Chapter 5
Contemporary Cities

Abstract The fifth chapter addresses our contemporary cities. It focuses on urbanization processes developed after the mid-twentieth century, exploring the growth of urban population and its distribution by cities of different sizes. The chapter then moves into a more detailed analysis of three 'megacities' and two 'medium cities'. For more than 1500, Istanbul (Constantinople) was the capital of the Roman, Byzantine, and Ottoman Empires. After the foundation of Turkey, in 1923, Ankara became the new capital, but Istanbul has never lost its central role. Today, it is inhabited by fifteen million people. In the twelfth century, Tokyo (Edo) was established as a small castle town. In the early seventeenth century, it was one of the largest cities in the world, becoming Japan's capital in 1868. Today, with almost 40 million inhabitants, Tokyo is the largest metropolitan area in the world. Founded in the early seventeenth century by the Dutch, New York has been continuously growing, in a process of urban evolution marked by the 1811 plan, culminating in today's metropolitan area that is the home of eighteen million people. With more than one million people and with a remarkable urban history and built heritage, expressed by UNESCO classification, Marrakesh and Porto are the focus of the last part of the chapter.

Keyword Megacities · Istanbul · Tokyo · New York · Marrakesh · Porto

5.1 Urbanization Processes (1950–2020)

Where does Humankind live in? Are we rural or urban? And what are the main transformations of the last decades? In which kind of cities do we live? Small or large? How small and how large? This section aims at answering these questions, mainly based on data offered by the United Nations and its Population Division of the Department of Economic and Social Affairs.

In the mid-twentieth century, two in three people on the planet were living and working in the countryside (Table 5.1). As such, the urban population in 1950 was 30% of the total population (2.5 billion people), being mostly concentrated in North America, Europe, and Asia (particularly Eastern and Southern Asia). Almost 2/3 of these urban dwellers lived in settlements with less than 300,000 inhabitants. In the

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Table 5.1 Evolution of world population—rural and urban (%), 1950–2020

	Rural	Other urban < 300,000	Smallest cities 300,000–500,000	Small cities 500,000–1 M	Medium cities 1 M–5 M	Large cities 5 M–10 M	Megacities > 10 M
1950	*70.4*	17.7	2.0	2.6	5.1	1.3	0.9
1960	*66.3*	19.2	2.3	3.0	5.9	2.0	1.4
1970	*63.4*	19.7	2.4	3.5	6.5	2.9	1.5
1980	*60.7*	20.4	2.5	3.7	7.6	3.1	1.9
1990	*57.1*	21.7	3.0	3.8	8.6	3.0	2.9
2000	*53.4*	21.9	3.1	4.3	9.8	3.4	4.2
2010	*48.4*	23.1	3.4	4.9	10.7	4.1	5.3
2020	*43.8*	23.2	3.7	5.3	12.1	4.3	7.6

Source World Urbanization Prospects, The Economist

other 1/3 of the urban population, 'medium cities' (1 to 5 million) were predominant, being followed by 'small cities' (500,000 to 1 million) and 'smallest cities' (300,000 to 500,000), and then by 'large cities' (5 to 10 million) and 'megacities' (more than 10 million inhabitants). In the mid-twentieth century, there were only two megacities, New York and Tokyo, with 12 and 11 million inhabitants, respectively (Table 5.2).

Over the 1950s, the rural population continued to decrease to 66% at the end of the decade. In the urban population, the main increase took place in large cities and megacities. In 1960, the world had three megacities. The new megacity was Osaka, a former capital of the Japanese Empire in the seventh and eighth centuries (formerly called Naniwa), that at the end of the seventeenth century had a population of 350,000 inhabitants and a privileged commercial relationship with Tokyo. In 1960, Osaka was the home of 11 million people.

Table 5.2 Evolution of population in megacities established in the twentieth century (in millions), 1950–2020

	New York	Tokyo	Osaka	Mexico City	São Paulo	Mumbai	Kolkota	Los Angeles	Buenos Aires
1950	12.3	11.3	–	–	–	–	–	–	–
1960	14.2	16.7	10.6	–	–	–	–	–	–
1970	16.2	23.3	15.3	–	–	–	–	–	–
1980	15.6	28.5	17.0	13.0	12.0	–	–	–	–
1990	16.1	32.5	18.4	15.6	14.8	12.4	10.9	10.9	10.5
2000	17.8	34.5	18.7	18.5	17.0	16.4	13.1	11.8	12.4
2010	18.4	36.8	19.5	20.1	19.7	19.4	14.3	12.2	14.2
2020	18.8	38.3	20.5	21.9	22.1	22.8	15.7	12.5	15.9

Source World Urbanization Prospects, The Economist

The increase of urban population and the reduction of rural population continued throughout the 1960s. Within the 'urban', large cities had the highest growth rate. By the end of the 1960s, there were 15 large cities in the world, mostly located in North and South America, Europe, and Eastern and Southern Asia. There was one large city in Africa, Cairo. While the three megacities continued to grow, the Japanese capital held the highest rate. In 1970, Tokyo had 23 million inhabitants, meaning that in two decades it has doubled its population.

While the main dynamics of the former decades continued over the 1970s, the most expressive change took place in megacities, with the substantial growth of Tokyo and the emergence of two megacities in the Global South, Mexico City and São Paulo. Mexico City was founded as an Aztec city, called Tenochtitlan, in the fourteenth century and then destroyed and rebuilt by the Spanish as a capital city, in the sixteenth century. While it had 3.4 million people in 1950, three decades later, it had 13 million inhabitants. After having a minor role in three historical periods (early indigenous, Portuguese colonial, and imperial), it was in the republic, in the late nineteenth century, that São Paulo acquired a key position in the Brazilian urban system. São Paulo had a similar growth to Mexico City, from 2.3 to 12.1 million people in three decades, being a megacity in 1980 (Fig. 5.1).

The growth of megacities continued over the 1980s. In ten years, its number doubled from 5 to 10. In 1990, the new megacities were Mumbai and Kolkata in Southern Asia; Seoul in Eastern Asia (the South Korean capital would have a population decrease in the following decade); and Los Angeles and Buenos Aires in North and South America. As such, the 10 megacities were all located in America and Asia. The two Indian megacities, Mumbai and Kolkota, introduced, in a more explicit way, a new theme in the urban agenda, the poor conditions of living of a significant part of the urban population in the late twentieth century (as discussed in Chap. 3). On the other hand, Los Angeles is a notable example of the discussion between compact and sprawl.

In the 1990s, as in the previous decade, the change in megacities has been the most expressive within the percentage of the world population living in cities. In 2000, there were seven new megacities; for the first time, one was in Africa—Cairo, and one in Europe—Moscow (Fig. 5.2). The other five were Delhi, Dhaka, and Karachi in Southern Asia; Shangai (the first Chinese megacity) in Eastern Asia; and Rio de Janeiro in South America. In the turning from the twentieth to the twenty-first century, Tokyo, the largest megacity, had 35 million people.

In the following decade, there was a radical change. For the first time in Humankind history, more than half of the world population was living in cities. More specifically, in 2010, the world population was 6.9 billion and the urban population was 3.5 billion people. In 2010, more than 10% of the world population was living in medium cities, and 5% was living in 23 megacities. The seven new megacities were Beijing, Chongqing, and Shenzhen (all Chinese) in Eastern Asia; Manila in South-Eastern Asia; Istanbul in its singular location between Asia and Europe; Paris in Europe; and Lagos in Africa.

In 2020, settlements with less than 300,000 inhabitants represent 23% of the world population, medium cities represent 12%, and the 36 megacities (more than half is in

Fig. 5.1 São Paulo, *Praça da República. Source* photograph by the author

Asia) represent 8% of the world population. In 2020, seven megacities are above 20 million residents: Tokyo (38 million), Delhi (29), Shanghai (27), Beijing (24), São Paulo (22), Mexico City (22), and Osaka (20 million). Looking back, it is important to highlight that Tokyo has been the largest megacity since 1960. Finally, in this 70-years period, the highest growth rates have been in Tokyo, between 1950 and 1970, and in Dhaka, Karachi, Shanghai, and Delhi, between 2000 and 2020—all illustrating the rapid growth of population in Asia.

In 2020, the world population is 7.8 billion (3.4 rural and 4.4 urban), and it is estimated that, in 2050, it will be 9.8 billion (3.1 rural and 6.7 urban). While in North America, South America, Europe, and Oceania, most of the population lives in cities (all above 65%), in Asia there is a balance between urban and rural, and in Africa, most of the population is rural (around 40% of African people lives in cities). Looking at Africa, two of the four countries with megacities are mostly rural (Egypt and the Democratic Republic of the Congo), one is mostly urban (South

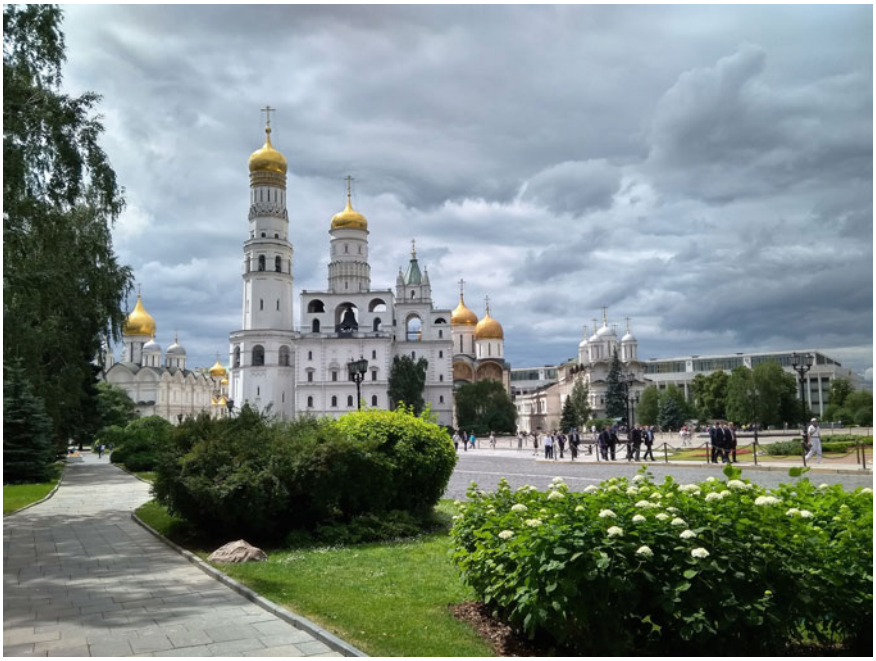

Fig. 5.2 Moscow, Kremlin. *Source* photograph by the author

Africa), and there is a rural/urban balance in one country (Nigeria). In Asia, four of the eight countries with megacities are mostly rural (India, Pakistan, Bangladesh, and the Philippines), three are mostly urban (China, Japan, and Indonesia), and there is a rural/urban balance in one (Thailand).

A look at the recent evolution of each country reveals common aspects, but also some singular features. Let us focus on three of these eight Asian countries, China, India, and Japan. In the mid-twentieth century, most of the Chinese and Indian population was rural (near 90% and 80%, respectively); while more than half of the Japanese population was urban. Nowadays, more than 90% of the Japanese population and 60% of the Chinese population are urban, while in India, only 35% of the population is urban. In 2050, it is expected that in the three countries, the most population will be urban.

The comparison of each of these three countries with its sub-continent and with Asia as a whole reveal other important aspects. In the mid-twentieth century, the urban population in China was lower than Eastern Asia and Asia averages; in India, it was close to the Southern Asia and Asia averages; and in Japan, it was considerably higher than the Eastern Asia and Asia averages. Nowadays, the urban population in China is higher than the Asian average but lower than the Eastern Asia average; in India, it is lower than the sub-continent and the continent averages; and in Japan, it is higher than the two averages. According to the United Nations' estimate, this tendency will continue in the next three decades.

Finally, a look at the urban population by size class of urban settlement reveals some additional aspects. In 1990, in China and India, most urban population was living in cities with less than 300,000 inhabitants; China did not have megacities and India had two. In China, in the last decades, the urban population has been growing, including now 105 medium cities and 6 megacities. In India, it includes 52 medium cities and 6 megacities. In Japan, in 1990 and in the present, most of the urban population is in two megacities, Tokyo and Osaka.

5.2 Megacities

5.2.1 Istanbul

This section addresses a city with a unique urban history—Istanbul, formerly named Byzantion and Constantinople. We start with a brief reflection on the natural site and the city of Byzantion, moving then to the urban history of Constantinople as Roman and Byzantine capital, and finally to Istanbul as Ottoman capital and major republican city after the foundation of Turkey. The last part focuses on Istanbul in the twenty-first century, addressing its different districts. This subsection draws on the notable book 'Istanbul, an urban history' by Doğan Kuban.

The natural site where Byzantion was established is unique. It lies between Asia and Europe (east and west), between the Marmora and the Black Sea (south and north), and in the convergence of two rivers, the Golden Horn (narrower) and the Bosphorus (larger)—Fig. 5.3. The settlement was established in the promontory on the tip of the peninsula, at the end of the Eastern Balkans, 50 m above the water level. This location offered many advantages, including a large harbour, sheltered from the south wind. One of the rivers, the Golden Horn, is about 300 m large. In its north bank, there was another early settlement, Sycae (present-day Galata, in Beyoğlu), facing Byzantion in the south. On the east side of the second river, the Bosphorus (30 km long, separating Europe from Asia), two other early settlements were formed, Chrysopolis (Üsküdar) and Chalcedon (Kadiköy). Finally, some settlements were established in a group of islands 20 km southeast of Byzantion (in present-day Adalar). All this area combines the Mediterranean, humid subtropical, and oceanic climate (according to Köppen climatic classification).

Byzantion was founded in 659 BC by the Megarans, a Greek group. With the expansion of the Romans in the second century BC, the city progressively lost its autonomy, and in 73 AD, it was finally incorporated by Rome. In 196 AD, Byzantion was destroyed by Septimus Severus, after the alliance of the city with one of his rivals. There are no relevant archaeological remains from the city before its destruction. As such, discussion about its size and shape is mainly based on the interpretation of ancient texts. For most scholars, the acropolis of the city should correspond to the Topkapi Palace (built in the Ottoman Empire). Due to its geopolitical importance,

Fig. 5.3 Istanbul site. *Source* Google Earth

Byzantion was later rebuilt and named Antoninia, by Severus. In the period of reconstruction, the walls of the city were rebuilt and extended (starting at present-day Eminönü Square and going south), and a key east–west street was built linking the agora and the main gate (at Çemberlitas).

After the first division into four parts, in the fourth century, the Roman Empire was divided into Western and Eastern, with capitals in Rome and Constantinople. As remarkable as the natural site of Byzantion, so was Constantine's decision of making it the capital of an empire centred in the Eastern Mediterranean (almost simultaneous to another major change in the empire—the recognition of Christianity). The transformation of the city started in 324, and it continued throughout the reign of Constantine's son. In terms of size, it significantly expanded Severus limits—the new city walls started now at Cibali, west of Ataturk bridge. Again, the Constantinian city was lost in the early Middle Ages, and most of what we know is based on later

literary descriptions. It was a 'Roman city', sharing common aspects with Rome or Timgad (Kuban 1996).

Constantinople was the capital of the Roman and Byzantine empires for one millennium. Part of this longevity was due to the Theodosian walls, the largest defensive system of Late Antiquity. Built in the first half of the fifth century, the walls were 19 km long and enclosed an area of about 1,400 hectares. Their layout was determined by topography and defensive requirements, and not by an increase in city population. In fact, the area between the Constantian and Theodosian walls was never fully developed, and the latter have remained the western limit of the city until the twentieth century (Kuban 1996).

The most prosperous period of Constantinople as East Roman capital was between its foundation and the end of Justinian reign in the mid-sixth century. After the so-called Nika revolt and destruction of many buildings in Constantinople, Justinian carried out a remarkable process of reconstruction of the city and the erection of notable monuments, like the basilica of St. Sophia (Fig. 5.4b). At the time, within walls, the urban space was mainly structured by one major east–west street, the Mese (present-day Divan Yolu). There is no relevant information about a secondary pattern of streets. Outside the walls, the three main settlements continued to flourish. Sycae was already part of the city (since Constantine I); it was physically linked with it through a stone bridge, and it was limited by a city wall erected by Justinian. The Bosphorus and a set of harbours provided relation with Chrysopolis and Chalcedon. In addition, a suburban landscape made of noble villas along the Bosphorus started to be created.

After the reign of Justinian, the city faced constant threats: external pressures from Islam, the neighbouring Balkan states, and the Catholics of the Western Mediterranean (eventually leading to the Crusaders occupation in the thirteenth century); internal religious struggles (like the iconoclasm); and a set of natural events (plagues, earthquakes, and fires). And yet, even in this period in history, the city had moments of glory, as in the case of the Macedonian and Comnenian dynasties. In the early eleventh century, the city had a population of 600,000 inhabitants. The urban landscape of Constantinople combined high-density residential areas and low-density religious areas (monasteries) with an expressive presence of green areas (see Fig. 5.5 for a representation of the city, some years before its fall).

In 1453, after a battle between the Theodosian defence system and modern artillery, Constantinople was captured by the Ottoman Empire. There is a strong symbolism in the fall of Constantinople for both civilizations. While some aspects of the Byzantine city would continue throughout the new period, in part due to the tolerance of Sultan Mehmed II, there would be some major changes in the following decades. The reconstruction of the new capital of the Ottoman Empire (succeeding Bursa and Erdine) and the attraction of a new population started shortly after the conquest. One of the most important transformations was the development outside the city walls, enabled by the strength and security offered by the Ottoman Empire. The new urban life was organized around the family and the mosque. The realm of the family was the *mahalles* (quarters). The physical form of the city was an organic accumulation of *mahalles,* in which houses were more important than streets. On

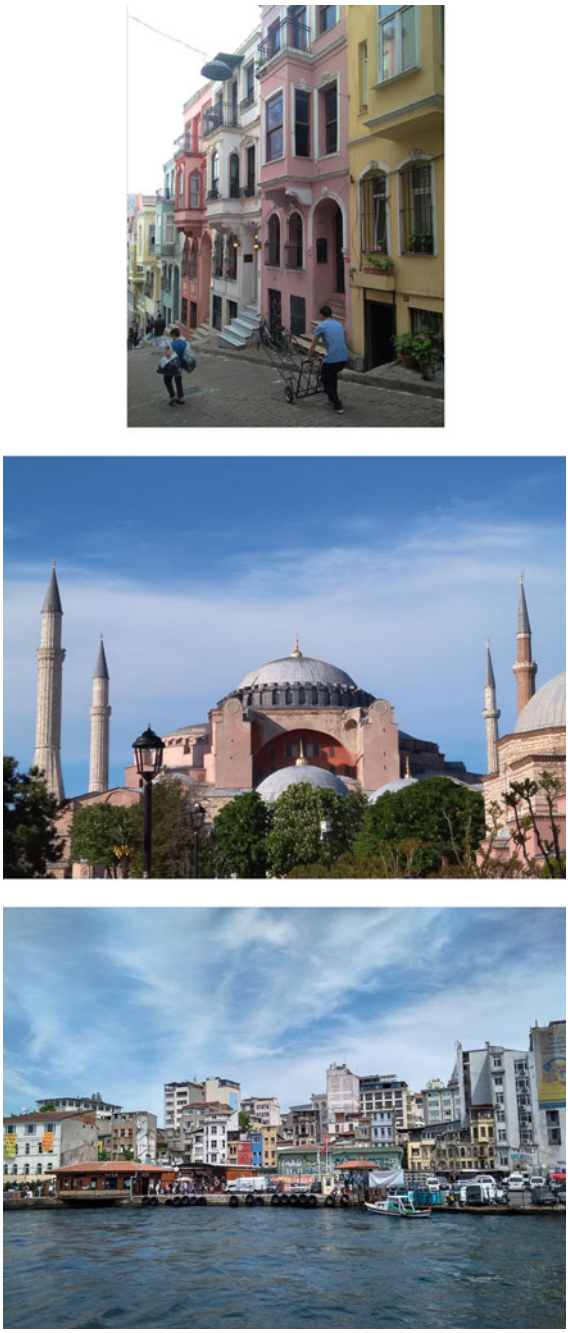

Fig. 5.4 Fatih (Sehsuvar Bey and St. Sophia) and Beyoğlu (Arap Cami). *Source* photographs by the author

Fig. 5.5 Representation of Constantinople by Cristoforo Buondelmonti, 1420. *Source* Public domain

the other hand, the mosque was not only a building, but a whole complex made of different constructions with distinct functions—the *kulliye.* In between the family and the mosque, there was the *bazaar* and the market, the *çarşi.* And above all these parts, there was the palace, the *saray.* The first palace was built in present-day Istanbul University, and a second one, the Topkapi Palace, in the acropolis of old Byzantion. One century after the conquest, the reign of Süleyman the Magnificent (1520–1566) represents the apogee of the Ottoman Empire. One of the most important contributors to the greatness of this period is Sinan, the chief architect of Süleyman. Probably their most impressive achievement is the Süleymaniye, a notable representation of the idea of the *külliye* as a socio-religious complex, and a key element of urban form,

clearly distinguishable from ordinary buildings and streets, due to the regularity of its composition (Kuban 1996).

The process of modernization and westernization of Istanbul started in the eighteenth century, with the 'tulip period', leading to a more extrovert lifestyle, and being strengthened in the mid-nineteenth century with the *tanzimat*, a period of structural reforms of the Ottoman society. In terms of city representation, this would include the preparation of the first map based on modern mapping techniques by François Kauffer (Fig. 5.6) and the drawings by Antoine Ignace Melling portraiting an urban landscape that would soon disappear. The modernization process started changing the perception of the city limits, with the increasing importance of districts and quarters outside the walled city and the acknowledgement of the Bosphorus as an integral part of a wider Istanbul (one of the key characteristics of today's urban landscape). It also initiated the transformation of the urban fabrics, in which public and private secular architecture would replace the religious constructions. But the fundamental changes would take place in the nineteenth century: in the street patterns, leading towards higher regularity, in clear confront with the traditional patterns created by the sum of buildings; in the scale of the building fabric, with increasing building footprints; and in development control of residential areas, aiming at regulating the construction of the many wooden single-family buildings that were the basis of the traditional urban landscape of Istanbul.

The First World War, the occupation of the city by western allies, the war of independence, the end of the Ottoman state in 1923, and the transfer of the capital to Ankara were a sequence of events that profoundly changed Istanbul. It was in this context that, in the 1930s, the first systematic attempts of planning started. While implementation of planning proposals was delayed due to the lack of resources

Fig. 5.6 Map of Istanbul by François Kauffer, 1776. *Source* Public domain

Table 5.3 Evolution of population in Istanbul, 1950–2020

Year	Metropolitan area population
1950	967,000
1960	1,453,000
1970	2,772,000
1980	4,397,000
1990	6,552,000
2000	8,744,000
2010	12,585,000
2020	15,190,000

Source World Urbanization Prospects

(needed for the construction of the new capital), after their beginning, the rhythm and depth of transformation of the city would continue to increase over the twentieth century. This includes the complete transformation of Istanbul urban forms: the destruction of parts of the city wall; the construction of a new street pattern planned for cars (see the examples of the Askaray and Beyazit squares); the loss of Ottoman residential architecture, within the historical centre and along the Bosphorus; and the establishment of the *gecekondu* (squatter settlements) due to the high rates of population growth, particularly after the mid-twentieth century.

According to the first official census, there were 690,000 people living in Istanbul in 1927 (against 1.2 million during the First World War). Over the last century, the population has been always growing, with the highest rates in the 1960s (population has almost doubled from 1960 to 1970—see Table 5.3). Over this period, the city started to be more homogeneous, with the steady increase of migrants from different regions in Turkey, of Muslims, and of Turkish speakers. In 2010, Istanbul had near 13 million people, becoming a megacity, and ten years after, it has 15 million people—almost 1/5 of the Turkish population (the country includes another city with more than 5 million people, the capital Ankara). In 2020, Istanbul has a perfect balance between females and males. It has a strong presence of young people, expressed by the following composition by age: 21.7% youth, 71.4% working age, and 6.9% elderly.

Istanbul is made of 39 districts—25 in Europe and 14 in Asia—and 782 neighbourhoods (Fig. 5.7). There are profound differences between the districts. The population varies from less than 20,000 to about 1 million inhabitants in Adalar and Esenyurt, respectively. Population density goes from less than 100 (Çatalca and Şile) to more than 40,000 inhabitants per km^2 (Gaziosmanpaşa), and the average value is 2,900 inhabitants per km^2. In terms of area, the size of districts varies from less than 10 km^2 (Bayrampaşa, Beyoğlu, and Güngören) to more than 1,000 km^2 (Çatalca). While almost 10 million people live in the European part and more than 5 million in the Asian part, population density is similar in both parts due to the larger size of the European part.

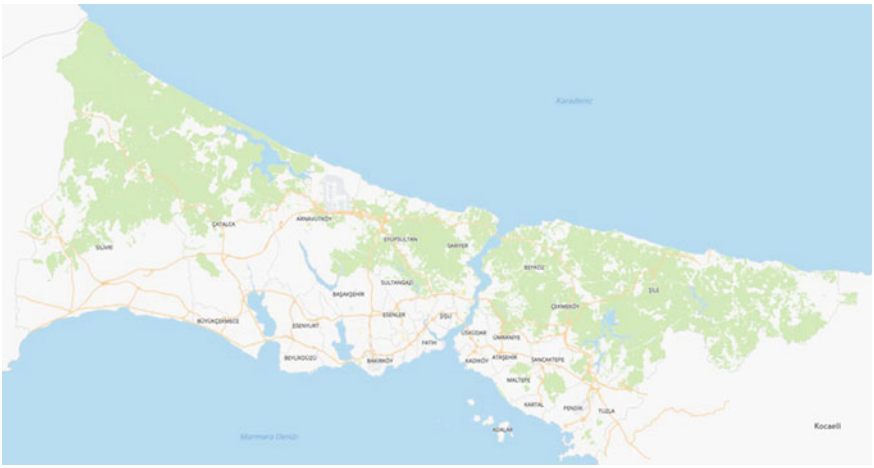

Fig. 5.7 Istanbul districts. *Source* Istanbul Büyüksehir Belediyesi

The next paragraphs focus on the five districts with the longest urban history: Fatih, Beyoğlu, Üsküdar, Kadıköy, and Adalar. Fatih corresponds to the imperial capital limited by the Theodosian walls, only partially intact. Despite the huge loss of built heritage in a unique city in Humankind history (particularly of Roman and Byzantine periods), Fatih has still a remarkable urban landscape. The district is the home of almost 450,000 people, distributed by about 60 neighbourhoods. Both the level of education and the socioeconomic status are lower in Fatih and Beyoğlu (near the city average) than in Üsküdar, Kadıköy, and Adalar. The size of the family is larger in Fatih, Beyoğlu, and Üsküdar than in Kadıköy and Adalar. While the western neighbourhoods of Fatih have the higher population numbers, the eastern ones (located within the Constantinian limits) have the lower population values. One of these eastern neighbourhoods is Sehsuvar Bey. The neighbourhood has a strong relief, ranging from the sea level at south to 40 m at north (Fig. 5.4a). The northern part of the neighbourhood is made of a regular pattern of streets and street blocks, composed of many plots, and with the high coincidence of plot and building frontages. On the contrary, the southern part is made of irregular streets and street blocks, with less plots per street block and a lower coincidence between plot and building frontages.

The second district, Beyoğlu, includes historical Sycae (Galata) and a larger area located northwest. It has about 230,000 inhabitants and a similar population density to Fatih. Smaller than Fatih, Beyoğlu is made of 45 neighbourhoods. The northwest neighbourhoods are more populated than the older southeast ones. One of the less populated neighbourhoods is Arap Cami, set between Ataturk and Galata bridges (Fig. 5.4c). The character of Arap Cami, as of Istanbul itself, is strongly determined by the presence of water. Topography varies from 0 to 20 m. The neighbourhood is made of a varied pattern of streets and street blocks, where most of the small street blocks are made of many plots and a continuous building frontage.

Fig. 5.8 Üsküdar, Kadıköy, and Adalar. *Source* Bing Maps

Fig. 5.9 Üsküdar, Kadıköy, and Adalar. *Source* photographs by the author

There are about 530,000 people living in Üsküdar (former Chrysopolis). Its area is two times higher than Fatih and four times higher than Beyoğlu. The district is made of more than 30 neighbourhoods. Although there is not a clear division as in the former districts, the neighbourhoods along the Bosphorus tend to be less populated. Figure 5.8a shows some of these neighbourhoods bordered by the Bosphorus. As in Arap Cami, the relation with water and the intense river traffic are fundamental characteristics of this urban landscape. Topography has great variations, between 0 and 60 m. While the patterns of streets and street blocks are more irregular than the two other cases, the most relevant difference is the lower number of plots per street block and the lower continuity of building frontages. While the building fabric is not as impressive as in Fatih and Beyoğlu, the vibrancy of urban life is quite similar.

About 480,000 people live in Kadıköy (former Chalcedon). Population density is lower than Fatih and Beyoğlu and higher than Üsküdar. The district is made of about 20 neighbourhoods. Figure 5.8b shows the Caferağa and Osmanağa neighbourhoods (complemented by Fig. 5.9b capturing a scene of the street life). The relation with the Bosphorus is a key characteristic. Relief varies between 0 and 30 m in the centre of this small 'peninsula'. A comparison with the Üsküdar neighbourhoods, included in Fig. 5.8a, reveals a more regular pattern of streets and street blocks, a higher density of plots, and a higher coincidence between plot and building frontages.

Adalar is an archipelago in the Sea of Marmora, also named the Princes' Islands. The archipelago is made of four larger islands, corresponding to five neighbourhoods, that are the home of 15,000 people. Figure 5.8c shows the Büyükada island, inhabited by almost 8,000 people. The urban landscape is made of an irregular pattern of streets and street blocks, the non-coincidence between plot and building frontages, and the strong presence of green areas. Most residential buildings, with a strong presence of wood, have a high architectural quality (Fig. 5.9c).

5.2.2 Tokyo

This subsection focuses on the world's largest megacity, Tokyo (formerly known as Edo). After a brief introduction to the natural site and the urban history of Japan, we move to the history of Edo between the twelfth and nineteenth centuries (with a particular focus on the second part of this period, the Tokugawa Shogunate), the urban growth of Tokyo in the last 150 years, and the development of its different wards in the last decades. This last part draws mainly on a notable morphological analysis of the Japanese capital carried out by Shigeru Satoh in 2003.

Japan is an archipelago in the Pacific Ocean made of almost 7,000 islands. It has no land borders with other countries. Japan's neighbours on the eastern edge of the Asian continent include the Republic of Korea, China, and Russia. The country is in a volcanic zone on the Pacific ring of fire exposing it to earthquakes, tsunami, and volcanoes. Tokyo is in the Kanto region in the eastern part of Honshu, one of the five main islands of Japan (the others being Hokkaido, Kyushu, Shikoku, and Okinawa). The settlement site is a remarkable interplay between water and land, the

Tokyo Bay, which is linked to the Pacific through the Uraga Channel (Fig. 5.10). Numerous rivers, notably the Arakawa, flow into Tokyo Bay. Throughout the years, land reclamation along the coast of Tokyo Bay has been constant. Tokyo has a humid subtropical climate.

The unification of Japan took place in the third century. In this period in history, the country did not have a strong urban culture. Each emperor would build his new imperial residence, moving it from place to place, as in the Egyptian civilization (presented in the last chapter). The idea of an imperial capital, the *miyako*, was imported from China in the mid-seventh century. The urban layout of Chang'an was the model for the spatial organization of Japanese capitals. Since 645 and over one and a half century, 14 capitals have been erected, from Naniwa (Osaka) to Heian (Kyoto). Contrary to these 150 years of constant change, the last one, Kyoto, was the capital of Japan for more than one millennium, until 1868, although in some periods it had only a symbolical nature due to the military power of the shogunates

Fig. 5.10 Tokyo site. *Source* Google Earth

(*bakufu*) after the twelfth century. In the late mediaeval period, Kyoto should have about 500,000 inhabitants (Masuda 1970).

Edo (originally named Edojuku) was established as a small castle town in the twelfth century, in the place of present-day Imperial Palace (Fig. 5.11). Farming and fishing were two central activities in this early settlement. The first castle was built by the governor of the Musashi province in the plain of the Kanto region. In this historical period, despite the unified state, each region was the stage for complex political and military tensions between different feudal lords, the *daimyo*. Despite its prosperity, the Edo castle did not have a significant size or role in Kanto. In the mid-fifteenth century (by the time of the fall of Constantinople, described in the last subsection), the castle was rebuilt and expanded by Ōta Dōkan. The new castle had a 5.5 km line of moats, three lines of defence, and 25 gates. Around the castle, there were several shrines and temples. Overall, the streets of Edo were parallel to the larger roads intersecting the town. As Edo did not achieve total dominance of the Kanto plain, it was exposed to the tensions of the region, and between the late fifteenth and late sixteenth centuries, the city experienced a certain decline (Morris, 1972; Yazaki 1968).

After the war in the late sixteenth century, Ieyasu Tokugawa was appointed as shogun, becoming the effective ruler of Japan in 1603. Edo, his selected residence, was now at the centre of the country life. This was the beginning of the Tokugawa Shogunate, which would rule Japan for two and a half centuries. Edo was gradually

Fig. 5.11 Chiyoda, Imperial Palace. *Source* photograph by the author

transformed, and in the mid-seventeenth century, it had the largest castle in the history of Japan, and it was probably the largest city in the world with more than one million people. One of the fundamental reasons for the substantial populational increase was the requirement for the feudal lords to be residents in Tokyo, at least in alternate years. The presence of feudal lords involved the presence of many people, including warriors. While the number of townsmen should be slightly higher than warriors, each of these should be above 500,000 people.

More than 2/3 of the city area was for the military class, while the other 1/3 was equally divided for townsmen and for temples/shrines. Different commercial and industrial activities were established in different specialized streets. By then, Edo was made of the following wards (*ku*) in present-day Tokyo: Chiyoda, Chuō, Shinjuku, Sumida (these four will be analysed in detail at the end of this subsection), Minato, Bunkyō, Taitō, Kōto, Shibuya, Toshima, Arakawa, and parts of Shinagawa, Kita, and Itabashi. In these areas, the districts of Nihonbashi, Kyobashi, Kanda, and Asakusa were the most important. The traditional house for the townsmen was a one- or two-storey building, erected in the plot frontage, made of mud-plastered walls and gabled roof and where the ground floor generally had an open front used for shop space. Another residential building was the *nagaya*, located on vacant plots in back streets, accommodating several families (tenants). As in the case of Istanbul in the Ottoman Empire, Edo in the Tokugawa Shogunate was subject to great disasters that destroyed a significant part of its urban form elements. One of these was the great fire of 1657 that caused the death of 50,000 people and affected streets in a total length of more than 80 km (in the reconstruction process, parts of these streets have been widened) (Yasaki 1968).

The policy of international isolation promoted by the Tokugawa Shogunate, the pressure of foreign countries towards open trade in Eastern Asia, internal social and economic problems, and a civil war between supporters of the shogunate and of the empire, led to the Meiji restoration of imperial rule in 1868. In that year, Edo was proclaimed imperial capital and renamed as Tokyo. In the following years, Tokyo was progressively transformed from a feudal city into the capital of an emerging modern state, including fundamental changes in institutions and administration (wards reorganization), in social stratification structures (increasing the rhythm of relocation of the *daimyo* and warriors, which started in the last years of the shogunate), and in industry and commerce. This modernization process promoted by the Meiji government shares some similarities with the *tanzimat* in Istanbul, described in the last subsection. Japanese census started in the 1870s. According to these, Tokyo's population was 520,000 in 1872, but in just two decades, between the late 1870s and late 1890s, it doubled from 670,000 to 1,330,000 people (see Fig. 5.12 for a map of the city in the second half of the nineteenth century). Life in this continuously growing city continued to be affected by devastating events. Firstly, in 1923, the Great Kanto Earthquake, and subsequent fires, destroyed almost half of the urban area of Tokyo. The city was subject to an intense reconstruction programme, and in 1930, all the destroyed area has been rebuilt, including processes of land readjustment. Secondly, the participation of Japan in World Word II (after invading Korea in 1910 and Manchuria in 1931) has brought enormous destruction to the country and

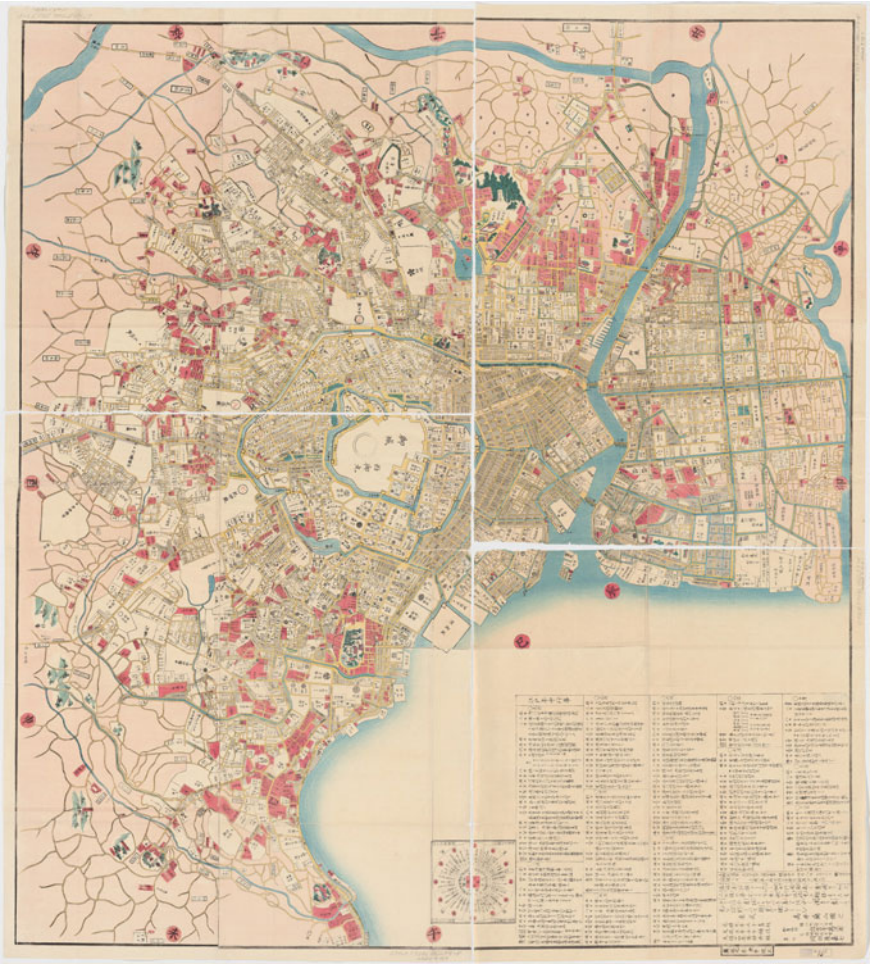

Fig. 5.12 Map of Tokyo by Takai Ranzan, 1859. *Source* Public domain

its capital. As in the case of the great earthquake and despite the extreme degree of destruction, recovery was fast.

The increase in population in the post-war period is remarkable. Table 5.4 portraits this evolution between 1950 and 2020, at three different scales: the metropolitan area (considering the metropolis and the three prefectures of Saitama, Chiba, and Kanagawa), the metropolis, and the city (made of 23 special wards, the *ku*). In general, there has been an increase in population throughout the seven decades at the three scales. In the first decade, there has been a substantial growth in the metropolitan area, the metropolis, and the city. Yet, after 1960, the demographic processes have been different: faster in the metropolitan area than in the metropolis, and of population loss in the city between 1970 and 2000. Almost one-third of the Japanese population

Table 5.4 Evolution of population in Tokyo, 1950–2020

	Population (in millions)		
Year	Metropolitan area	Metropolis (prefecture)	City
1950	11.3	6.3	5.4
1960	16.7	9.7	8.3
1970	23.3	11.4	8.8
1980	28.5	11.6	8.4
1990	32.5	11.9	8.2
2000	34.5	12.1	8.1
2010	36.8	13.2	8.9
2020	38.3	13.7	9.5

Source World Urbanization Prospects, Tokyo Metropolitan Government

lives in Tokyo Metropolitan Area; and if we consider the metropolitan areas of Tokyo and Osaka together (the latter including Kyoto), these represent almost half of the population of Japan. In 2020, there are 13.7 million people living in the Tokyo metropolis, corresponding to 6.9 million households, meaning about 2 persons per household (below the national average of 2.4). According to the Organisation for Economic Co-operation and Development (OECD), population density in the metropolitan area is 3,200 people per km^2, increasing to 4,700 in the core area. Tokyo has a strong presence of old population, as expressed by the following composition by age: 12.2% youth, 63.6% working age, and 24.2% elderly (elderly population is 3.5 times higher in Tokyo than Istanbul).

The next paragraphs focus on four central wards in Tokyo city—Chiyoda, Chuo, Sumida, and Shinjuku. This analysis of these *ku* is based on the remarkable morphological reading carried out by Shigeru Satoh and his collection of urban form patterns into 500 × 500 m boxes (Satoh, 2003). The Chiyoda ward is 11.7 km^2 and it is the home of 63,000 people (the ward with the lowest number for resident population). It includes the area of the Imperial Palace where the first castle town was erected in the twelfth century. As mentioned above, Chiyoda has suffered major destruction throughout the last centuries. One of the areas suffering the most profound changes is located between the Imperial Palace and Tokyo Station—Marunouchi (Figs. 5.13, 5.14 and 5.15). This urban landscape has a strong presence of water and vegetation. The street network of Marunouchi, built in the 1960s, is an orthogonal grid. Most street blocks have a rectangular shape and small size, around 10,000 km^2. Each street block corresponds to a very reduced number of plots (one to three) and each building has a very large footprint, occupying almost the whole area of the plot. Plot and building frontages are coincident, contributing to a close relationship between streets and buildings. The building fabric includes high- and medium-rise buildings, erected after the 1990s and mainly made of glass and steel. The main land uses are offices and commerce.

While Chuo and Chiyoda have similar sizes, the Chuo population (160,000) is 2.5 times higher. But, still, it is the second lowest of Tokyo city. The ward is located between Chiyoda and Sumida River / Tokyo Bay, and it had a key role in the urban history of Tokyo. Over the years, it has been the subject of significant transformation and land readjustment processes. Figures 5.13, 5.14 and 5.15 address one of its parts, Ningyocho. One of the most notable aspects of Ningyocho's urban landscape, common to other parts of Tokyo, is the remarkable dual network of flows and building stocks. On the one hand, there is a main regular network for faster flows of movement (complemented by a notable public transport system) framed by medium- and high-rise buildings. On the other hand, enclosed by the former, there is a secondary network for slower flows of movement, where silence prevails, framed by low-rise buildings and a strong sense of human scale—Fig. 5.15c. This complex pattern of organization of flows and stocks, which has been constantly improved over time and supported

Fig. 5.13 Shinjuku (Nishi), Chiyoda (Marunouchi), Chuo (Ningyocho), and Sumida (Mukoujima): streets, street blocks, and plots at the same scale. *Source* Satoh (2003)

Fig. 5.14 Shinjuku (Nishi), Chiyoda (Marunouchi), Chuo (Ningyocho), and Sumida (Mukoujima): block plans of buildings at the same scale. *Source* Satoh (2003)

by consecutive land readjustment processes, is one of the main lessons that Tokyo has to offer, in terms of its physical form. The aerial photograph in Fig. 5.16, taken from the Tokyo Metropolitan Government building looking west, complements this description. Street blocks are smaller in Ningyocho than in Marunouchi, and the number of plots per street block is significantly higher. While there are about 30 plots in the Marunouchi sample, there are almost 1,300 in the Ningyocho sample. In the latter, plots have between 50 and 300 m^2, and a common plot is 5 m width and 20 m depth. This means that the presence of different urban agents and strategies and as such of a more diversified urban landscape is significantly higher in Ningyocho. While office and commerce are more present in the main network, commerce and housing are dominant in the secondary network.

Sumida, located northeast of Chou, is larger and has a higher resident population (266,000) than Chiyoda and Chou. We focus on Mukoujima at the centre-north of the

Fig. 5.15 Shinjuku (Nishi), Chiyoda (Marunouchi), Chuo (Ningyocho), and Sumida (Mukoujima). *Source* photographs by the author

Fig. 5.16 The dual network of flows and stocks. *Source* photograph by the author

Sumida ward. The street network of Mukoujima is clearly different from the ones of the two former samples. It has an irregular pattern following paths of farming land, waterways, and old roads, being overlapped by a reduced number of regular streets. Yet, this irregular pattern should not be misunderstood with chaos, as it holds a hierarchy of three tiers of streets and has a strong human scale—as in Ningyocho. Considering the 500 × 500 m boxes in Figs. 5.13 and 5.14, it is in Mukoujima that the percentage of land for streets is lower—about 20% of the total, against 40% in Ningyocho and Nishi Shinjuku, and 50% in Marunouchi. Street blocks and plots are very different both in form and size. The density of plots in the Mukoujima sample is higher than in the Ningyocho sample—about 1,600 in the former and 1,300 in the latter. The most common plots have between 30 and 90 m^2 (some plots have been subdivided over time). Most of the building fabric is made of row-buildings, two-storey, for residential use, or combining residence with commerce or workshops on the ground floor. There are still some wooden houses that have survived the Great Earthquake and World War II.

Shinjuku ward is 18.2 km^2 and it is the home of 347,000 people (as Sumida, its population density is higher than the city average). Our focus within the ward is on Nishi Shinjuku, the area around the Tokyo Metropolitan Government building. The area was planned in the 1960s. It is structured by an orthogonal grid and a density of street blocks and plots like Marunouchi. The major difference between the two samples, with a significant impact on the urban landscape, is the position of each

building within each plot and the relation between buildings and streets. While in Marunouchi plot and building frontages are coincident, creating an urban landscape that is more friendly to pedestrians, in Nishi Shinjuku, most buildings setback. The sample includes 21 plots (mostly between 9,000 and 10,000 m^2) and 23 buildings mainly for offices (30–54 storeys) and commerce (20–30 storeys).

5.2.3 New York

This subsection focuses on one of the two oldest megacities—New York. After a brief introduction to the natural site and the first Manhattan settlements by the Dutch and British, we focus on the city after independence in the late eighteenth century. Contrary to Istanbul and Tokyo, the physical form of New York is strongly influenced by one notable plan, designed in 1811, that created the pattern of streets and avenues, street blocks, and plots that still frames the life of Manhattan. 'The greatest grid: the master plan of Manhattan 1811–2011', edited by Hilary Ballon, is a major reference for understanding plan preparation and implementation over time. Finally, we address the five boroughs of the city in the last decades.

New York is on the east coast of the United States. As shown in Fig. 5.17, the site is a complex interplay between water and land, the New York–New Jersey Harbour Estuary. The island of Manhattan, in the centre of the figure, is located between the US mainland at west (Hudson River) and Long Island at east (East River). At north, it is separated from the mainland (Bronx) by the Harlem River. The relationship of Manhattan with the Atlantic Ocean is mediated by the Upper Bay and the Lower Bay. As Tokyo, New York has a humid subtropical climate.

After being explored by Giovanni da Verrazano, for France in 1524, and by Henry Hudson, for the Netherlands in 1609, the area that would be named New Amsterdam (and renamed New York in 1664) was settled by the Dutch West India Company in 1625. In the next year, Peter Minuit, the first Director-General of New Netherland, bought Manhattan Island from a local tribe. Figure 5.18 presents a map of New Amsterdam at the end of the Dutch occupation in the mid-seventeenth century. New Amsterdam was a small settlement surrounded by water at east, south, and west, and by a wall (in what would be Wall Street) at north. The pattern of streets was very irregular. One main street emerged in this irregular set, the *Breede Wegh*—a pre-existence of the former indigenous occupation (the *Weekquaesgeek*). Later, it would be called Broadway. The map in Fig. 5.17 shows a set of 20 street blocks of irregular size and shape, with several plots of different sizes and shapes, and varying building densities (higher in the southern street blocks). Fort Amsterdam stands out as an exceptional built complex. Despite the construction of new streets, the street pattern of today's Lower Manhattan is very similar to the pattern of the seventeenth century.

In 1664, New Amsterdam was conquered by the British and renamed New York. Under the British Government, the city flourished and its population had a significant increase. From about 1,000 inhabitants in 1650, it grew to 20,000 inhabitants in its late

Fig. 5.17 New York site. *Source* Google Earth

colonial days. There was a moderate expansion of the urban area—the city was three times larger than New Amsterdam 100 years earlier—extending until the Commons (now the City Hall Park). On the other hand, a new pattern of orthogonal streets and street blocks, promoted by private initiatives, started to be built. This is the case of the areas between Broadway and Hudson River, in the west part of Manhattan, and to the east of Bowery Lane, in the eastern part of the island.

After the independence from Britain, this preference for a regular layout would have its greatest expression in the early nineteenth century. In 1807, the New York State Legislature appointed three commissioners—Gouverneur Morris, Simeon De Witt, and John Rutherfurd—to prepare the future of the city. They hired John Randel Jr as surveyor general. The 1807 Act sets some design guidelines, fixing the plan's baseline at the edge of the dense settlement at Houston St., anticipated squares and three types of streets, and established specific implementation procedures. The plan was based on an apparently futuristic growth scenario. At a time when the city

Fig. 5.18 Map of New Amsterdam by Jacques Cortelyou, 1665–1670. *Source* Public domain

(concentrated south of Canal Street) had 96,000 inhabitants, the plan envisioned it reaching 155th St and forecasted a population of 400,000 in 1860. The population of Manhattan in 1860 would be 813,500, doubling the Commissioners' projections for that year (Ballon 2012).

The plan proposed a division of the territory north of Houston St into a grid layout of 12 avenues and 155 streets. Figure 5.19 shows the pre-existent layout (grey shaded blocks) and the proposed grid—almost 2,000 new blocks. Although the grid looks uniform, it contains two primary patterns that create variety. The first is the streets' width: avenues are 30 m wide, the standard cross streets are 18 m, and the major cross

Fig. 5.19 Map of New York by William Bridges, 1811. *Source* Public domain

streets are 30 m (they exceed both the norms in Lower Manhattan and the minimum stipulated by the 1807 Act). The second is the street blocks' dimensions: all blocks are 60 m wide (north to south), but their lengths (east to west) vary, diminishing from the centre of the island to the shorelines. One key characteristic of the plan was that all streets and avenues were numbered, rather than named. Due to the high land values of Manhattan, the plan has restricted the number of squares and parks, believing that the Hudson and East rivers provided sufficient open space. The existing small and scattered parks were retained.

The plan did not dictate plot dimensions, but the blocks had a modular system, all are divisible by 6 and 7.5 m–20 and 25 feet (Fig. 5.20). A standard plot was 30 m deep (half of the street block depth) and 6 or 7.5 m wide. Regulation of buildings height was related to the streets' width: taller buildings in the avenues and lower-rise buildings in the side streets.

Plan implementation was a long process—it took about 60 years for the grid to be built up to 155th Street—including significant modifications: (i) the insertion of Broadway (which would become the counterpoint of the grid, particularly in its diagonal stretch from 10th to 72nd Street); (ii) the construction of two new avenues linking the northern and southern parts of the island (Lexington, between 3rd and 4th avenues, and Madison, between 4 and 5th avenues); (iii) the creation of new open

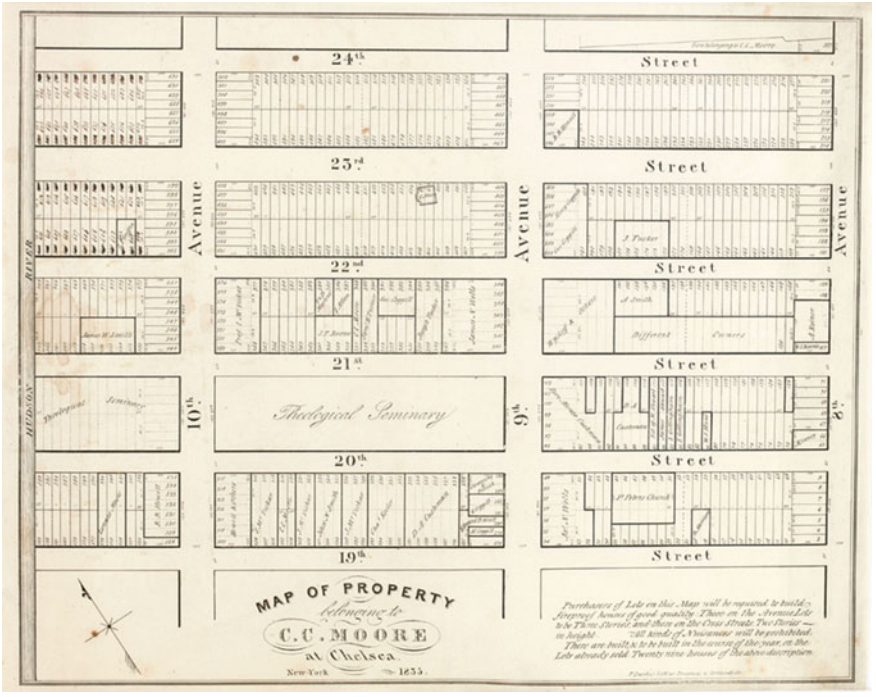

Fig. 5.20 'Map of property belonging to C. C. Moore at Chelsea', 1835. *Source* Public domain

spaces—neighbourhood parks and squares (from Union Square to Bryant Park), in a first stage, and Central Park in a second stage (covering an area of three street blocks wide and 51 blocks long, and promoting the role of the 5th Avenue as the meridian separating the east and the west sides); (iv) the enlargement of some axes (Park Avenue north of 47th Street, Lenon Avenue, Adam Clayton Powell Boulevard, and 17 of the east–west streets); and finally, (v) the removal of the military parade ground, the Observatory and most of the proposed squares.

Despite the levelling of hills and filling of valleys to produce a more horizontal surface, today's topography still has a striking resemblance to conditions in the early nineteenth century. Most streets of the plan ran through private property. To build these streets, the State Legislature defined the street opening system, an early form of eminent domain allowing the construction of streets and squares for the city and the financial compensation of the owners (Ballon 2012).

New York first expanded along the East Side. Its low and flat topography invited construction, unlike the West Side's rugged hills and valleys. In the 1830s, there was a housing boom, and at the end of the decade, the city had opened gridded roads up to 52nd Street. The improvement of the West Side began in the mid-1860s. The establishment of Morningside and St. Nicholas Parks and the undulating Riverside Drive are some examples of the presence of topography. Similarly, the planning of Upper Manhattan (north of 155th St), carried out more than 50 years after the 1811 plan, would give more preeminence to its rugged landscape (Ballon 2012). In the late nineteenth century, the Brooklyn Bridge linked Manhattan and Brooklyn. In 1898, these two, joined by the Bronx, Queens, and Staten Island, consolidated into the five-borough metropolis.

The technological advances of the twentieth century exaggerated the grid, as skyscrapers climbed higher with the help of steel skeletons and elevators. Before 1916, the grid could be extended straight up into the sky along the boundary lines of streets and plots. In 1916, the first zoning law was approved restricting the height of buildings, requiring them to setback as they rose to protect a measure of sunlight on the street and lower storeys. In 1961, a new zoning law was approved aiming to encourage builders to incorporate open space into their plots, allowing them to build taller towers (Ballon 2012).

In the twentieth century, there was an important change—the incorporation of superblocks into the grid, by erasing some street sections. While some were formed by monumental buildings and complexes, others were made of large housing projects. Although the housing superblocks fit neatly into the orthogonal street system, they changed the grain of the city and had no walkable character or mixed-use quality. In the last decades, the prevailing trend has been to recover the grid, as in the recent developments of Battery Park and Ground Zero (Ballon 2012).

In the mid-twentieth century, New York was, together with Tokyo, one of the two megacities in the world. Overall, at the metropolitan and city scales, there has been a growth of population from 1950 to 2020 (Table 5.5), reaching 18.8 and 8.3 million people, respectively, at the end of this period. While between 1980 and 2020 there, has been a growth for the two scales, from 1950 to 1980, these processes have been different—it has been more continuous at the metropolitan area (the 1970s were

Table 5.5 Evolution of population in New York, 1950–2020

Year	Population (in millions)	
	Metropolitan area	City
1950	12.3	7.9
1960	14.2	7.8
1970	16.2	7.9
1980	15.6	7.1
1990	16.1	7.3
2000	17.8	8.0
2010	18.4	8.2
2020	18.8	8.3

Source World Urbanization Prospects, New York City—Department of City Planning

the exception) and more discontinuous at the city. Today, the population of New York is 6% of the total population of the United States, a country that has another megacity, Los Angeles, and eight cities with more than 5 million people. According to the OECD, population density in the metropolitan area is 800 people per km^2, increasing to 1,500 in the core area. New York has the following composition by age: 17.9% youth, 66.4% working age, and 15.7% elderly.

Over the last three decades, there has been a growth of population in each of the five boroughs, with the highest percentual increase in Staten Island (Table 5.6). Today, the number of residents is higher in Brooklyn and Queens and lower in Staten Island. Population density is higher in Manhattan (the smallest borough, made of 12 districts) and lower in Staten Island (made of 3 districts). The highest densities in Manhattan can be found in the Upper West Side and Upper East Side (respectively, Community Districts 7 and 8). Figure 5.21 shows the ground plan of these two parts of Manhattan; their pattern of streets, street blocks, and plots constitutes the legacy of the 1811 plan to the city.

The diversity of the different neighbourhoods of New York is one of its most important characteristics. The brief description that follows moves from south to north in Manhattan, and from there to the Bronx, Queens, Brooklyn, and Staten Island. The built environment of Lower Manhattan is marked by the pattern of streets

Table 5.6 Evolution of population in New York City's five boroughs, 1990–2019

	Bronx	Brooklyn	Manhattan	Queens	Staten Island	**New York City**
1990	1,203,789	2,300,664	1,487,536	1,951,598	378,977	**7,322,564**
2000	1,332,650	2,465,326	1,537,195	2 229,379	443,728	**8,008,278**
2010	1,358,108	2,504,700	1,585,873	2 230,722	468,730	**8,175,133**
2019	1,418,207	2,559,903	1,628,706	2,253,858	476,143	**8,336,817**

Source New York City—Department of City Planning

Fig. 5.21 Manhattan—Upper West Side and Upper East Side: streets, streets blocks, and plots. *Source* New York City—Department of City Planning

of both Dutch and English settlements (Fig. 5.22b). It was the site of the first capital of the United States and, after 1792, of the financial capital of the world. It includes the Ground Zero that, after the terrorist attacks in September 2001, has emerged in the area showing the strength of the city. At northeast of Lower Manhattan, we will find the Seaport and the Civic Center. This was mainly developed after independence. It has a strong linkage with the water and in its northeast part relates to the Brooklyn Bridge. Lower East Side, located south of the 1811 grid, is the traditional gathering point for newly arrived immigrants of many cultures. Little Italy and Chinatown are the most visible examples of the presence of these communities. Soho and Tribeca are two of the trendiest (and most expensive in which to live) neighbourhoods of New York, with an intense artistic life, full of galleries, cafés, and shops. Soho is also widely known due to its remarkable architecture, one of the world's most significant set of buildings in wrought iron (Fig. 5.22d).

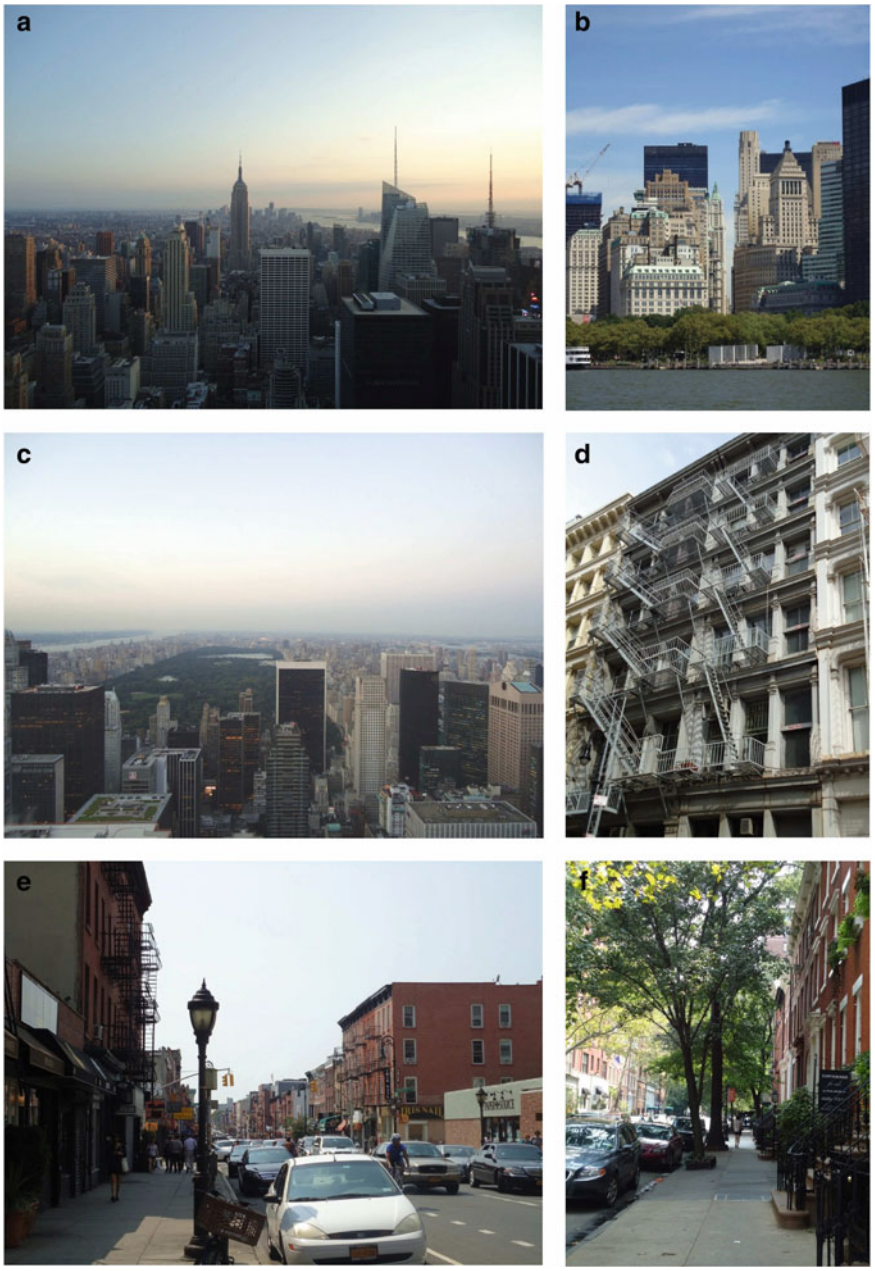

Fig. 5.22 New York: **a** the southern part of Manhattan, **b** Lower Manhattan, **c** the northern part of Manhattan, **d** Soho, **e** Brooklyn, and **f** Greenwich Village. *Source* photographs by the author

Let's move north of Houston Street. Greenwich Village combines the south-western part of the 1811 grid, around the vibrant Washington Square, with a more irregular pattern of streets, around Sheridan Square (Fig. 5.22f). Gramercy and Flat-iron are dominated by the pattern of streets defined by the 1811 plan. While Gramercy is mainly a residential area structured around the park built in the 1830s, the area around the Flatiron Building and Madison Square has a mixture of uses. South of Central Park, we find the Theater District. The Theater District first began to attract theatres and restaurants to the neighbourhood after the Metropolitan Opera House moved there in 1883. The district includes some of the most important build-ings (Rockefeller Center), squares, and parks (Times Square, Bryant Park) of New York. At the east of the Theater District, we find Midtown. This is an area with many skyscrapers and some fundamental museums. It is clearly marked by the pres-ence of the 5th Avenue, and it is inhabited by a high-income population. This high-income population has lived in the Upper East Side since the turning of the twentieth century. Today, it is gathered in the 5th and Park avenues. Madison Avenue holds several shops and galleries. The area gathers some important museums. Despite its latter occupation, after the construction of the elevated trains, several buildings have been progressively built in Broadway and Central Park West. Today, the Upper West Side is a very diverse place from the high-income population in Riverside Drive and Central Park West to mid- and low-income in Amsterdam Avenue. It is also the place of fundamental cultural buildings, like the Lincoln Center. The northern part of the island is Harlem, the vibrant centre of African American culture. The neighbourhood is structured by the 125th Street (Martin Luther King Jr Boulevard), including key buildings of the culture of the city, like the Apollo Theater.

The Bronx is almost two times larger than Manhattan. Its pattern of streets is clearly different from Manhattan, more fragmented and structured by main undulated streets. It holds some singular buildings and open spaces such as the Yankee Stadium, the Botanical Garden, and the Bronx Zoo. Queens has the largest area and the second-highest population of the five boroughs. One of its more dynamic areas is Long Island City, connected to Manhattan by the Queensboro Bridge, or 59th Street Bridge. One of the major expressions of the artistic life of Queens is the PS1 MoMA, a part of the Museum of Modern Art. Brooklyn (Fig. 5.22e) is the largest borough of New York in terms of population (it would be the fourth largest city of the United States if it was a city by itself) and the second largest in terms of area. It is probably the area with the soundest ethnic diversity. Three of the most important areas of the borough are Downtown Brooklyn, Brooklyn Heights, and Park Slope, near the remarkable Prospect Park. Both Brooklyn and Queens have a pattern of streets somehow close to the dominant pattern of Manhattan. Finally, Staten Island has a street system more fragmented than the Bronx street system. It is a borough with an area larger than the Bronx and about 475,000 inhabitants.

5.3 Medium Cities

5.3.1 Marrakesh

Marrakesh is a 'medium city' and one of the four imperial capitals of Morroco. Its medina has been classified by UNESCO as part of the World Heritage List. The urban history of Marrakesh over five dynasties, from the Almoravid (starting in the mid-eleventh century) to the Alawite, as well as the four decades of the French protectorate, and the years after independence in 1956, is described in the next paragraphs.

Marrakesh is in the north part of Morroco, in Northern Africa. The country faces the Mediterranean Sea at north and the Atlantic Ocean at west. It has land borders with Algeria at east and Mauritania at south. Marrakesh is in the Transit River valley (the river running east–west, north of the city—in the top of Fig. 5.23), located north of the Atlas Mountains (running east–west—in the bottom of Fig. 5.23) separating it from the Sahara Desert, and about 150 km east of the Atlantic coast. Both the Atlas and Sahara have a strong influence on the character of the city. Marrakesh has a hot semi-arid climate.

Marrakesh is one of the four imperial cities, together with Fes, Meknes, and Rabat. The city, which gave its name to the Moroccan Empire, was founded in the mid-eleventh century by the Almoravids, a Berber dynasty (an ethnic group indigenous of North Africa) established in 1056 that lasted until 1147. The city became the capital of these conquering nomads who would succeed in stretching their empire from the Sahara to Spain and from the Atlantic to Algeria. The original layout of the medina dates to the Almoravid period, which included the construction of the city walls (built in 1126–27), a large palace (destroyed), a mosque, and the *khettaras*, a sophisticated system of subterranean channels for irrigation that is still in use. Youssef ben Tâchfine and, particularly his son, Ali ben Youssef were the main promoters of the urban development of the city in this dynasty.

In 1147, the Red City was taken by the Almohads (1147–1269). While most of the existing monuments—palaces and mosques—were destroyed by the conquerors, Marrakesh was maintained as the capital and has experienced unprecedented prosperity. The magnificent Koutoubia Mosque was built in this period upon the ruins of the Almoravid foundations. The Almohads built new quarters extending the city wall, the Kasbah (1185–90) which was a prolongation of the city to the south with its own ramparts and gates (Bab Agnaou, Bab Robb), its mosque, palace, market, hospital, parade ground, and gardens (UNESCO, 2009). Contrary to the Almoravid buildings, constructions erected by the Almohads were very simple with no decoration.

After the Almoravid and Almohad dynasties, the city has gone through different cycles of decline or stagnation, and prosperity. The first period of decline came with the Merinid dynasty that ruled the empire for more than two centuries and established Fez as the main city. The last years of this dynasty were marked by famine and ruin in Marrakesh.

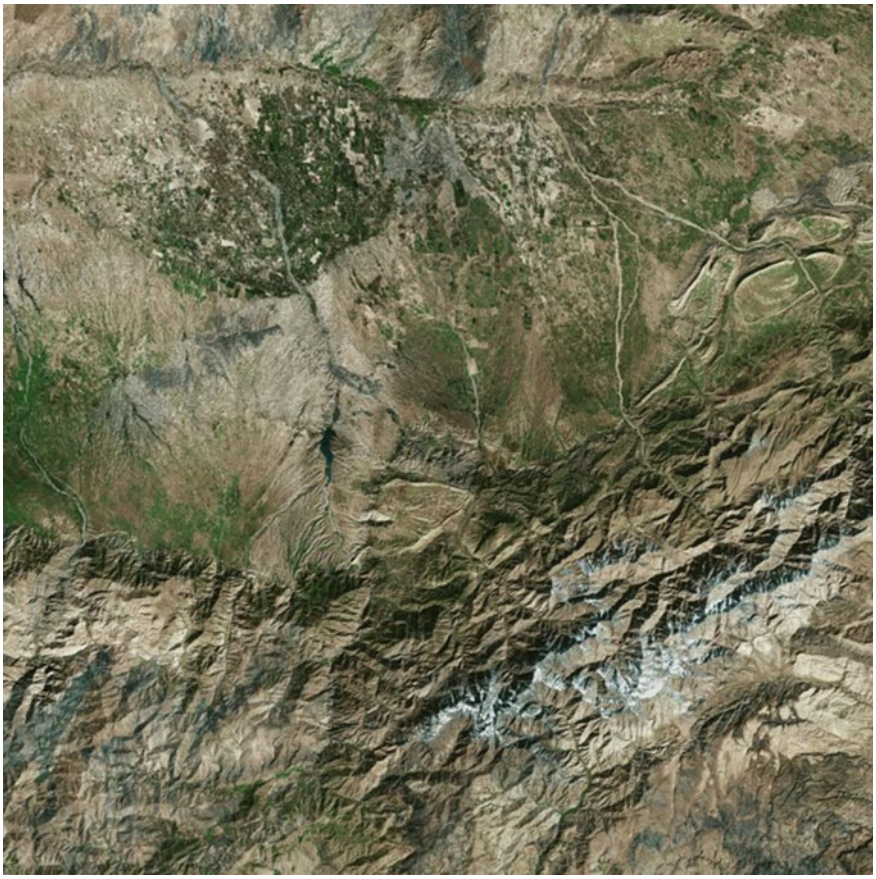

Fig. 5.23 Marrakesh site. *Source* Google Earth

The Saadians conquered the city in 1522. The new dynasty has given the city a period of great prosperity, including some major works, namely: the reconstruction of the notable Ben Youssef *Madrasa* in the northern part of the Medina; the construction of the *El Badi* Palace, in an abandoned Almohad garden northeast of the Kasbah, inspired in the Alhambra (Granada); and the erection of the Saadian Tombs, whose precious architecture is isolated from the rest of the Kasbah. The *Mellah*, or Jewish quarter, was built in the late sixteenth century for the largest Jewish population in Morocco. It is one of three main areas of the traditional city, together with the medina and Kasbah (Gottreich 2007; Métalsi et al. 1999). Figure 5.24 shows what is probably the first cartographic representation of the city in the second part of the sixteenth century.

A period of stagnation came in 1688 with the Alawite dynasty (which is still the ruling house of Morocco) favouring, first, the city of Fes, then Meknes, and finally Rabat. Nevertheless, some sultans of this dynasty have developed important works,

Fig. 5.24 Marrakesh map by Antonio da Conceição, 1549–1589. *Source* Public domain

giving the city a new mosque, *madrasas*, palaces, and residences harmoniously integrated into the homogeneous unit of the old town, which was surrounded by 10 km of clay and lime and beaten-cob ramparts. The great traditional areas of greenery—the palm groves, the *Menara,* and, to the south, the *Agdal* gardens—were located beyond the walls (UNESCO 2009). In the late nineteenth century, the *Al-Bahia* Palace was erected, northeast of the *El Badi*. The nineteenth century is also marked by internal fights encouraged by different European countries.

In the first half of the twentieth century, under the umbrella of the French protectorate, a new city northwest of the medina was designed. The *Guéliz* neighbourhood was conceived by Marshall Lyautey, Captain Landais, and the planner Henri Prost. Figure 5.25 shows the plan of the city after the construction of the *Guéliz* neighbourhood linked with the medina by the *Doukkala* gate.

Marrakesh has always been growing since the mid-twentieth century, when it had about 200,000 inhabitants, presenting higher rates of growth in the 1980s and 1990s (Table 5.7). Nowadays, Marrakesh is a vibrant city of about one million inhabitants. It is the fifth most populated city in Morocco (a country with a population of 36 million people, 62,5% of which are urban), after Casablanca, Rabat, Fes, and Tanger—all medium cities (one to five million people).

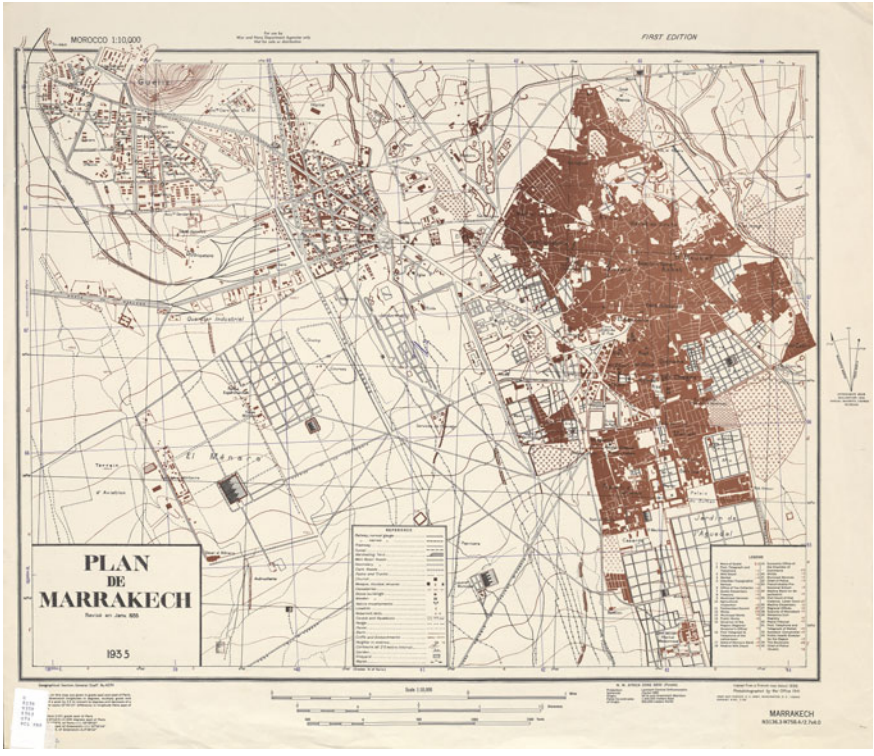

Fig. 5.25 Marrakech map, 1935. *Source* Public domain

Table 5.7 Evolution of population in Marrakesh, 1950–2020

Year	Population
1950	209,000
1960	243,000
1970	323,000
1980	416,000
1990	578,000
2000	751,000
2010	880,000
2020	1,003,000

Source World Urbanization Prospects

Marrakesh is an extremely sensorial city with intense colours and odours. The patterns of streets, plots, and buildings within and outside the medina are significantly different (Fig. 5.25). The elements of urban form within the medina are a remarkable example of an Islamic City as described in Chap. 4. The medina of Marrakesh is surrounded by the city wall, a notable structure of irregular shape with 10 km length, 6 to 9 m high, and 1.5 to 2 m wide. Ten monumental gates establish the connections between the medina and the immediate surroundings.

The exterior open spaces within the medina are mainly composed of two rather different elements, the intricate pattern of narrow streets and the large *Jemaa-el-Fna* Square—see Fig. 5.26 for an aerial view and Fig. 5.27 for some daily life photographs. The medina is a notable example of the liveability of open spaces. The relation between built space and exterior space is clearly favourable to the first, in a proportion that distinguishes the interior of the medina from both western cities and the 'city' outside the medina, namely the *Guéliz* and the *Hivernage* neighbourhoods. *Jemaa-el-Fna* is a rather unusual square. It has a very irregular shape, with more than 250 m in its largest axis, and it is configured by rather ordinary buildings. Yet, as Times Square in New York, it is always crowded both by residents and tourists at any time of the day. Activities in the square change during the day, from the market in the morning to musical and cultural performances in the evening.

One type of street, as described in the previous chapter, is the *suq*, composed of a large number of individual shops and organized according to the products for sale (Fig. 5.27f). The *suqs* of Marrakesh with their narrow streets are located north and east of Jemaa-el-Fna. The most ancient areas of the *suqs* are located between *Suq Smarine*, in the south, and the Ben Youssef Mosque, in the north, and include the *Rahba Kedima*, the 'old square' (a former slave market that is a centre for different types of healers).

Contrary to other imperial cities, in Marrakesh, the *Kasbah* and the medina are strongly connected. Except for the palace, the streets of the *Kasbah* are very similar to those of the Medina. This is also the case of the *Mellah* that has lost its original population becoming very similar to the other areas within the Medina.

Fig. 5.26 Marrakesh: the intricate pattern of narrow streets and the large *Jemaa-el-Fna* Square. *Source* Google Earth

The Ben Youssef area is one of the most important cultural and spiritual areas within the Medina. Three singular buildings are predominant in this area, the Marrakesh Museum, the Ben Youssef Mosque, and the Ben Youssef *Madrasa* (Fig. 5.27e). The *Madrasa* is one of the most remarkable buildings of the city. It has a squared shape and two storeys. It is organized around a symmetrical axe including the central patio with a rectangular pool, the prayer room, and the *mihrâb*. Two galleries of student cells, both on the ground floor and first floor, are structured around this axis.

The *Bab Doukkala* connects, literally, two different worlds, the Medina and the *Guéliz* neighbourhood. Indeed, the radial patterns of streets—built around the 16 November Square and the Mohammed V Avenue—and the relation between open space and the built fabric are significantly different outside and inside the medina. The built environment of the *Guèliz* (and *Hivernage*) is less adapted to the climatic conditions than the one of the medinas. Despite the intense transformation of the building stock in *Guèliz* for the production of office buildings and multifamily residential buildings that occurred in the last decades, it is possible to find some modernist single-family buildings surrounded by gardens erected in the early twentieth century (Fig. 5.27c).

The high-income *Hivernage* neighbourhood extends the *Guèliz* south. Although it presents a similar pattern of streets, plots tend to be larger, and building coverage is lower. Despite the qualification of streets (for instance, with trees), many of these are configured by high walls with no visual contact between the street and the different

Fig. 5.27 Marrakesh: **a** *Jemaa-el-Fna* Square; **b** and **d** street in the Medina; **c** street in the *Gueliz* neighbourhood; **e** Ben Youssef *Madrasa*; and **f** the *suqs*. *Source* photographs by the author

plots and buildings. In addition to the luxury houses, the *Hivernage* includes hotels, clubs, theatres, and casinos. At west of the neighbourhood, and 2 km of the *Bab Jdid*, the *Ménara* gardens, with the large reservoir built in the twelfth century and the green-roof palace erected in the nineteenth century, constitute a remarkable piece of landscape design.

5.3.2 Porto

Starting from a small castle town in the sixth century, Porto has been significantly expanded, firstly, in the fourteenth century, through the construction of a new city wall, and then in the eighteenth century, through the opening of a set of planned streets outside the wall. Since the early nineteenth century, the city and Portugal itself faced fundamental political changes, from Absolutist to Constitutional Monarchy, from the First Republic to Dictatorship, and from that to Democracy, in 1974.

Porto is on the coast of the Iberian Peninsula, the western limit of Eurasia. The city and metropolitan area are in the North, the largest and most populated region of Portugal. The metropolitan area is limited by the Atlantic Ocean and its natural landscape is framed by the *Douro* River (Fig. 5.28). The river had always fundamental importance to Porto connecting the city with the *Alto Douro* region where the notable Port Wine is produced. The historical kernel of Porto and the region are two sites classified by UNESCO as part of the World Heritage List. Two other important rivers in the metropolitan area are the *Ave* and *Leça* (north of *Douro*). Porto has a warm-summer Mediterranean climate.

Despite some previous forms of human occupation developed since the eighth century BC, the history of Porto as a town began in 1123 with the attribution of the so-called *foral*. The town in the twelfth century was a small settlement, of 3.5 hectares (in a high position, 60 m above the Douro River). By then, it was mainly constituted by a small castle town surrounded by a Romanesque city wall with four gates. The city walls was probably built in the sixth century, including a cathedral, a residential building for the clergy, a small market, and a number of small houses. Outside the wall, the land had mainly agricultural uses. One of the most important streets within the Romanesque wall was *Rua D. Hugo*. It is a small and very irregular street, not only in terms of the plan but also in terms of the topographical differences. The form of its 20 plots is also very irregular, including frontages from 3.5 m to 70 m. The diversity of its buildings is also substantial: building coverage is very high, and building height goes from one to four storey (although most buildings are two storey).

In the fourteenth century, a new city wall with 16 gates was built, including an overall area that was twelve times superior to the former. The new walled area included the Ribeira, the main port of the city. The increasing port activity in the early sixteenth century, mainly based on the Port wine trade with Britain, led to the introduction of some changes in the mediaeval city—the construction of new streets and some improvements in the city wall. One of these streets was *Rua das*

Fig. 5.28 Porto site. *Source* Google Earth

Flores. In morphological terms, it was substantially different from *Rua D. Hugo*. The construction of *Rua das Flores* started in 1521 linking two existing squares, one of these containing one city gate. The street is 350 m long and 9 m in width, and it has 100 plots. The permanence of its plot structure over time is remarkable. In 500 years of urban history, all (but one) plots kept their original form. Plot frontages are considerably less diverse than in *Rua D. Hugo*. The variety of building types is lower than in *Rua D. Hugo*. Height is, as it might be expected, higher than within the Romanesque wall, ranging from two to six storey.

In the early eighteenth century, the economic development of the city, supported by Brazilian gold and diamonds, allowed the construction of a set of Baroque buildings. Throughout the century, there was a significant increase in population, from less than 20,000 to about 30,000 inhabitants. Therefore, Porto local authority asked for the intervention of the Crown, and in 1758, the *Junta das Obras Públicas* was established as the public agency responsible for urban planning and management. It focussed

on two different areas, the historical kernel and the territory outside the city wall. Supported by favourable legislation on land and building expropriation, the *Junta* designed not only the street itself but also a street facade for the different buildings. It also provided land subdivision processes into regular plots with standard width (5–6 m) and variable depth. These plots are very different from the ones that can be found within the first and the second city walls. In 1784, the vision and the main guidelines of the *Junta* were gathered in a plan, the *Plano de Melhoramentos*. The work developed by this agency over eight decades is one of the most interesting periods in the urban history of Porto. A symbolic street of this period is *Rua do Almada* (already mentioned in Chap. 2) which has the name of the first president of the *Junta*, *João de Almada e Melo*. The street was built in 1764. With more than 800 m long, linking the walled city to a new square at the north, it is far longer than *Rua das Flores* and *Rua D. Hugo*. The average width of the street is similar to *Flores*. *Rua do Almada* includes ten street blocks and 215 plots. A significant part of these plots is 5 m wide and 20–90 m deep. This type of plot led to the emergence of a particular type of building. Due to the small size of the plot frontage, the building had to be developed 'in depth' – more than 15 m.

Despite some references to two different maps from the eighteenth century, the first map of Porto, encompassing what was then the whole city, was prepared in the early nineteenth century, in 1813, by George Balck—the so-called *Planta Redonda* (Fig. 5.29). Eight decades later, the map of 1892, designed by Telles Ferreira, would be a milestone in Portuguese cartography (Fig. 5.30).

The history of Porto in the first half of the nineteenth century was framed by two military events, the second Napoleonic invasions in 1809 (Portugal was invaded by the French three times between 1807 and 1813) and the civil war between conservatives and liberals from 1826 to 1833. The civil war and the victory of the liberals led to the establishment of a Constitutional Monarchy in Portugal and to the extinguishment of the *Junta* in 1833.

In the expansion of Porto outside the second city wall, after the opening of the first streets designed by the *Junta*, the new streets were planned and built on a territory structured by five roads leading to different cities in the north of Portugal. The urban landscape was marked by the development of industrial activities and the emergence of a new housing type, the *ilhas*. This residential solution for the working class consisted in rows of houses built on narrow and long plots connected to the street through strips of open private space and located on the back of larger *bourgeois* houses facing the street.

In 1892, the northern and western expansions of the city were supported by two main axes, *Avenida da Boavista* and *Rua da Constituição*. The construction of these axes took a long period of time. The first map of Porto, the *Planta Redonda*, already represented the eastern part of the Boavista axis (Fig. 5.29). This street linked the *Praça da República* with one of the five gateway roads to some of the most important nearby cities in the north of Portugal. In 1813, Boavista was 500 m long, 11 m wide, and 80 per cent of it had already been occupied with buildings. More than 150 years later, in 1978, the street length was 13 times higher. Although the early stages of the construction of *Rua da Constituição* can be traced to 1843, the first map to

Fig. 5.29 Porto map by George Balck, 1813. *Source* Public domain

include this street was the 1892 map (Fig. 5.29). Despite its apparent unitary form, *Constituição* had been built in three moments. The percentage of building façade has been growing in a regular rhythm, from 20% by the late nineteenth century to 58% by the late 1970s.

The urban landscape of Porto, in the first half of the twentieth century, is marked by the construction of the first social housing blocks, trying to eradicate the *ilhas*. In the first phase, these interventions corresponded to single-family houses, one to two storey, in peripheral parts of the city. The first multifamily housing building promoted by the Porto City Council was built in 1940. In the 1950s, there was a massive public investment on housing. Part of this investment corresponded to an important housing programme designed for the city, the *Plano de Melhoramentos*, which lead to the

Fig. 5.30 Porto map by Telles Ferreira, 1892. *Source* Public domain

construction of 6,000 dwellings in sixteen separate neighbourhoods. This second phase of housing promotion continued throughout the next two decades, including large neighbourhoods made of several apartment blocks, four storeys, clearly separated from the street. These dwellings were always very small and had a standard interior layout.

Since 1864, the year of the first census in Portugal, Porto population has always been growing until 1960. After a period of two decades with inconsistent trends, since 1980 the city has been losing population to its metropolitan area (made of 9 municipalities) and great metropolitan area (constituted by 17 municipalities, formally established in 2003) – Table 5.8. This has been most evident in the surrounding cities of *Maia*, *Valongo*, *Matosinhos,* and *Vila Nova de Gaia.* In 2020, Porto has 217,000 inhabitants and its great metropolitan area has 1.7 million inhabitants, which is a rather unusual proportion between a city and its metropolitan area (1:8). Porto and Lisbon taken together represent almost half of the Portuguese population. According to the OECD, population density in the metropolitan area is 1,300 people per km^2, increasing to 1,600 in the core area. Porto has the following composition by age: 13.5% youth, 66.8% working age, and 19.7% elderly. If we look at the data of the last census, we can see that Porto population (45.5% men and 54.5% women) were aggregated in 101,000 families, meaning that the average number of persons per family is 2.4. The city had 138,000 dwellings in 44,000 buildings, meaning 3.1 dwellings per building, expressing a sound presence of single-family housing and small-dimension multifamily housing.

The following paragraphs describe the main parts of the city. The historical centre corresponds to the area once contained within the fourteenth-century wall (Fig. 5.31a). Its streets and plots are very irregular, and the building density is high. Buildings are narrow, usually three storeys (some have five storeys). Although building and plot frontage are coincident, building coverage is very high. This is a part of the city where change has been, and should continue to be, slow. *Mouzinho da*

Fig. 5.31 Porto: **a** and **b** historical centre; **c**, **d**, and **e** *Baixa*; and **f** Boavista. *Source* photographs by the author

Table 5.8 Evolution of population in Porto, 1950–2020

Year	Population		
	Great Metropolitan Area	Metropolitan Area	City
1950	–	730,000	285,000
1960	1,145,000	840,000	310,000
1970	–	924,000	302,000
1980	1,516,000	1,104,000	327,000
1990	–	1,164,000	302,000
2000	1,731,000	1,254,000	263,000
2010	1,760,000	1,285,000	238,000
2020	1,728,000	1,313,000	217,000

Source World Urbanization Prospects, Instituto Nacional de Estatistica, AMPorto

Silveira, in the late nineteenth century, and *D. Afonso Henriques*, in the mid-twentieth century, were the last streets to be built in the area (Table 5.8).

The *Baixa* (Downtown) is located north of the historical centre in the immediate surroundings of the demolished wall. It was partly built according to plans prepared in the late eighteenth century and includes buildings dating from then to the early twentieth century. Streets and street blocks are regular, and plots have a rectangular shape. Most buildings have commercial use on the ground floor. The *Baixa* includes the civic centre that was built in the early twentieth century after the demolition of several street blocks (Fig. 5.31c). It also includes some small- and medium-size gardens, like the *Palácio de Cristal* (Fig. 5.31e).

Steadily after the 1960s—and the construction of a new bridge linking this area with the city of *Gaia* in the south bank of the *Douro*—the *Boavista* area emerged as the main financial and services centre of the city. The area is structured around the *Rotunda*, a large green roundabout with a diameter of more than 200 m, gathering eight different streets with a sound variety of plots and buildings. In the last years, some exceptional buildings such as the *Casa da Música* were erected in this area reinforcing an image of modernity (Fig. 5.31f).

Traditionally, the residents of the western part of the city hold higher incomes than the inhabitants of the eastern part of Porto. The size of a dwelling is also larger in the western part. The western part of the city combines, from north to south, the city park—linked to the seaside, a regular grid built after the late nineteenth century, and the *Foz Velha* with an irregular pattern of streets, plots, and buildings very similar to that of the historical centre.

Exercises

A. Testing Your Knowledge

5.1 Today, where does humankind live in?

i. 56% of the world population lives in urban settlements and 44% is rural. Most of the urban population lives in medium cities (1 to 5 million people).
ii. 56% of the world population lives in urban settlements and 44% is rural. Most of the urban population lives in settlements with less than 300,000 people.
iii. 44% of the world population lives in urban settlements and 56% is rural.

5.2 What have been the fundamental changes in world population distribution over the last seven decades?

i. The change of predominance in the rural/urban dichotomy and the growth of large cities (5 to 10 million people).
ii. The change of predominance in the rural/urban dichotomy and the growth of megacities (more than 10 million).
iii. The change of predominance in the rural/urban dichotomy and the growth of medium cities (1 to 5 million).

5.3 What makes the uniqueness of Istanbul urban landscape?

i. Its geographical setting (between Asia and Europe, between the Marmora and the Black Sea) and the patterns of streets, plots, and buildings inherited from the Roman Empire.
ii. Its urban history (capital of Roman, Byzantine, and Ottoman Empires for more than 1,500 years) and present political role (capital of Turkey).
iii. Its geographical setting (between Asia and Europe, between the Marmora and the Black Sea) and urban history (capital of Roman, Byzantine, and Ottoman Empires for more than 1,500 years).

5.4 From the list below, select the most relevant characteristic of Tokyo's physical form and structure.

i. A dual network of flows and built stocks: a main regular network for faster flows framed by medium- and high-rise buildings; and a secondary network for slower flows, framed by low-rise buildings.
ii. A pattern of streets, plots, and buildings (both singular and common) inherited from the twelfth century.
iii. The high-rise buildings dominant in the urban landscapes of some central wards.

5.5 Looking at New York's process of urban development what has been the most important, and long-lasting, action on the physical form of the city?

i. The construction of the Dutch wall (at present-day Wall Street), encompassing a set of 20 street blocks.

ii. The implementation of the new pattern of streets, street blocks, and plots proposed by the 1811 plan.
iii. The construction of major road infrastructures in the mid-twentieth century.

Solutions

5.1 ii.

5.2 ii.

5.3 iii.

5.4 i.

5.5 ii.

Interactive Exercises

Exercise 5.1—Where do we live?

'Where do we live?' aims at offering students a first insight into the main population dynamics of their countries and continents. It draws on data collected and offered by the United Nations (UN), and its Population Division of the Department of Economic and Social Affairs.

Students should start their investigation at https://population.un.org/wup/DataQuery/. Each student should select one country from the continent where the exercise is taking place. The first step is looking at the country's urban population distribution in 2020, identifying the different cities that fit in each of the five types defined by the UN: smallest cities, small cities, medium cities, large cities, and megacities (see the last row of Table 5.9 for the example of Spain, in Southern Europe). The second step is looking at these cities' evolution over time (drawing on the set identified in the last row), focussing on three historical periods: 2000, 1980, and 1960. The final step is identifying periods of population increase and decrease for each of these cities, as well as the highest positive and negative rates. The results of the exercise should be gathered in a table similar to Table 5.9. The exercise can take place in classes or as homework.

Exercise 5.2—Physical and socioeconomic reading

'Physical and socioeconomic reading' is an exercise that explores the capacity of each student to gather physical characteristics and socioeconomic indicators, as exemplified in Chap. 5. The exercise, framed by the contents taught and learned in the last chapter (particularly in the analysis of Istanbul, Tokyo, New York, Marrakesh, and Porto), should be as follows.

Firstly, each student is given a city from an initial list, gathering the main cities of the country where the exercise is being developed. Secondly, the analysis of each city should make evident: i. a brief geographical and historical context; ii. the present urban form (streets, street blocks, plots, and buildings) of a particular part of the city

Table 5.9 Evolution of urban population according to city size, 1960–2020

	Smallest cities 300,000 – 500,000	Small cities 500,000 – 1M	Medium cities 1M – 5M	Large cities 5M – 10M	Mega. > 10M
1960	Malaga 300,000 Sevilla 439,000 Zaragoza 323,000	Valencia 505,000	Barcelona 2,468,000 Madrid 2,392,000	–	–
1980	Bilbao 432,000 Las Palmas 361,000 Malaga 494,000 Valladolid 323,000	Sevilla 646,000 Valencia 745,000 Zaragoza 583,000	Barcelona 3,837,000	Madrid 4,253,000	–
2000	Bilbao 353,000 Cordoba 308,000 Las Palmas 356,000 Murcia 367,000 Palma 331,000 Valladolid 320,000	Malaga 526,000 Sevilla 687,000 Valencia 743,000 Zaragoza 616,000	Barcelona 4,355,000	Madrid 5,014,000	–
2020	Alicante 370,000 Bilbao 350,000 Cordoba 344,000 Las Palmas 402,000 Palma 467,000 Valladolid 305,000 Vigo 307,000	Malaga 590,000 Murcia 500,000 Sevilla 704,000 Valencia 834,000 Zaragoza 731,000	–	Barcelona 5,586,000 Madrid 6,618,000	–

Source World Urbanization Prospects

selected by the student, using a software for the interactive visualization of maps and satellite images (like Google Earth, Bing Maps, or Baidu Maps); and iii. a small set of demographic, social, and economic indicators for that same part of the city, usually available at each country's national statistics.

Each student should prepare a brief PowerPoint (5–10 min, 10 slides maximum) to be presented to the classroom. The student should use text and images (drawings and photographs) or any means that he thinks is adequate.

Exercise 5.3—Urbanized

'Urbanized' is a notable documentary directed by Gary Hustwit in 2011 (available at https://www.hustwit.com/urbanized). It offers the framework for this exercise: a debate on the main strengths, weaknesses, opportunities, and threats for several cities all around the world.

In addition to the visualization of the full documentary (in the classroom or at home), two or three cities and topics should be selected for discussion (for instance, Brasilia, as a city, and density, as a topic). For each of these cities and topics, two small groups of students should be created, for a debate framed by a dialectical method. The first group should develop a thesis and build a set of arguments to support it (for instance, defending the low density of Brasilia, based on the symbolic nature of the monumental axis, and the strong presence of green areas in the residential axis). The second group should formulate an anti-thesis and present its fundamental argumentation (for example, contesting that the low density of the Brazilian capital, not only within but also outside the so-called 'Plano Piloto', based on social justice and environmental sustainability). In the end, the two groups should collectively build a synthesis, in a process where each student should be able to appreciate the arguments of their colleagues.

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