog caused by heavy traffic, the Mexican government has enforced various rules and measures. Just to name a few, we saw an endeavor to separate slow and fast traffic, and noticed that on smoggy days a limited number of cars got access to the roads, depending on the number of the license plate. Car owners are forced to having checked their car every year on the exhaust of gasses. Heavy industries are moved from inner city locations.

Passenger transport

Mexico has a good working bus network through the whole country. The maintenance of bus stops is put out to private contracts; ten percent of the bus stops are allocated to governmental advertising, e.g. to announce cultural activities or new governmental rules. The bus stations from where daily hundreds of busses leave to destinations throughout the whole of Mexico are situated at the north, east, south and west side of Mexico City. Because of this well functioning system, the more expensive alternative, the train, did not really succeed in Mexico. The existing network for trains is no longer used for passenger travel. But the underground railway, the Metro, is very successful in Mexico City. However, because of the hard soil and the natural relief the network is rather limited. Further enhancement will be very expensive, so it is expected that this will not happen very quickly.

Carriage of goods

Almost 80 percent of the total transport of goods is being carried out by road. Mexico has a couple of important trade-corridors throughout the country. Most of these corridors run through or near Mexico City.

Parking

In the city center parking is not allowed, except in parking garages. A couple of years ago Mexico City started with paid parking in two pilot projects. The resistance of the residents was high, but nowadays people are more accustomed to paid parking. The present number of 4,200 parking meters will be increased to 6,000 parking meters. A problem is the lack of guards, so that too much money is in the meters, increasing the risk of burglary.

5.2 Future prospects

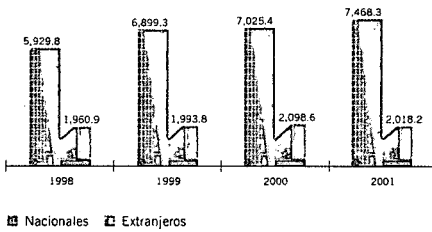
In order to improve the traffic flow, the government intends to construct a double road system by adding a second layer on top of the main roads in Mexico City. But the realization of this plan will be in the far future. Maybe it will never take place, because of a lack of finances and urban planning aspects. In order to cope with the expected growth of passengers, the government also intends to build a new airport. The current Airport Benito Juarez is becoming too small. The government organized a design competition for a new airport at the bottom of the former Lake Texcoco. A consortium has been set up with ICA and Cemex to build this new airport. Unfortunately, there are some problems concerning the property of the land. Most of the land is privately owned by individuals. Furthermore the environmental agencies are not happy with the situation of the new airport.

5.3 Accessibility of new projects

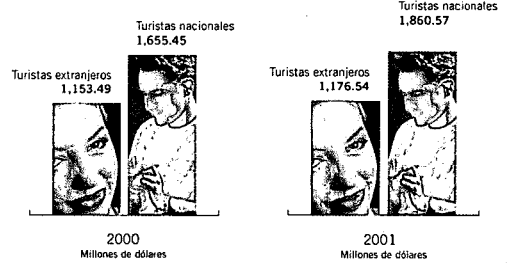
Because of the revitalization of existing areas such as the Paseo de Reforma and the urban development of new areas such as Santa Fe, and also as a consequence of the construction of huge office towers such as the Torre Mayor, there will be a growing need for further enhancement and extension of the infrastructure. However, the data that are used by the government and private investors, are based on statistics that are updated only once every ten years. So these data are not always up to date. A more pro-active attitude towards future developments is needed to guarantee a successful completion. Now we will discuss some observations during our site visits.

Revitalization of the Reforma

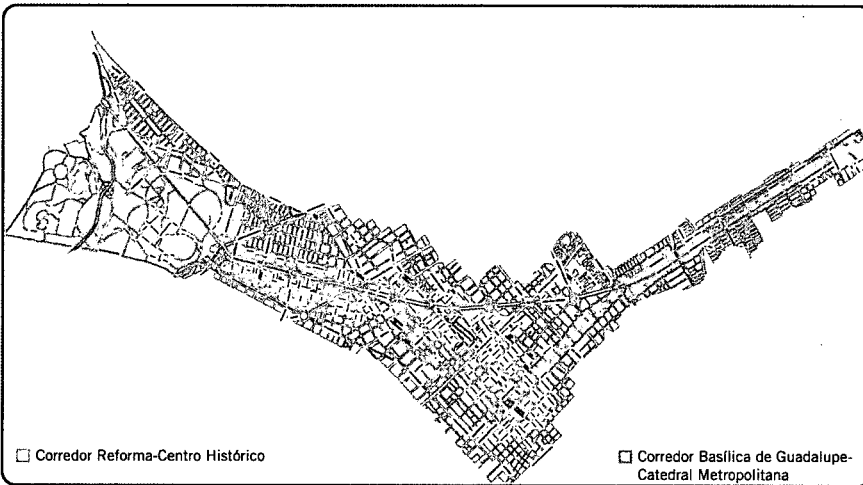
Mexico City wants to generate a growing tourism by improving its image and by upgrading the environment. According to Luis Trujillo from the Ministerio de Turismo, Mexico is now number eight on the world wide list of attracting foreign tourists, but it has the ambition to improve this position. To achieve this objective, Mexico City has to solve a couple of problems, particularly its image of a smoggy, crowded and unsafe city, the poor level of public transportation, the poor quality of the pavements, and the poor maintenance of public green. To cope with these problems, the government is busy in upgrading a couple of natural tourist corridors: the area along the Museo Nacional de Antropología, Museo Tamayo and the Museum of the Modern Arts, and the area of the Reforma in the historic city center.



Growth of tourism in Mexico City - 1



Growth of tourism - 2



Cultural corridors in Mexico City

The improvements have to be made available by federal efforts, but also by private investments such as the Torre Mayor and big hotels such as the Sheraton Hotel. The government will install new lighting system on the Paseo de la Reforma and change the current pavement into a more attractive, comfortable and sustainable pavement. Public areas will be upgraded with terraces and kiosks. The ground level of big buildings must become more attractive to pedestrians and will be filled in with shops and cafes.

Santa Fe

One of the biggest urban developments is the renewal of the area of Santa Fe (see also chapter 4 on ground policy). Santa Fe is located south-west of the historic city center. It used to be a mining area and a garbage dumpsite. The area belongs to two different states. This remarkable fact increases the complexity of developing a well functioning infrastructure. Another unique characteristic is the blend of functions. Santa Fe evokes an image of modernity and an international atmosphere because of the presence of international companies such as IBM, Hewlett Packard and ABN AMRO. Most buildings are designed in an international style, although many of them are designed by Mexican architects.

Public transport to Santa Fe is not well developed. It is not accessible by the metro system. A metro system would be too expensive because of the hard soil of the mountains and the different altitudes.

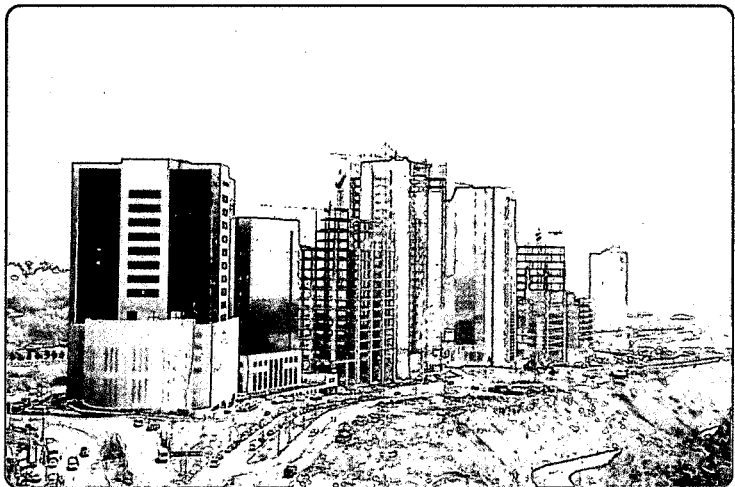
Also almost no busses go to Santa Fe. According to Servimet, the organization that is responsible for the development of Santa Fe, the lack of public transport is not really a problem, because most of the employees in this area come by car. Moreover, as a consequence of the mix of functions, more and more employees will live in the area, so the distance between living and working will be limited. This is probably true, but one might ask why one did not strive for an in-between solution. See for instance Paris, where the metro partly goes above the ground and partly underground. This would make a metro network affordable and as such lead to a reduction of traffic on the road.

To comply with the wishes of the large international companies, there is an energy backup system installed at Santa Fe. This will reduce the risk of power failure. One of the prerequisites of international organizations is a failure-proof power resource, because they need a constant and big energy supply. Besides an up to date power supply, Santa Fe also got a state-of-the-art water supply: a sewer system with a separation of black and gray water. The master plan also includes an artificial lake, which regulates the water level of the surrounding area. The water for the urban green of Santa Fe is being subtracted from this lake.

Torre Mayor

Torre Mayor is the most prestigious project of Mexico City, maybe even of whole Latin-America. With its 55 stories and 225 m height it will be the highest building of Latin-America.

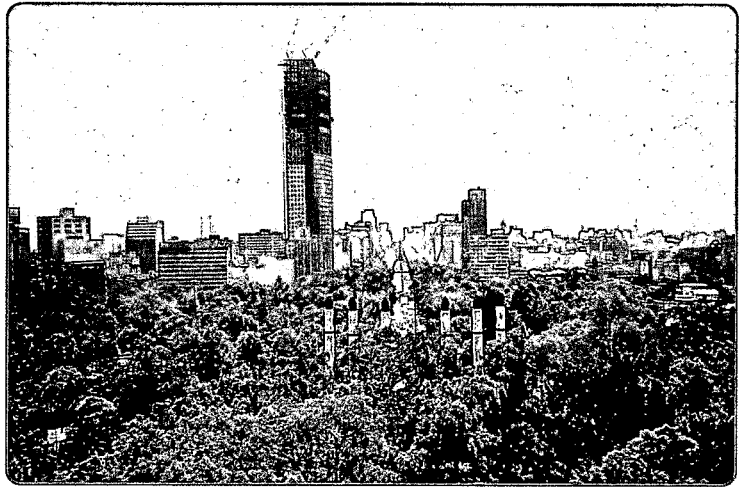
The Torre Mayor is situated along the Paseo de la Reforma against Chapultepec Park. The project is being developed by Reichmann from Canada. A lot of attention is paid to its form and facade in order to evoke a positive and attractive image. This is particularly important to attract international companies. By upgrading the Paseo de la Reforma, the value of the surroundings will increase, too. Because of its location along one of the biggest roads in Mexico City, accessibility by car is quite good. But as a consequence of the huge number of employees and visitors, the Reforma will be extra crowded during office hours. The building is also reachable by metro and busses; more than 20 public bus routes pass in front of the tower and two subway stations of Metro line 1 are within a five-minute walk.



High-rise buildings in Santa Fe

Just like Santa Fe, Torre Mayor also has a backup system for the energy-supply, in order to attract international companies. The 77.000 m² of office space requires an enormous amount of power. This power must be delivered in a sure and safe way constantly. Torre Mayor gets its electricity from two different stations besides its own backup system. The building is an intelligent building with state-of-the-art technology. A dual tubular steel framework and a lateral load resisting system ensure structural reliability under the severest seismic conditions and create column-free spaces. All tenants enter through a single security check point. A computerized Building Management System provides completely automatic control and monitoring of the air conditioning and ventilation system. The sprinkler system is an inte-

gral part of the safety network. A plug-in bus duct riser system delivers electrical power to each floor in a flexible, cost-effective manner. Environmental concerns are given priority by means such as a triple filtering system for outside air intake, a cooling system free of CGCs, and an internal water re-cycling process. A copper and fiber optic telecommunications backbone of 7,500 lines is provided as part of the base building construction, establishing an infrastructure of voice and data transmission.



Torre Mayor

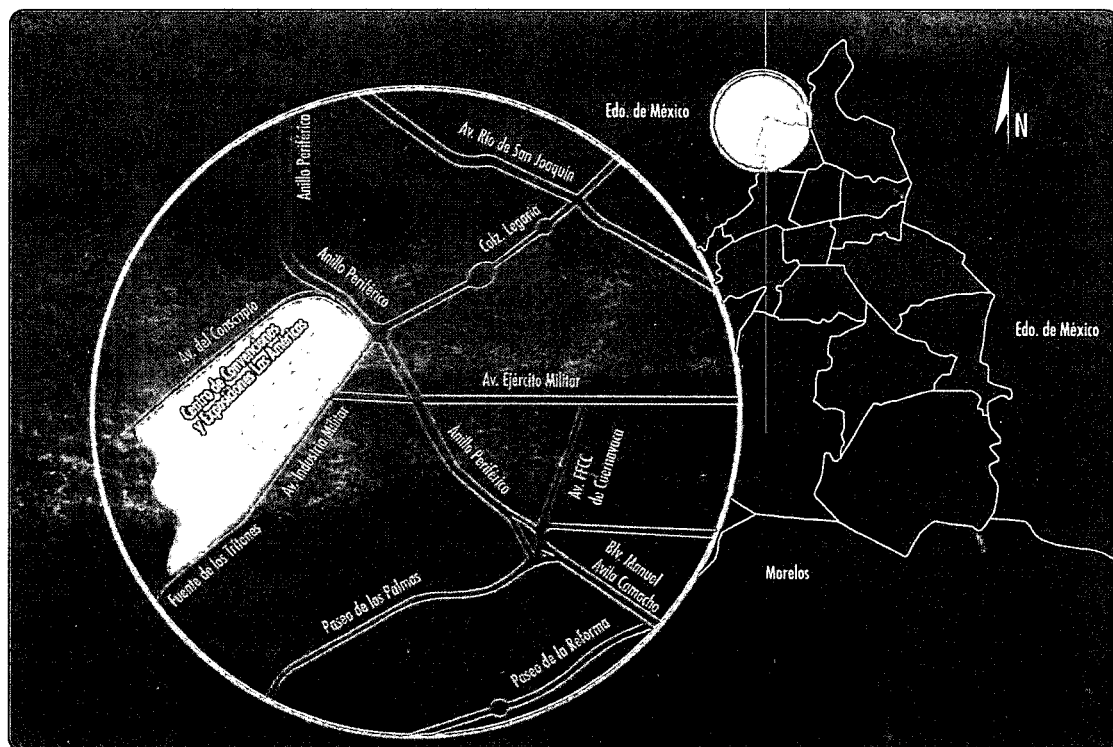
This tallest office tower of Latin America (55 storeys, 250 m) is developed by Reichmann. International. It includes a mix of functions: 13 storeys of parking; 5 storeys with facilities for employees, such as a two storey retail concourse and terraces; floor 10-55 = offices. Each floor is 1700-1850 sq. mts. Rent = 17-22 USD/m2 per month, depending of floor-level and number of rented m2. About 8000 m2 is already rented in advance. Parking standard: 1 parking per 30 m2 gross floorspace; net floorspace per employee: 10 m2

Congress center

The new Las Americas congress center is a huge project, including a hippodrome, a congress center, hotels and a shopping mall. The capacity of the exhibition space or 'salas de exposiciones' is over 13,000 m2. The capacity of dinner rooms is up to 2,500 persons, in the near future even up to 5,000 people. By this mix of different functions visitors are not forced to travel alone through Mexico City, but they can stay at a safe location. Again, the accessibility of the complex by public transport is not very good. The location is very remote from the airport and from the historic city center. But there is enough space for busses, bringing or picking up the visitors in front of the building. Parking of private cars is not a problem either. There are enough parking spaces available. In phase 3 additional parking places will be built. In case of a growing need, it is possible to convert an empty exhibit area to a roofed parking area.



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5.4 SWOT-analysis of strengths, weaknesses, opportunities and threads

In addition to these observations, we did a so-called SWOT-analysis and looked after the most striking positive and negative aspects.

Strengths

- Strong commitment of the government measure
- Good metro-network
- Good trade-corridors
- Awareness of the necessity to minimize work-living traffic

Weaknesses

- Poor maintenance
- Unclear government policy
- Poor synchronization between government agencies
- Unclear road signs
- Complicated roadmap
- No passenger travel by train
- Hard soil and natural relief (slopes)
- No 100 percent failure-safe power supply

Opportunities

- Upgrading of the historic city center (more attractive, more safe), leading to a growing number of tourists
- More governmental money for the infrastructure when tax income will increase
- Improvement of public transport to new areas such as Santa Fe
- Stimulation of the reduction of work-living traffic through function-blending
- Growth of technical knowledge, so better opportunities to extension of the metro-network

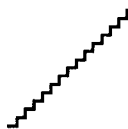
Threats

- Explosive growth of the population
- Increase of car traffic
- Increase of smog
- Increase of criminality

5.5 Conclusion and recommendation

In spite of many problems, we may conclude that the infrastructure works quite well. Positive factors are the rules and measures of the government, a good working bus system throughout the whole of Mexico and a solid, yet small Metro network. But further improvements are needed as well. A sound and clear government policy and better synchronization between different government agencies may lead to a better infrastructure and will reduce traffic jams. Another important measure is the extension of the metro-network to important new building sites such as Santa Fe. The SWOT-analysis shows that there are plenty of challenges to the government, perhaps with the help of private organizations, to upgrade Mexico City's infrastructure to a higher level in the future. However, if the government does not keep working on the improvement of the infrastructure, Mexico City's accessibility will get worse. This will have a bad influence on Mexico City's business, industry and tourism. So it is of utmost importance to continue all kind of policy efforts and test the consequences of different solutions.

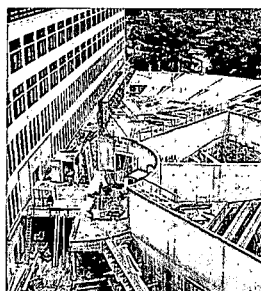
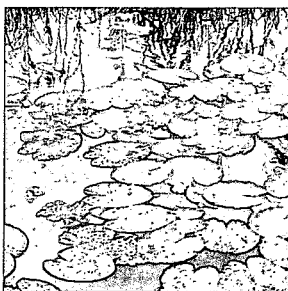
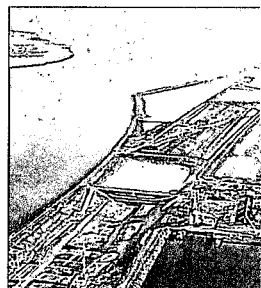
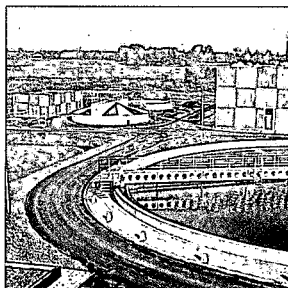
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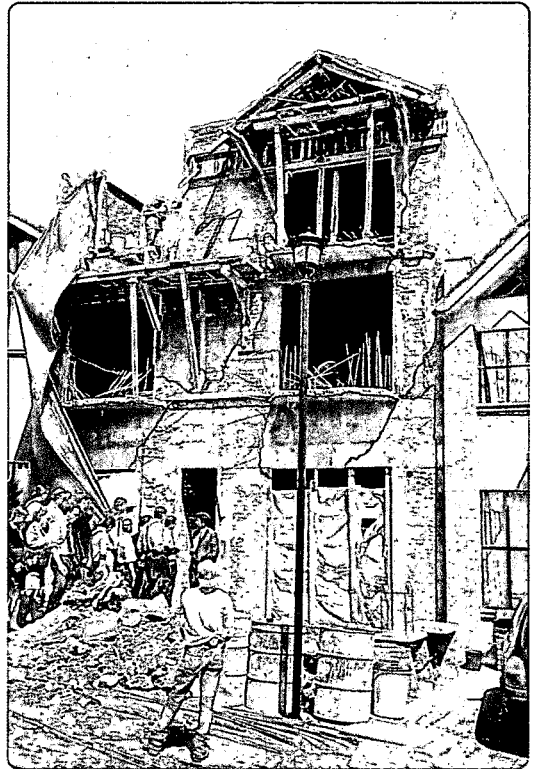
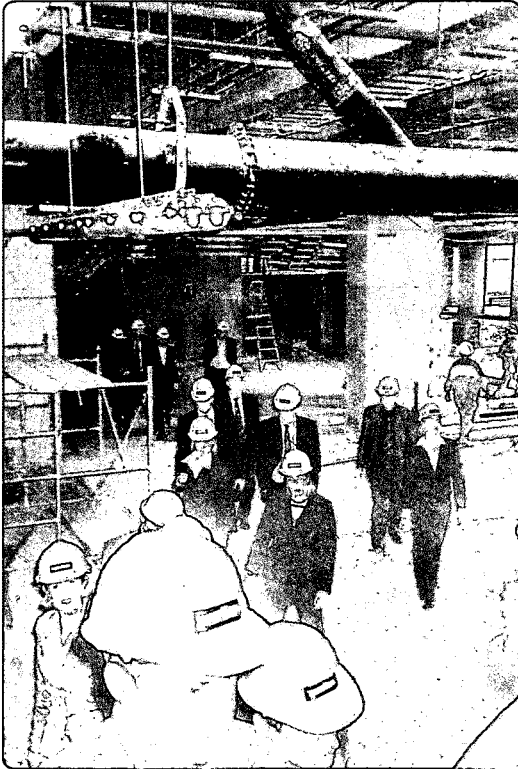
6 Logistics in building construction

Juke Lobeek

In addition to the analysis of the urban infrastructure, we also tried to analyze the logistics on building sites. In this chapter our observations are summarized with respect to construction techniques, the equipment and materials used, and the way the work is organized.

6.1 Construction techniques

At present both in the country of Mexico and in the more progressive Mexico-City, in situ concrete is used more often than prefab-elements. This shows a contrast with the techniques that are used in the Netherlands. Even in big building projects such as the Torre Mayor and the new Sheraton Hotel (downtown) in situ-concrete is used. The main reason is the relatively low costs of labor in Mexico. Of all building costs the labor costs are not the largest part, but the costs of materials are. In the gated community project that we visited, construction steel showed to be the most expensive material used.

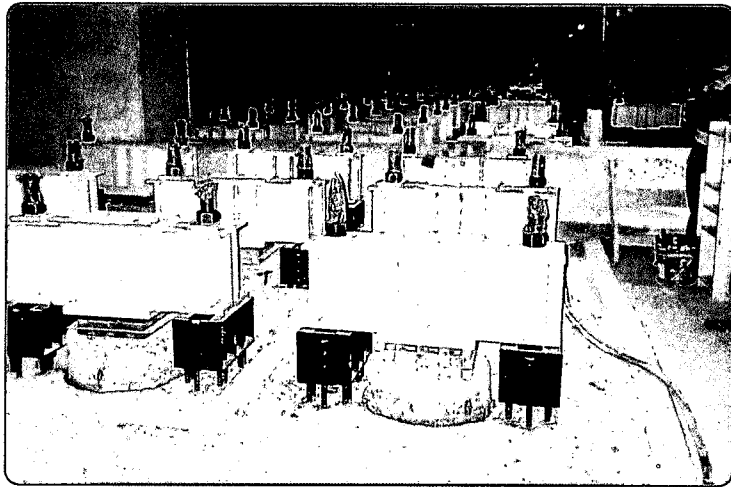


Left: Torre Mayor, a tall office tower under construction. Right: A small house in a gated community, under construction

One might think that this causes a high risk of theft, but despite of the price it is seldom stolen from the construction site. Because of the lower labor costs it is possible to construct buildings by using very time-consuming techniques. In the project we mentioned before, the ceiling in the front room is made by specialized subcontractors. Often subcontractors come from the same family, passing on the craftsman-ship from father to son. The curved ceiling was made of bricks. In the Netherlands this would be too expensive. In the Santa Fe project we noticed that the commissioner let a small façade-element be mounted to the building top, to look whether it looks the way he likes. Maybe this is exceptional and not common in all building projects.

In small projects, the contractor does not use a site hut. In big projects such as the Torre Mayor or the Sheraton Hotel a building next to the building site is used as a hut by working-people. Elsewhere a lower story of the building in construction is used as a hut. For the Reforma-project barracks were used as a shed.

A particular characteristic of Mexican construction techniques is that constructors have to take into account the risk of an earthquake. That's why in housing projects a certain distance between the houses must be regarded. This distance is related to the height of the annexes. In case of a four story house the minimum distance is about 20 centimeters. In very high buildings shock-dampers are used to anticipate on earthquakes. It is remarkable that contractors cannot insure them against unforeseen circumstances, like in The Netherlands. In some housing projects we noticed that the houses had a black under seal coat on the brick-walls, because the wall is probably one stone thick and has to be protected against moisture.



Dampers to protect a building against the shocks of an earthquake

6.2 Equipment

In one of the projects that we visited we saw that the electricity and water-meters were located at the entrance of the neighborhood and connected by separate lines to each house. In the Netherlands we are used to transport water and electricity by common tubes and split it into individual lines only just in front of the houses. Even in high-rise buildings such as the Torre Mayor for the first time a system is used that divides the lines on each floor-level of the building and not at the ground floor. The building process of the Torre Mayor can be followed on internet by the so-called Internet Project Tracking System. This I.P.T.S. system is totally new in Mexico.

In small housing projects, most materials are lifted and carried by hand. Construction steel is sawed by hand, too. Even for making holes in rocky or mountainous grounds only a chisel is used. But of course in large building projects machines are used like cranes, shovels and digging-machines. These tools are quite expensive in comparison to the labor costs. It is cheaper to work one week by hand than a couple of hours with a shovel or some other tool.

At the construction site of a social housing project of the "Instituto de Vivienda", the former inhabitants of the location - who were supposed to be also the new inhabitants - had built a temporary accommodation for themselves by using old huts, cardboard, steel plates etc. In the Netherlands this situation would be declared unfit for habitation. But for the time of construction (6-9 months) the prospective tenants coped with the inconvenience. In spite of the poor circumstances and the bad smell they were even proud to show their 'homes', enjoying the good view on the development of their new 'super' residence.

6.3 Labor

The number of working-people on building sites is much bigger than in the Netherlands. Even at a relatively small building sites one can see over a hundred working-people. At the time we visited the Torre Mayor, over 1600 people were working on the site. Again this may be caused by relatively low costs of labor. Another reason may be to reduce hidden unemployment. Poor educated working-people earn only 60-120 Pesos per week, this is about 6 to 12 Euro. Often workmen can earn bonuses when more work is completed than planned. As such it is tried to accelerate the low working-pace of the average Mexican. This appeared to work out very well. Contractors pay workmen every week. Working-people work from Monday to Saturday at noon. On the building site next to our hotel in Mexico-City a number of working-people even slept on the construction site in a self-made shack. Not all working-people have a solid employment contract. In spite of the poor labor circumstances, there are hardly any strikes, because the workmen are not organized in unions.

Despite or maybe because of the large number of working-people, at the building site of the Torre Mayor safety levels are quite high. This may be the case because the developer is an international (Canadian) building company and not representative for Mexican companies.

At smaller sites, however, working-people were not wearing safety shoes. But on larger projects safety-helmets and -shoes tend to be worn. Nets along the façade, to prevent falling objects, seem to be less usual than in the Netherlands.

6.4 Conclusion

With respect to logistics, Mexico-City has many different habits than we have in the Netherlands. Especially the number of working-people on a building site and the high level of using concrete in situ, is different from what is usual in the Netherlands. The main explanation seems to be the economical situation and low costs of labor. Another reason might be that new construction techniques do not get through into small building projects. So there seems to be a market for construction-managers!



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7 Investments

Reinout Schapers
Hans van Velthoven
Marijn Verheij

In order to get an impression of the Mexican investment climate, we visited among others the ING group, a bank and investment company, and the Alles Group, a consultant and developer of real estate services and office buildings. Is it worth to invest in Mexico and why, particularly in real estate? What's the balance between risk and profit?

7.1 A brief retrospective view of history

After its colonization by the Spanish conqueror in 1519, and also in later centuries Mexico has experienced several revolutions. Until the end of the nineteen twenties there have been several wars, coupes and other forms of revolutions. After this period there finally came a democracy, although this was ruled by only one party until the early nineties. Because of this one party system, the economy was attended by a lot of corruption. A small group of people controlled the country and allowed each other to maintain this power under all kinds of circumstances. But the last twenty years we have seen some great changes in this system, caused by events such as the big earthquake of 1985 and the peso crisis in 1994. The first one destroyed big parts of Mexico City. As a consequence of poor legislation and building control, most buildings were not prepared to withstand an earthquake. This event set a marker and a first attempt was made to stop the corruption. The economic crisis of 1994 resulted in the peso to losing its value. The Peso was no longer a wanted currency in and outside of Mexico. The banking system broke down because of bad policy and management. From that time on there has been a growing pressure and influence from the United States. They started to invest large amounts of money to restructure the economy and the democracy in order to stop Mexicans from fleeing to the United States and to stop the drug trafficking. In this period Mexico has made a lot of progress. The opposition came into the government and Mexico slowly became politically and economically more stable. In 2000 for the first time a member of an opposite party was elected as the new president. Mr. Fox still is the president at this moment.

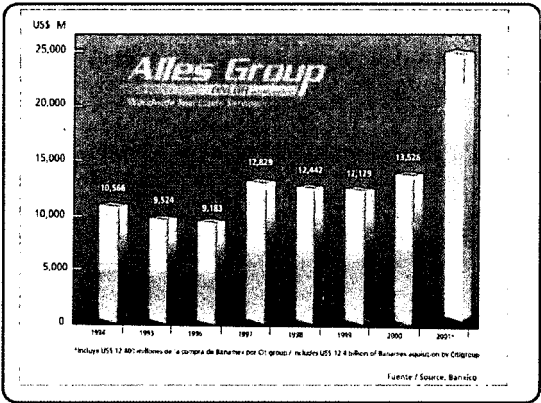
7.2 The economic situation

The last few years the economic growth in Mexico was quite high. At the beginning of the year 2000 there has been a small fall-back, but now there is a steady growth of 6-7 percent a year. The interest rate is dropping slowly. The government is trying to reduce it's financial shortage to 0.65%. It is expected that this will lead to, a more stable economy. The income from taxes is rather low. The total tax rate is about 11% of the GDP. This is very low compared to tax rates in Europe of 30-50%. Particularly income tax is low, for several reasons. Firstly, tax rates are low by themselves. Secondly there is still corruption. Besides that taxes are being deducted and there is a large illegal 'black' market. And thirdly, because of lack of money to subsidize relevant activities, the government reduces taxes for companies who are willing to invest. The latter seems to be a paradox. Because of a shortage of tax income

one lowers tax income! But on the other hand this creates a legal economy with a lot of employment. And legal employers do pay taxes! Of course the final result depends on a good structure and control.

In 1995 Mexico signed a free trade agreement with the United States and Canada, the NAFTA agreement. These countries agreed not to pay import taxes over export products. This made Mexico potentially a very interesting place for American investors and other foreign investors as well, to invest or to settle. But Mexico still has to get rid of its reputation of a corrupt country and to improve an image of reliability in order to increase its export to western countries. At this moment The United States are the largest investor in Mexico, with the Netherlands as the second largest. There is a trend toward a wider scope. For instance in 2003 Mexico will chair the WTO-conference.

Companies that are investing in Mexico are mostly insurance and banking companies, like ING, ABN-AMRO and the Rabobank. Next there are some producing companies like Philips, Unilever, Shell and Akzo-Nobel. Most Dutch companies usually enter the Mexican market by buying Mexican companies and continue with there own name and there own products.



The height of the current GDP is not clear. Opinions on this differ widely. According to the Dutch embassy the GDP is about USD. 8000, while the local government states the GDP to be about half of this amount, USD. 4000. The national income and productivity is not equally divided among various groups. A small upper group produces about 70% of the national product. A large group of 45% is really poor, and 25% even lives beneath the minimum life standard and earns less than 1 USD per day.

The Mexican economy is a so called 'leap frog' economy. An economy that grows by very large steps. Foreign investors bring their money and introduce the newest technology into Mexico. The telephone infrastructure in Mexico is owned by AT&T and is one the most high-tech systems in the world. The economy is depending on western counties, above all on the US. Mexico's large economical growth is mainly a result of high economical growth in the United States. As a consequence Mexico is very dependent of the export to these countries and subsidies coming from them. Because the western economies are slowing down and also because of the terrorist attack on the Twin Towers on 11th September 2001, the Mexican situation gets less priority now on the agenda of the US government. The effects are clearly noticeable in Mexico. But Mexico still operates much better than other countries in Latin America, where economies are going down much more or even collapsing completely.

7.3 The banking system

Since the peso crisis in 1994, when most banks went nearly or completely bankrupt, there is almost no credit available. Banks don't give the credits either. As a consequence, it is very hard for Mexican businesses to invest in new buildings, technology and people. So it is extremely difficult for them to com-

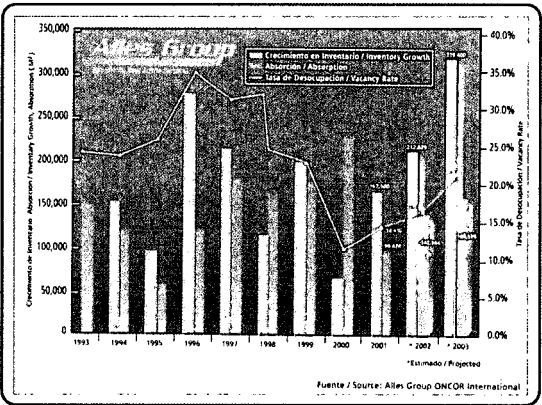
pete with foreign companies that do have capital of their own and can loan at the bank. During the crisis the state took over the huge debts from the banks. At present banks are paid by the government to stay in business. This makes it less attractive and also less necessary for the banks to issue loans. Only foreign banks issue loans now. That is why Mexico is an interesting market to invest in banks. For a private person it is almost impossible to get a mortgage for a home. At this moment it is usual that Mexican people save enough money in twenty or thirty years to be able to pay cash and buy a house. In the Netherlands it is the other way around: people own a house at a young age and pay back their mortgage in thirty years.

7.4 The energy sector

The oil industry in Mexico is being monopolized by Pemex. Foreign investors don not have any chance to enter the Mexican oil market. Foreign investors are very eager to invest, but the Mexican state does not allow them to because of fear for exploitation and loss of their grip on the natural resources. This policy is supported by most Mexican people. Many people perceive that foreign (American!) investors are taking over their country and its resources. Pemex is not very competitive opposed to other multi-nationals because of too few investments in new techniques. All profits go directly to the state instead of being invested. The last few years Pemex has to import oil to fulfill in the need for oil products.

7.5 The real estate market

The development of the real estate market in Mexico has been and still is different from most western countries. After the earthquake in Mexico City in the nineteen eighties, high-rise building has been put to strict legislation. As a consequence the development of high-rise buildings almost completely stopped. Since then developers have been focusing on medium height buildings. Because the buildings use more ground area while realizing less floor space it caused a very fast expanding of the city area in these years. But the last few years high-rise is becoming popular again. Land prices are rising and it is becoming more economical to build high-rise. Moreover, new techniques make it easier and cheaper to construct high-rise according to the standards in Mexico City. A number of first class office buildings have been built since 2000, as a response to an increase of demand for high-quality office space. Companies occupying so-called AAA locations belong to a wide variety of industries: technology (internet, telecommunications, software), food, consulting, automotive etc. It is estimated that in 2001 Mexican companies accounted for 47% of the total AAA office demand, while foreign companies accounted for 53%.



AAA office market, main figures

7.6 Investment in real estate

Because loans are very hard to get, most real estate is owned by a very few parties that can afford to buy buildings. So it is very normal in Mexico City that one family owns an entire office building for which they pay cash. These buildings are perceived as an inflation and devaluation proof investment for the future. They find it safer to invest in real estate than to keep their capital in the banks. For that reason it is common that buildings in Mexico City are being build without any pre-lease. Of course this means a higher risk of vacancy.

Projects like the new Torre Mayor office building and the buildings in Santa Fe are being developed by a developer which carries the financial risk. During development and construction they look for tenants for the particular building. As a consequence investment risks are very high. But on the other hand returns are high as well. In Mexico City returns of 15 to 25% on the invested capital are quite normal.

A trend at this time is that companies move outside the city center to areas where new modern buildings are being built. This causes the older buildings in the city center to become empty. Many of those do not have a new destination, because their technical equipment and thermal isolation are out of date. Besides many buildings are privately owned. Private parties and families often wait and hope that the value will increase in the coming years.

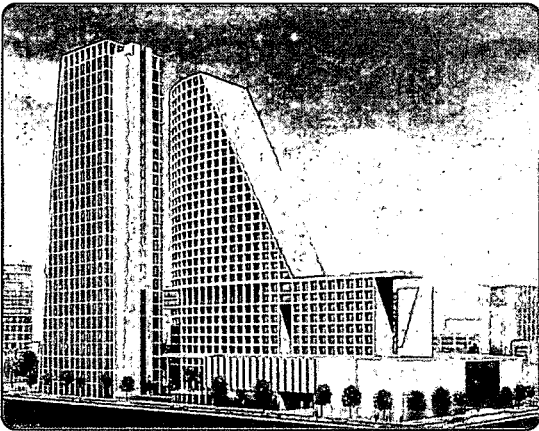
It is said that it is cheaper to build a new building in the outer areas then to demolish an existing one and build a new one in the center. Redevelopment is not an option. This trend is causing the old center to be taken over by poverty and insecurity. That's why the government of Mexico City is trying to revitalize the city center by encouraging companies to build there. Instead of subsidies they give fiscal incentives. An example is the Torre Mayor. The government is trying to set up a public private partnerships to make this project a success. The government focuses on infrastructure and safety. Particularly the last issue is very important to make this project successful. Consultants and other parties think that these developments have a lot of potential. In the center infrastructure is much better then in the newly developed build outer parts.

7.7 The housing market

As we said before it is hard to get a mortgage on a house. So people have to safe enough money to pay cash. This makes the market for housing less risky. Although people have to wait a long time for being able to buy a house, the market for rented houses is small. Most people are not willing to rent a house. They prefer to wait until they have enough money to buy one of their own. Often houses are owned by people from the same family for many generations. Developers that invest in housing often buy a piece of land and search for someone who wants to build a house there. This is a form of low risk investment. Other developers build houses 'for the market' without knowing the future users. This is much more risky. But because of the shortage of houses in Mexico City and a high demand, usually it does not take too much time to sell a house.

7.8 Public services

All infrastructure in the city is being developed by the local government. This is being financed through the selling of ground. Because the government owns only 15% of the land they can gain limited funds by selling it. Governmental finances are not enough to keep all kind of services at a proper level. The government does not have much grip on the city and the way it is developing. In many areas people start building houses and other sorts of accommodations. The governments power and resources are not sufficient enough to make this process stop. They lack the money for taking proper measures. An interesting project showing huge amounts of investments is the upgrading of the cultural corridor (see also the chapters on infrastructure and ground policy). The table below shows an impression of public and private investments in this area. Besides the investments made in the corridor area large investments are planned as well for many other city areas. In 2002 the Government is planning to invest 2.9 million USD in the Chapultepec Area for the improvement of street lighting, green areas, a better traffic flow, signposting and street furniture. The investment in the Reforma area will be 13.7 million USD. Private investments in the Reforma area will be over 270 million USD in 2002.



Reforma 222

A mixed use development with a Quinta Real Hotel, apartments, a small shopping mall and state of the art offices, currently under construction. In total 136,500 square meters. Office floors are on average 800 sq. mts. Design by Teodoro González de León. Developer: Grupo Danhos

Public works

Public illumination	0.5
Garden areas	1.3
Public security	2.8
Total amount	4.6

Private investments

Colón Hotel	11
Sheraton Hotel	70
Balderas y Juárez	40
Reforma 115 (Office tower)	30
Reforma 222 (mix of functions)	200
Torre Mayor	250
Torre Latinoamericana	15
City Tour	2.3
Total amount	618.3

Other private investment

Grupo Posadas (5 hotels)	76.7
Hipódromo	200
Santa Fe	74
Total amount	350.7

Investments in Mexico City's Tourism and Cultural Corridors (million USD). Source: Secretario de Turismo

7.9 Conclusion

Many (Dutch) foreign companies don't see the real estate market in Mexico City as an interesting investment market (yet). The market does not show enough transparency. The agreements that are made are not always too reliable. Corruption still occurs and contractors and other participants do not always keep themselves to their contracts. The rent on real estate is not always paid in time or at all and companies can not do very much to tackle these problems. Because pre-leasing a building is not custom, vacancy is a serious threat. Another risk factor is the Mexican economy, which is still not stable enough. On the other hand a return on investment of 15 – 25%, which is not unfamiliar in Mexico City, is quite high compared to Dutch yields. Despite of this multinationals such as Shell, Unilever, Philips and ING are only willing to invest in real estate for their own use. These companies make investments in other segments of the Mexican economy, like energy, insurances and pension funds. The present supply of real estate does not match the requirements of international companies, so they mostly develop their own real estate. Because of the high risks involved in developing real estate in Mexico, for foreigners and other investors that are unfamiliar with the Mexican real estate market and its specifications, there are large opportunities for building consultancy companies like the Alles Group.

Local investors are more interested in investing in real estate in Mexico City. They perceive real estate as a safer way to reassure the value of their money instead of keeping it in a bank account. Many investments are paid cash and not with loaned money from the bank. As a consequence, running costs don't include paying back mortgages and so depreciation of the property is relatively small.

For private investors such as middle class people it is difficult to own a house of their own because mortgages are difficult to get. They have to work for a long period before they can afford a house because they have to pay for it all at once in cash.

8 Actors and interactions

Saskia Boon
Peter Ligtermoet
Anke Neecke

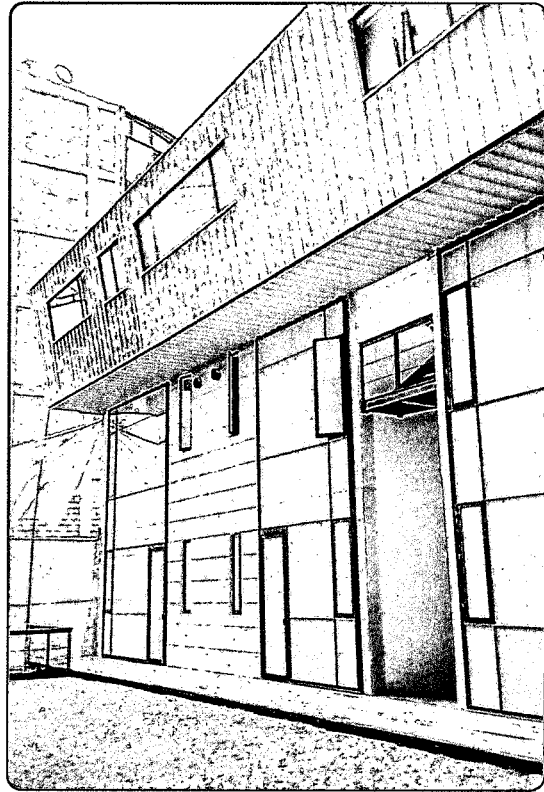
During our preparations for the study trip to Mexico-City, we came up with several questions regarding building processes in Mexico. We wanted to find out how the different actors (architects, managers, construction companies, etc.) interact in Mexico. Who are the most powerful actors? How do they work? How do they work together? And is there a difference in regard to what we are used to in the Netherlands? In this chapter we try to answer these questions. The answers are not always as clear as we wanted them to be, but this chapter does give a general overview of building processes in Mexico. We start describing the context in which the actors operate. After that, we discuss each of the different actors involved. We finish by drawing some general conclusions and making recommendations for the future.

8.1 Context

The building process in Mexico is in many ways the same as in Europe or the US, but maybe in even more ways different. Economic, cultural and legislative circumstances are very different from what we are used to. One of the factors that makes a large difference is the economic situation. Mexico has a much more stable economy than many other Latin American countries, but it can still be characterized as underdeveloped. One of its major problems is its instable currency, the Peso. Due to this foreign countries are not very keen on investing in Mexico and even local investors take a great risk by doing so. It is clear that this does not have a positive effect on the construction market – a market that is highly dependent on economic growth. From this perspective, we may expect that in Mexico budgets are more tight and that construction companies and architects have fewer possibilities for investing in new construction technologies and innovation. Another problem is Mexico's legislative and political system. Mexico's government seems to have a stifling impact on the building industry: lots of rules, red tape and even corruption. Recently, the election of Vincente Fox as president seemed to change this governmental culture. Fox promised to make the Mexican government more efficient. One of the problems, however, is that the president is directly chosen by the people, but not at the same time as the ministers. At this moment the Presidents' party has a minority in the government and therefore holds little power. So, it is questionable how fast and to what extent Mexico's political climate will change. For the time being, architects, developers and other professionals in the construction industry operate in a fairly difficult economic and political context. Below we will describe in detail how the different actors operate and interact with each other.

8.2 Architects

In Mexico the architect still seems to hold the traditional position of main principal in the design and construction process. In contrast to the Dutch situation, the architect's position has not yet been eroded by external parties such as cost specialists, real estate consultants and construction managers. Mexican architects make the design, and often also guide the entire building process. In some cases, the architect is also the main investor in the project. In the Netherlands, these are three different roles played by three different parties. Especially the fact that an architect is investing in his own project is very rare in the Netherlands. According to Sanchez -a fast rising star in modern Mexican architecture- Mexican architects are forced into real estate investment because most clients are simply not interested in architecture. In order to create the architecture you want, you need to have more expertise than just the capacity to design. This is clearly reflected in the structure of Sanchez' architectural office. His office is a three story building in the center of Mexico City. The first floor is occupied by designers, the second floor is occupied by construction experts and the third floor is used by the company's real estate experts. Sanchez combines these different disciplines to be more free and autonomous in creating his own architecture. Thereby, he exemplifies the entrepreneurial spirit of Mexican architects.



Residential complex in Condesa designed by Sanchez and his partners.

8.3 Construction managers

As said before, Mexican architects are often in charge of the whole building process. In some large projects, however, clients may involve specialized consultants for the briefing process, cost control and overall project management. In particular foreign clients are likely to hire specialized management experts. One of the few companies offering such services on the Mexican market is the Alles Group. The Alles Group was founded by North-Americans five years ago. At this time there were few construction-management companies in Mexico. Slowly, however, more companies are entering the market. The work of the Alles Group and other consultancy firms mostly concerns office-space and industrial space. They analyze the needs and desires of specific users and the overall real estate market. The Alles Group is innovative in different areas. They use, for example, the Internet Project Tracking System (IPTS) in which the customers can follow the continuation of the project from anywhere they want. The rise of construction-management companies on the Mexican market can change the way different actors in a building process work with each other. Normally the architect asks for a certain percentage

of the total building costs and that is his fee. Due to the instability of the Peso, the total building costs can increase an enormous amount. The Alles Group works on a 'flat fee' basis, which means they ask a fixed price. This gives a customer a lot more security, and fewer risks. A customer will directly approach the Alles Group, after that the Alles Group will hire the architect themselves. As a result, traditional power-relations in the building process will change.

8.4 Investors

Mexico does not have the same investment culture as the US or Europe. The rental real estate market is relatively immature and institutional investment is rare. This is not only a matter of economics, but also of culture. Traditionally, Mexicans are used to owning a building or house rather than renting it. Families and companies tend to invest their own money in the ground and buildings they inhabit. To them, owning real estate provides some sort of (tangible) security – a highly appreciated quality in an unstable country such as Mexico. The rental market does exist though. In the residential market you can find high-income rental housing and in the office market we have seen high-profile rental projects such as the new Torre Mayor. The Torre Mayor is a good example of how foreign investors influence the real estate market of Mexico City. This project is a major investment of the Canadian investor Reichmann (that earlier invested in the Santa Fe project on the periphery of Mexico City). Typically, Reichmann hardly used any local expertise. The whole architecture, technical drawings, and expertise came from North America. Possibly, this strategy is the result of low trust in the capacities of local parties. This lack of trust cannot really be justified (as there is plenty of good expertise in Mexico), but it does clearly indicate that foreign investors do not perceive Mexico City as an easy market. This notion was underlined by our visit to ING Commercial America – a Dutch insurance company. The ING Group invests heavily in international real estate. Our expectation was that ING in Mexico would also be involved in real estate investments. Yet, we were told that ING Commercial America does not invest in real estate at all, because of the large risk involved with these investments, due to the instable Peso. This is the same reason why banks in Mexico hardly give loans for building projects. ING does have a real estate development department: Insignia ESG. This department is developing in the Santa Fe area at this moment.

8.5 Government

It is very difficult to get a good impression of the role of the Mexican government. Due to the enormous size of the city, there are many different levels of government and many different departments. Real estate professionals may have to deal with national, state, city and municipal government. It seems that these different levels and department do not always work well together. Sometimes there is a large difference between the level where plans are made and the level where plans are decided upon. A lot of (good) plans are initiated on a lower level but possibly never implemented. Another big problem of this government is that it has few financial resources. Income taxes are low (11% in Mexico, 30% in The Netherlands) and the economy is in a bad shape. As a result, the government has few financial means to influence real estate development in Mexico. This problem is enlarged by the fact that the Mexican government owns relatively little land in Mexico City. The government owns only 15 % of the total ground in Mexico-City. Mostly the ground is in the hands of private parties. These private parties make it difficult for the government to obtain the ground because often they don't want to

give up the land. The government could acquire land compulsorily but the procedures take a long time and are difficult to perform.

Two government departments are of particular interest. The first one is the Instituto de Vivienda del Distrito Federal. This is a public ministry, part of the Secretariat Urbana y Vivienda. They give subsidies and technical support for the realization of single-family dwellings. The projects are used to upgrade the general quality of life and to bring life back into the inner city. The projects are extremely important because there is a huge shortage of low-income housing. The market asks for 50.000 houses per year. The government cannot fulfill these needs; they realize about 15.000 public houses per year. The Instituto de Vivienda del Distrito Federal plays a large role in this by subsidizing people for building and owning their own house. People receiving this subsidy must have an income between 180 to 800 USD per month. Higher income categories have to go to private housing corporations. Whereas government has a investment restriction of 20.000 USD per house, private parties can increase this amount.

The second interesting government department that we visited is the Secretario del Turismo. The secretariat of tourism has developed a plan to redevelop the center of the city and turn it into a pleasant area to live in and an attractive area for tourists. The government works together with the university in developing the master plan for the two corridors in the center of Mexico-City. Students developed the plan together with teachers. In this project the cooperation between private parties and public parties plays an important role. The government participates by providing infrastructure, new and clean public spaces, a water supply system, etc. Private parties participate mostly by investing and realizing individual projects. These private parties are mostly banks and foreign companies. The government invests 16.6 million USD in this project. By this investment they hope that the price of land will increase. These profits then can be invested in the social sector and improve the education, healthcare, public housing etc. Just as important is that the project has to revitalize the inner-city that is currently being dominated by empty buildings.

8.6 End users

In the Netherlands, there is a strong debate about the role of end-users in the design process. The idea is that end-users should have a larger say in the design of buildings. In Mexico this is not very common. Here the end users are involved when the building is already being build or even when the building is totally finished. In many cases this results in adjustments afterwards. A major exception is the design of high-income housing for individual clients. In one of the projects we visited all owners chose their own desired style of architecture. The project was set up like a city within a city –a gated community that takes care of its own security, infrastructure and public spaces. The government hardly played a role in this project. A private developer made a master plan for the project, but each individual could build his own house in its own style. As a result the project exists of many different, mainly historic and traditional styles.

8.7 Contractor

Mexican contractors are usually not involved during the design process. New ways of working such as Design & Build (in which one party is responsible for both designing and constructing the building) are more rare than in the Netherlands. Another crucial observation is that Mexican construction is much

more dominated by manual labor. Building sites give the impression that contractors work with fewer facilities (cranes, containers, temporary concrete roads) than we are used to. They depend heavily on manual labor, which comes cheap in Mexico. This is probably also the reason why prefabrication is not as widespread as in the Netherlands or the US.

The working conditions on Mexican building sites are very different to those in the Netherlands. The number of toilets is for example very small in relation to the number of employees on the site. Furthermore we have seen the use of construction tools (often hand-made) for activities where we would have used machines. Another example is the muddy sites after the rain. Without proper roads and walkways, building sites tend to end up like giant mud-pools, in particular during the rain season. These differences in working conditions can without a doubt be related to economic differences. In Mexico there is simply less money to be spent on the labor conditions of construction workers. It is important to note, however, that there can be large differences from project to project. Large projects like the Torre Mayor show a very professional and efficient organization of the building site. Furthermore, it is important that the Mexican market also has some clear advantages in comparison to the Dutch situation. The major advantages of the Mexican construction market is the availability of highly skilled construction workers (such as masons and welders) that have become rare in the Netherlands. Another indistinguishable quality is the talent to improvise –a indispensable quality when working in Mexico City, or so it seems.

8.8 Conclusion and recommendation

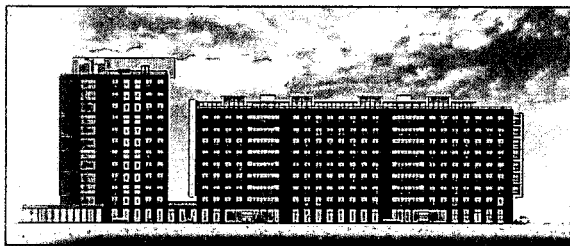
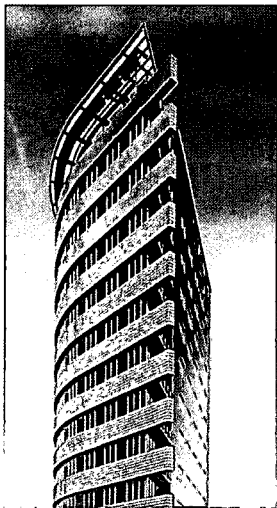
The Mexican construction industry has some clear strengths such as the abundance of cheap and skilled manual labor. At the same time, however, we have to conclude that it also suffers from some major weaknesses. Innovation for example is rare. A lack of financial resources, the dominance of red-tape and the persistence of traditional project management slows the professional development of the building industry. There are almost no management forms used like Design & Build or Public Private Partnership –instead the projects are carried out in a very traditional manner. From the projects and companies visited the overall impression was given that the interaction between actors is in general not large.

Another crucial problem is the role of government. One of the biggest problems is probably the corruption. Also the many rules and levels of authority make it difficult to carry out plans that are made. One of the actors that seems to suffer from this the most is the government itself. Because of the lack of money and the difficulty involved in carrying out plans, their hands seem to be tied.

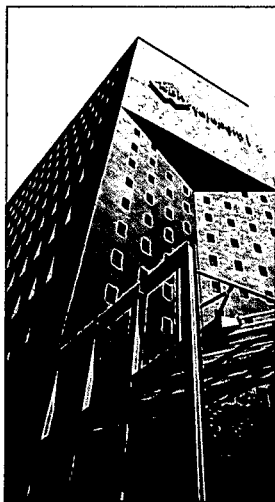
To realize changes in the construction market, the role of government should be analyzed carefully. It is easier said than done, but it is clear that corruption should be dealt with in a structural way. To minimize the different rules and levels of authority, it might be a good idea to create an umbrella organization with the task to create and coordinate a univocal system and a simple structure of rules concerning real estate development. Obviously it is extremely difficult to make such changes because in order to do so you have to go back to the roots of the system. It is likely, however, that there will be a lot of positive pressure from the market. Upcoming management firms could play an important role. New management techniques may change the process of real estate development. Tasks will move from one actor to another, which means that involvement, responsibilities and risks will change –for the better.

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9 Concluding remarks

Juriaan van Meel
Theo van der Voordt

For two weeks we have visited a world that differs strongly from ours. It might be even more correct to say that we have visited two worlds: a rich and a poor world. In the 'upper world' we have seen real estate developments that are just as sophisticated as, or even more sophisticated than, in Europe and the US. We have visited gated communities, beautiful (private) university campuses, luxurious office towers and super malls –all guarded by heavily armed private policeman. These places are like oases in the urban 'jungle' of Mexico City: spaces are clean, the grass is neatly trimmed and buildings are air-conditioned. The young people inhabiting these places seem all to be well educated, English speaking and wearing clothing from Nike or DKNY –just like their counterparts in Amsterdam or New York. Next to that (often just one block away, or at the other side of the road) we have seen the polluted, dangerous and congested side of Mexico City. We have come across the 'barrios' or shantytowns where personal security is under constant threat and the quality of life is low. In most places, water supply, transportation and other infrastructure systems are inadequate. The government is trying to change this situation by investing in social housing and infrastructure. It is clear, however, that for the majority of Mexico City's inhabitants, daily life is a struggle.

The diversity of the city and also its size and complexity make it almost impossible to come up with clear-cut conclusions, especially after a visit of only two weeks. With all observations we have to keep in mind that the greater Mexico City area has almost twice as much inhabitants as the Netherlands. Problems and opportunities are of a different scale than we are used to. Our observations are further clouded by a difference in culture and language that limit the possibilities of constructing an objective view of Mexico. Therefore, we will limit ourselves in this concluding chapter to some very general observations on how the two major forces in real estate –government and market–function within Mexico City.

In Mexico City, government can be seen as both an obstacle and a stimulant for progress. From architects and developers we have heard strongly felt complaints about how government hinders new development. There are countless regulations to comply with and the bureaucracy is enormous. Real estate professionals have to deal with officials of the local borough, municipality, city, region, and the state –and within these different layers of government they have to deal with different departments. This turns real estate development into a painstaking and time-consuming activity. General concerns about corruption further bring down the idea of a efficient government. At the same time, however, we visited several government departments and officials that put great effort in developing and improving Mexico City. Government is investing in social housing and infrastructure. Old, abandoned buildings in the inner city (of which there are plenty due to the earthquake of 1985) are being turned into pleasant new residences. Furthermore, we have seen how the Mexico City Tourism Authority is working on the restoration and revitalization of Mexico City's two most visited tourism corridors. The master plan (developed by architects and urban planners from the National Autonomous University of Mexico) encompasses office development, hotels, restaurants, public spaces, shops and many of the City's tourist attractions such as the Zocalo and the Basilica de Guadalupe. Also the successful Santa Fe project is led by the government. This former wasteland in the periphery of Mexico City has been transformed

into a world class location for international companies. The only criticism about this project may be that it does not help the objective of bringing life back into the inner city. Furthermore we have visited the urban planning officials that try to streamline the growth of the city –a task that is extremely difficult in a city where much is being built without permit. Despite very limited resources, they are trying to manage Mexico City's urban development and protect the green areas and woods that surround it.

Even more important than the government is the private sector in shaping Mexico City's appearance and living conditions. Again we can say that this force has both a negative and a positive impact on the city. For decades the private sector has built offices and apartments of a very variable quality. For example, a couple of years ago, air-conditioning and double-pane glass (to keep out the noise of the busy streets below) were still a rarity in office buildings. And even today, much of the existing office stock is not capable of meeting the requirements of international occupants. Even worse, many of the buildings are empty and deteriorating. Especially the inner city is in a sorry state. All around Reforma and the famous Zocalo, one can see empty, obsolete office buildings and apartment blocks. The lack of life and the poor quality of these buildings contribute to an unsafe inner city. Buildings are owned by private parties that have little interest beyond their own profits. Ground speculation seems to be more important than creating high quality buildings that may raise occupancy ratio's and rental values. Obviously this also has to do with the demand of Mexican companies and people. Possibly, many Mexican companies simply cannot afford the rents that come along with high-class office and retail development. Furthermore, it is extremely difficult to convince middle- and high-income people to leave their gated communities and move back into the congested and unsafe city center. Slowly, however, things are changing. Architect Sanchez has for example just finished a high income rental block in the increasingly fashionable Condesa neighborhood. Even more visible is the creating of new office space. Canadian real estate giant Reichmann is finishing Latin America's tallest structure in the heart of the city. This glitzy project will provide the market with high-class office space. It is one of many projects that hopefully bring business and life back into the center. In the end, that may have an positive impact on the overall welfare of Mexico City.

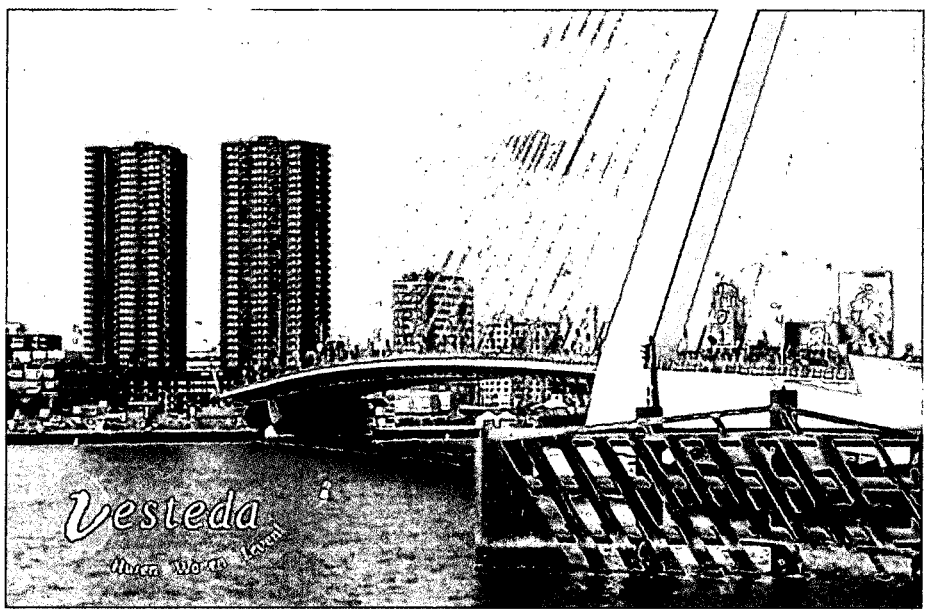
When comparing Mexico City with the Netherlands, it is striking to see that the market forces have such a strong impact on the development of Mexico City. In the Netherlands, real estate developers and investors are much more dependent on the plans of Dutch Ministries (such as the Ministry of Housing, Health and the Environment), and local municipal boards of 'big' cities such as Amsterdam and Rotterdam. In the Netherlands there is a strong planning tradition on all scale levels: nation, provinces, municipalities and districts. Large urban projects are often public-private partnerships, where most often the government takes the lead. Mexico City seems to be much more of a free market. This provides better opportunities for private investors and developers, but endangers the development of infrastructure, social housing and public spaces.

In many cases, we can also find striking similarities between projects in Mexico City and the Netherlands. The improvement of the cultural corridor of Mexico City is quite similar to the development of the cultural axis in Rotterdam. Just like in Mexico City, local government invested heavily in the upgrading of public spaces (including a series of sculptures) to create an attractive cultural corridor between the Central Railway Station and the what-is-called Museum park. The latter is a concentration of museums designed by well-known architects such as Rem Koolhaas. Another similarity is that between the development of Santa Fe and Kop van Zuid, a former harbor area at the south bank of the Maas river in Rotterdam. The municipality of Rotterdam redeveloped this abandoned harbor area to attract high incomes and new business to the city. Just like in Santa Fe, private and public organizations were

attracted to settle in this area by offering them low land prices in the early stages of the project. An important difference, however, is that in the Kop van Zuid project the City of Rotterdam invested heavily in public transport and infrastructure to make the area more accessible. In Santa Fe, public transport is still a problem.

Despite of the many problems that we have seen in Mexico City, our strongest impression is that of an extremely vibrant city. Cruising the city in our battered minibus, we noticed and experienced a very high density of business, people and activities. Politics, business, entertainment, criminality: everything happens here, 24 hours a day. Mexico City is clearly the heart of the nation. Looking at history, it seems that it has always been this way. From the importance lent to it in Aztec legendary, to the central role it played in Cortes' conquest, to the importance it has in modern politics – if a momentous event occurred in Mexico, odds are good that it occurred in Mexico City. And also today, Mexico remains to be a city with enormous opportunities. It is the center of a country whose resources and development path should be able to transfer it from a developing to a developed economy. We are grateful that we were able to visit such a vibrant city and meet so many knowledgeable and hospitable people. We learned a lot and enjoyed ourselves enormously. According to us, the incompleteness of our observations is an opportunity rather than a problem. It gives us an excellent reason to come back soon.

 Vesteda
Huren ◦ Wonen ◦ Leven!



Appendices

A Program BOSS study tour 2002

B Participants BOSS study tour 2002

C Sponsors

Appendix A

Program BOSS study tour 2002

Carolien Driessen

Saturday, June 29th

What better way to get to know a city than by walking around and learning a bit about its history? During our walk in the **historical center** we were lucky enough to be accompanied by Maria Theresa, a Mexican tour guide who also happens to speak Dutch. First she took us to see the Plaza de la Constitución, more commonly known as the Zócalo. The Zócalo is the origin of Mexico City. This is where the famous eagle was seen sitting on a cactus eating a snake. One side of the Zócalo is dominated by the Palacio Nacional. This current president's palace is built on the spot of Palacio Moctezuma, where Hernán Cortés took residence when he conquered Mexico. Here the murals of Diego Rivera tell a story about the history of Mexico. On another side of the Zócalo lies the Catedral Metropolitana, the largest church of Latin America. After a drink on the terrace of Hotel Majestic we walked through the neighborhoods of Zócalo and Alameda Central passing buildings such as Casa de los Azulejos, Torre Latinoamericana and Museo Nacional de Arte.

In the evening we enjoyed our first Mexican dinner while listening to the Mariachis singing their famous songs. Although very few people knew the lyrics, the song Cielito Lindo, better known as the Ay, ay, ay, ay (canta y no llores) song was enthusiastically welcomed at our table.

Sunday, June 30th

Sunday we were on our own. From our hotel on the Rio Amazonas we walked along the Reforma to **Chapultepec Park**. In this park was a big market where all sorts of things were sold and where a lot of Mexican families like to spend their Sunday afternoons. After walking around the park we visited the Castillo de Chapultepec. This 18th century castle is now the home of the Museo Nacional de Historia. In the Chapultepec Park also lies the Museo Nacional de Antropología, one of Mexico City's most famous museums. After an instructive visit to this museum half of the group decided to go soak up some more culture in a Mexican bull-fighting arena. The other half walked about the park for a while and then returned to the hotel.

Monday, July 1st

In order to understand the information we would be receiving in the next two weeks it was important for us to get a good impression of Mexican society at this moment. Albert Oosterhoff, head of the economic department at the **Dutch embassy**, informed us on subjects as: the internationalization of Mexico, the current economic and political situation, demographic topics and the relations between the Netherlands and Mexico.

Across the street from the Dutch embassy lies the **Iberoamericana University**. Antonio and Alejandro, two students at this private university, gave us a tour of the campus and after lunch accompanied us to the neighborhood of Condesa, a part of Mexico City famous among architecture students for its art-deco architecture. At the end of the afternoon they took us to see the Barragán museum. Luis Barragán was an architect who has meant a lot for modern Mexican architecture.

While showing us a block of converted apartments Antonio and Alejandro noticed the architect of this project, who also happens to live there, enter the parking garage. They approached Javier Sanchez and asked him if we could enter the courtyard. Mr. Sanchez appreciated our interest in his work and took a long time to explain the project and answer questions. Eventually he invited us to come to his office

later that week. Back in the hotel we found out that Mr. Sanchez is one of Mexico's most important architects at this moment.

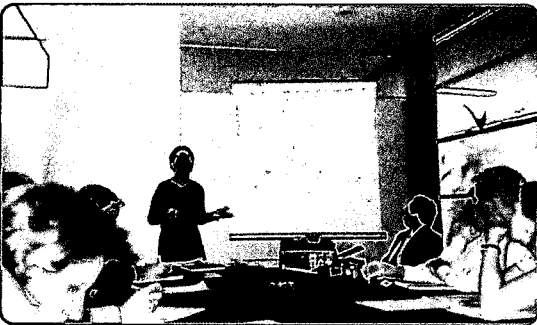
Tuesday, July 2nd

In the morning, Urb. Gabriela Quiroga García, Directora de Planeación y Evaluación del Desarrollo Urbano, received us at the **Secretaría de Desarrollo Urbano y Vivienda**, the Department of Urban Development and Housing. She lectured us on the complexity of urban planning and development in Mexico City. She started her presentation with the historic background of Mexico City and its phenomenal growth from 1950 to 1980. After a comparison with the Netherlands to emphasize on the size of Mexico City and the Metropolitan area and with that the scope of the department we were told about the activities of the last twenty years and the current urban development programs. When Ms. Quiroga finished, Arq. Luis Guillermo Ysusi Farfán, the director-general of the department, spoke a few words to us. At the end of the meeting there was time for some informal conversation with the department's staff while we were enjoying some refreshments.

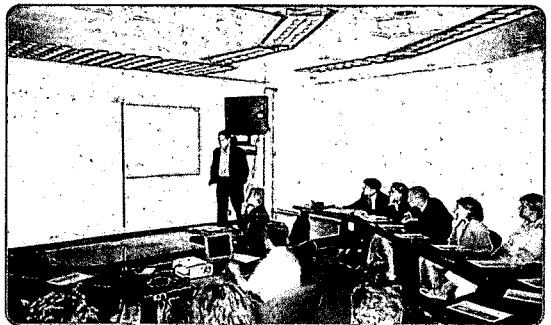
Unfortunately, due to some navigational problems, we were late for the appointment we had in the afternoon with **Arq. Alejandro Coeto** of the Consorcio Sordo Madaleno. This meeting was organized by and took place at Tec de Monterrey University. Luckily Mr. Coeto was able to stay a little longer than he had planned to personally illustrate a photo presentation of his work. When he left we were offered some refreshments and there was some time to speak with Lexa Villegas and Ana Rita López who together with José Manuel Suárez Noriega, Coordinación de Actividades de Desarrollo Programas Internacionales, had taken the time to organize three days of our trip.



Alejandro, Antonio and Egbert at the Iberoamericana University



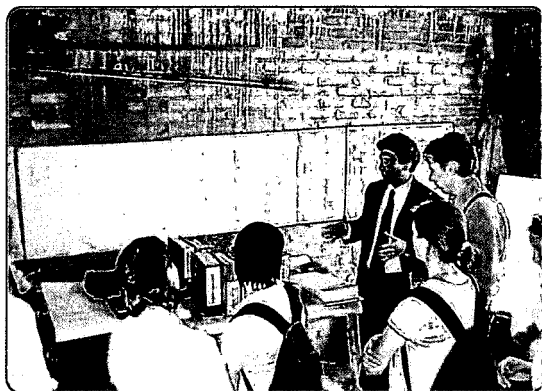
Urb. Gabriela Quiroga García at Secretaría de Desarrollo Urbano y Vivienda



Arq. Alejandro Coeto at Tec de Monterrey

Wednesday, July 3rd

Wednesday we had another appointment organized by Tec de Monterrey and this time we made sure we were on time. We had received directions to a gated community, a group of houses that are permanently guarded. Most of the houses here were finished and already occupied. A few houses were still under construction and at one of these houses **Arq. Alejandro Garzón** was waiting for us. He was the architect of this house and he was also supervising the construction. Because of this Mr. Garzón was able to answer all our questions not only regarding architecture but also regarding costs and management. After a tour through the house he showed us another house that was already finished and furnished to give us an idea of how a building project such as the first house will turn out when finished.



Arq. Alejandro Garzón

Thursday, July 4th

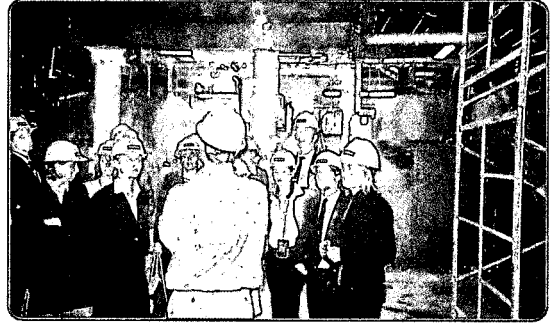
Thursday morning we had agreed to meet Lic. Luis Alberto Trujillo Castillo, Director de Planeación y Evaluación of the **Secretaría de Turismo**, at the Tamayo Museum. Here we received a lecture from Lic. Francisco Ruiz Herrera, DG of Strategic Planning and Tourism Development, on the Cultural Corridors. In order to promote Mexico City as premiere tourist destination the department is developing two main tourism corridors around the Zócalo. The two zones are already the capital's most visited attractions but urban spaces need to be refurbished and services need to be revitalized. After the lecture there was an organized tour through the Tamayo museum. Just a few minutes away from Tamayo was the Museum of Modern Art. Here we had lunch and took a look at the temporary exposition of Frank Lloyd Wright. Having arrived at the **Torre Mayor** later that afternoon, we were invited into a little office at the foot of the 225 m high office building. Here Francisco Aceves informed us about both technical and economical details of the project. When he had finished answering all our questions, we went in the tower for a small tour. Among others we saw the 17th floor, to give an example of the office space when it is ready to be let and one of the machine rooms. Unfortunately we couldn't go to the top of the tower because at six o' clock all the workers were going home and this caused the elevators to be pretty busy for a while.



Francisco Aceves at the Torre Mayor

Friday, July 5th

Friday morning we were expected at the **Cámara Mexicana de la Industria de la Construcción** (CMIC). Tec de Monterrey had organized a meeting for us here with Lic. Marisol Farrera Luna, Coordinadora de Difusión. CMIC is a company that mediates between the government and private contractors. Approximately 400 of the estimated 2000 construction companies in Mexico City are registered at this institute. After a discussion with Ms. Farrera Luna and her colleagues we went back to the bus for a long drive to the north of Mexico



Inside the Torre Mayor

City. After this two-hour drive we arrived at the campus of **Tec de Monterrey** for the second time that week. The visit started with a small introduction to the university and its goals and purposes, by Mr. Edgar Sanchez. After this introduction there was time for lunch, during which we could exchange thoughts with some students from the faculty of architecture who had come to meet us. When we finished lunch, there was a tour around the campus. Before the rain broke out we were able to see the workshops, the computer lab, a lecture room and the bookstore. With a heavy rain shower, by now we had gotten very used to them, the tour came to an end.

Saturday, July 6th

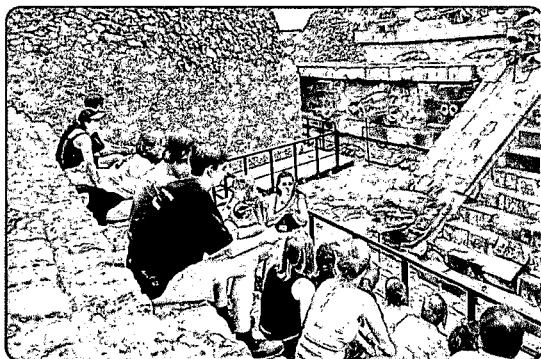
All of a sudden it was Saturday and we were already halfway through the trip. With all of the work visits of the past week it was time to catch up on the sightseeing of Mexico City. Today Maria Theresa took us to see **San Ángel and Coyoacán**. These two districts were founded in the Spanish Colonial Period and were located far outside the City. Nowadays they have become a part of the metropolis. Besides several marketplaces, churches and monasteries, San Ángel and Coyoacán are also known for the famous people who have lived here. The visits to the houses of the Russian revolutionary Trotsky and the artists Diego Rivera and Frida Kahlo were really worthwhile.

Sunday, July 7th

This Sunday was the only day we went outside of Mexico City. We headed north for the pyramids of Teotihuacán. On our way there, we stopped shortly to see Plaza de las Tres Culturas, a square with a mix of modern, colonial and pre-Colombian architecture and the Basílica de Guadalupe. This highly decorated block of buildings is the most frequently visited Catholic Church in all of America. Legend has it that the Virgin Mary appeared here to the Indian Juan Diego. Arriving at Teotihuacán, there was one more thing Maria Theresa wanted to show us before we went to climb the pyramids. We went to a tequila brewer where we were shown all the possibilities of the Agave. Parts of this cactus plant can be used as paper, soap, needle and thread and of course tequila and mezcal. After practicing the trick to put salt in your mouth without your hand touching your mouth, it was finally time to climb the pyramids. Having reached the top of both the Moon and the Sun pyramid everyone had worked up quite an appetite, which made the buffet Maria Theresa had arranged for us at the end of the day taste even better.



Tasting tequila and mezcal in Teotihuacán



María Theresa at Teotihuacán

Monday, July 8th

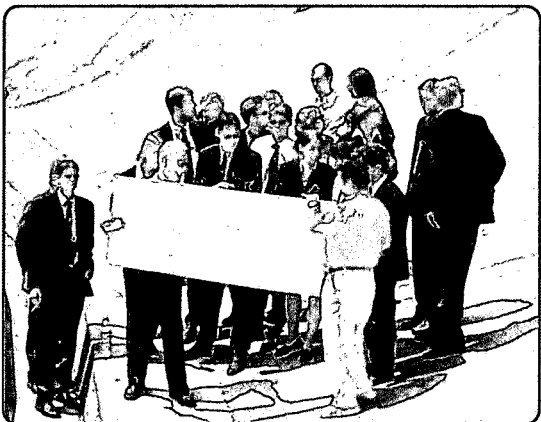
Mr. Peter Winkel of **Servimet**, a company in charge of special urban development projects of the Mexico City Government, had offered to meet us at our hotel so he could lead the way directly to Santa Fe. Here Servimet had set up a small office where Ing. Mario Cuellar, Director of Development, welcomed us and together with Carlos Espinosa explained the Santa Fe project and Servimet's role in this project. After this meeting we took a tour of Santa Fe under police supervision. For most of us this was probably a once in a lifetime experience. During the tour Mr. Winkel and Mr. Espinosa highlighted historical, infrastructural and architectural aspects of the project. We finished our visit to Santa Fe with lunch in the center of this district. Back at the hotel we telephoned **Arq. Javier Sánchez** to confirm the meeting with him we had arranged the week before. He was happy to receive us at his office and again he took quite some time to tell us about his firm and show us some of the projects that his firm is working on.



Arq. Javier Sánchez

Tuesday, July 9th

On Tuesday morning we had an appointment with **Alles Group ONCOR International**, a provider of corporate advisory services in the real estate market, in the Torre Forum, which was difficult to find for the bus driver. Everything was soon forgotten when we received a big American welcome with coffee and donuts. Ing. Jay Mulay, Vice President Investment Projects, gave us some insight in the companies background, what brought the company to the Mexican market and what problems the Alles Group has to deal with as a foreign firm within the market. During this meeting in which we were offered a lot of time to fire



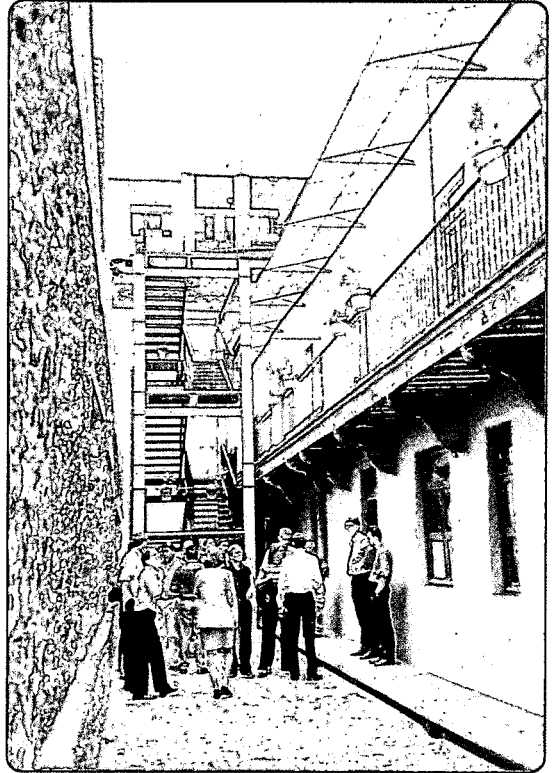
Visit to Santa Fe

away all of our questions, Mr. Mulay was assisted by Ing. Jorge Sánchez Armass Truby and Lodewijk J. Ramondt, one of the project leaders and the Sub-Director de Cuentas Corporativas.

Later that morning we visited the **Instituto de Vivienda**, a housing association connected to the Secretaría de Desarrollo Urbano y Vivienda Ms. Edna Vega, Directora de Planeación, had arranged some people to inform us on a social housing program in Mexico City that was erected two years ago. Among them were Alejandro Jimenez, Anabel Monterrubio and Edgardo Muñiz. They took us to see three different projects in the city center that were under their supervision. The first project was a project still under construction. Here the occupants of the old dwellings that had been torn down were going to move into the new houses that were being built. They had built temporary living space for themselves in between the street and the construction site and because of this they were able to closely follow the progression of their new houses. The next project was a finished new apartment building, but the apartments were not occupied yet. The last project we visited was a renovation project. From the street we could only see the old facade, but when we entered the courtyard there were beautiful new apartments and we could see how many old materials and details the architects had been able to be save.



Lodewijk Ramondt, Jorge Sánchez and Jay Mulay



A renovation project of Instituto de Vivienda

Wednesday, July 10th

Wednesday morning we were expected at **ING CA**. After some refreshments Manuel Riveros, Vice President Real Estate Management, welcomed us and introduced us to Richard Katzman and Carlos Ordoñez of **Insignia ESG**, an American company specialized in commercial real estate services. They gave us a clear explanation of the Mexican real estate market. After a short break we talked with Eddie Green and Annick Verbunt, two staff members at ING CA, about ING CA's activities in Mexico City. When all our questions had been answered we received a tour of the building that before the ING settled here, had been vacant for 11 years. This was a perfect example of the, for us ungraspable, real estate mar-

ket in Mexico. A specific building, in this case a hospital including medical instruments, had been built while there was no certainty about future tenants.

After our visit to the ING we headed for **Xochimilco**. This region was the main water catchments area for Mexico City up until the 19th century. Today both tourists and locals come here to relax and drift along the canals in one of the colorful punts. In spite of the rainy weather we really enjoyed the wonderful Mexican food and the cheerful mariachis joining us on our boat trip.



The mariachis at Xochimilco

Thursday, July 11th

On Thursday there were three different projects on the itinerary. Secretaria de Turismo had organized three visits for us, two projects in the Tourism and Culture Corridor and one to Las Americas Convention Center.

We started the day close to our hotel. At the site of **Reforma 222**, Arq. Jorge Gamboa del Buen, Director of Grupo Danhos, was waiting to explain to us the Torre Danhos Project. This project was one of the several projects of the Cultural Corridor Zone. When we were there the foundations were being laid for two mixed-use towers, which are supposed to reach their full height of 130 m in 2003.

The second project concerning the developments in the Cultural Corridor Zone was the erection of the new **Sheraton hotel**. Mauricio Linder gave us a tour of the building and showed us parts of the hotel that were already finished, such as furnished suites, as well as parts that were still under construction, such as the big hall for dining and parties, the presidential suite and the big terrace. This terrace was a replica of the Alameda Park, which is across the street from the hotel. One thing that really caught our attention on this tour was the foundation technique.

In the afternoon we had a few free hours, which for some people was their last chance to go swimming and soak up some more sun. Later that day we went to **Las Americas Convention Center** where Jorge Vattilo showed us around and told us about the concept of Las Americas and the realization process of the convention center. He also showed us some construction problems that according to him had occurred mainly due to the fast track system.

That evening was our last dinner with the whole group together because some people would be heading for their holiday destinations on Friday night. Mr. and Mrs. Oosterhoff, Egbert's parents, had offered to be our hosts and we were invited to have drinks and dinner at their house that evening. Luckily Ms. Irene Tello was able to make it as well. She had been a great help to us in organizing this trip and unfortunately she was absent during our visit to the Dutch embassy. This way we were as yet able to talk to her and thank her for her help in person.

Friday, July 12th

Friday morning, the last day of our study trip had arrived. Today again, was organized by Secretaria de Turismo. Mr. Trujillo had organized a meeting for us with students and teachers at the **UNAM architecture faculty**. This meeting started with a lecture by two of our professors Theo van der Voordt and Juriaan van Meel and the president of our student's society Wouter Boon. Wouter explained about BOSS and its objectives and Mr. van der Voordt and Mr. van Meel spoke about the Faculty of Architecture, the subdepartment Real Estate and Project Management and highlighted some urban developments in Rotterdam and Amsterdam. They concluded with a rough comparison between developments in Mexico

City and developments in Dutch cities as an attempt to provoke a group discussion. After a short break Arq. Alejandro Rivadeneyra, professor of architecture and project coordinator of the Tourism and Culture Corridors project, gave a lecture about Mexico City and the new plans for the Reforma area. The morning discussion was followed by a tour of the campus by Carla Mendoza Pucciarelli, Coordinación de Apoyo a la Dirección. The tour ended in the cafeteria where we all enjoyed a very welcome lunch.

In the afternoon Secretario de Turismo had arranged a tour guide for us to show us some more of the historical center. Due to a lack of time we only visited the **Templo Mayor** and its museum. This temple, which was built in the 14th and 15th century by the Aztecs, was almost totally destroyed by the Spanish when they conquered the Aztec capital. In 1978 some statues were discovered by chance, which led to the excavation of the remains of the Aztec temple, which is now one of the most important attractions of historical center of Mexico City. At the end of the tour the circle was complete. We had finished our trip where it had begun, the Zócalo, center of the Historic town, origin of Mexico City.



Appendix B

Participants BOSS study tour 2002**Students**

- | | | |
|-----|-----------|----------------|
| 1. | Saskia | Boon |
| 2. | Wouter | Boon |
| 3. | Carolien | Driessen |
| 4. | Geert | Fiolet |
| 5. | Marjolein | Geerards |
| 6. | Annemarie | Helvoirt, van |
| 7. | Marijn | Hoog, de |
| 8. | Pi | Kolbye |
| 9. | Peter | Ligtermoet |
| 10. | Juke | Lobeek |
| 11. | Anke | Neecke |
| 12. | Egbert | Oosterhoff |
| 13. | Reinout | Schapers |
| 14. | Bert-Jan | Scheffer |
| 15. | Annemieke | Thissen |
| 16. | Suzanne | Tol |
| 17. | Hans | Velthoven, van |
| 18. | Marijn | Verheij |
| 19. | Vincent | Verheijdt |
| 20. | Merel | Zorge |

Teachers

Dr. Ir. J.J. van Meel

Dr. Ir. D.J.M. van der Voordt

**BOSS Studytour 2002**

Appendix C

Sponsors

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ABC Bouwmanagement (main sponsor BOSS)

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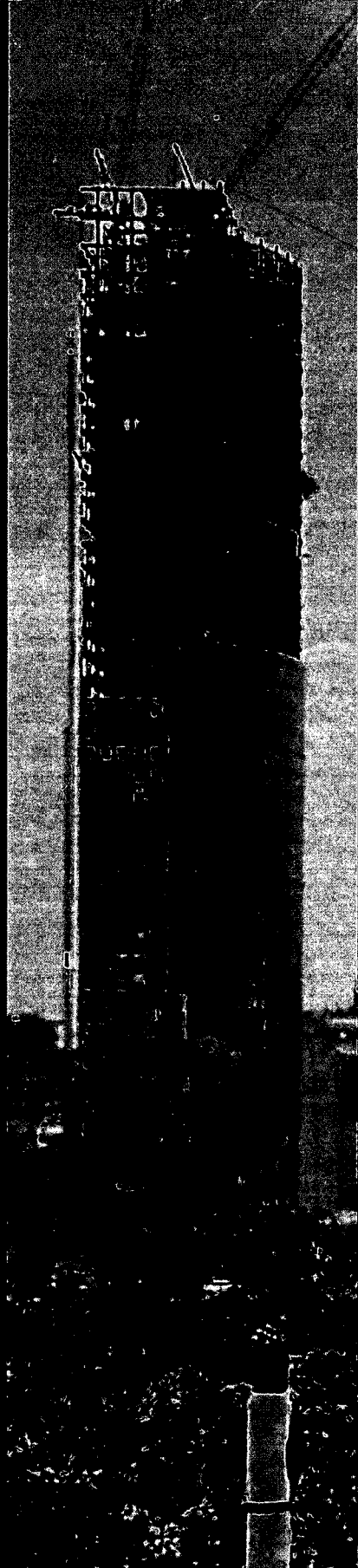
Witteveen+Bos

Ernst & Young (Clothing BOSS study tour 2002)

College van Bestuur Fonds TU Delft

Department Real Estate & Project Management

Faculty of Architecture TU Delft



This report is the result of the BOSS studytour 2002 Mexico City from the 28th of June till the 14th of July. It primarily gives an overview of the five central themes of research: urban (re)development, ground policy, infrastructure & logistics in building construction, investments and actors and interactions. Despite the research on these themes the contents of this report can not be considered more than a description of our experiences in Mexico City. The combination of project/company visits and Mexican culture made our study tour a very pleasant educational experience.