

Conversely, the ancient Greek and Roman cities were characterized by change, decay, and reconstruction. As sociologist Rodney Stark has stated, when faced with the impressive ruins of classical cities, we are led to believe that these cities were almost eternal. This, however, he argues, is but an illusion, since what has survived throughout the centuries are the last vestiges of cities that had fallen into ruin several times, be it from earthquakes, floods, or fires. Therefore, Fortier has categorized the Ancient Greco-Roman city as a *transformation city*, rather than a *creation city*, since its urban layout and architecture are constantly changing over time. Specifically, as catastrophes destroyed parts of the city, those were then rebuilt in an idiosyncratic way within the existing city layout as partial interventions, often aimed at the architecture of the public space. Rome, in particular, is referred to by Fortier as an *accumulation city*, since the transformation there was more drastic than in the Greek city, resulting in a conglomeration of imposing monumental and civil engineering artifacts, apparently without much cohesion. Incidentally, such a constant change did not affect only the city's material structure but also its population. As Rodney Stark has remarked, it was common for cities to become almost completely depopulated (often due to natural disasters, epidemics, or war) and then re-inhabited, with their ethnic makeup often changing dramatically during this process.

The Greek and Roman city not only represented specific morphological archetypes, but they were also cities of political significance. Therefore, their architecture and urban planning cannot be understood without their societal dimension. With the Greek city – especially Athens – we mainly think of the *city-state*, the so-called *polis*, that is, the city as an autonomous administrative entity where the origin of democracy as a form of government lies. The word *democracy* is derived from the word *demos*, that is, people, which originally referred to the inhabitants of the villages in the countryside. However, as cities developed and population growth became more dependent on the revenues from the countryside, these villages were incorporated and became an administrative part of the *polis*. This political arrangement became known as *synoecism*, which simply meant living together in one house.<sup>1</sup> Conversely, Rome was originally a city of different tribes, but where later the emperors exercised their power, erected their grandiose buildings, and tried to keep the people calm with 'bread and games'.

## PERIODIZATION

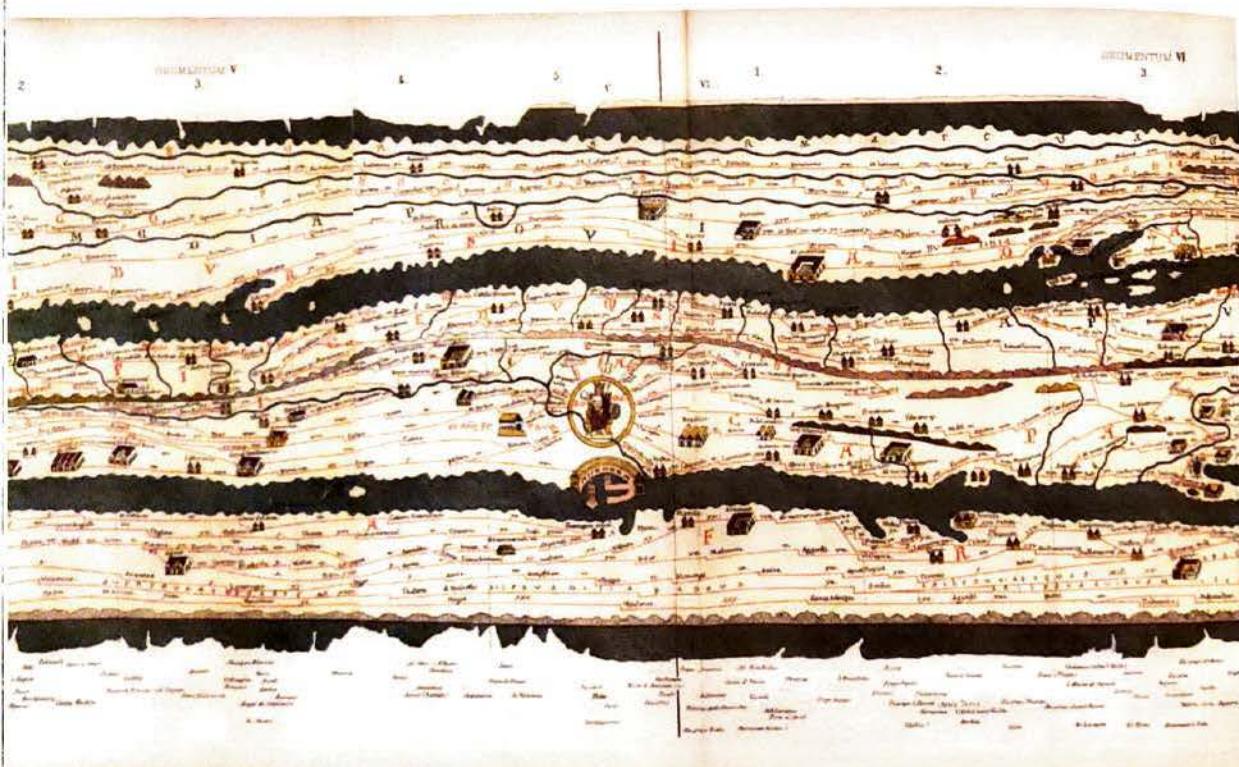
In the development of the Greek civilization, three periods have been commonly identified, beginning from the early Minoan civilization in Crete to the unification of various Greek states across. Therefore, the development of the Minoan culture (c. 3000-1400 BC) on the island of Crete (and, later the Mycenaeans in the mainland, c. 1600-1100 BC), has been recognized as a prehistory to Greek civilization, which would only start with the early unification under Athens' rule of in the Archaic period (c. 776-500 BC), leading up to the most famed and sophisticated Classical period (c. 500-323 BC), which culminated in the Hellenistic period (323-146 BC).

Greek Civilization		Roman Civilization			
3000 - 1400 BC	Minoan Civilization				
1600 - 1100 BC	Mycenaean Civilization				
1200 - 800 BC	Dark Ages	1100 - 725 BC	Villanova Period		
776 - 500 BC	<b>Archaic Period</b>	725 - 580 BC	Oriental Period	753 - 509 BC	Roman Kingdom
500 - 323 BC	<b>Classical Period</b>	580-480 BC	Archaic Period	510 - 27 BC	<b>Roman Republic</b>
		480 - 325 BC	Classic Period		
323 - 146 BC	<b>Hellenistic period</b>			27 BC - 395	<b>Roman Empire</b>

The development of the Greek civilization throughout these different periods also had a geographic dimension. While the earlier Minoan culture, for example, originated on the island of Crete, later developments took place on the mainland. Therefore, some prefer to speak of an Aegean complex instead of Greece, arguing that during both prehistory and history, Greece was part of a larger Aegean complex where the same material way of life could be found and which encompassed not only the Greek mainland and islands (including Cyprus and Crete), but also the west coast of Asia Minor.

The Hellenistic period has commonly been considered as the closing moment of the Greco-Classical period, with the death of Alexander the Great in 323 BC marking the end of the Classical period and the start of the Hellenistic period. In the preceding

decades, as Greek city-states engaged in many wars (both against external enemies as well as among themselves), either by conquest or annexation, Greek city-states gradually lost their independence, until 338 BC, when Philip II of Macedon (359–336 BC) unified the region and founded the Greco-Macedonian Empire. With his passing in 336 BC, his son Alexander the Great continued to build this empire and spread the achievements of Greek culture on a large geographic scale, from Egypt to Persia and India. It was also during this Classical period that many new cities were founded modeled after Athens.



With Alexander's death, however, the Greco-Macedonian empire was divided into four parts, the so-called *Diadochi* (successors) Kingdoms, with many of the *diadochi*, following Alexander, continuing to spread Greek culture, but without the original depth. Gradually, however, the *Diadochi* kingdoms were conquered by the Romans, who appropriated Greek culture by imitating, reinterpreting, and adapting it. There is therefore a direct relation between Greek and Roman culture that resulted in both several similarities and differences between the two ancient civilizations. Effectively the Hellenistic period can be seen as a kind of interim period when Greek city-states had lost their independence, but the Roman Empire had not yet completed its expansion across the eastern part of the Mediterranean. An interim period in which many of the ideas that would be widely adopted by the Romans—on both architecture and urban planning—were beginning to mature.

From the city-state of Rome on the Italic peninsula arose, from the 6th century BC, the Roman Empire which, at its height, encompassed all the regions around the Mediterranean, as well as throughout mainland Europe. In particular, the imperial period following the Roman Republic was a time of great geographic expansion. Cities played an important role in the Roman Empire's expansion, as cities were founded throughout Europe, also with a military function. Furthermore, there was a large network of paved roads along which troops could easily move. The *Tabula Peutingeriana* or *Peutinger Map* shows the boundaries of the Roman Empire in the 4th century, covering an area from Great Britain, Spain, and North Africa in the west to the Ganges River in the east.

## SYMBOLIC CITIES

The Greek and Roman city, especially Athens and Rome, are in many ways also symbolic cities, a kind of cultural archetypes. Beyond their historical development, another underlying meaning has been identified in these cities, specifically, as being crucial periods in history. For example, the classical period of the Greek city has been referred to as an *axial period*, i.e., a time when fundamental changes in the thinking of mankind took place and when the foundations of our modernity were laid. According to sociologist Shmuel N. Eisenstadt, with the Greek *polis* the realization arose that man is not subject to given circumstances and dependent on the time and place of his birth, but instead can make his own decisions and shape the world according to his own ideas. This was the beginning of modernity, in fact, of multiple modernities, according to Eisenstadt, since this was a process that took place not only in Greece, but also in China, even if in another form, with the Western version of modernity having since become predominant due to all kinds of political-economic developments. In many ways, the discussions that followed, deal with the architectural-urban interpretation of that specific modernity.

The emergence of Greek philosophy is connected to the emergence of modernity. Since Greek culture is a culture of reflection, the philosophers Plato (c. 427-347 BC) and Aristotle (384-322 BC) are often considered the founders of Western philosophy. They also thought about the ideal city, particularly questioning how it should be organized, which social groups could be distinguished, and how they should live together. Their specific approach laid the foundation for the study of the so-called *household codes*, with some historians, such as Helen Rosenau, even arguing that their work served as the foundation for a Greek utopian tradition in urbanism. The architectural theorist Vitruvius (80–15 BC) would play a similarly prominent role, but in the Roman utopian tradition since, much like Plato, he searched for a city that met the requirements of harmony and regularity based on geometric shapes.<sup>2</sup>

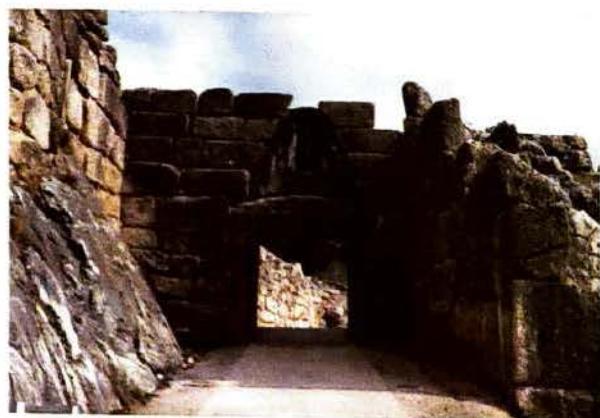
While many of these utopian ideas remained just that, ideas, both civilizations were civilizations with significant urban development in their respective periods. Nevertheless, both in terms of area and population, Greco-Roman cities were small. In fact, these cities tended to be small and enclosed by walls within which the population lived packed together. According to Rodney Stark's estimates, in the year 100, Rome had an exceptional population of approximately 650,000, while most other cities had populations between 200,000 (Ephesus) and 30,000 (Athens). Furthermore, large parts of Greek and Roman cities consisted of public buildings, monuments, and temples. According to Rodney Stark, in Pompeii, for example, such buildings took up 35 percent of the city, while in Rome, they amounted to half of the city.

# FROM ARCHAIC GREECE TO IMPERIAL ROME

The architectural-urban typology of the ancient Greek and Roman city is considered in a continuity to such an extent that the term Greco-Roman city is commonly employed. But while these ancient city models do share some structuring elements, they also diverge in some other crucial respects.

The development of the Greco-Roman city can be traced back to the Minoan (c. 3000-1400 BC) and Mycenaean times (c. 1600-1100 BC), when there is an emergence of the *palace* and *castle* cities. In Minoan times, the city was a mixture of planning and organic growth, with streets determined by the geography and topography of the situation, with alleys and streets, but also stairs to bridge height differences. Often a town was formed around a castle or citadel, located in a strategic location, protected by mountains and ravines. This is where the name *Acropolis*, i.e., the highest point of the city, originates. From a fortress, the surrounding area, could be controlled and protected, as the population could retreat to the high-walled castle when needed. While over time, as cities became walled, citadels would lose their military significance, the Acropolis continued to play a central role in the city as a meeting place for citizens, but also the residence of the gods, who protected the city in times of need.

In that period, the interaction between city and landscape becomes an important feature, as the city is characterized by cumulative growth and a certain formlessness. The term labyrinth would become associated with the (Minoan) Labyrinth of Knossos, but in reality, it merely referred to buildings whose structure was not immediately clear and that were characterized by irregular patterns, much like the settlements in those earlier cultures. Similarly to Minoan cities, Mycenae (1350 BC) was little more than a fortified castle-town, (see Figure above) with the citadel housing administrative and ceremonial spaces as well as a palace, surrounded by smaller settlements closely associated with circular tombs (*tholoi*), such as the Treasury of Atreus (c. 1330 BCE), in the area below. The citadel walls were made of dry masonry, composed by builders with minimal shaping. Later Greeks thought this impressively scaled masonry was the work of Giant Cyclops, thus naming them cyclopean constructions.



## THE GREEK POLIS

The invasion of nomadic tribes waned the power of the Mycenaean civilization, followed by three centuries of the so-called *Dark Ages* (1200-800 BC) in Greek history, before the Archaic period (c. 776-500 BC) and, eventually, the Classical period (c. 500-323 BC) could begin. In the Archaic period the *polis*, the sovereign city-state, arised as a new way of living together. With its own administration and politically independent, these city-states were a civil society, where citizens held the power. However, there were some differences with, for example, the city-state of Sparta being described as a *timocracy* (where only property owners could engage in government) and Corinth as an *oligarchy* (where only a small group of people rules) which meant that a certain class or elite predominated. That was also the case in Athens, where a distinction remained between civilians and non-citizens, free and slaves.

As population and prosperity increased within Greek civilization, there was also a growing rift between a ruling elite of landowners and tenants, between rich and poor. Therefore, it is important to understand the strategic importance of the *polis'* development, since it combined ancient concepts of justice by allowing the city-state to be ruled by a collection of citizens, usually in power for a year, who derived their authority from rightful selection or election. Citizenship was reserved for adult men, with women, slaves and foreigners being excluded since the citizen had to fight for the *polis*. The *polis* was thus a heroic collective based on loyalty where everything was subject to the common good: family, faith, and commerce.

The communal service to the gods of the *polis* was the basis of citizenship and in devoting oneself to the city before everything else, the citizen was serving his gods. Therefore, in the Greek city-state a distinction was established between *urbs* and *civitas* where if the *urbs* was the physical city, the place of assembly and worship, the *civitas* was the moral nexus found in the religious and political association of the citizens. With the *civitas* being the most important between the two, the Greek polis might just survive the destruction of the *urbs*.

The *polis* in the Greek Archaic period were a kind of aristocratic republic, organized as a collective gathering of several communities into a single political entity, i.e., *synoecism*. The city-state of Athens, for example, included the city, the villages of the Attica peninsula, as well as the countryside surrounding the city, the *chora*. Greek city-states also founded colonies across the Mediterranean, the so-called *apoikia*, with the *metropolis*, the 'mother polis,' stationing some of her city residents to run the government there. Such colonies were important for the food supply and trade interests as well as for absorbing overpopulation. Naples and Marseille, for example, were founded in this manner.

## AGORA

The Classical period was the pinnacle of ancient Greek architecture and urbanism. Athens then came to the fore as an exemplary city where art and science flourished and the foundations for Western philosophy were laid. In their work, the philosophers Socrates, Plato, and Aristotle reflected on the ideal society and the city, in particular on the ratio of the smallest to the largest unit of household, i.e., on the relationship of the family, the *oikos*, to the *polis* as a sovereign city-state.

Public life played a crucial role in the city, and as issues of interest to the community were debated, architecture and urbanism were also expressive of this condition, since they defined the backdrop for political and public life. The *agora* was central to this system, since it was the heart of the new city as an open square and public speaking place where temples were not central but set aside, open, transparent, and accessible. Effectively, in the evolution from acropolis to polis, the *agora* had a central role, since as it began to accommodate political, economic, cultural, and religious activities, it displaced the acropolis as the most vital feature of the city, the focus of its social life and the location of its most important buildings. As a central element of a social, economic and political network, the *agora* would come to play an intermediary role in promoting social cohesion in the *polis*.

The *agora* was surrounded by colonnades or galleries, the so-called *stoa*. These were intended as a shelter from the sun, where philosophy was debated and taught, but also where shops were located. Important government buildings could be found in close proximity to the *agora*, such as senate halls and other legislative buildings. Therefore, the *agora* and the *polis* were seen as symbols of democracy and the rule of law in the Greek city.

However, Greek society was nevertheless based on natural inequality where the magistrates formed a top layer, but women and slaves formed the bottom layer, for whom the *agora* was not accessible. The status of Athenian women was, in fact, extremely low with women being classified as 'children' regardless of their age under Athenian law. Furthermore, girls received little or no education and were often married during puberty, often even earlier, thus being legal property of men all their lives. However, this was different in Sparta, where women had status and power and did not have to dress in disguising garments, like the women in Athens. In view of this inequality, the number of people who actually took part in public life — and who were full members of the *polis* — should be considered less highly, and so should the idea of the *polis* as the beginning of democracy be put into perspective. All the more so, since Plato too preferred an aristocratic rather than a democratic government of the city-state, as he considered that the latter would give people too much freedom.

## PUBLIC BUILDINGS AND SPACES

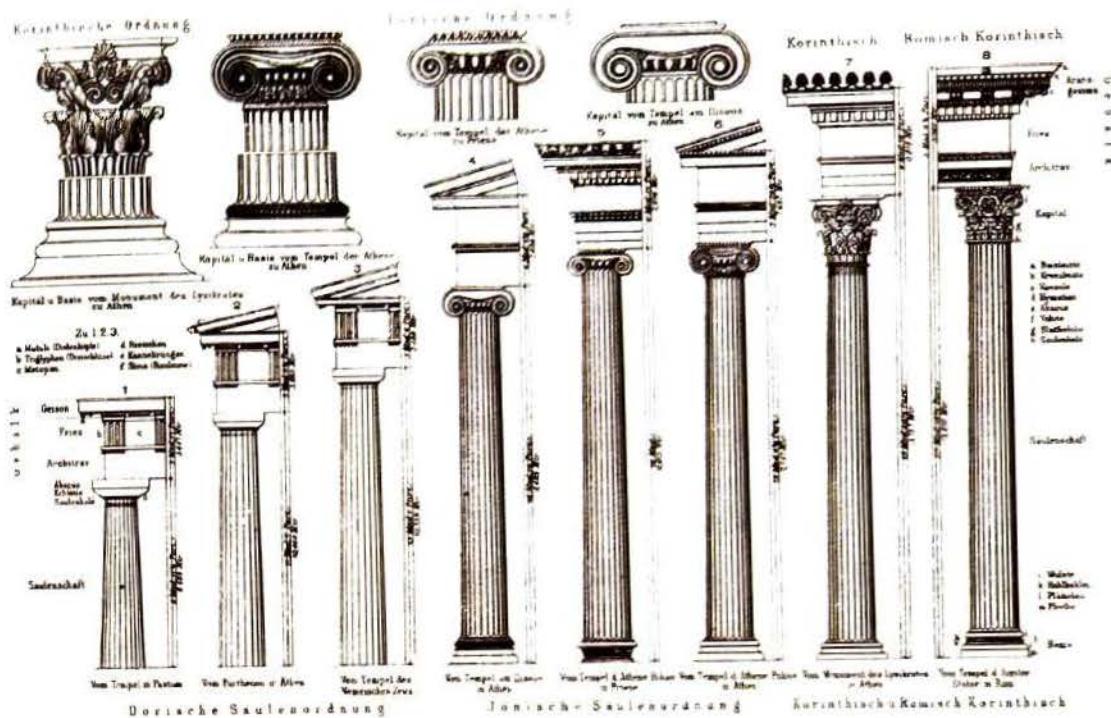
As life in the Greek city took place in the open air—and with such a large emphasis on public life—great importance was attached to public space in the *polis*. The primacy of public life could also be read from the physical form of the city, with homes being set back from the street and low in height while public temples, stadiums and theaters were formally emphasized as large public buildings and spaces. Particularly in a large *polis*, such public buildings were very spacious and covered most of the city, but also in smaller cities, a lot of resources were spent on buildings with a common function.

Because life took place outdoors, little importance was attached to domestic comfort and the quality of the homes. Most of the population lived in simple dwellings, without public or communal facilities or buildings. One-story high, these houses made a closed impression, built together along communal walls with only small windows high in the wall and rooms grouped around an inner courtyard. The 'urban fabric' of streets formed by the grouping of these houses was originally irregular, with later attempts to make them systematic through rational urbanism.

The ancient city could not be separated from religion, as civil society was also a religious community. In Ancient Greece, religion was polytheistic, with a whole 'pantheon' of gods depicted as idealized people, and thus temple building was one of the priorities in the early history of Greek architecture. During the Archaic period the typology of the temple was created based on the design of the Mycenaean megaron. Temples were initially made of wood, clay, and terracotta, with stone temples only being built from the 6th century BC. In these, the initial megaron shape was extended with a front and rear gallery and either a single or double colonnade along the sides, i.e., in peristyle, applying the Ionic, Doric or, later (particularly in Roman times), the Corinthian order.

Along with religion, the theater was another important element of Greek public life. Therefore, theaters were also an important architectural-urban element in the Greek city. Theaters were uncovered spaces, organized in a semicircle, with stepwise ascending benches for the spectators, closed on the right side by a stage with a fixed back wall, the *skene*, and with an altar at their center. The Greeks' essential relationship between buildings and landscape was made particularly evident in theaters, as these were carved from hillsides, with their location being partly determined by natural acoustics and alignments with purposeful vistas. The *odeon* or *odeum* was a variant of the theater, dedicated especially for music, singing, and recitation. Like the theater it was also semi-circular, but unlike the theater, it was covered.

## CLASSICAL ORDERS



Ancient Greeks developed a highly stylized treatment for bases, capitals, supported members, and entablatures which in the 16th century were termed the *orders of architecture*. They became the basis for the classical language of architecture and were described by Vitruvius (based on earlier, now lost, Greek texts), in what remains the only written architectural treatise from antiquity to have survived, *De Architectura*. Vitruvius identified three orders which also roughly accompanied the three periods of Greek architecture. While the Doric was the sturdiest one based on the proportions of men (developed on mainland Greece), the Ionic was lighter in character to reflect the proportions of women (developed on the Aegean islands), and the Corinthian was the slenderest of all with a highly decorated cap-

ital, suggesting the form and proportions of a young maiden. The latter one was the last to be developed and was rarely used in Greek architecture.

Each order has a specific combination of architectural elements. The *Doric* column has no base and has the simplest capital atop a fluted shaft. Its entablature consists of a plain architrave and alternating metope (often with painted or sculptural painting) and triglyphs (vertically channelled tablets) in the frieze which is crowned with a cornice. The *Ionic* column has a base, a fluted column shaft (like the Doric) and a capital with volutes, i.e., scrolls, while its entablature is composed of an architrave and frieze. The *Corinthian* order emerged as a variation of the Ionic, but is distinguished by a decorative, bell-



shaped capital adorned with acanthus leaves, flowers, and scrolls, as well as an elaborate cornice. In many instances, the column is fluted.

There were general conventions regulating the proportions of the parts, their overall height, and the column spacing. The ancient Greeks adjusted these conventions according to specific circumstances, but Renaissance architects later codified them into a set of mathematical ratios based on the column's base diameter. However, there is no evidence that Greeks ever reduced temple design to a single formula. Orders were both specific

and flexible, not a restriction, but an expressive medium for designers that could be adapted to circumstances.

In contrast to the development of a stricter organization of building complexes and urban planning, the use of the architectural orders seemed to move away in the opposite direction, from sober traditions associated with Athens towards freer and showier interpretations associated with Asia Minor's coast. As such, the Doric order (associated with mainland Greece) was displaced by the Ionic order (reflecting the exuberance of the Ionian colonies), and later developed into the Corinthian.

Ancient Greeks also had a resolute body culture, with sport being particularly important. From 776 BC the Olympic Games were organized, and since they were dedicated to Zeus, they were organized near his temple in the city of Olympia, while other games dedicated to other gods, such as the Pythian Games, were organized in Delphi in honor of Apollo.<sup>3</sup> Therefore, the *gymnasium*, with its rooms dedicated to gymnastics and fitness, running tracks as well as hot and cold pools, was an important public facility in the Greek city. In fact, these were considered to be so important for civil service and urban defensibility, that their funding and maintenance was supported by the collected taxes.

But beyond physical exercise, conversations and debates were also held in gymanisums as a form of mental development. Furthermore, as social relations developed, the gymnasium even took over some of the agora's role in this regard, with the landed gentry in democratic Athens segregating themselves from the masses, the *hoi polloi*, preferring the gymnasium to the agora for their debates. After the introduction of the professional army (around 400 BC), spiritual development took on a greater emphasis in the gymnasium, as it became a school.

Another type of facility for sports activities was the stadium, an elongated, elliptical racecourse of approximately 185 meters, with seats for spectators on the long side, often arranged on a natural slope. Not only was there room for athletics, but also for wrestling, for example, in a special semi-circular space built at the end of

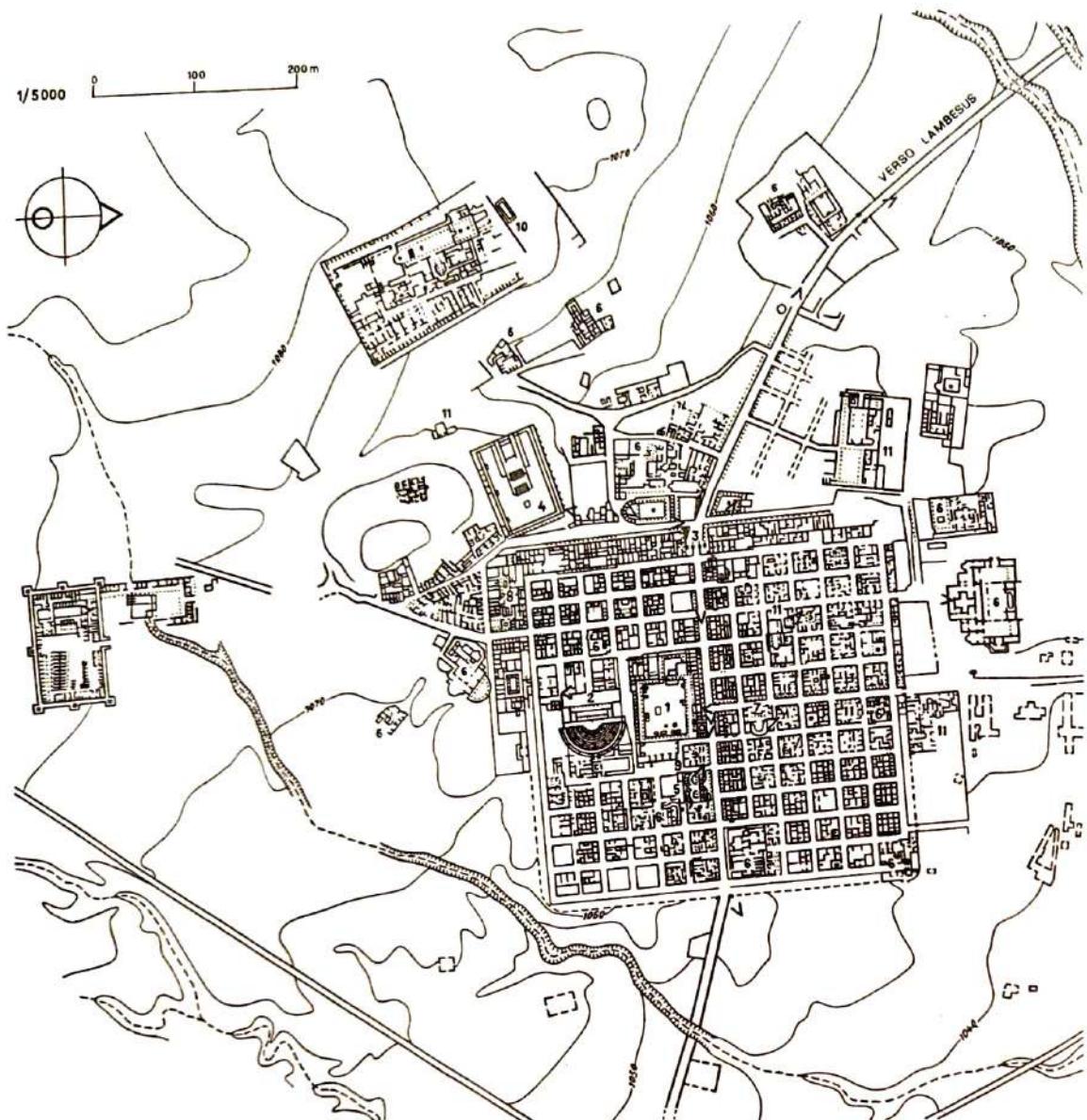
the racecourse. In Roman times, such stadiums became used as a hippodrome for horse racing with drawn chariots and gladiator fights, part of the Roman popular entertainment or *bread and games*.

## THE ROMAN URBS

When we think of the history of ancient Rome we soon think of grandeur, of imposing architecture, rational urban planning, as well as civil engineering, such as aqueducts. This is discussed extensively in most books, yet, the Roman city also had a dark side with architectural historian Lewis Mumford even arguing that despite the wealth of literature on the Ancient City, the city itself remained a shadow.

While the beginning of Roman civilization was contemporary with the Etruscans, the Greeks and the later Egyptian dynasties, in time, Roman civilization absorbed those cultures (as well as others) and continued to grow longer than all the rest. According to French philosopher Rémi Brague, it was a characteristic of the Romans that they heavily borrowed from other cultures and did not need to be original, a method that Brage claims later became typical of Europe. But despite absorbing many different cultures, the Romans still produced a remarkably homogeneous architectural style with forms and typologies that were in many ways original, such as the triumphal arch. Roman culture and construction practices were derived from many sources, mainly Etruscan and Greek, and yet there are striking differences from the ancient Greek culture. Romans were both materialistic and practical, but they were also devoted to family life, gifted administrators, astute lawmakers, and highly competent and innovative builders.

Roman history can be divided into its three different forms of government, namely kingdom (753-509 BC), republic (510-27 BC) and empire (27 BC-395), with architecture accompanying the changes to the Roman political system. Roman society during its kingdom period was greatly influenced by the Etruscans, particularly regarding state structure, construction technique (mainly of arches and vaults), trade, and religion. Etruscans liked big feasts, horse races, dance and music, as well as gladiator fights and their settlements appear to have been organized as city-states, much like in Greece. Some have argued that the basis of Western urbanization can even be found in the Etruscan cities, since all the structure of the Roman city was derived from them and, through Rome, that influence was passed on to many people. Specifically, Etruscan cities had a grid plan, with their two main streets being perpendicular to one another, crossing at the center of the city. While this organization may have been derived from Greek colonial cities, the Romans would later adopt similar plans for their military camps, the so-called *castrum*.



Starting in the Republican period, colonies with walls were founded across the Roman Empire, which were based on the model of the *castrum* and its rational urban planning. Such urban implementation was based on geodesy, precise land division, and strict geometric principles, as well as with religious perspectives. The founding of new cities for Roman colonization was, for an important part, based on agricultural legislation that was intended to adequately divide the territory. Specifically, territory was divided into private and public land, with the wealthier elite taking over public land for agriculture at the expense of small farmers, who then 'fled' to the city. For this purpose, colony settlements were founded, to which communities the public land belonged. The colonies also had a strategic role since they served to defend the Roman Empire's territory.

Beyond the parceling of the land, agricultural laws also had an influence on the organization of the landscape, including water management. Therefore, these were carried out by special officers, the surveyors, but decisions on establishing colonies and parceling out territory were in the hands of a special commission of Roman magistrates. Establishment of a colony and land division laid with the commission, including the choice of the exact area where the settlement was to be founded, the definition of the territory's boundaries, and the religious rituals required for the colony's foundation, leading up to the division and assignation of the land itself. These laws could also stipulate general regulations for land use – sacred, public, destined for a public road or aqueduct – as well as prescribing the width of the boundaries (*limites*) necessary for the implementation of the land division which had to be outlined in the territory and defined through roads, ditches, and boundary stones.

For the actual implementation of the division, many different tasks had to be dealt with on location: the division grid had to be defined, measured and marked. These grids consisted of boundaries – often roads – dividing the territory into large squares or rectangles, which were then again divided into individual lots, resulting in the measured and divided area, called *pertica*. The use and purpose of this rigid structure was manifold since it allowed for a kind of zoning of the territory and facilitated the administration of property and the management of tax collection. For this purpose, the cadaster was documented in a map, the *forma*, of which a copy was kept in Rome. At the same time the grid provided the basis for the infrastructure within the territory, with the roads constituting the grid ensuring accessibility and easier use of the land.

## FORUM

The rise of the Roman Republic (c. 510-27 BC) has been compared to the history of the Greek polis, but some crucial variations remain. If in Athens there was a civil society, although it was ultimately ruled by an aristocracy, in Rome there was a clear distinction between the higher class, the patricians, and the lower class, the plebeians. While the plebeians were represented in the popular assembly, the patricians were represented in the senate and, in the end, the senate effectively decided on the administrative issues of the city.

What the Agora was for the Greek city, the Forum was for its Roman counterpart. Thus, the forum was not just a public square, but an urban ensemble of public space and large-scale buildings for administration, religion, justice, and trade. Much like in the agora, commercial activities took second to civic and religious ones in the forum, even if the three were inseparable. It was in the forum that the storeroom of a city's weights and measures was located, where the administration of justice

was conducted, where public oratory of all kinds could be found, where public announcements were exhibited, and where games were held (at least during the Republican period). However, the market function of a forum was often displaced to other squares, since the administrative and noisy commercial activities were considered incompatible. Specialized markets emerged, such as the *Forum Boarium* and the *Forum Pescatorum*. The most famous of all forums was the *Forum Romanum*, a forum that originated on the place where Rome was founded.

The imperial forums created during the Imperial period were akin to open-air museums full of statues and monuments, intended as reminders of the great events in a city's history, the site of celebration of its triumphs and traditions. But the imperial forums were specifically dedicated to the 'glory' of one of the emperors and with them the emperors appropriated the public domain of the city. In Rome itself, a series of remarkable forums dedicated to the glory of reigning emperors, such as the Forum of Trajan (106-112), siphoned away much of the authority of the old Republican forum.

The Basilica was a crucial public building in any Forum complex as well as a new typology invented by the Romans. Basically, a large assembly hall, basilicas were used for law courts, but also served as gathering places for social and commercial functions, much like the colonnaded stoas in Greece. Instead of defining exterior space, however, in the basilica, colonnades define the longitudinal central space. The basilica in Pompeii (c. 120-78 BC) is the oldest known basilica, though it was probably not the first. The entrance was made primarily from the short side, adjacent to the city government offices, but there were lesser entrances on the two long sides.

Temples and sanctuaries were other important public buildings for the Roman civilization. Influenced by the Greeks, Roman religion was likewise polytheistic, with gods depicted as idealized people. Roman temple construction had its own characteristic. The Temple of Jupiter (c. 150 BC) in Pompeii and the Temple of Mars Ultor (c. 20-2 BC) in Rome were very similar and typical for Roman temples. Unlike Greek classical temples, these were not isolated structures, but axially approached buildings in urban settings, similar to temples from the Hellenistic and Etruscan periods. Roman temples were raised on podiums, were accessed by a single flight of stairs, with a double row of columns atop. But not all Roman temples were rectangular, as some were circular, similar to the Greek round *tholoi*. The Temple of Vesta (c. 25 BC) in Tivoli is a particularly interesting example. Set on a promontory, it reflects the Greek precedent in design and location, but it is also distinctly Roman, because of its axial approach through one flight of stairs, the use of concrete walls rather than marble blocks as well as Corinthian ornamentation.

The greatest Roman circular plan temple is the Pantheon in Rome (113-125) which, much like the Parthenon in Athens, is one of the most influential buildings in Western architectural history. The Pantheon's size, innovative design and technical accomplishments make it an impressive work that would remain a constant reference for subsequent architectural periods. The Pantheon's entrance is presented as an enormous portico with twenty Corinthian columns in prostyle, establishing an awkward connection between a rectangular portico and the circular *cella*. Notably, the *cella* is covered by a dome with a circular opening, an oculus, opening the building to the sky and letting air and light in. Unlike other pagan temples in Rome, the Pantheon was converted to Christian use and its original marbles were never scavenged, thus, in all Rome, the Pantheon was the Ancient Roman building that has remained closest to its original state.

## FROM GREEK TO ROMAN ARCHITECTURE

The typology of Greek and Roman architecture and urban planning shows important similarities, but there are also differences, which are rooted in the cultural difference between the two. While Roman character looks for order and world rule, the Greek mind aims at amazement through intellectual discovery. Roman culture, unlike the reflexive culture of the Greeks, is focused on legislation, military affairs, technology, in short, it is pragmatic. As a culture of engineers rather than philosophers, infrastructural works are important for the Romans, from roads and aqueducts to sewage. If a Greek work of art aims to inspire the viewer through the embodiment of the sacred or the beautiful (or both), a Roman work of art, on the other hand, communicates something in a more objective manner. While many Roman buildings with their arches and vaults may very well be an expression of technical ingenuity, the Greek word *techne* means both art and skill.

Furthermore, the distinction between Greek and Roman architecture and urbanism has been recognized in the way the buildings were organized in relation to one another. While the Greek building appears as an independent fact, in Roman architecture, even though the building is seen as a piece of sculpture, it no longer retains such a beautiful independence, as buildings are grouped with more deliberate consultation and the parts are also less isolated. That is why not only the Greek completely round, free-standing columns with architraves resting on them were replaced by heavy, square Roman pillars bearing arches, but also why the thickness of the walls is more pronounced and when columns are needed, half columns are used connected to the wall. Furthermore, instead of flat ceilings, the Romans use large barrel or groin vaults to span spaces, since the arch and the vault are the work of engineers. These arched and vaulted constructions, such as aqueducts, basilicas,

theaters, and palaces, are what we think of when we think of Roman architecture and not of the temples.

A major difference between Greek and Roman architecture arose from the use of new building materials and techniques by the Romans. Notably, they used fired bricks of cast material, which allowed for a more efficient and more varied construction, as well as a form of hydraulic cement derived from volcanic deposits, *pozzolana*, which when mixed with lime, rubble and water, would react chemically and harden to stone-like consistency, even if under water. Effectively, the imposing size and quality of Roman constructions were only possible because they applied engineering skills to tackle everyday problems. The Romans employed elements that operated in compression, namely the arch, the vault and the dome. While these had already been previously developed, but with limited use by earlier civilizations, the Romans made them the basis for their structural systems. The breadth and complexity of the Empire demanded new construction practices, and these had to be capable of producing very large buildings quickly and economically.

# CLASSICAL ATHENS

Named after its patron goddess, Athena, Athens was the most important city-state in Greece, and experienced tremendous development in numerous fields during the classical period of Ancient Greece (500-336 BC). If we focus in particular on the architecture and urbanism of ancient Athens, we must realize that we may never really approach Athens' essence since the physical form of the city remained in the shadow of the city as a society. Aldo Rossi also pointed that out, arguing that the physical aspect of Athens had always been secondary to its inhabitants, almost as if the city was purely a mental place. Effectively, Athens was first and foremost the social organization of the city-state, not the designation for an architectural-urban whole particularly since Athens was a city-state whose inhabitants lived across a reasonably large rural region, but remained closely connected to the city.

The historical vicissitudes of Athens confirm the fundamental fact that the connection among Athenian citizens and the city was essentially political and administrative and not residential. The problems of the city did not interest Athenians, except from a general, political, and urban point of view. As some have argued, it is precisely because of this conception of the city-state, as a general, political place for Athenians, that the first reflections on urban organization were of a purely theoretical type. That is, they were speculations concerning the best form of the city and how it could be organized as a political organization that could be most favorable to the moral development of its citizens. Therefore, maybe that is precisely why the architecture that we find in Athens is so extraordinary, or, as Rossi speculated, that perhaps the architecture of the Greek cities owes its extraordinary beauty to this inherent intellectual character. He would continue to extol the architecture of Classical Athens by claiming that it embodied the passage from nature to culture, with myth becoming a material fact in the building of the temple.

But while Rossi speaks of Athens as a mental place, contemporary sociologist Thomas Gieryn has associated Athens with the concept of truth-spots, spaces or places where truth is or could be revealed. Specifically, he refers to Mount Parnassus, where the oracle of Delphi spoke, as an example, but did the Acropolis with its temples and the Agora as Athens' public meeting place together form such a Truth-Spot, where the space of divine and philosophical truth respectively, obtained through mutual dialogue, came to light? That may have very well been, but there was also quite some tension between the two truths, since some philosophers, such as Protagoras (c. 490-420 BC), doubted the gods.

Although some historians have typified Athens' urban development during its classical period as organic, this might have been too generous. Instead of a coherently grown whole, the ancient Greek city appears to be more of a collection of large-scale artifacts without much structure, leaving one to wonder if the ordering was mostly mental, as Rossi argued. Effectively, while the placement of buildings in Greek urban planning – most notably temples – may appear random, it was greatly influenced by the ambition of logical sequences in an ordered and balanced universe, using surprise and shifts in perspective to reveal the full drama of architectural forms. A similar placement strategy can be recognized in the Athenian Agora. However, it is worth remembering that Athens was paradigmatic of a transformation city and after the destruction caused by the war with the Persians, the Athenians chose to rebuild their city.

In Classical Athens there were two main groups of civic buildings, namely the Acropolis, the city's political and religious center, and the Agora, its civic and commercial core, connected by the Panathenaic Way. After defeating the Persians, Athenians rebuilt both these complexes with great care and considerable attention to spatial relationships, but in both, the implementation and layout of their respective buildings were determined by existing constraints.

## ACROPOLIS

The reconstruction of the Athenian Acropolis began in 479 BC as peace emerged at the end of a long war between Athens and the Persians. The end of the war and the reconstruction of the Acropolis have been identified as the beginning of the classical period of Greek architecture, which would extend until the death of Alexander the Great in 323 BC. Standing on a plateau that rises steeply above the plain of the city, the Acropolis – which had been a military, political and religious center since Mycenaean times – was what the *polis* was originally applied to, as Athens' original site for refuge, worship, and government, and as such the point of origin of the Athenian city. Although the organization of buildings on the Acropolis might seem like a random placement, in fact, buildings have been carefully placed and planned to respond to particular qualities of the site. Most noticeably, upon arrival, visitors are confronted with the backside of the temples, since temples on the Acropolis in particular – but also Greek temples in general – are mostly Eastwards oriented, while the plateau itself is accessed through the Western escarpment.

The Parthenon (447-432 BC), a temple dedicated to the goddess Athena Polias, is the Acropolis' most important building (see Figure on the right). Designed by Iktinos and Kallikrates, the Parthenon was the largest and most famous of all Greek

temples, built with the finest marble, Pentelic Marble. The Parthenon is usually described as a Doric temple, with Ionic attributes. Specifically, it combines a *peripheral colonnade*, surrounding the temple on all four sides with Doric columns, with a continuous sculpted frieze around the exterior of the *cella* wall characteristic of the Ionic order, as well as presenting four Ionic columns supporting the roof of its back room, the *opisthodomos*. Across the Parthenon, there are subtle adjustments in horizontal and vertical lines, which counter the perspective and enhance the perception of orthogonal geometry. The *stylobate*, for example, that is the platform where columns rest, is convex and slightly bent upwards, while the columns not only incline (imperceptibly) away from the viewer, but the end columns are also larger in diameter and the corner ones are closer together. Combined, all these adjustments not only avoid strict geometrical perfection, but also correct visual illusions of straight elements.



Sculpted figures adorned the inside and outside of the temple, representing various moments in Athens' history, which culminated in the large cult statue of Athena housed in the temple's main space, representing Athena with a Nike, a goddess of victory, on her right hand and a shield resting on her left. The *cella* where the statue was located was one of the largest and grandest interiors built in ancient Greece, so much so, that it is still debated whether the space was enclosed or not, since its long span would have posed quite some construction problems, but a relatively dark interior would have been a more appropriate setting for such a dramatic sculpted figure. Finally, the Parthenon's orientation allowed the sun to penetrate the *cella* interior on the morning of Athena's birthday.

Since antiquity, the Parthenon has had various adaptative reuses, from a Christian temple to a Mosque. Most notably, perhaps, by 1687 the Parthenon was being used as a munitions storage which exploded when it was bombarded by the Venetians, ripping out the *cella* wall and dislodging several sculptures. Some of these sculptures were then taken by the victorious Venetians as trophies of their conquest. At the start of the 19th century, Lord Thomas Bruce, Earl of Elgin (1766-1841, then British ambassador for the Ottoman Empire) negotiated the remaining of the Parthenon sculptures, moving them to England. The Elgin Marbles, as these pieces became known, are on permanent display in the British Museum, despite several efforts of the Greek government to initiate a process of restitution.

While the Parthenon remains the most imposing structure on the Acropolis, it is surrounded by several other notable structures. The Propylaea (c. 437-432 BC), the monumental entrance gateway to the Acropolis, was designed by Mnesikles as a symmetrical entranceway in an asymmetrical setting, marking the transition from the secular and profane world below to the sacred world of the Acropolis. It is essentially a Doric Portico (with a wider central space between columns so as to accommodate a processional way through its axial space) flanked by two projecting wings. The northern wing is organized as a traditional Greek megaron, and was used either as a picture gallery or banqueting hall, while the southern wing presents itself as a porch overlooking the freestanding Temple of Athena Nike.

This small temple dedicated to the victorious Athena is located on the edge of the hilltop, in a place formerly occupied by a bastion just to the right of the Propylaea. Designed by Kallikrates in 448 BC, but only built in 420 BC, this early Ionic temple with four Ionic columns at both the front (eastern end) and back (western end), was a simple sanctuary housing a wooden image of Athena, holding her helmet and a pomegranate (symbol of fertility). Notably, this temple's refined detailing and small size made it an important model for garden temples throughout the 18th century.

The Erechtheion (421-406 BC), just north of the Parthenon, is the other important temple on the Acropolis. Much more elaborate than the Temple of Athena Nike, the Erechtheion is among the most inventive temples of classical antiquity, with multiple complexities and various scales united through an exquisite use of the Ionic order than is simply unmatched. Specifically, given the topography of the site, the Ionic order was used to negotiate the difference of levels while allowing for different sites of worship to be accommodated within one temple. If the eastern entrance led to a sanctuary dedicated to Athena (with a wooden figure), the north stylobate, which is approximately three meters lower, led to a shrine for Poseidon. The west façade presents yet another use of the Ionic order, with four columns partially engaged with the wall, while the temple's south side, facing the Parthenon, presents the unique porch of the Caryatid maidens, from which the Erechtheion is easily recognized. Instead of Ionic columns, this porch's roof is supported by six Caryatid maidens in a graceful pose, one slightly bent knee, and drapery revealing their form, looking across the ruins of the former temple (deliberately left exposed as a reminder of the Persian destruction) and toward the Parthenon. This most unusual composition of Caryatid maidens was believed by Vitruvius to represent an atonement for the state of Caryae which had allied with the Persians in the war.

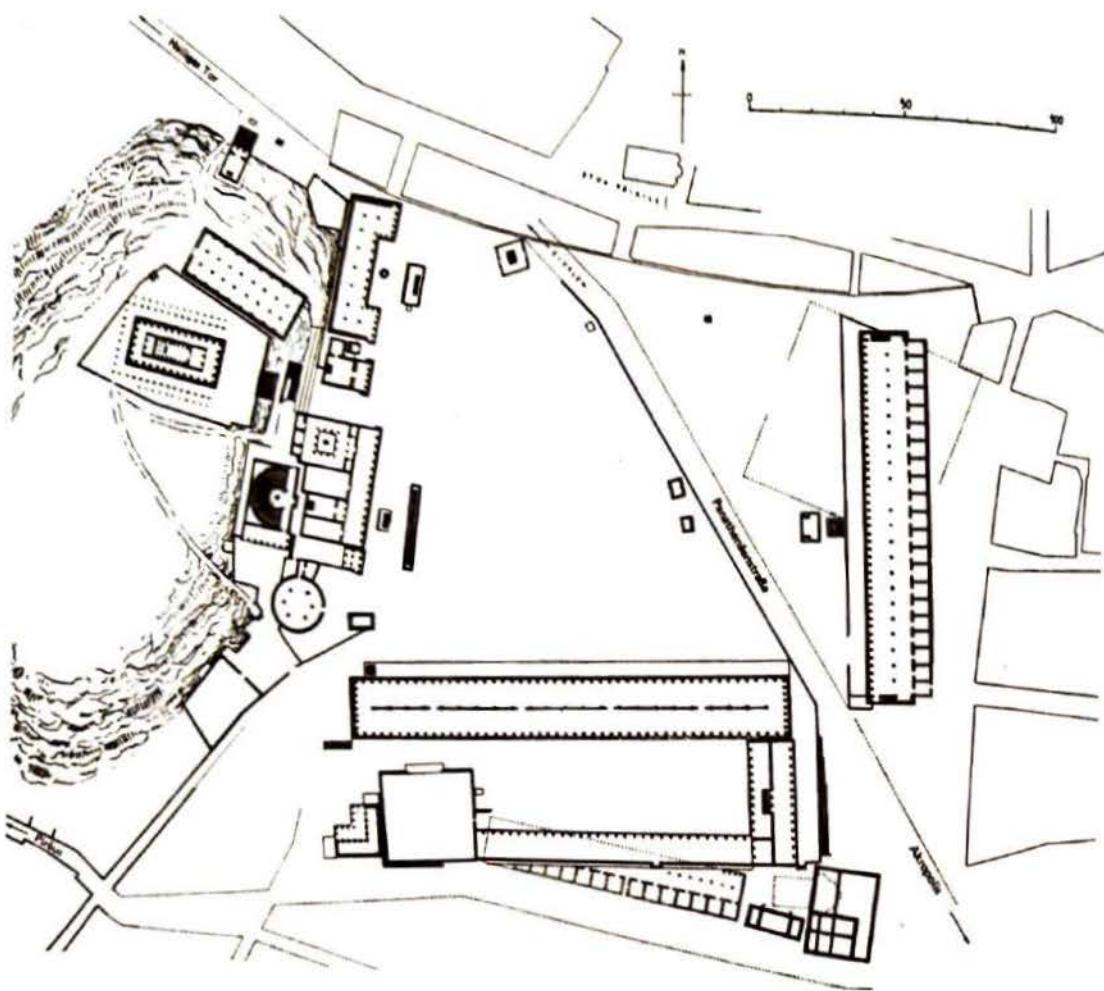
While the Erechtheion's authorship remains under dispute (with some sources attributing it to Kallikrates and others to Mnesikles), the Erechtheion's ingenious design not only responded to the site's natural conditions while showing proper deference to the Parthenon, but also represented a palimpsest of Athenian history, with different mythical and historical episodes being brought together in this temple. Furthermore, the Erechtheion is also exceptional in classical architecture for its fine decorative detailing, which is believed to have directly influenced the later Corinthian order.

The seemingly random placement of temples on the Acropolis was influenced by the logical sequence of an ordered and balanced universe. This created a composition that used surprise and changing perspective to reveal the full drama of architectural forms, with movement and procession being used as a structuring element.

## ACORA

Just below the Acropolis' plateau (see Figure on next page), was the Athenian Agora, the other fundamental urban space in Classical Athens, which used spatial strategies similar to those employed in the organization of the Acropolis. This civic and commercial center developed around the ancient Panathenaic Way – leading to the Acropolis—from around 600 BC, when the first public structures were built on the western side of the Agora Hill.

These first buildings included several temples to Athena, Apollo, Ares, as well as a shrine to Zeus, which would later be replaced by the Stoa of Zeus (c. 425-410 BC) and the Doric Temple of Hephaestus (c. 449-415 BC), one of the most well-preserved temples from that period. Another important building was the Senate House, the Bouleuterion (c. 500 BC), which was designed as a colonnaded porch leading to the assembly chamber, with seats organized as rows along three sides of the chamber that could famously accommodate the 500 elected senators of Athens.



On the Agora, however, the most important typology would be the (Greek) stoa, as several buildings around the Agora adopted that typology. Basically, stoae were roofed walkways organized along a double colonnade to the front and a wall – often with individual rooms – to the back (on the longitudinal side). As a new typology developed by the Greeks, stoae evoked a sense of shelter while connecting to the larger open space (as if they were the combination of several megarons). These were urban buildings where merchants traded, but also where citizens were invited to participate in the civic life of the polis, being that, to a certain extent, they were the early, ancient even, precursors to commercial arcade spaces, which later appeared in other urban designs.

The Royal Stoa, the first of several stoae in the Agora, was built on the northwest corner of the complex, just besides the Panathenaic Way. This small rectangular building with a colonnade and steps on the long side facing the Agora housed the city's chief religious magistrate responsible for official sacrifices and city festivals. Perpendicular to the Royal Stoa and over the Panathenaic Way was the Painted Stoa, which displayed paintings of military triumphs, both real and mythical, and was characterized by an external Doric colonnade and interior Ionic columns. Conversely, the South Stoa (c. 425-400 BC) occupied the entire southern side of the Agora and it is believed that it was used for commercial functions. Other significant buildings on the Agora include the *Heiliaia*, a rectangular, unroofed court which, most likely, housed the city's main law court, as well as the *Tholos*, a circular building used to serve the meals to the fifty senators on duty. As the building defined the edges of the public space, the Agora's open areas were used as racetracks and as the setting for (dramatic) performances and dancing.

With the Hellenistic period the Agora changed considerably. Some buildings were modified, and others were added, creating a more complete sense of spatial order and enclosure. Not only was the South Stoa rebuilt with a new orientation and an additional middle stoa, but the famed Stoa of Attalos (c. 159-134 BC) was built in a straight angle from the Middle Stoa (c. 159-138 BC), thus establishing a narrow point of entry to the Agora, contrasting with the expansiveness beyond.

## PANATHENAIC WAY

The Agora was entirely developed around the last stage of the Panathenaic Way before it ascended to the Acropolis, crossing the Agora diagonally. The Panathenaic Way was extremely important to the spatial organization of Athens, as the city's main thoroughfare connecting the main city gate with the Acropolis, but was also considered to be a sacred way, since it served as the route for the most important religious procession, a festival to Athena held every year, which was a high point in Athenian public life. The procession ended on the hills of the Acropolis at the statue of the goddess Athena. In his analysis of the importance of channels for human movement, the so-called *movement systems*, Edmund Bacon argued that while the Panathenaic Way was used by Athenians every day of their lives for a multiplicity of purposes, its use must always have raised association with the religious procession all of them had witnessed since childhood. Therefore, the Panatheneic Way became the central organizing principle of Athenian architecture and urbanism. In fact, it was far more than a city street, since it was part of a system of regional movement which linked some of the most sacred places in Greece, but as it crossed the city of Athens, cut diagonally across the originally amorphous space of the Agora, and up the western

slope to the Acropolis, through the Propylaea to the statue of Athena, it served both as a sacred way and also as the main street of Athens.

Edmund Bacon goes on to typify the character of Greek architecture and urbanism during this time as *growth by accretion with space as connector*. Specifically, he recognizes that each new building was “internally ordered around one axis” and positioned in such a way to establish a relation to existing buildings that an angular volume of space was created which bound the two together. In this spatial system, coherence was maintained by the tension between buildings across the angular space which Bacon considered was a principle of city design that was applicable to contemporary urban issues.<sup>4</sup>

## PIRAEUS

Contrasting to the organic urban growth of the city of Athens was the port city of Piraeus, which was rebuilt during the classical period in an orthogonal grid pattern inspired by the ideas of Hippodamus of Miletus (498-408 BC). Located to the southwest of Athens, this city presented the other main approach of Greek urban development, with its well-defined and organized grid presenting a clear contrast to the organic organization of Athens.

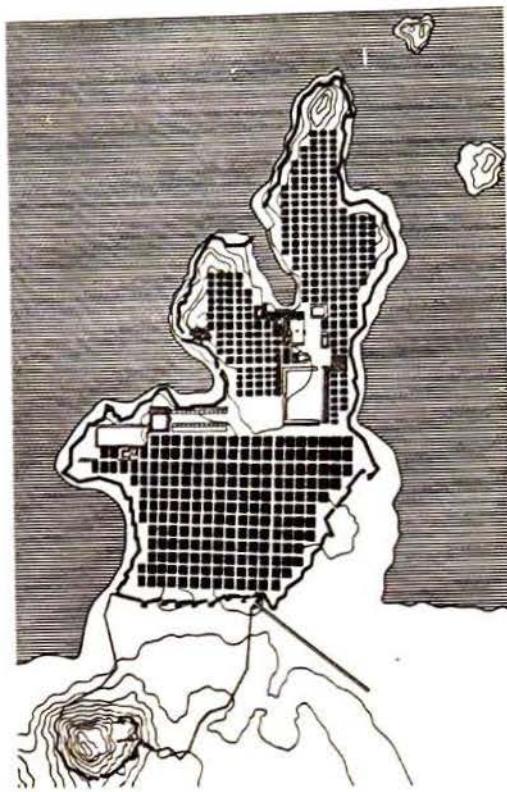
The form of systematic urbanism that was deployed in Pireus was closely associated with Hippodamus, a mathematician and student of Pythagoras, who is often regarded as the first urbanist, with Aristotle mentioning him as the inventor of the regular distribution of a city. Hippodamus implemented the grid as a fundamental principle for urban development, as he attempted to consolidate and articulate the religious, social, and commercial elements of the city center within orthogonal blocks, adjusted to fit the particular topography. For Hippodamus, the grid offered regularity, but also flexibility, it was operational at city and building level. Furthermore, as streets ran parallel and perpendicular to each other, the grid offered the possibility to create a hierarchy in them and, without any specific center, the city’s agora could be easily fitted into the system.

The combination of Acropolis and Agora would be used in several Greek city-states, with the Greek city in general, but Classical Athens in particular, often being considered to represent a remarkable and unmatched architectural and urban achievement. With its articulation of spatial organization and social life, close relation between architecture, space and experience, Classical Athenian architecture and urbanism would remain a source of inspiration for several periods to come.

## HIPPODAMUS' RATIONAL URBANISM

Although the Greek and Roman city have been associated with transformation and accumulation, i.e., with cities as rather unorganized collections of architectural-urban objects in constant change, Greco-Roman urban planning also has its planned, regular city, namely in the tradition of rational cities determined by geometry. This approach to urban planning was first developed by Hippodamus of Miletus (498-408 BC), particularly as he developed new plans for Miletus and Priene.

Since for Hippodamus, spatial planning was the basis for structuring society, he was among the first politicians who did not attempt to describe an ideal state. Effectively, he thought of urban planning as a means to formally express a more rational social order. His ideal city consisted of 10,000 citizens (free men), together with women, children and slaves for a total of 50,000 people. He made a distinction between three population groups, namely artisans, farmers, and warriors, as well as three types of land, namely sacred (for religious purposes), public (assigned for the use of warriors), and private (left to the farming class). In this ideal city, space was preserved for public functions and temples, with the size of the agora and theater being determined by the size of the population. In redesigning his hometown of Miletus, Hippodamus also contemplated the design of a typical family house, pro-



posing houses that used the traditional megaron as the basic living unit and with a major room opening southwards.

Hippodamus' rational approach has also been associated with the marked difference of the Greek approach to the grid between the Classical and Hellenistic periods. The agora, for example, during the classical period remained irregular in plan and loosely defined by civic buildings, but after Hippodamus designed the first perfectly rectangular agora in Miletus, that quickly became the norm. Effectively, the Hellenistic period shows how the previously minimal construction to articulate and bind the space was displaced by an em-

phasis on symmetrical arrangement of architecture, giving a more formal character to the civic open space.

Hippodamus' influence ripples across many periods, with Edmund Bacon considering his model to represent one of the most splendid urban plans ever made. Specifically, he points out how Hippodamus' model introduced several

forms of tremendously dynamic quality as a counterpoint to the rigid discipline of the orthogonal, gridiron plan. In this way, the repetitive module of the regular rectangular residential blocks sets up a rhythm which is the basis for the composition of the city's public components, the temples, the gymnasia, and the stoas, creating dynamic incidents to the otherwise repetitive grid.

## I MPERIAL ROME

Most different periods of spatial development have a typical cultural-historical characteristic. If the medieval period was determined by trade and the collective imagination, embodied in the construction of churches and cathedrals, the Renaissance was defined by the spirit of art and science, while the 19th and 20th century were characterized by the opportunities that technology and science offered for cultural change, architecture, and urban planning. The period of the ancient city can be understood as having been determined by mythical and pagan religious thought but, within that, there is a difference in emphasis between the Greeks and the Romans. While the emphasis of the Greeks was on reflection, the Romans were more focused on legislation and engineering.

While for the Greeks, architecture derived its extraordinary beauty from its intellectual character and therefore transcended the banality of the everyday, in Rome, architecture and the city contributed to everyday activities. According to Aldo Rossi, first in Republican and then in Imperial Rome, the city revealed and reveled in all of the contrasts and contradictions of the modern city, perhaps with a dramatic character that few modern cities know. The pragmatic dimension of ancient Rome and its relation to the idealistic ambitions of ancient Athens were perhaps best described by French philosopher Michel Serres who described Rome as a Greek city that had been brought back to earth, that had become absorbed in the flesh of the earth, and where the ideal world had come home to the black box of (physical) matter.

At first, the spatial development of the city of Rome will not be approached chronologically, but rather through a mythical and pagan-religious thinking perspective that is characteristic of the period of Rome's development. This results in a number of themes, which will also be developed chronologically, from an early period of Italic tribes and kings to the republic and then to the empire. This will make it clear how mythical and pagan religious thinking is mixed with geographic, economic, architectural, and technical aspects.

Much like ancient Athens, Ancient Rome has received a great deal of attention and its cultural-historical significance has been analyzed by several architectural theorists, including Joseph Rykwert, Aldo Rossi, as well as Colin Rowe and Fred Koetter. In his analysis, Joseph Rykwert has drawn attention to the symbolism of the city, particularly pointing out a dimension that has been lost in modern urban planning: the symbolic and ritual foundation of a city. As he extensively discusses the mythical origins of Rome (as well as the ritual that underpinned the foundation of a Roman

*castrum*), Rykwert refers to Michel Serres' interpretation of symbolism to describe the city as a palimpsest of superimposed readings in which the urban texture makes a matrix of evocations through the city's history and the repeated pattern of its murders and violence. With this, Rykwert also argues that the symbolic and ritual foundation of a city should not be viewed too idealistically. Specifically, in the case of Rome, a murder (in fact, a fratricide) lies at the basis of its origin. A murder that will be repeated in the foundation of every subsequent Roman city.

Conversely, Aldo Rossi's interpretation of Rome focused on the significance of architectural and urban design artifacts for the history of the city as a *collective memory*. According to Rossi, artifacts can change function and decay over time, but their significance to the collective memory remains permanent, and such artifacts, including historical patterns of streets and squares, are therefore essential, *primary elements* of the city. Therefore, for Rossi, the concept of *locus*, that is, of the relationship established between a site and the buildings that are in it becomes quite important since it is at once quite specific and singular to each site and architecture, and at the same time universal and can be observed in every site and architecture.

Further expanding on those ideas, Colin Rowe and Fred Koetter have recognized the contingent character of Rome, which is not characterized by an unambiguous utopian plan, as modern urban design has always pursued but instead, Rome represents a paradigm of urban planning as *bricolage*. Rowe and Koetter identify in Rome a rejection of the grand utopian visions of total planning, as the city has adopted instead the model of a collage city that can accommodate a whole range of utopias in miniature. Therefore, Rome is presented by Rowe and Koetter as some sort of model which might be envisaged as alternative to the disastrous urbanism of social engineering and total design.

Such collage was initiated with the founding of the city. The assumed official founding year of Rome has been identified as 753 BC with Romulus and Remus, but the city may very well be older than that, as various peoples and tribes had occupied that location before. However, while the Latins and the Sabines as well as the Etruscans figure in the early history of Rome, the exact reason why these various tribes decided to settle in this location remains disputed, particularly since it does not seem to be a very strategic location.

Why is Rome where it is? This can only be explained by the topographical conditions. The area where ancient Rome originated had a number of hills or ridges, usually reduced to the *seven hills of Rome*: the Palatine, the Esquiline, the Viminal, the Quirinal, the Capitoline, the Caelian, and the Aventine. It was on these hills that the first inhabitants settled, specifically, shepherds who grazed their flocks on the slopes of

the Palatine Hill, i.e., the Latins, as well as the Sabines on the Quirinal. Excavations on the Palatine Hill have revealed ancient huts, resembling those built by the Etruscans in Etruria and Latium around 900 BC. Therefore, it has been theorized that the Etruscans, as an educated people who would later inhabit this area, had turned these original nomadic peoples into permanent farmers. After all, farmers, merchants, and craftsmen also lived on the Roman hills.

It was no coincidence that Rome started on the Palatine Hill. The first settlement arose close to the curvature of the river Tiber, where there was a bridge or ferry at the still present island in the Tiber. Between the hills of the Capitoline, the Palatine, and the Esquiline, there was a valley where the dead were buried (and later the Roman Forum was created) while a stream ran through the valley, an important source of water. The valley area was a swampy area, where the Etruscans started to build the *Cloaca Maxima* (c. 600 BC), which would later become the major sewer of ancient Rome.

According to Roman mythology, Romulus and Remus founded Rome in 753 BC. Rome was ruled from 616 BC by members of the Etruscan royal house, the Tarquins until around 510 BC, when the Latins overthrew the Tarquins and established the Roman Republic. Other Etruscan city states north of Rome continued to thrive, but between 396-88 BC Roman forces gradually incorporated these settlements. With this incorporation, much of Etruscan culture merged with Roman life, not only Etruscan art and architecture, but also Etruscan customs, such as chariot racing and gladiatorial contests, which became quite popular in Roman society.

## BEFORE ANCIENT ROME

The first phase of Rome's development is commonly referred to as *Roma Quadrata* and is usually understood as the city of Rome founded on the Palatine Hill according to Etruscan ritual. The city's area, however, also probably covered part of the (circular) area of the *pomerium* even though some understand the term *Quadrata* (square) to refer to the division of the city by two perpendicular axes of the *cardo* and the *decumanus*. Above all, *Roma Quadrata* was an alliance.

Two distinct stages have been generally assumed in the growth of the city between the earliest settlement on the Palatine Hill. The first stage, the *Septimontium*, did not refer so much to a spatial demarcation, but rather to a ritual unity connecting the people settled on this location, stretching to only a few of the seven hills. When this area became too small for the city, the Rome of *Regiones Quattuor* (or Four Regions) was created, a division attributed to Servius Tullius (578-534 BC), the sixth Etruscan

king of Rome. The city was no longer divided according to ethnic groups and social classes, but according to administrative-spatial districts, which would remain until the reign of Sulla (138-78 BC). The entire area of the original pomerium was included in this classification, except for the Capitol.

In 378 BC the city was surrounded by the Servian (named after Servius Tullius, who initiated the construction of this wall) or Republican Wall. Built of blocks and cement, it was intended to protect Rome against external attacks. The part of the wall not built on the hills, towards the lower ground, was reinforced with an earthen wall and a moat. The wall fell into disrepair as the Roman Empire became powerful and Rome did not face any hostile attacks. Therefore, where gates used to stand, new triumphal arches were erected during the imperial era, and the city continued to grow outside the walls. It was not until the 3rd century that it became necessary to protect Rome once again from attack and the Aurelian Walls (271-275), named after Emperor Aurelius, were built. This new wall was necessary to protect Rome from the attacks by tribes from Germania. To build the wall efficiently, existing structures were used, which became part of the wall, including an aqueduct. The wall had many city gates.

## THE CAMPUS MARTIUS

The counterpart of the *pomerium* was the *Campus Martius*, a green plain that stretched from the Roman Forum to the Tiber. While the *pomerium* was sacred ground, where no weapons were allowed to be carried, the *Campus Martius* was originally an open plain, primarily used for military exercises, that was redesigned by Roman general and architect Marcus Vipsanius Agrippa between 27 and 25 BC with temples, baths and public gardens. This construction campaign also served to express the exceptional prosperity Rome was experiencing at that time. The scenic quality of the site was praised by many ancient writers, including the Greek geographer Strabo in 7 BC, claiming that the ever-green plain covered in grass, surrounded by buildings and the hills that reached to the river's edge was truly magnificent and used for leisure, with horse and chariot racing, as well as ball games and gymnastics. The buildings on the *Campus Martius* would later be restored by Hadrian (76-138), who transformed it into one of Rome's great monumental centers. The *Campus Martius* was built over time. While Agrippa built the original Pantheon (27-25 BC), Nero later built a complex of baths (c. 62-64), while Domitian built a stadium (c. 80-86) and the Odeon (c. 106), which today can be found in the modern city center of Rome.



IL CAMPO  
MARZIO  
DELL'ANTICA ROMA  
OPERA  
DI G. B. PIRANESI  
SOCIODELLA REAL SOCIETÀ  
DEGL'ANTIQUARI DI LONDRA

## THE FORUM ROMANUM

Roma Quadrata was expanded with a strip of land, created where the Etruscans once drained the swamp at the foot of the hills, that we now know as the *Forum Romanum* (or Roman Forum) and which became the center of the city. The monument *Umbilicus Urbis Romae* stood on the Forum Romanum, associating the Forum to the navel of the city, but the Forum, was also the center of the Roman Empire. This much was symbolized by a second monument, the *Milliarum Aureum*, which indicated how far away the major cities in the Roman Empire were from Rome. Between the two monuments was the *Rostra*, the podium where the consuls of Rome gave their speeches, standing in front of the *Curia*, the building that housed the senate.

For Aldo Rossi, the Roman Forum is the prime example of a *locus*, i.e., the relationship between a certain specific location and the buildings that are in it. Specifically, he associates this term with the concept of *genius loci*, the spirit of a place, to indicate that the selection of the location for any building, for any city, was of primary importance in the classical world.



But which structures fit the spirit of the Roman Forum? Georges Dumézil, a scholar of religion, has argued that the Forum already expressed the Indo-European spirit, which would always manifest itself as a threefold system of (1) religious and secular power, (2) military power, and (3) artisans. For this, Dumézil focused on the *Regia*, the complex of buildings comprising the king's official residence where religious leaders also gathered, the Temple of Vesta, and the House of the Vestals. Therefore, the Forum Romanum reflected the functions distinguished by Dumézil: temples and administrative buildings, military displays and processions, basilicas for markets and shops. This functionality has remained central to the Forum's continuous transformation throughout the history of Rome. This locus is characterized by transformation and permanence. Effectively, the Forum was Rome and a part of Rome, according to Rossi. It represented the expression of a specific vision of the world of classical forms; yet its design was also more ancient, as persistent and pre-existent as the valley where the shepherds of the primitive hills gathered.

In the 5th century BC the Forum lost its function as a marketplace, becoming a public square instead. During this period, the Forum was filled with statues, temples and monuments so that the valley that had once been full of local springs, sacred places, markets, and taverns now became rich with basilicas, temples, and arches, and furrowed by two great streets, the *Via Sacra* and the *Via Nova*, which were accessible from small alleys. The *Via Sacra* (or *Sacra Via*) is the oldest road in Rome, which takes its name from the many temples that lie on it and was also important for processions. It extended for 500 meters in a westerly direction from the ridge called the Velia to the foot of the Capitoline Hill, along the middle of the Forum, bending here and there to accommodate the various monumental buildings, from the Basilica Julia and the Temples of Vesta, of Castor and Pollux and of Saturn. Victorious Roman generals paraded along it on their triumphant processions through the Forum to the Temple of Jupiter Capitolinus.

Around 46 BC, Julius Caesar (100-44 BC) expanded the Forum complex by building a new forum on the northeastern section. There he built the *Basilica Julia* and a new senate building, the *Curia Julia* (44-29 BC), while also spending considerable funds restoring the Senate's meeting place, the Curia, upon building a new Rostra, or orators' platform. In memory of Caesar, who had meanwhile been declared divine, the Temple of Julius Caesar (29 BC) was added to the Forum. The forum's expansion would continue with the covering of the *Cloaca Maxima* (that added public space) as well as the major expansion erected by Augustus. Between 27 and 2 BC, a large shopping complex was added, as well as the Temple of Mars Ultor (c. 20-2 BC) and the Arch of Augustus as an entrance to the forum, which had now found its final form.

The successive expansions of the *Forum Romanum* had been shaped by the addition of several monuments by various emperors, mainly materialized in new colonnaded fora adjacent to the original *Forum Romanum*. Julius Caesar built a forum containing a temple and governmental chambers, while Augustus built a forum surrounding the Temple of Mars Ultor and Vespasian built a forum around a library. With its continuous development, the *Forum Romanum* continued to assert its role as the locus of ancient Rome.

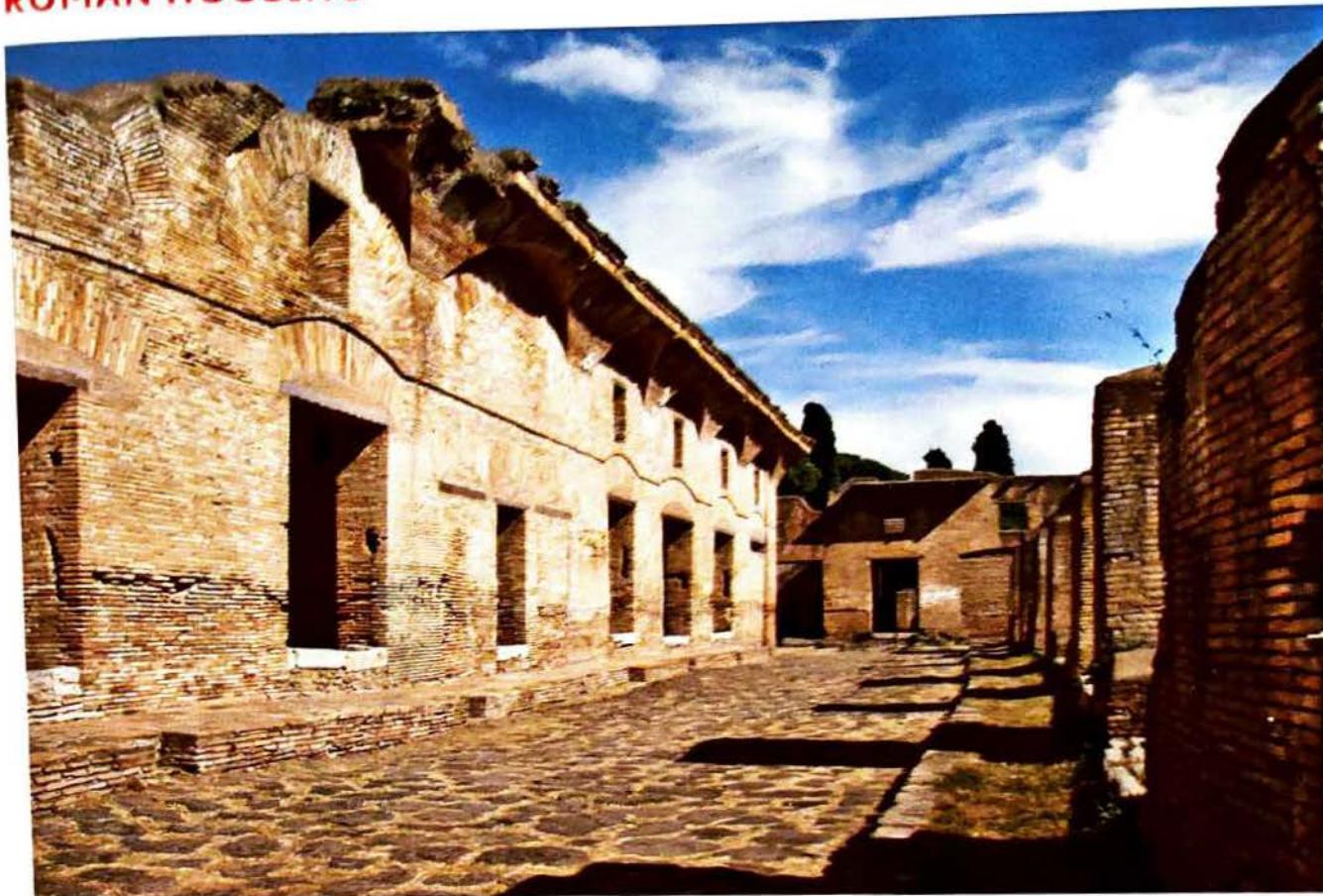
## FURTHER DEVELOPMENTS

During the reign of Emperor Nero, in 64, a large part of the city was consumed by a large fire, with a clear distinction becoming discernible between Rome before and after the city fire, respectively, the *Vetus Urbs* and the *Nova Urbs*, the city rebuilt by Nero. To the destruction of more than half of the capital – especially the densely populated working-class neighborhoods – Nero responded by rebuilding Rome on a grand scale according to a new, regular city plan. Wide, straight streets were built, with building codes and bounties ensuring rapid reconstruction and preventing new abuses, while the housing units of the *insulae*, as well as the imperial palaces, basilicas, and thermal baths, were rebuilt with a construction of solid concrete and masonry. For himself, Nero built a new imperial palace on the *Forum Romanum*, the *Domus Aurea* (or Golden House), a complex of buildings with gardens and a lake mainly intended for parties and festivities. To fund all the city's reconstruction, Nero instituted a strict tax regime, which would eventually cost him his popularity.

It was not until the 3rd century that the *Aurelian Wall* was built, necessary to protect Rome from the barbarian invasions. By then, Rome was the capital of a vast empire, which was naturally reflected in the size of the city. When the *Aurelian Walls* were completed in 264, they enclosed 1330 hectares (compared to only 321 hectares in Roman London or 34 hectares in Roman Florence), and an inventory conducted fifty years later, in 312-315, mentioned 1790 *domi*, or large single-family homes, and 46,602 *insulae*, or residential blocks with predominantly tenement houses (which are said to have been inhumanly overcrowded). During this period, it has been estimated that far more than a million inhabitants, probably one and a half, lived in Rome.

Rome's prosperity, however, would not last much longer, since before the medieval period begins, there was a period of decline for the capital, prompting Emperor Constantine to designate the city of Constantinople as the new Rome. The image of the hill town along the River Tiber would spark the imagination of subsequent generations, as the ruins of a variety of monumental buildings – from temples and imperial palaces to forums, amphitheaters, and stadiums – would keep the locus of Rome alive, a reminder of Rome as the Eternal City.

## ROMAN HOUSING



Much of what is known about Roman housing is derived from the excavations in Ostia, the port city of Rome. Two main typologies having been identified, namely the *domus* and the *insula*.

A *domus* was a private house with an atrium as its central space, around which the other rooms were arranged, including the *tablinum* (commonly used as an archive or office space) and the *triclinium* (the dining room). The atrium contained the *impluvium*, the water basin that collected water led through a central roof opening for light and air supply, lined by a peristyle colonnade. To reach the atrium from the *domus*' monumental front door, it was necessary

to pass through a long corridor, with so-called *tabernae* on either side, which were rented out as retail spaces, while in the back, through the atrium, a walled garden could be found. In the open atrium, there was a chapel for the house gods, the protectors of the house, since it was believed that the house was still inhabited by a genius. In architecture and urban planning, the use of the term *genius loci* still refers to the phenomenon of such a local genius, even if now it is used to indicate the specific character of a space or place.

It is clear that a *domus* was not the home for most of the Roman population. As the urban population increased, and the

wealthier residents moved out of the city, several of these houses were densified with the construction of additional upstairs rooms and apartments. In Republican Rome the *insula*, a multi-story house, a type of tenement barracks up to six floors, was developed for common housing. The *insula*'s ground floor consisted of shops and a courtyard while the exterior façade had scattered windows and balconies. The apartments in an *insula* were referred to as *cenaculum*, which could be reached through a communal space. In these apartments, inhabitants were packed

quite tightly with entire families huddled together in single rooms. Therefore, most people spent their days in public buildings, with the average dwelling serving only as a place to sleep and to store belongings. Walls were initially constructed of timber filled with clay or mortar, but in 100 BC, a new construction method was applied with the use of brick and hydraulic cement (*pozzolana*). After Rome's fire of 64 under Nero's reign, the *insula* became the predominant housing type. In the 4th century, Rome had 46,000 *insulae* against 1800 single-family houses.

# THE MARKET, THE CATHEDRAL AND THE CITY WALL

Preceding the Middle Ages (which spanned approximately from 500 BCE to 400 CE), there was the period of Roman rule. As an urban culture, the Roman Empire has left its marks across Europe with the establishment of a system of urban settlements connected through an elaborate road network. This road network is depicted in a 13th-century illustrated map, the so-called *Tabula Peutingeriana* (or the Peutinger map, named after the 16th-century German archeologist Konrad Peutinger), which beyond presenting the network's layout across central Europe, also depicts the (defensive) borders of this empire to the North, the so-called Lower Germanic Limes. The border ran straight through the Lower Countries—along the Rhine, flowing from Xanten, through Utrecht and Alphen aan de Rijn to Katwijk. German and Celtic tribes, such as the Frisians and Saxons, lived north of the Limes, while Batavians and other tribes lived south of the Limes, in peace with the Romans.

## THE ROMAN EMPIRE

The *castrum* was a typical Roman settlement which served as a military encampment (with smaller forts sometimes being called *castellum*). Developed for pure military efficiency and practicality, *castra* had strictly geometric structures, being organized in either a square or rectangular area with an orthogonal street pattern. The two directions of the orthogonal pattern were defined by the edges of the camp as well as by its structuring main street. If from north to south the structure was based on the two parallel main streets, the *via principalis* and the *via quintana* (which also divided the *castrum* in three districts), the perpendicular direction from east to west was defined by the *via decumana* or *via praetoria*. The combination of these two directions is what made the *castrum*'s street plan a *grid*. Since many medieval towns developed on the sites of such *castra*, their original regular layout can often still be recognized, thus functioning as a pre-urban element. In England the suffix *-chester* in town names refers back to their roman origins, while in the Lower Countries, in cities such as Maastricht and Utrecht there are also traces of those origins.

With the collapse of the Roman Empire – and as other cultures such as the Celts, the Franks, and the Teutons take over various regions across Europe – Roman culture, which was based on city life and its urban settlements, was replaced by small agricultural units, with the farming village becoming the typical settlement for this

period. This new type of settlement was based on a smallholding, with a familiar organization of five to eight farms, with their long sides facing a triangular open space, the common village green. This space was often organized as a common grassland for livestock and as an open space for public meetings, but behind the farmhouses, there were the fields to be cultivated first. To this day, this kind of Frankish triangle can be seen in hamlets, villages, and towns, particularly those built on sandy soils, such as Tilburg.

Stretching from the 9th to the 13th century, the next period was initiated by Charlemagne's (747–814, or Charles the Great) ability to unify a large portion of central Europe under his rule as well as his attempt to revive Roman arts and culture. Beyond establishing the Carolingian Empire, Charlemagne's rule also ushered the introduction of a new political, cultural, economic and military system in Europe, namely feudalism, or the feudal system. The feudal system was organized in a strict hierarchical manner, composed by three main classes with different rights and obligations – the nobility, the clergy and the peasantry – with the king at the very top and the peasants at the bottom. Control of the land was established by military rulers who, while at the king's service, enjoyed extensive power of the land under their control. These strongmen lived in fortified dwellings (castles) and controlled the surrounding lands by force of arms. While in the 10th century the Carolingian empire collapsed due to territorial disputes, the feudal system remained a structuring element of medieval society.

## A TURNING POINT

A clear turning point in medieval urban development, however, has been identified in the 11th century, with the growing development of trade. With trade flourishing, there were significant effects to feudalism. Specifically, as agricultural serfs became craftsmen and tradesmen, the peasantry class also began to look after their own interest, thus providing a decisive break with the relations of servitude required for the operation of feudalism. But with trade flourishing, trading settlements also began to emerge across Europe. This became the starting point for a renewed urbanization, both with the development of previously established Roman settlements as well as the foundation of new settlements at the intersections of roads and waterways. Gradually an urban culture arose, with towns becoming more powerful.

By the Late Middle Ages (1300–1550), several historical towns were established, and in several of those the medieval layout is still visible today. Notably, the urban morphology and architectural typology of these towns were shaped by the social and functional elements of late medieval life, with trade and crafts becoming particularly

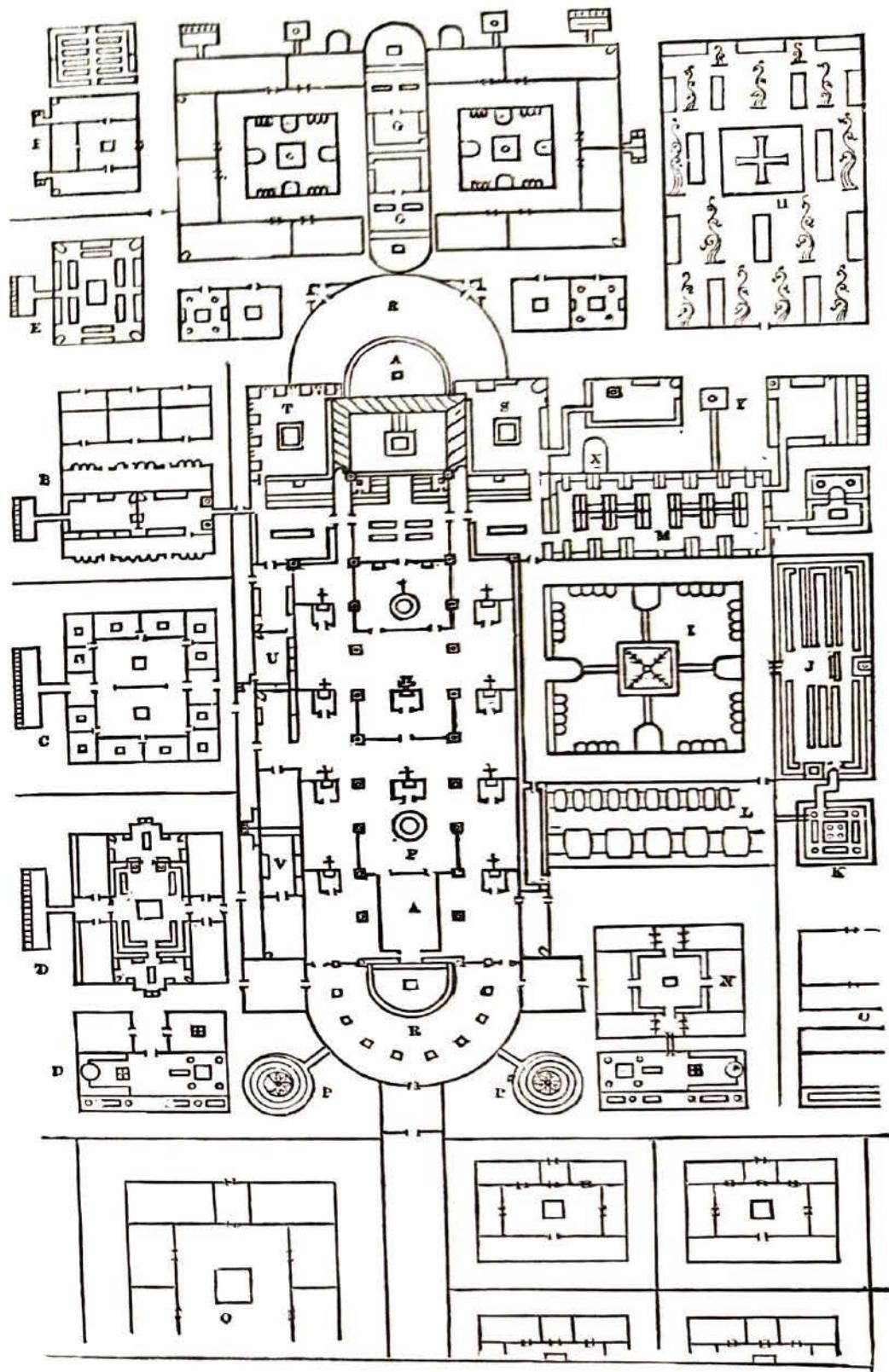
important. If on the urban scale this was expressed by urban spaces intended for various specialty markets (such as hay, fish, and grain markets) as well as streets occupied by particular crafts (such as butchers, cobblers, armorers, or blacksmiths), on the architectural level these were particularly visible in the construction of guildhalls as places to both live and work. These urban and architectural elements were complemented by other elements that could facilitate trade, from infrastructure such as docks, wharfs, dams, ditches to administration such as town halls and weigh houses. Beyond trade, medieval towns were also significantly shaped by religious life. This meant that not only cathedrals, churches, and cloisters, but also hospitals, (Latin) schools, orphanages, poor houses, and old people's homes (associated with religious orders) became important functions in medieval towns. The other crucial function of a medieval town was associated with its military function, with a system of defenses (primarily a system of tall walls) being complemented by a network of storage, depots and armories. Effectively, commercial, religious and military functions were the three main elements shaping medieval towns, easily recognizable in their urban fabric, be it through the empty space (usually central) for the market, the vertical towering presence of the cathedral, or the expanse of the city walls establishing the town's boundary.

## TWO APPROACHES

The Middle Ages' urban history has commonly been understood by two diverging approaches. A common approach associates medieval urban development with Roman civilization, claiming that, while medieval development builds on that Roman foundation, it nevertheless expands beyond it to reflect the period's increasing social, demographic, economic, and functional differentiation throughout the Middle Ages, with periods of decline and rise. For example, as the population increased, the Early Middle Ages' fortified settlements were no longer able to accommodate everyone. As new settlements developed just outside the city gates — sometimes becoming just as important as the original settlements — city walls needed to be expanded, and with them, so did the towns. In this approach, it is believed that during this process cities became specialized centers of secondary and tertiary activities, fulfilling a complementary role towards their (small) surrounding rural area while carrying out a range of commercial, industrial, financial and cultural activities, effectively competing with each other on a broader level, as Leonardo Benevolo has argued. Therefore, it is considered that while there is a renewal of ancient traditions, a new urban system emerges.

Focusing on historical continuity, this approach mainly takes urban development as a starting point in quantitative terms (since it observes and identifies instances of

# THE PLAN OF SAINT GALL



**I**n the Middle Ages, communal forms of monasticism – the withdrawal from the corruption of everyday life in order to contemplate the world – became a predominant social and architectural model, with thousands of new monasteries being founded. Often established in remote sites, monasteries were also centers of knowledge, with schools spreading various fields of learning across Europe, often preserving and advancing the best in architecture, arts and agriculture.

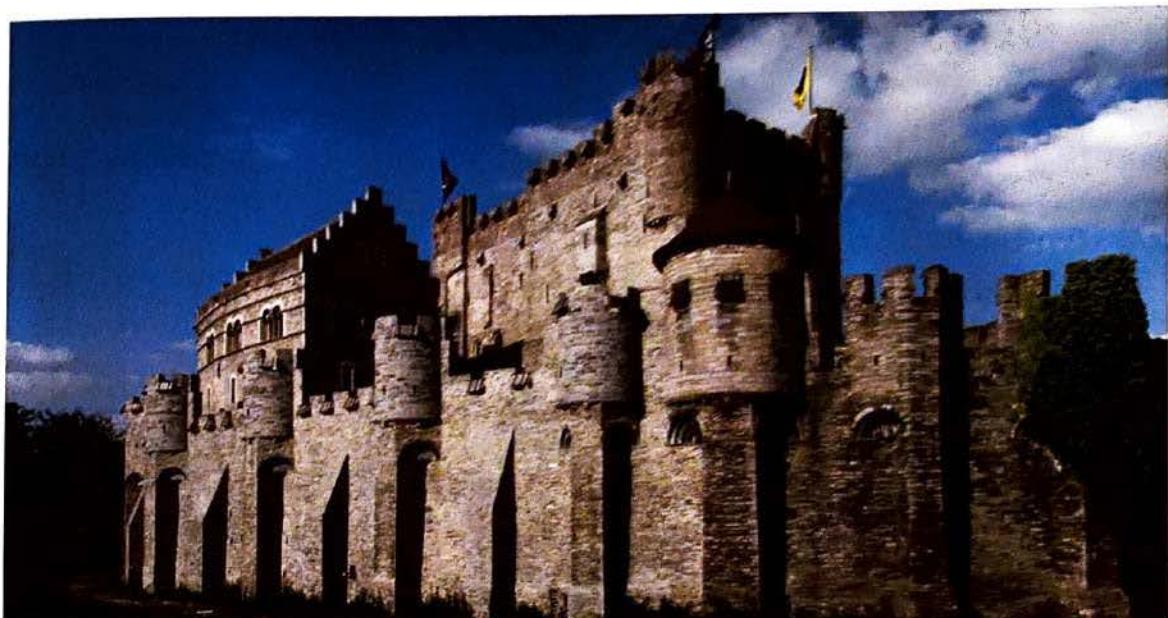
Under Charlemagne's rule, monastic organizations were required to follow the flexible, yet rather specific, Rule of St. Benedict, which dictated the organization and management. In 817, several abbots from leading monasteries held a conference to resolve differences in the interpretation of the Benedictine Rule. From this discussion a document was produced detailing a model layout for a Benedictine abbey: the plan of Saint Gall.

The oldest surviving architectural drawing from the medieval period, the plan of Saint Gall defines the various components for a self-sufficient religious community, designed for approximately 110 monks. The largest building was the church, defined as a double ended Basilica in plan, with masonry walls, timber truss roofs,

and a western hemicycle flanked by twin cylindrical towers. The cloister was located south of the church, comprised of a courtyard enveloped by a covered, arcade walk which connected the major buildings on its sides: on the east the chapter house, workroom, and the warming room below the dormitory; on the south the refectory (or dining hall); on the west the cellar and storeroom; and on the north, the church. Other service buildings necessary to the monastery like the bakery, the brew house, artisan crafts workshops, and a working farm were located outside the cloister. The monastery also included a double cloister to house the novitiate and infirmary, a house for physicians, a medicinal herb garden, and the cemetery, being completed by the abbot's house, an external school, and a guesthouse and stables for high-ranking visitors.

The Plan of Saint Gall articulates the high quality of functional planning achieved by Carolingian architects, and while no monastery ever built followed the plan precisely, its general disposition of monastic buildings was used throughout most Benedictine abbeys. Effectively, the plan of Saint Gall established a model that would be used for the next 400 or more years as the basis for monastic design.

increase and expansion), while exploring so-called 'traces' from the past, mostly Greek and Roman traces. Conversely, however, there are also theories that emphasize the 11th century as a turning point, with Henri Pirenne and Max Weber arguing that an entirely new kind of society developed at that time, one that constituted a unique break with feudal society and laid the foundation for Western-European culture.



In his seminal book *Les Villes du Moyen Âge* (Cities of the Middle Ages), the Belgian historian Henri Pirenne (1862-1935) identified the development of long-distance trade as the most important factor for the emergence of a (new) urban way of life. According to Pirenne, as a result of the remarkable population growth, in the 10th century the number of people who ended up outside the existing regular relationships of rural society steadily increased. This included vagabonds, mercenaries, seasonal workers, robbers, and bandits, who had to earn a living by trading in order to survive. These persons naturally became involved in the exchange of goods, since they had no fixed dwelling and were attracted to, and depended on, places where many people gathered — such as ports, annual fairs, and places of pilgrimage — to carry out their activities.

Due to their roaming existence, these groups realized that various goods fetched higher prices in some places than in others. These traders lived dangerous lives, since roads were not only bad but also very unsafe, with people being regularly attacked. As a result, traders would band together in order to survive, with the first roaming tradesmen forming various associations. These took the form of fraternities, bound by oaths of loyalty (towards each other) and were used to organize collective purchases and sales of goods. These tight-knit groups were called guilds or *hanse* in the Lower Countries. Such close-knit groups of traveling tradesmen were a new phenomenon

in feudal society, being completely separate from the existing social order. Since among these traveling merchants, cunning, shrewdness, and rational behavior were paramount to survive, Pirenne claims that their fortune was not determined by their birth, but by their intelligence and their initiatives.

According to Pirenne, the presence and activities of this class of traveling merchants led to a new urban society, since he argues that the traveling tradesmen needed permanent places from where they could organize their journeys (during the winter months), both for commercial and safety reasons. These places had to be safe as well as well-connected to existing transportation networks, i.e. being located at intersections of roads and waterways. In some cases (such as York), the towns and fortresses originated in Roman military encampments already presented these opportunities. As those towns and fortresses that best met the requirements were sought out by this class of roaming tradesmen, safety and geographical location were the determining factors for the development of trade and the emergence of a new urban life.

The emergence of a new medieval urban culture was also an important point of discussion for sociologist Max Weber (1864-1920), as he attempted to determine the conditions that allowed for the transformation of a settlement into a town. According to Weber, standard features, such as a certain number of houses and buildings forming a more or less cohesive urban fabric, or the presence of a market or a fortification, were not sufficient to elevate a medieval settlement into a town. Instead, he claims, the most significant parameter was the visible adoption of a certain way of living, that differed in essential aspects from the dominant, usually rural pattern of living. For Weber these societal conditions were met when the settlement presented several characteristics, but first and foremost, when the town's economic development was supported by crafts and trade. Furthermore, for a settlement to become a town, it was necessary that it included both a market and a fortification, but also that it contained an alliance of (free) citizens, as well as a certain judicial and administrative autonomy encompassing both an autonomous judicial system framed by a town's independent legislation, as well as an autonomous town administration with administrators largely appointed by their own population.

Therefore, what characterized medieval urban society was that the economic policy to be implemented was determined by the citizens themselves or by certain groups among those citizens. This was done by an autonomous community, not dictated by a ruler they depended upon. Ultimately, much like in ancient Mesopotamia or in Ancient Greece, it was the capacity of developing new economic activity and new occupations beyond the cultivation of the land that prompted the revival of an urban culture in the Middle Ages. But along with this renewed economic prowess and urbanization, existing societal systems would be challenged and, eventually, displaced.

# THE TYPOLOGY AND MORPHOLOGY OF MEDIEVAL TOWNS

Many have recognized the Middle Ages as a defining period for Europe's urban development. Urban development historian A.E.J. Morris, for example, identified the various historical phases of urban development during the Middle Ages with various typologies. In broad terms, he identified two main categories, that of towns that developed organically and that of towns established during that period. Regarding the development of existing towns, he identified towns of Roman origin, other fortified towns (that had originally been established as fortified military encampment but later acquired a commercial function), and towns that developed from rural villages. As for new towns, he identified two types of towns that were developed especially in the 13th century, namely, the fortified bastide towns established in France, England and Wales as well as other towns founded throughout Europe with or without full urban status, either based on a pre-established town plan or not.

The main categorization of Morris' typology distinguishes between the (organically) 'developed town' and the 'planned town'. This distinction, which the German art historian Albert Erich Brinckmann also identified as the two main types of towns, is often discussed in scholarly literature, even if using different terminology. The distinction between these two main types can be found in the urban structure and the formal expression of these towns' urban fabric, namely in the contrast between irregular and regular urban organization.

## THE DEVELOPMENT OF A MEDIEVAL TOWN

The roots of urban medieval settlements were laid at specific locations across Europe, with fortresses and fortified settlements being built on strategic sites from which large regions could be controlled. These were often strategically connected to transport infrastructure, namely at the intersection of waterways and roads. The actual urban morphology of these towns was commonly determined by the local topographical elements, from strategically high locations to the composition of the soil, as well as the presence of natural features such as creeks, rivers or hills.

While peasants remained connected to working the land, even when expanding existing agricultural holdings and starting new cultivations, trade and crafts began to develop near the fortifications of the more powerful nobility and clergy – such

as ducal fortresses and fortified monasteries. Although clergy mostly lived in the countryside in abbeys and monasteries (and often initiated new cultivations there), some clergy also lived in or near trading settlements in churches or cloisters, with a view to the spiritual and material care of the population, with the religious orders not only caring for the poor and the sick, but also establishing various schools.

In an early medieval town, tradesmen and craftsmen settled in areas around castles and fortifications, often just outside the settlement walls. Therefore, the ruler's fortress and the outside settlement were two separate spatial elements. Only in a later period did they become one spatial entity, often signaled by the erection of a new wall around both areas. With these city walls, the distinction between urban and rural areas became sharper, even as the town, from a functional perspective, expanded into a local center of not only administrative or military, but also, economic and religious institutions.

Between 1300 and 1500, the built area gained a certain stability in almost all medieval towns, as it became developed as a permanent architectural structure resulting from streets, alleys and squares lined with (more or less) connected buildings that blocked off the open landscape. The layout of the streets and the parceling of building sites were still, however, implanted on the previous, more rural settlement. Another feature was the way the buildings were built on the land using stone foundations (or if required piles), which in most towns was a gradual development that was strongly influenced by the condition of the soil and the available building materials and building techniques. Therefore, in contrast with the break between buildings and landscape from a functional and a visual perspective, there was a much more enduring connection between the rural and the urban in technical and construction terms.

## URBAN COMPONENTS

The development of a medieval town commonly included a variety of spatial elements, both urban and architectural. First and foremost, (most) medieval towns developed under the shadow of a fortification or stronghold such as fortresses and castles. These were not only easily defendable complexes, but also the town ruler's center of authority, administration and military power. These were always built at the town's most strategic location, commonly on either a high point or in a fork in the river. At first, these fortresses formed independent spatial units, but were usually integrated later into the walls of the civil town that grew around it as a 'corner stone.' A town's defensive system was commonly comprised of a fortress and a wall surrounding the entire settlement. But while medieval walls were first simple earthen walls with wooden palisade, as war techniques evolved to also include artillery (with the first

firearms being made around 1350, with stone and iron bullets after 1450) stronger walls became a necessity. Moats were dug along the construction of ramparts and heavy, stone city walls. These walls were fitted with city gates, with special attention to their construction and design to prevent the gates from being the weak points when a city came under siege. Therefore, city gates later became specialized architectural elements in their own right, with even water gates (built to accommodate rivers as they cut through city walls) becoming a special category. Besides gates, the system of defensive walls was completed with the construction of defense towers.

The settlement developed by tradesmen and craftsmen in the shadow of the fortress is often referred to as the *civil town*. The fortress and the civil town developed in a symbiotic relationship, since if the fortress was a primary market for the selling of goods from the civil town and a refuge in times of danger, for the fortress, the prospering trade settlement was a source of revenues and a latent military force that could help defend the fortress in times of peril. Growing tension between town and fortress, however, would arise when the civil town increasingly manifested itself as an economic force, since that was commonly followed by a growing call for self-rule which made the struggle for administrative power more intense. Even when walls were constructed around the civil town, the separation between the two areas would remain, as often two strongly delimited territories emerged, independent of each other. However, as the (newly combined) town succeeded in gaining greater political and economic autonomy, as the town expanded, the fortress would become a part of its system of defenses, even if it remained in a special position. Therefore, throughout the town's emancipation process, the urban population directed its anger primarily at the fortress, with arson, plundering or destruction of the fortress resulting in defeat of the ruler and freedom for the town.

The settlement's economic and social center was always the market. Commonly located in and around a central space in the walled city, the market facilitated the exchange of goods, services, and information for the benefit of the town and the region. This central space was almost invariably situated at or near intersections of the original main trade routes or areas where goods were unloaded, such as the embankments in waterways. The introduction of several pieces of urban infrastructure in support of the market would gradually shape the urban space around market areas. From meetings halls and houses for trade and industry guilds to weigh houses, various types of institutions would concentrate their buildings in and around market areas to facilitate trade.

Although the market was the actual physical place where trade was conducted, the term 'market' was also a symbolic expression for the *raison d'être* of a medieval town: trade. Effectively, not all towns had a central market square, as trading went on all

over town (even outside the gates) to such a degree that some have even argued that a medieval town was a market in its entirety. Trade and production went on in all parts of the city, from open to closed spaces, from public to private spaces. Often the market took place in the town's main street, that had been widened for that purpose, but the market also took place on bridges and along canals and quays. Many names in European towns recall this market function and refer back to the fact that specific kinds of trade were linked to specific places in the town: the fish market, the cow market, the egg market, and so on.

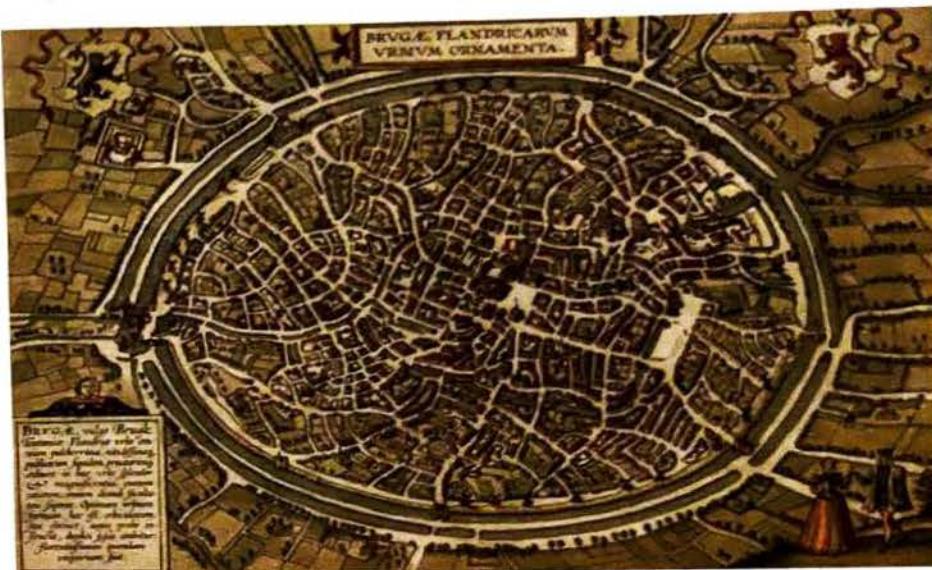
The urban fabric of any medieval town was established by a network of streets and canals. This urban layout has been commonly described as an intricate web or a labyrinth of pathways, a disordered arrangement of narrow streets where traffic was busy and difficult, where a great deal of urban activity was accommodated. Therefore, besides being busy, medieval streets were often dirty and unpleasant, specifically, as tradesmen spread out their goods in the street and craftsmen regarded the section of the street (or the canal) in front of their house as their workplace, where they usually carried out their most noisy, dirty, or smelly work activities. Thus, medieval streets definitely functioned as a yard, with trading taking place on the boundary between house and street, in a semi-public transition area consisting of pavements, steps and extensions such sheds, stalls, and the like.

Conversely, canals were used (at least at first) for water traffic, with medieval towns using, wherever possible, existing water ways or ditches. Originally, these canals were nothing more than ditches that had been deepened, with earthen embankments. Later, however, as quay walls were built, canals and the street along them could be widened, with the extra street width being used as storage space or even, as happened in Dordrecht and Oudewater, for example, for building.

In the medieval street plan, the *portus* – the very first port area of the town – can often be recognized by its even more irregular and small-scale street pattern. These areas were particularly representative of a *disordered arrangement*, where a web of winding streets without any clear main lines was bordered by alleyways and back yards. Due to this pattern of disordered arrangement medieval towns are often compared to biological organisms, with Bruges in Belgium having been identified as a well-known example of this alleged similarity between this kind of street plan and a biological organism (see Figure on the right).

The term *organic* stems from this metaphor, but a comparison is also made with a biological tissue: the street plan of a medieval town is said to have the features of an *urban tissue*, that regulates its own development. What is essential in this interpretation is the significance of small-scale building, the so-called basic cells, that operated in a way that made the city function as urban tissue. These basic cells formed

the fine-grained structure of the medieval street plan, as every cell renewed itself and lived its own life inside the urban tissue. The basic cells were part of the same typology, but there was much differentiation between them. That is why, according to John Habraken, the urban tissue has the characteristics that every organic phenomenon has, namely that it is made up of recognizable parts, that are only separately recognizable, however, because they exist together.



Although most medieval towns presented such a disordered arrangement in their urban fabric, some were nevertheless organized on either radial-concentric or grid street plans. Examples of the *grid street plan* are particularly common in founded cities, particularly the French *bastides*, which are characterized by a designed street plan. Conversely, the *radial-concentric street plan* was determined by the existing elements and the expansion of existing towns. Specifically, these plans were commonly the result of the combination of, on the one hand, the approach roads traditionally leading toward the old town center, i.e., the urban core where the marketplace was traditionally established, and on the other hand, by the concentric expansions and walls that were added to the town throughout time.

## ARCHITECTURAL COMPONENTS

The most imposing and significant buildings in medieval towns were churches and cloisters. These were both representations of religious power but also symbols of civilian society in the settlement and they commonly formed an architectural counterbalance to the ruler's fortress. Among urban buildings, churches often took very unique positions within towns, especially cathedrals which were commonly centrally located. Parish churches, however, generally did not have a dominant central

over town (even outside the gates) to such a degree that some have even argued that a medieval town was a market in its entirety. Trade and production went on in all parts of the city, from open to closed spaces, from public to private spaces. Often the market took place in the town's main street, that had been widened for that purpose, but the market also took place on bridges and along canals and quays. Many names in European towns recall this market function and refer back to the fact that specific kinds of trade were linked to specific places in the town: the fish market, the cow market, the egg market, and so on.

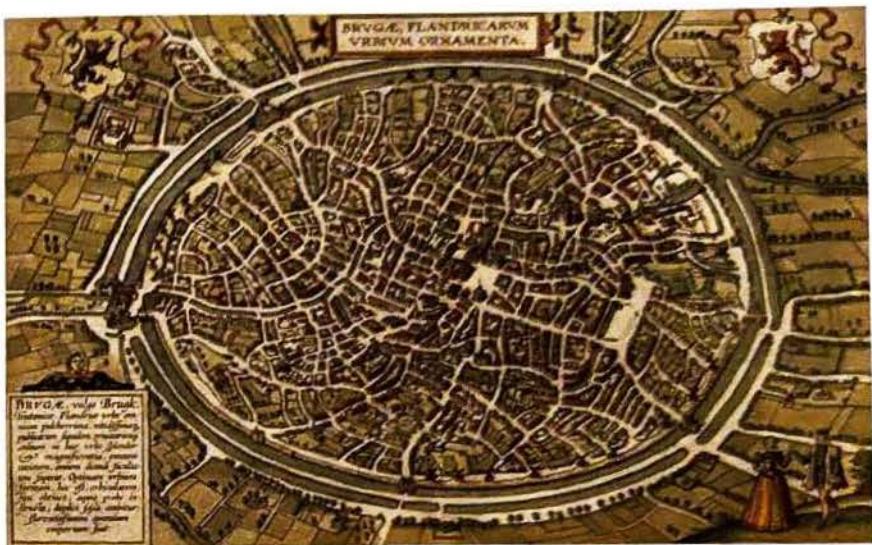
The urban fabric of any medieval town was established by a network of streets and canals. This urban layout has been commonly described as an intricate web or a labyrinth of pathways, a disordered arrangement of narrow streets where traffic was busy and difficult, where a great deal of urban activity was accommodated. Therefore, besides being busy, medieval streets were often dirty and unpleasant, specifically, as tradesmen spread out their goods in the street and craftsmen regarded the section of the street (or the canal) in front of their house as their workplace, where they usually carried out their most noisy, dirty, or smelly work activities. Thus, medieval streets definitely functioned as a yard, with trading taking place on the boundary between house and street, in a semi-public transition area consisting of pavements, steps and extensions such sheds, stalls, and the like.

Conversely, canals were used (at least at first) for water traffic, with medieval towns using, wherever possible, existing water ways or ditches. Originally, these canals were nothing more than ditches that had been deepened, with earthen embankments. Later, however, as quay walls were built, canals and the street along them could be widened, with the extra street width being used as storage space or even, as happened in Dordrecht and Oudewater, for example, for building.

In the medieval street plan, the *portus* – the very first port area of the town – can often be recognized by its even more irregular and small-scale street pattern. These areas were particularly representative of a *disordered arrangement*, where a web of winding streets without any clear main lines was bordered by alleyways and back yards. Due to this pattern of disordered arrangement medieval towns are often compared to biological organisms, with Bruges in Belgium having been identified as a well-known example of this alleged similarity between this kind of street plan and a biological organism (see Figure on the right).

The term *organic* stems from this metaphor, but a comparison is also made with a biological tissue: the street plan of a medieval town is said to have the features of an *urban tissue*, that regulates its own development. What is essential in this interpretation is the significance of small-scale building, the so-called basic cells, that operated in a way that made the city function as urban tissue. These basic cells formed

the fine-grained structure of the medieval street plan, as every cell renewed itself and lived its own life inside the urban tissue. The basic cells were part of the same typology, but there was much differentiation between them. That is why, according to John Habraken, the urban tissue has the characteristics that every organic phenomenon has, namely that it is made up of recognizable parts, that are only separately recognizable, however, because they exist together.



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position, as they were often integrated into rows of buildings (such as the Oude Kerk in Delft) or, when this was not possible, they were often situated behind the row of buildings (such as the Rotterdam-Laurenskerk). Therefore, a church did not necessarily have a church square, and the present-day large squares framing these churches are mostly the result of buildings around the church having been demolished in later times. Much like churches, small cloisters were also often embedded within the town's urban fabric in buildings expanded for that purpose. Larger cloisters, however, were found either at the edges of town or even outside their walls, since there was space available there to build larger cloisters.

The very fabric of the town, however, was mostly composed of dwellings. However, since in medieval towns, living and working were not separated, these residential buildings were also commercial buildings. At first, every house had quite some space around it, but gradually the medieval town grew denser. In between existing buildings, new buildings were inserted, resulting in connected building blocks. Later, connected buildings were even made mandatory, so that a maximum number of buildings was created directly bordering the street.

Since closed façades were also obligatory, the closed building block became the organizing principle of medieval towns. Combined with the city walls this closed building block resulted in a rather closed cityscape which created a contrast between inside and outside by creating two spaces, two worlds, which existed clearly separate from each other, even though there was a strong relation between them. Firstly, there was the world of public streets and squares (or the urban yard) and secondly, there was the private world of residential homes with their back gardens. To sociologist Hans-Paul Bahrdt these two worlds exemplified his twin concepts of public and private, a polarity that was at the heart of the urban way of life in the late medieval civil town. In this view, the marketplace becomes the perfect symbol of urban openness.

## THE IMAGE OF THE MEDIEVAL TOWN

The typical shape of the medieval town has resulted in a stereotypical image, with a variety of building forms being attributed to the medieval city. The street pattern is irregular, and the city presents a landscape of variously shaped sloping roofs and specific details to create a picturesque image. The arrangement of the blocks of buildings results in a closed cityscape, in which the architectural objects serve as a demarcation of public space with the streets providing a sequence of different images, which are anything but dull. But the medieval town is also fairly small and has a fine-grained structure, as a result of the small dimensions of both plots and buildings. This is true for both residential buildings as well as buildings with a public function.

## CHARTRES CATHEDRAL

Primarily built between 1194 and 1250, the Notre-Dame Cathedral in Chartres is one of the first and finest examples of the mature expression of the High Gothic, which is clearly articulated in both its interior organization and exterior formal expression. Specifically, this cathedral was among the first to include flying buttresses from the start, a structural component that made interior galleries structurally redundant. This simplified the interior elevation to only three horizontal divisions (from the four that had characterized Early Gothic cathedrals), namely the nave arcade, the triforium passage, and the clerestory windows. With the removal of the galleries and the use of flying buttresses, the clerestory windows' size was increased in a noticeable manner and the vaulting became organized over a single bay in a quadripartite fashion (instead of over two bays in a sixpartite fashion). But while the design of Chartres cathedral is a resolute evolution over past examples, it also seems to indicate a return to previous Romanesque models. Specifically, the entire building is expressed as a solid physical presence rather than an impossibly thin and hollow structure. In Chartres, architectural elements and forms are not thinner, or more skeletonized than earlier Gothic forms, but are instead thicker, heavier and more massive. Such condition is immediately perceivable both in the interior and exterior of the building,



with monumental – archaic, even – flying buttresses on the exterior and massive piers and a rounded, sculptural space in the interior. The combination of substantial piers, vaults, and windows resulted in a clear distinction between solid and void, i.e., between wall and window. This allowed glass (and light) to be presented in the simplest and clearest way possible, since the vaults and piers become minimal frames for the great windows.

Chartres cathedral was a turning point in the evolution of Gothic expression, representing a blending of opposites since it somehow revived a previous massiveness while still drawing in a considerable amount of light. With its compact, hulking massing and simplified interior elevation, this cathedral articulated a new unity driven by the collusion of new and old elements.

Despite their reduced size, these residential buildings have often been described as pleasant, indicating how the morphological image of the medieval city has been much idealized in urban development, presumably in contrast with modern 20th century residential areas, that have been regarded as monotonous. Unlike the 20th century development which did not result in a closed cityscape, the medieval town is often considered to have been varied and to have offered a hospitable atmosphere, warmth and conviviality because of its small scale. Moreover, being an organically developed settlement the medieval city is regarded as providing a contrast to the contrived geometric nature of the 20th century city. This image is often summarized in the organic nature of the medieval city.

Leonardo Benevolo (1923-2017) has claimed that the medieval town stood for a variety of concrete situations that could not be combined into general models. Instead, he claimed, the medieval town should be appreciated by the fundamental innovations that it developed which, when compared with cities in antiquity, are specifically urban morphological features.

Firstly, and most notably, since in medieval towns public and private buildings were built next to each other, they merged into a compact entity with a strongly individual character that was immediately recognizable from the outside. Therefore, the medieval town only seems disordered to us today because its building elements were added in different periods but were interconnected. Effectively, streets and squares form an interrelated public space with a strong individual character, with streets having different shapes and accommodating pedestrians and carts, markets, gatherings, and ceremonies. While providing more space, squares do not have a fundamentally different function as compared to the streets. Buildings, connected along this complex system of streets and squares, define these urban spaces, as their façades form the outer walls of the public space.

Secondly, medieval towns are known for their complexity, both as a society and as administrative organizations. Effectively, the structure of the public space was the result of a balance between various powers, from the city administration to the guilds, from the religious orders to various social classes. Every town of a certain size had more than one center: a religious, a civilian and one or more trading centers. These centers usually partially overlapped, but in a sense, they also competed with each other, with towns often being organized in smaller units of quarters or districts, each with its own organization and own symbols, enjoying a certain degree of political autonomy as well.

Finally, medieval towns must be recognized for their development towards a high building density, as they occupied the smallest possible amount of space, with the center acting as a powerful magnet. Since town walls were a costly endeavor, building

a new wall was postponed until the whole area within the old town walls had been fully developed, which often meant greater density as buildings became increasingly higher. This *compact* city, Benevolo claims, made it easier to envision the urban organism as a coherent three-dimensional object, which made it possible to create a concrete, clear cityscape, situated in natural surroundings, but clearly recognizable. An image that fostered a collective identity of the citizens and that was captured by 14th century painters with a great sense of engagement.

# MEDIEVAL YORK

The English city of York is an example of a medieval town that developed from an earlier Roman settlement. Much of this city's history is still visible today since it has greatly retained its medieval character. Most notably, York is particularly famous for its Minster (1220-1475), its medieval cathedral that indicates how, as early as the Middle Ages, York was already an important religious center. Since often there are no written sources regarding earlier periods, much of the city's earlier history has been reconstructed through various analyses of historical maps and events, spatial structures and (still visible) architectural objects, as well as (archeological) excavations.

From this reconstruction, York's medieval history has been identified and associated with four recognizable structuring periods, directly corresponding with the dominance of certain societal groups that also determined the town's main function. Therefore, York's earliest history has been associated with its founding Roman period, which ended in the early 400s. Between the 7th and the 9th century, York experienced its Anglo-Saxon period, which was immediately followed by its Danish period between the 10th and 11th century, leading up to its Late Medieval period, starting from the 12th century.

While these four periods represent a chronological dimension, they can also be regarded as spatial layers. Effectively, York's history is built up from a collection of historical layers, each characterized by spatial patterns and artifacts, typical of the period and represented by that particular layer. However, not all these layers are still present today or are fully recognizable. Often, these spatial patterns and rudiments can only be revealed through close analysis of historical maps or by archeological excavations. In architecture and urban development analyzing the city as a layered landscape has been termed a *palimpsest* approach, which is how the layered history of York can be best understood.

A palimpsest is an old manuscript, often written on a papyrus that was reused several times, overwriting previous text. Thus, under the now legible text there would be another, older text that was no longer entirely legible, although traces of it may still be recognizable. Therefore, a 'palimpsest approach' refers to the analysis of a text as a combination of various texts from different periods and by different authors, where the main text is complemented with incidental fragments from previous texts. A similar condition can be perceived in York, where the various patterns of the city's occupation came to inform its development throughout the Middle Ages, even if they

are no longer directly visible, either by natural developments or conscious imposition. Effectively, the layered development of the city may even obscure its earlier type, with a certain period being overwritten and turned into an underlying element, much like York's Roman foundations.

## ROMAN PERIOD

The foundation of York has been traced back to the establishment of the Roman military encampment of Eburacum near the rivers Ouse and Foss at some point around 70 BC. While the reasons for selecting this specific location remain unclear, undoubtedly the presence of the rivers played a significant role. Specifically, not only the area between the rivers was a plateau that provided firm habitable land, but the rivers themselves formed an intersection of routes, a precondition for accessibility and mobility. Therefore, regardless of how much uncertainty there may be regarding the decision to locate the encampment on this plateau, the conditions of this settlement show an interplay between what geographers denote as possibilism and determinism: people chose the possibility to settle here, but the geographical circumstances also played a determining role. Therefore, it seems clear that what was of particular importance for choosing this location was its strategic importance.

Effectively, when this Roman camp was established, it commanded both major routes by water to many parts of the province, as well as an entire network of connections over land. The establishment of a military camp at what would later become York was thus an example of the Roman genius for strategic planning. As they built straight roads across the land and connected major urban centers, the fortress on this plateau became a crucial element for offensive campaigns against the Northern tribes as well as a secure base for operational planning and distributing supplies.

This settlement, however, was not a city yet, but a Roman military fortified encampment, completely enclosed and defined by four defensive walls. Although first quickly built on a foundation made of branches with a clay rampart and a turf front, these walls were soon made more durable with a new foundation of squared oak beams and a solid rampart of clay with a timber palisade, complemented with timber watch towers covered with shingle roofs. Between 107 and 108, the defensive wall was rebuilt in stone, which was then followed by another major rebuilding campaign around the year 200 and another one approximately 100 years later. This was a radical recasting of the settlement's defenses, since once these construction campaigns were complete, the encampment was protected by stone walls about six to seven meters high and one and a half meters thick of white magnesian limestone, with a tile cornice, and an earthen rampart inside.

As expected, during the Roman period the military function was dominant in York. Regarding urban development, the nature of this camp can best be defined in quantitative, geometric terms, with the size and the layout of the settlement being determined by the size of the Roman military unit that it was to house, i.e., a legion. The legion was the largest military unit of the Roman army, with approximately 6000 soldiers (most of which were legionnaires, or heavy infantry, but who were also supported by horsemen and auxiliaries such as archers and slingers). Concerning York's spatial layout, as common to most Roman military settlements, Eburacum occupied a rectangular area and was organized along the two perpendicular main roads, in this case, the *Via Praetoria* (defining the north-south direction) and the *Via Principalis* (establishing the east-west direction). At their crossing, at the settlement's very center, the most important buildings were to be found, from the houses of the tribunes ruling over the settlement, to the legion's headquarters, including a basilica, offices, and stores, articulated along courtyards and colonnades. This basic regular Roman urban structure continued to structure York in following centuries.

Around the encampment, land was cultivated which, with the construction of a port and the settlement's strategic accessibility, fostered the emergence of trading as a secondary function for the military settlement. With the harbor, Eburacum developed trading routes for various raw and transformed goods – from grain to pottery, from coal to jewelry – with the rest of Britannia as well as continental Europe. As trade flourished, a civil town began to emerge outside the fortress's walls, first populated by merchants and later with retired soldiers. With a remarkable population growth (estimated at 6000 people), the civil town became more urban and cosmopolitan. While houses were tightly packed in terraced embankments along the main roads, the town was complemented with a large temple, a considerable complex for public baths, and a great basilica combining law courts and the town's administration. Further into the countryside, a constellation of farms and villas extended the Roman rule and paid tribute to the growing town.

By the early 400s, however, urban life had generally grown less intense in Roman-occupied Britain. With the increased incursions of Northern tribes, Roman control and administration of the several regions across the province had already collapsed, when Emperor Honorius ordered a retreat of Roman government and administration from the province in 410. With this retreat an era would come to an end also in York.

## ANGLO-SAXON AND DANISH PERIOD

A century after the Romans' departure, York would once again be controlled by a powerful societal group, as it was captured by the Anglians. Very few monuments,

however, survived from this period, as the Anglians were not really an urban people. Rather than towns or cities, Anglian settlements took the shape of more modest villages, with at least seventy or eighty of these villages (recognized by their names often ending in -wic or -ton or -ham) being founded in the area surrounding York during that era. But the city itself must not have changed significantly from the Roman times, with the old fortress still standing on the plateau, even with the addition of an Anglian tower (built sometime in the 7th century and expressed as a simple rectilinear tower of rough stone). The old Roman barracks at the center of the fortress were also occupied, with the early Minster – namely its library and school – also being erected there.

By 867, Danish forces captured York in a fierce battle, ruling the city for almost 100 years. During that time, the Danes transformed what was left of the town and fortress into a major trading center, with several markets appearing in the city, specifically in the south-eastern part and thus shifting the town's (economic) center. Unlike the Anglians, the Danes developed an urban culture, with the network of roads then developed greatly contrasting the Roman grid, and much more related to the familiar urban fabric of medieval towns, as it adopted an organic and irregular pattern.

Therefore, the fortress's simple geometry was undoubtedly modified, with new roads following functional needs rather than the direction established by the two Roman perpendicular main axes. These new diagonal paths, roughly parallel to each other, established an irregular urban fabric that gradually shifted the emphasis from the old *Via Praetoria*, particularly since this road was increasingly impeded by the Minster and associated buildings. Conversely, the old *Via Principalis* became more important since it led to the city's most significant extension, the area between the Ouse and the Foss, south-east of the fortress. It may have been during this time that the city's main market moved to that area, near the landing places on the two rivers. From that market, a road crossed over the front of the old fortress, while another that became increasingly important was gradually developed, following a natural line across the river and connecting to the old Roman road. This road would become a crucial axis, structuring everything that would later happen to York's urban fabric.

But it was really in the Danish period that the city took on much of the shape and urban character that it has today. The Danes had arrived by river and the river became for them, as it had been for the Romans, of crucial importance. For the river brought not just raiders and plundering, but also trade which brought wealth and urban development. The Danes were greatly influential in developing an urban civilization in York. Their occupation and reorganization, however short, established the main lines of the city as such: its commercial life, its regional and national significance, as well as its organic, rambling, irregular, and winding urban fabric, which has survived until this

day. Rather than monuments, the Danes left in York an urban form which is clearly visible in the city's layout, in its street and district patterns, as well as in its property divisions, many of which have remained unchanged since their rule. Danish York (or Jorvik, as it was then named) was dominated by the old Roman fortress' remains as well as the new imposing structures of the cathedral and palaces among a vastness of densely packed single-story houses made of branches and mud. In terms of urban space, it adopted the form of a series of interconnected markets between the landings of the two rivers, organized by functional paths connecting the rivers and trades, the markets and the landing places. While Roman rule has been identified as a foundation for European civilization – as Roman buildings, language and legislation have permeated European culture – Scandinavian culture was also influential in England and York.

## MEDIEVAL CITY

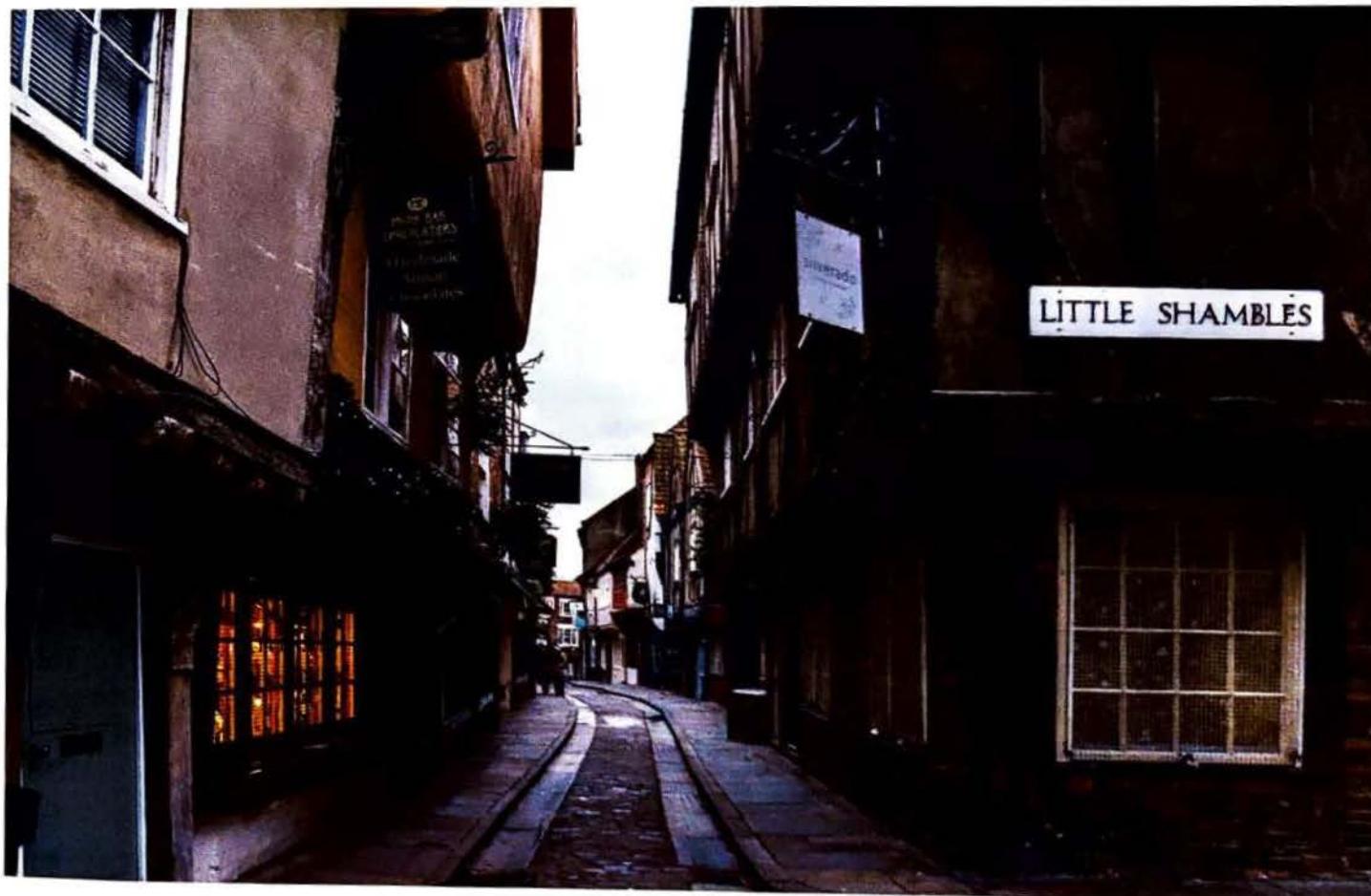
At the end of the Danish rule, York was a large and prosperous town, with an estimated population of about 10,000 people, most of which tradesmen and craftsmen. The Danish rule had been good for York, turning it into a thriving, bustling market town, making it only second to London in size and prosperity. In the following years, however, much of that would disappear, as the Norman conquest of the city culminated in a large fire in 1068, destroying much of the city and its records. The population of the York's County was decimated from about 8000 to 2000 and the town and surrounding area was described as a wasteland. Out of the ashes of the fire, a new culture and a new town arose.

The medieval city that developed from the 11th century was a new city with old foundations and was thus characterized by a dual typology: the straight Roman layout and, to the southeast, the irregular and closed shape of the Danish period. Furthermore, since the city's key sites were already established, what followed was a reorganization of those sites. Arguably the main difference for the town's urban structure was the construction of the castle, which rose above the mostly destroyed town as a constant reminder of the king's power and ferocious grip on York.

Beyond the most important building in York, the castle was also the central point for an entire defensive system that would come to determine the town as it was rebuilt. Specifically, a series of defensive mounds were erected around the town, which would later be converted into massive stone walls with battlements and an encircling path above it. Furthermore, a dam was built on the river Foss, to provide a moat to the castle but which also flooded about 50 hectares of land and created a large artificial lake, then dubbed the Kings Fishpool. Along this large body of water was the only

place where walls were not built, given its impenetrable character. The impressive system of defensive walls not only enveloped York, but also imposed some changes to the town's urban fabric, as it was complemented by a series of gates that provided access to the town.

The gates became increasingly important, as throughout the following centuries, York's strategic position in Northern England, at the crossing of several rivers and roads, fostered the (re)emergence of trade in the city as it became, once again, a provincial metropolis. Specifically, as a series of farming villages and sheep farms (often developed by religious orders and monks) surrounded York and traded their goods in the city (from which they could then be distributed along the rest of the trading network), the city prospered during much of the later medieval era. York's growing trading prosperity would be reflected in the construction of several civic buildings and guild halls, including the timber-framed Merchant Adventurer's Hall (1357-1361) which included not only a great hall for meetings and conducting business, but also a chapel and a charity hospital. The later York Guildhall (1449-1459) with its solid masonry walls already indicated a new period in the city's trading and economic prowess.



With economic prosperity came political prosperity as well, with the city gaining the ability to self-govern in 1212, when King John signed a city charter providing the citizens with the ability to collect and pay taxes to the Crown, to organize their own court system and even being allowed to appoint a town mayor (a self-governing system that greatly remained in place until 1974). York's resurgence as the capital of the North would be further recognized in 1298 with the transfer of the king's Treasury from Westminster to York.

Ultimately, it was primarily in this last period that the foundations were laid for the later York, with its contrasting scale of castle and Minster and the city wall with its numerous city gates on the one hand and the market squares and the small-scale typology of streets and buildings on the other hand. Some of the medieval urban fabric established during this period has survived as a series of timber-framed buildings, mostly in what has become known as the Shambles. Mostly composed of shops with overhanging upper floors, the Shambles identifies what originally was the street occupied by the city's butchers. But if the position of the medieval castle was determined by the placement of the Norman castle, the Minster's position would be determined by the placement of the church in Anglo-Saxon times. Besides defensive concerns, in reconstructing the city from the fire, Norman rulers also initiated a massive campaign of church building, which would arguably become one of their greatest built legacies in the town.

## THE YORK MINSTER

The most impressive building in York is still its Gothic cathedral, the York Minster (1230-1472), located at the very center of the former Roman fortress, where the most important roman buildings used to stand. With a 72 meter high central tower, the white York Minster has dominated the city's townscape since the mid-13th century with its cruciform plan being visible from most of the city.

Throughout almost 300 years, several construction campaigns would shape the Minster as it is known today, with each new campaign replacing parts of an earlier building that had been erected in around 1080, after the devastating Norman fire had destroyed the original Minster.<sup>1</sup> The first elements to take form were the two transepts, which were rebuilt in the mid-13th century with wooden roofs and with simple lancet windows with stained glass representing narrative scenes and symbolic motifs. This was followed by the construction of a rather original octagonal chapter house attached to the North transept. The originality of the design is revealed by the lightweight timber roof, which is entirely supported by the surrounding buttressed walls, thus avoiding the need for a central column. The clerestory windows covering

most of the upper wall are equally notable and allow light to fill the chapter house. But beyond its formal advances also the chapter house's decoration is worthy of admiration, from the exquisitely sculpted elements – including gargoyles, angels, animals and human heads – to the use of marble to clad the piers.

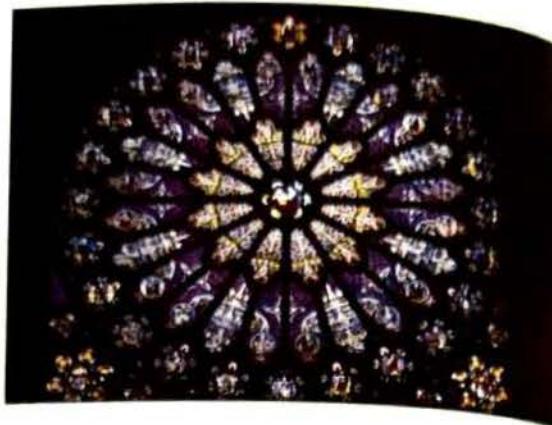
The Minster's long nave (measuring 160 meters) was rebuilt in a decorated Gothic style in a subsequent campaign between 1291 and 1350, creating the widest Gothic nave in England. However, while the nave has a wooden roof painted to appear as stone, the aisles were covered with vaulted stone roofs. The reconstruction and enlargement of the Minster's eastern arm between 1361 and the early 1420s would follow adding a four-bay, 32 meter high choir as well as a set of half-high transepts (that bring light directly into the altar) and a chapel. Completing the eastern arm is the largest expanse of medieval stained-glass window in England, the so-called Great East Window. Between 1407 and 1472, the square-planned central tower was rebuilt, one of the last works before the Minster's consecration. However, the renovation would be concluded with a late medieval refurbishment of the Minster's interior – including the remarkable choir screen with stone and gilded canopies – which created the rich interior that can still be seen and experienced to this day.

Just as the Minster was consecrated, however, York's economic fortunes had been in a steady decline, as economic and trading activity (particularly of the cloth industry) had shifted to other parts of Yorkshire. Despite the shiny new cathedral, the city's economic decline had been accompanied by a political decline, and the city would not recover its prominence until the 20th century.

## ABBOT SUGER'S CROWN OF LIGHT

While it is difficult to exactly define what the Gothic architectural expression is, it is widely agreed that it originated in the region of Paris, or Île-de-France, as the result of the vision of a singular patron: Abbot Suger (c. 1081-1151). As a personal friend of the then ruling king of France Louis VII (1120-1180), Suger was an influential figure in both church hierarchy and civil society. Beyond being trusted with the regency of France while the king was away on the Second Crusade (1145-1149), Suger was also the Abbot of the Royal Abbey of Saint Denis (1135-1264), the French royal monastery where the French kings found their final resting place. Realizing that the monastery's noble function was not appropriately expressed by its building, Suger initiated several reconstruction campaigns of the old Carolingian Abbey. Suger's ambitious vision for Saint Denis as a space of heavenly light, directly stimulated the development of a previously unseen daring structure and provided the prototype for subsequent cathedrals.

Work on Saint Denis was initiated in 1134 with the addition of a new one-and-a-half bays deep narthex crowned by two towers and complemented by sculpted tympani and, most importantly, a rose window (high on the facade's central bay). With the narthex completed, work began on the choir surrounding the altar on the opposite end of the building. This choir was just as revolutionary as the narthex, since it was composed of seven shallow radiating chapels with impossibly large



windows (that almost merge the chapels with the ambulatory) and svelte structural components. This resulted in increased spatial unity, but most significantly, in a harmonious colored light that penetrates the space almost without any interruption, producing a crown of light for the abbey's high altar. To bring such massive amount of light into the cathedral, the building's mass needed to be all but dissipated. This ambition resulted in the development of a new structural system, one in which the loads of the building could be supported by singular elements, one that obviated the need for massive walls that could thus be replaced by windows. Such skeletal structural system of thin vaults was also applied in the last reconstruction campaign that focused on the abbey's nave linking the narthex and the choir. The relative darkness of the ground floor was thus contrasted by the encompassing light seeping in from the top.

Ultimately, Gothic architecture can best be described as a combination of structural prowess and luminous experience, a combination which was greatly instigated by Suger's vision of the church of Saint Denis as a crown of heavenly light.

# MEDIEVAL BRUSSELS AND THE TOPOGRAPHY OF POWER

## ORIGINS

The question of how, when and where Brussels exactly originated, has been the source of much debate. The traditional explanation, sanctified by the official celebration of the city's 1000th birthday in 1979, holds that it originated from the founding in 979, by Charles, Duke of Lower-Lorraine (c. 953-993 and one of the last descendants of Charlemagne) of a *castrum* (a rectangular camp surrounded by earthen walls and a tower) on one of the islands in the river Senne. His arrival is thought to have given an impetus to the already existing Merovingian settlement around the chapel of St. Michael's on the river's right bank, which – in combination with the rise of international trade during that period – would have led to the development of a town. Today, this vision is contested, and historians now believe that Brussels came gradually into being as a collection of agricultural settlements near a swampy area along the Senne river. By the 11th century, a small *portus* had been created at the furthest inland point where the river was still navigable, which served as a transit port from where the agricultural surplus found its way to Antwerp and the North Sea. In this view, the building of a *castrum* there constituted a consequence rather than a cause of the dynamism and economic activity in this area.

The historiographical tradition also holds that next to his *castrum*, Charles of Lower-Lorraine had a chapel built to hold the relics of St. Gudula (652-712), a typical maneuver to increase the prestige and attractiveness of his settlement. Probably in reaction to the unpredictable nature of the river and for strategic reasons, shortly after (between 1000 and 1080), both the *castrum* and the relics were moved up the eastern escarpment of the valley: a new fort was built on the so-called Coudenberg (*Frigidus Mons*), while the relics of St. Gudula were moved to the existing St. Michael's chapel. This double move explains the separation of Brussels into a *ville haute* (upper town) with the seats of power and administration, and the noble residences; and a *ville basse* (lower town): the medieval town of the burghers (artisans, laborers, merchants). Access between both parts was initially limited to a couple of streets, reinforcing their development into two separate ecosystems and leading to a spatial, social and functional division that persists to the present day.

The new settlement quickly developed and was granted city rights in 1229. Besides its location along the old medieval trade route between Cologne and Bruges, and its role as a prime center of woven wool manufacturing, the town also embarked on a parallel

career as a ducal or princely capital. Indeed, as early as 1261, Brussels became a seat of the Dukes of Brabant – a recognition of its political, demographical and economical importance. For the next two centuries, the city became a premier center for art and architecture in the Low Countries. By 1480, the city counted an estimated 48.000 inhabitants, making it the most densely populated town in the Netherlands.



This was also a time of economic hardship, however, since by the mid-15th century the city's traditional textile industries had declined in favor of the tapestry industry and the fabrication of luxury goods and art – illustrating how its economy became increasingly dependent on the presence of the court. This, in turn, explains why the city authorities went to great lengths to accommodate the dukes and their entourage in the best possible way: it is estimated that at that time, one third of the city's budget had to do with construction works for, or expenses related to the court. Especially under the Burgundian rulers, massive building campaigns took place and innumerable festivities, tournaments and banquets were held at the city's expense. But even then the competition with other cities like Leuven and Mechelen in hosting the political institutions remained fierce; it was only under Emperor Charles V that Brussels became the *de facto* seat of power in the Netherlands, sealing the city's destiny as the central diplomatic crossroads in North-West Europe.

## MORPHOLOGY

The construction of city walls constituted the fundamental emancipating act of any new settlement. Brussels' first enclosure was probably completed by the end of the 12th century: a 4 kilometer long circuit of walls, featuring no less than forty towers and seven gates, and complemented with a ditch that could be inundated at certain points. Its primary role was defensive: it protected the then principal economic, political, and religious focal points of the emergent town, namely the Ducal Palace on the Coudenberg (c. 1150-1460); the Senne port; and the (currently) Cathedral of

St. Michael and St. Gudula (c. 1045-1675). Yet, it also had a demonstrative dimension as expression of ducal power while its constructive ingenuity also revealed the prosperity, skill, and economic power of the young town's inhabitants. Although the financial burden on the townspeople must have been very considerable, there were also economic benefits: as the construction involved a large amount of (unskilled) laborers, craftsmen, traders in raw materials, among others, these huge public works also fostered the local economy and may have contributed significantly to the social emancipation of large parts of the population.

Although the first fortifications were instrumental in fixing the city's form, within its confines, growth occurred completely unplanned. Most houses were built of wood, clay, and straw – except for the aristocratic residencies, erected in stone; the streets were unpaved, narrow and curvy and were places of production and trade rather than for circulation. At least until the 14th century, they also served as sewers: excrements of both humans and livestock were dumped on the street, just like the waste material of tanners, grease melters and butchers. Between the pockets of houses, there were fields, ponds and yards but as the city grew rapidly, these areas quickly filled up. For that reason, and after the siege of Brussels by the count of Flanders in 1356 had underscored the defensive inadequacy of the first fortification, a second enclosure was completed in 1383. Much larger and longer than the first wall, it comprised no less than seventy semi-circular towers and, again, seven gates. Its egg-shaped contour derived from the incorporation of the settlement around the Kapellekerk (to the South) that had become a prime center of textile production. This forms a typical instance of the poly-centric nature of most medieval towns, where various nuclei amalgamated over time.

Maps from the 16th century show how building within the city walls remained contained in fact along two main axes: in the north-south direction, the rue Haute and its extension up to the Porte de Schaerbeek; and in the east-west direction, the Chaussée de Flandre up to the Porte de Namur in the east. For a long time, the most densely built-up spaces remained the Grand Place and its environs, the neighborhoods adjacent to the river; and the Sablon and Beguinage neighborhoods. The economic depression in the 15th century and the long-lasting demographic impact of various epidemics explain why large tracts of land remained available for cultivation and would become built up only from the late 18th century onwards. The Senne remained the city's main proto-industrial backbone: it featured no less than thirteen water mills along its banks, used by flour millers, beer makers, tanners and metalworkers. In terms of residential fabric, the city consisted almost entirely of three- to four-story townhouses with pointed or gabled cornices, densely built on irregularly shaped city blocks. As maps from the 17th and 18th century attest, the morphology of the city would remain this way for quite a long time, for its expansion

halted in the course of the 16th century when religious wars, the rigidity of the urban guilds, and the growth of cloth processing in rural homesteads halted the economic, demographic and urbanistic growth of Brussels. The same maps also show how in the course of the 17th century, the outer walls were equipped with ravelins and bastions and complemented with the Monterey Fort (1670). This enormous investment, however, could not prevent the city from being ravaged by Louis XIV in 1695, and the bastions lost their relevance soon after. Similar to many other European cities, in the early 19th century, the walls were transformed into public boulevards.

### THE TOPOGRAPHY OF POWER

Within the city walls, various groups competed for influence and power: the city authorities strove to safeguard their autonomy from the feudal lord; the merchants claimed their share in the governance of the town (in detriment of the old patrician families); and even the canons at St. Michael's sought to maintain their monopoly over religious affairs. This struggle became not only expressed in numerous documents and debates, but also in the townscape under the form of infrastructure and representative buildings.



After the construction of the second enclosure, the palace at the Coudenberg lost its defensive role, becoming one of the most prestigious court residences in Europe. Housing over 600 people, it consisted of four residential wings, a large park, a chapel, and offices. Its prime feature was the Aula Magna: constructed under Philippe Le Bon

around 1460, it was one of the largest covered spaces in Europe (40 meters long and 17 meters wide, the roof pitch rose to 40 meters height), hosting some key moments in European history such as the abdication of Charles V in favor of his son Philips II in 1555. By the 17th century, the palace had evolved into a heterogeneous complex that, together with its gardens and the many aristocratic residencies in its vicinity, had transformed the Coudenberg into a site of wealth, power and opulence overlooking the merchant city. Nothing of this subsists today, however, after the palace was ravaged by fire in 1733, the ruins were used to lay out the current Place Royale (1775-1782), while the former aristocratic residences were demolished in the 19th and 20th century to make way for public buildings.

The Coudenberg palace was not the only physical expression of the duke's power. The first city wall had in fact been constructed on his orders (but paid for by the citizens) and initially, he also owned most of the town's mills, the crane in the *portus* and the municipal weighbridge; he also levied toll and decided on who could sell goods on the market. Nevertheless, the urban elites increasingly succeeded in taking matters in their own hands by taking advantage of the duke's persistent shortage of funds, for he was constantly involved in costly succession wars. In turn, by the late 13th century, the city had expanded its financial basis by claiming taxation rights on neighboring villages such as Molenbeek, Sint-Gillis and Schaarbeek. In some cases, like that of Anderlecht, this led to bloody conflicts (in this case, with the lord of Gaasbeek), illustrating how control over the neighboring lands (both in terms of taxes and cultivation) was of strategic importance for the young city's survival.

Religion was omnipresent in the medieval town, and the authority of the clergy was undisputed. Financially autonomous thanks to numerous legates, gifts (in money and artworks) and retributions from wealthy citizens, the canons of Sts. Gudula and Michael claimed authority over the city's religious landscape. They were a diverse and well-educated group, and their competence in administrative matters was called upon by both the city authorities and the nobility. While the collegiate church became a prime showcase for the prosperity and power of the old urban elite, many other churches rose to prominence, catering for specific subgroups such as St. Nicholas' Church (1125) close to the *portus* (the patron saint of the merchants) and the Church of Our Blessed Lady of the Sablon (c. 1400-1549) founded by the prestigious Archers' Guild. The canons of Sts. Gudula and Michael fiercely opposed their elevation to the rank of parish church, however, fearing substantial losses of income. They also looked down on another type of competitors, namely the religious orders that established themselves outside the city wall from the early 12th century onwards – in most cases with the consent of the feudal lords. Such settlements often gave rise to the development of an entire neighborhood, as had been the case around the Kapellekerk, mentioned before. Later, mendicant orders such as the Franciscans and Carmelites

were also granted permission to settle between both city walls, where land was still plentifully available. Apart from their role in spiritual matters, administration and care, these religious institutions had a major impact on the city's spatial development: after a second wave of foundations (in the context of the counter-reformation in the 17th century), they occupied an estimated 10 percent of the city's surface. Thus, through this amalgam of (Catholic) buildings and networks, medieval Brussels was literally permeated by religiosity.

Civic power was concentrated around the Grand Place, the central market square (see Figure below). First mentioned in 1174, it was initially no more than a marshy zone surrounded by sand banks along the 'Steenweg' (the old trade route between the Rhineland and the County of Flanders), where goods were traded that had arrived in port. Little by little, shops and houses were built along its borders, and by the 13th century, the Duke of Brabant erected three covered markets there for bread, cloth and meat. At around the same time, borne out of a competition with the neighboring cities (Mechelen and Leuven in particular) and aimed at attracting wealthy buyers and bankers from abroad, the city authorities constructed a huge cloth hall next to the square at their own expense. Their subsequent buying of two neighboring stone houses with a view to housing the city's administration, signaled the start of the political appropriation of the square in detriment of its initial economic function. Indeed, as early as 1360, dedicated markets for the sale of butter, cheese, wood, and charcoal were created in the vicinity, while a series of houses were expropriated to enlarge the central market square and rectify its borders - a typical medieval fashion of 'carving out' open space by erasing parts of the existing built fabric.



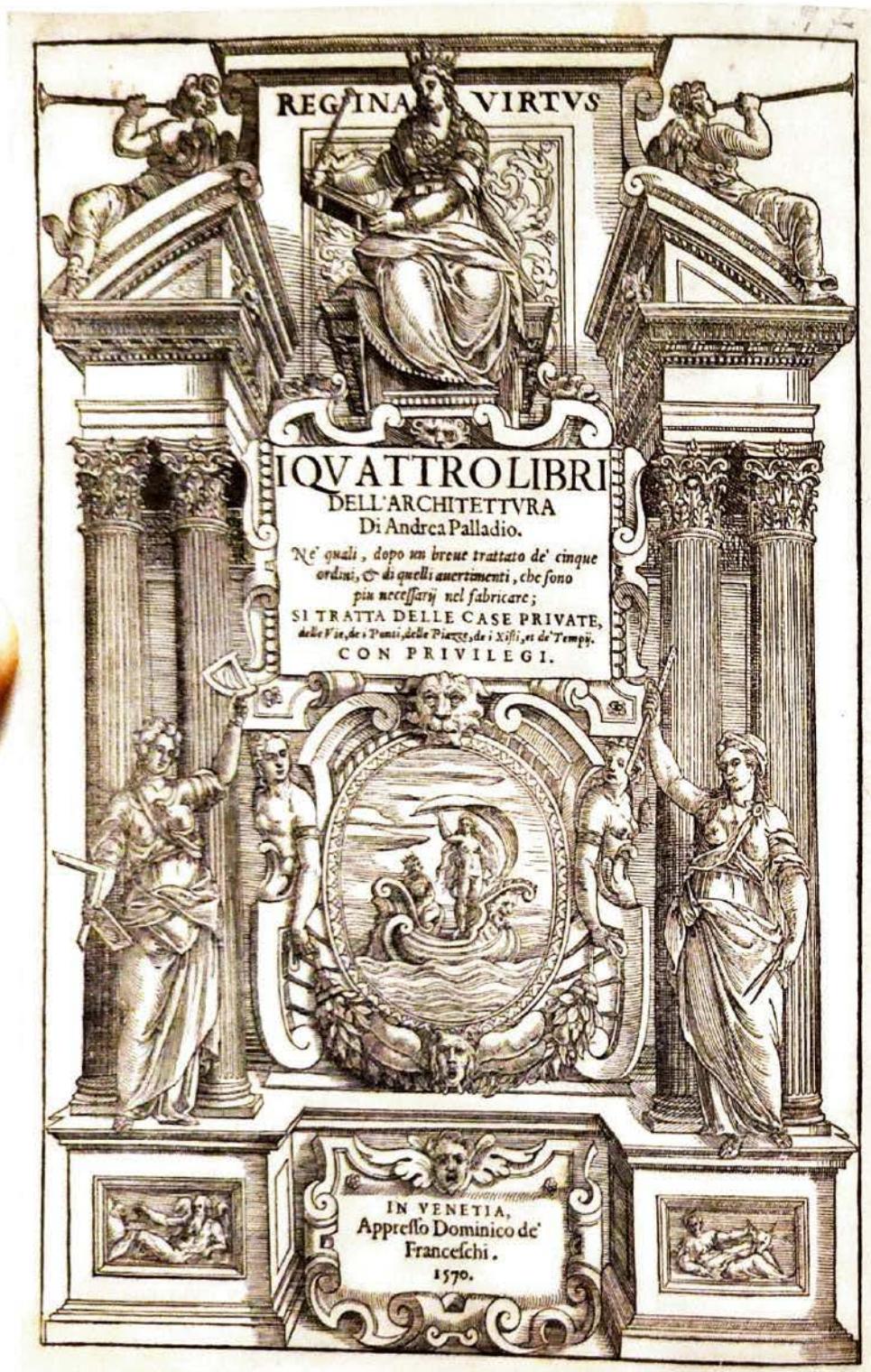
The construction of the town hall (1401-1455) on the western side of the square from 1401 onwards, in the Brabantine Gothic style (a reaction against the dominant French taste at the time) marked the start of a period of great economic prosperity and transformed the Grand Place into the heart and symbol of municipal power. Interestingly, the town hall had to be extended already by 1421 for, after a bloody conflict, the seven governing patrician families agreed to share power with the corporations of the merchants. It took until 1450, however, before the town hall's monumental spire was completed. It ensured the building's visibility in the cityscape and made a clear statement vis-à-vis the rivalling towers of Sts. Gudula and Michael, and the Aula Magna, both also completed at around the same time. Yet, the Grand Place was not immune to interference from the other powers. While it did not feature a place of worship or any other type of religious infrastructure (a remarkable fact that emphasized its mercantile and administrative nature), the duke managed to keep his foot in the door by transforming the old bread hall opposite the town hall into an office where, amongst other things, the princely taxes were due – a strong reminder that the city's autonomy remained fragile and subject to a higher political level. Also, the guilds laid their claims on the Grand Place as an expression of their increasing influence: they proudly planned their opulent headquarters on the remaining parcels along the square, expressing their wealth and importance through the size and embellishment of their houses. Thus, the Grand Place became the penultimate center of political, economic and social relations in the city, and the terrain of cohabitation and confrontation between the ducal or princely rulers and the city authorities.

Apart from its economic function and political importance, the Grand Place also played a major role in shaping the collective identity and historical consciousness of Brussels, as the theater for all sorts of events related to its internal institutional evolution as well as larger, international cultural and political changes. For example, in 1523, the burning of two monks converted to Lutheranism announced the wars of religion, while in 1615, a lavish 'Ommegang' (a traditional procession featuring the most important magistrates, confraternities, religious orders and leading citizens) was held there to welcome Albert and Isabella of Austria as the new governors of the Spanish Netherlands. The importance and pride attached to the square became best expressed in its astonishingly rapid reconstruction after the 1695 bombardment under Louis XIV, when marshal Villeroi used the town hall's spire as his main target and destroyed almost the entire city center – apart from the spire itself and the town hall's main façade. In a remarkable collective effort, the old wooden structures were replaced by a variety of opulent baroque facades, but the reconstruction of the city fabric occurred on more pragmatic grounds: in most cases, foundations were recycled whereby the city's medieval morphology remained in place. Soon, however, its social, economic, and spatial order would become profoundly altered: the French Revolution brought about the dismantling of the corporations; the Industrial Revolution turned

the city into a center of production, filling up all the remaining space in the city walls; and in the wake of the Belgian Revolution, Brussels became the capital of a small but very ambitious nation. Rather than a center of production, the so-called Pentagon (as the city center is commonly referred to) now received a new role as a central distributor of people, services and goods. The infrastructural modifications this engendered (such as the vaulting of the Senne river in the mid-19th century or the construction of a railway junction in the 20th century) have altered the morphology of the city center to such an extent that its medieval origins are scarcely recognizable anymore today.



# A HUMANIST TRADITION AND A RETURN TO ANTIQUITY



The Renaissance is often associated with a specific building style, that succeeded the Gothic period and was itself succeeded by the Baroque. Reducing the understanding of the Renaissance to a discussion of building styles is inadequate, however, since the resulting style was nothing more than a reflection of the conditions as well as the ambitions of dramatic cultural and social changes that started in the 1400s.

While a complex and significant period in both architectural and human history, the Renaissance is also easily defined by the term itself. Quite literally meaning 'rebirth' and 'revival', the Renaissance was characterized by a renewed interest in the guiding principles of Classical – particularly Roman – values, principles, ideas, and forms.<sup>1</sup> In architecture, the growing interest in classical antiquity was indelibly associated with the rediscovery of the medieval manuscript of the only surviving classical architectural treatise authored by Marcus Vitruvius Pollio (c. 80 BC-15). *De Architectura Libri Decem* (commonly known as the *Ten Books on Architecture*).<sup>2</sup>

Art historian Sir Ernst Gombrich once stated that the periodization of any building style was born out of a discussion considering the meaning of one particular form, that is, the classical form. In that sense, especially since the Enlightenment, a great deal of effort has been directed at defining categories in which architectural forms can be classified in a scientific way. For that to be possible, however, if on the one hand there has been a search for universal morphological principles that can unify the differentiated, historical range of forms, on the other hand historical and cultural periods have been purposefully defined so as to explain that differentiation. In fact, what sir Gombrich claimed was that while every period has had its own norms and forms, the essence of their discussion was inevitably animated by a deep consideration of the meaning of classical form. Noting that, throughout times, historians and architects were either for or against it, Gombrich claimed that stylistic discussions were inevitably both a symptom and a mask of an underlying cultural crisis: the division between classical and non-classical. And while the opponents of classicism ultimately won the day, with modernism's triumph causing the debate to become insignificant, during the Renaissance there was a clear support of classical tradition and principles.

However, the concept of the Renaissance has gradually gained a wider and looser meaning than in the past when it was defined strictly as a cultural movement based on a new appreciation of thinking and art from classical antiquity, which began in Italy and then spread across Europe. In fact, the reappreciation of classical culture was only one aspect of the extensive and intricate process of cultural, social, and religious change that occurred in Europe during the 15th and 16th century. Most notably, it was part of the formation of a humanist culture that led to a radical reconsideration of most, if not all, foundations of both knowledge and life and, as a result, of a new conception of the essential values of nature and history.

Specifically, during the Renaissance there was also an attempt at understanding the natural orders that govern the world, particularly of a heavenly cosmic order that was believed to be expressed through mathematical proportions, which were expectedly related to the dimensions of the human body.<sup>3</sup> Along with the clear positioning of Man at the center of God's cosmic order, Renaissance thinkers also attempted to reveal the secrets of antiquity by analyzing the work of other men. Therefore, the Renaissance has been identified as the first Humanist period, from which eventually the study of Humanities was developed.

The Renaissance's humanist culture was among the first that considered a conscious vision of the city as a crucial and central component of an organized society. It was, in fact, the first time since classical antiquity, that theories or any type of broader understandings about the city were developed. But if a theoretical understanding of urban planning in itself was not sufficient to foster radical changes to the city, it was nevertheless a fundamental force that supported urban transformation brought about by social, economic, and political needs. Therefore, during the 15th and 16th century, especially in Italy, the city underwent radical changes that set the basis for the modern shape that would be imposed on large cities across Europe in the 17th century.

## A SENSE OF HISTORY AND REVIVAL OF ANTIQUITY

In the Middle Ages there was no sense of history. Scholasticism, the philosophical-theological discussions that dominated medieval thinking, mainly considered this world as a mirror image of a different metaphysical world, i.e. a godly cosmos, a metaphysical reality, of which the factual real world was supposed to be an analogy or an image. That transcendent, purported, world was *a priori*, but how could it be 'captured' as a real, understandable reality? How could that analogy be constructed? As a whole or only in parts?

The sense of history which emerged in the Renaissance was crucial in resolving these issues, since it eventually reconciled notions of change and development with an understanding of the past. One of the earliest humanists, the writer and poet Francesco Petrarca (1304-1374), for example, discovered two Romes. The Rome of his time, but also another one that referred back to antiquity through the various building ruins around the city. Petrarca (or Petrarch, as he is also often referred to) stirred up the awareness that the Middle Ages had been preceded by a classical time that could be the source of both knowledge and culture. Specifically, while this ancient knowledge had gradually disappeared—transforming the Middle Ages into the dark ages—a rebirth of classical knowledge could bring back the light to humanity. In architecture, this was to be experienced with the revival of Vitruvius' work.

However, the concept of history that Petrarch articulated was limited. Since it was strictly concerned with historical sense or awareness, it meant that the entirety of knowledge and culture that represented antiquity was understood as a static entity. Since it was believed that everything was already known, the rebirth of classical antiquity did not mean development or history. That concept of development emerged later, influenced by revolutions in the natural sciences, as these showed that something could be different from what was thought in antiquity, that is that Aristotle was not the last natural scientist and Ptolemy was not the last astronomer.

## A PERSPECTIVIST APPROACH

Therefore, the Renaissance as an historical movement was soon no longer limited to emulating classical ideals, as city culture was too expansive to limit itself to simply following past examples. Soon the Renaissance entered a phase of experiments where its concept of style became broader, where it became aware of the significance of mathematics, of perspectivist drawing, and of the methodical observation of nature. These were the keys to open new possibilities. For anyone looking at it in retrospect, the greatest delight of those times, which have often been described as the great awakening of European culture, certainly lies in the productive tension between a new traditionalism and a genial originality.

From those new elements, the use of perspective, in particular, becomes important in architecture and urban design as time comes to a standstill and the eye becomes the thinking eye. A perspectivist view of space is developed in the Renaissance for this purpose. It is basically a mathematization of space where a single viewpoint can be determined through careful measurement and calculation that results in a flat representation of the impression of a viewing eye in space. Through perspective, it becomes possible to develop realistic representations of spaces and shapes, of spatial images in which the curving and fading caused by the spherical field of view of our two eyes have been replaced by uniform clarity, as Edmund Bacon has described it.<sup>4</sup> Bacon also summarized the paradigm through which reality is viewed in either the Renaissance or the Middle Ages in three categories: *apprehension*, *representation* and *realization*. The contrast between these two periods, that is between medieval intuitive design and Renaissance individual-centered design, hinges on a clear distinction that is made visible through diverging modes of drawing (*representation*) but exists also in their different understanding of context (*apprehension*) or even of building (*realization*). Specifically, Bacon argued that the Renaissance's use of perspective – which relied on a rational and rigid, one-point perspective of a single object in space – not only documented the precise observation of one individual at one specific moment but was also translated into single, self-sufficient buildings, detached from their

surroundings. Conversely, medieval drawings that commonly included a simultaneous representation of several objects from various viewpoints pointed at an awareness of a total environment and therefore resulted in a construction that was (wittingly or unwittingly) closely integrated in its environment.

Construction could thus be considered as an extension of the perspective paradigm, with reality becoming a man-made construct, based on the idea of the *mind* as the essential force to create, to form, to produce. That mind, however, was primarily poetical, before being practical and theoretical, where *poiesis*, or the art of creating, was a crucial element. It is this type of construction, i.e. reliant on an approach that was both conceptual as well as physical, that David R. Lachterman identified as "building geometry" and considered to be essential to understand the Renaissance's modernity. Ultimately, art was still to a great extent a craft.

## FROM MEDIEVAL TOWN TO RENAISSANCE CITY: THE CITY STATE

Changes in societal structure and the relations within the urban community were essential for the transition from the medieval town to the Renaissance city. In the Middle Ages a city was first and foremost a community of tradesmen and craftsmen, with power being exercised on larger geographical units in which several cities were combined as economic and strategic centers. As such, urban autonomy was limited to the framework of city rights and political decisions which, while pertaining to the town, were mostly decided somewhere else.

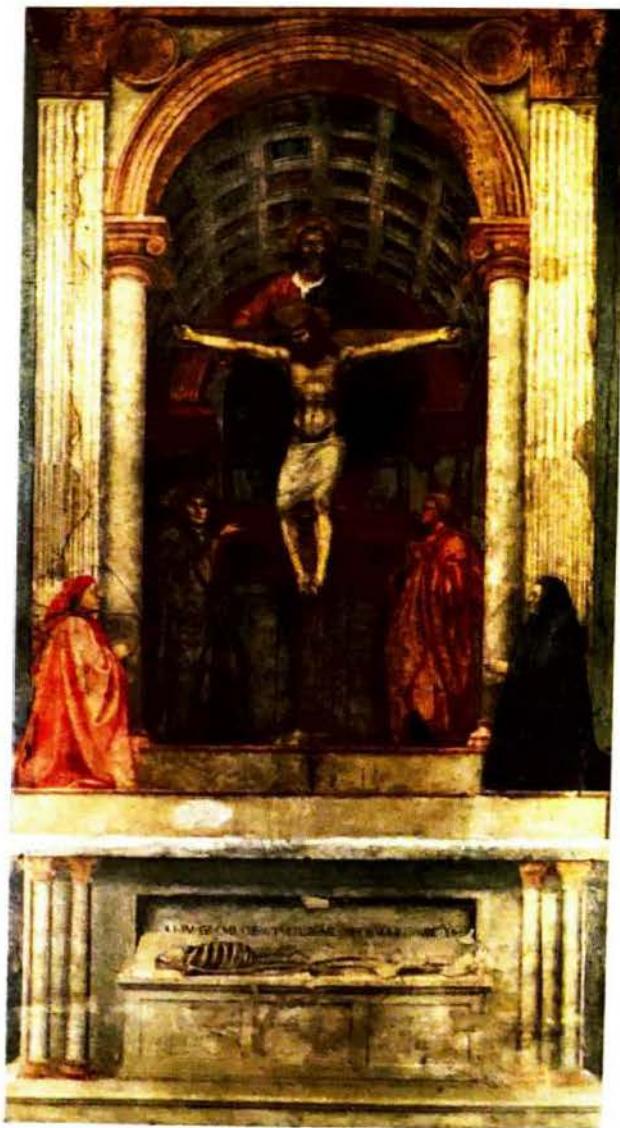
During the Renaissance, however, the city developed from a discrete social and economic system to a politically and economically independent entity with kings, lords and aristocratic elites: the city state. Furthermore, cities' economies no longer aimed at a discrete self-sufficiency but were now directed towards trading, with a new urban elite steering this developmental process. As merchants' fortunes (both financial and social) rose due to the capital accumulated from their trading, they started to dominate the city's political, economic and cultural life. This new urban elite had the economic opportunities, made the plans, and took the decisions, but as the city was to be reconstructed as a work of art aligned with perspectivist rules, they were assisted by a new class of experts: the practitioners of the arts and sciences.

## PERSPECTIVE AND THE IMPOSITION OF ORDER

The Renaissance's spatial pursuit was characterized by a rationalization of space, particularly with an application of a discernible logic to both the proportional definition of space and the combination of different architectural elements. Columns, beams, cornices and other architectural elements were thus organized in strict relationships between each other and the whole composition, inserted in spaces firmly defined by ratios and proportions. Inspired by the writings of Greek philosophers such as Plato, Renaissance architects were intent on creating an architecture of mathematical perfection. In order to achieve this goal, they used whole-number ratios — such as 1:1, 1 :2, 2:3, and 3:4 ratios that the ancient Greek mathematician Pythagoras had identified with musical harmony while indicating that their presence, while often undetected, was inevitably experienced by everyone hearing them — to create an architecture of harmonic perfection. For Renaissance architects the association of mathematical order and harmony, of proportions and beauty, was considered to be inherent, as they believed that not only these were the devices through which God's cosmic order was expressed on the physical realm, but also that they were inevitably related to the dimensions and proportions of the human body. Furthermore, Renaissance architects and artists held in particular reverence the ideal forms of the square and the circle, since these were the most

perfect forms, forms that were absolute, immutable, and centered, reflecting celestial harmony and serenity.

It became a widespread belief during this period that beauty could only be achieved through the use of proportions and thus the whole secret of art that could be appreciated by everyone consisted in proportionality, as Lorenzo Ghiberti (1378-



1455) and Daniele Barbaro (1514-1570) claimed in their respective writings. Since Renaissance artists found that the same law relates every point in space to any observer's eye, the basic notion of proportionality became entirely dependent

on perspective. Therefore, "from the point of view of the Renaissance, mathematical perspective was not only a guarantee of correctness but also, and perhaps even more so, a guarantee of aesthetic perfection".<sup>5</sup>

## HOMO UNIVERSALIS AND INDIVIDUALITY

The Renaissance ideal was also expressed in the emergence and appreciation of the *homo universalis*, an individual who masters knowledge from a variety of fields and subjects and draws on that broad knowledge to solve specific issues. A Renaissance man, therefore, was a combination of an artist, an inventor, and a scientist. Such versatility of Renaissance artists and scientists also means that we cannot merely speak of architects, let alone urbanists. People were never just architects, certainly not at the outset of the Renaissance, as there was always a connection with other artistic and scientific disciplines. In the particular condition of urban development, for example, the pragmatic side of this discipline was favored, with most urban development being directed by the hands of a 'city architect', a 'city carpenter', surveyors, or even fortification builders, with the art of cities being directed by the craft of building.

Although this connection between arts and sciences, as well as the rediscovery of ancient knowledge, are some of the standard definitions of the Renaissance, some also argue that as human beings started to discover themselves, the Renaissance also witnessed the rise of modern individualism. Rationalization was a crucial element in this process, since the Renaissance man was one who no longer wanted to subject himself to the irrational inscrutability of the will of God and who consciously or unconsciously accepted life. Ultimately, it meant that man took his destiny into his own hands.

# **L**A CITTÀ IDEALE: VITRUVIUS, LEON BATTISTA ALBERTI, ANTONIO FILARETE, AND VINCENZO SCAMOZZI

The ideal city emerged as a fashionable theoretical exercise throughout the Renaissance. Plans for ideal cities were not just studies of architectural and urban consistency with Renaissance ideals and the application of the rules of geometry and perspective, they were also the attempt to charge architectural and urban design with a clear intention to support a changing social and political condition. The question was not only how a new Renaissance society could be expressed in urban form, but also how an ideal urban form could work as a catalyst for an idealized social order. Along with such high-minded goals, military concerns also played a significant role in shaping ideal cities (and of existing urban settlements, for that matter), with these being designed like defense machinery adapted to the warfare of metal cannonballs and gunpowder.

In the transition from the medieval to the Renaissance city, there were significant changes in the social structure, which were inevitably reflected in the urban form of these cities. Specifically, during the 15th century, a new political order and power structure was established within European cities – particularly in Italy – which expressed itself as a political entity with princes, rulers, and aristocratic elites. If the medieval city had witnessed the emergence of commerce, with the growing influence of merchants, the Renaissance city developed from a dependent socio-economic system to an independent political-economic entity: the city-state.

Based on its commercial capital, the new urban elite spearheaded this social development, thus coming to dictate the political, economic, and cultural life of the city. While immediate impact on the urban form of the city was limited at best, the new socio-economic condition and political structure of the 15th century implied a completely new attitude and approach to the design of the city. Assisted by the power bestowed upon the local ruling elites, Renaissance architects could, for the first time, contemplate the act of town planning as an artistic endeavor. For the first time, the city was not merely created or planned, but effectively designed. The city was a work of art.



As a work of art, the design of the city was to conform to newly uncovered ideas of aesthetic delight. Guided by the rediscovery of classical antiquity, Renaissance architects believed that innate beauty was beholden to both proportionality and to the clear relationships (often through symmetry) established between different components and the entire composition. At its core, Renaissance architecture aimed at a mathematical perfection which could elicit harmony and repose from anyone experiencing such perfection through architecture. As Leon Battista Alberti (1404-1472), one of the most influential architectural theorist and practitioner of the Renaissance, put it, "everything must be reduced to exact measure, so that all the parts may correspond with one another, the right with the left, the lower parts with the upper, with nothing interfering that may blemish either the order or the materials, but everything squared to exact angles and similar lines".<sup>6</sup> The same idea of orderly design was later refined by another influential architect theorist, as Andrea Palladio (1508-1580) stated that beauty resulted from "the form and correspondence of the whole, with respect to the several parts with each other, and of these again to the whole; that the structure may appear an entire and complete body, wherein each member agrees with the other, and all are necessary to compose what you intend to form".<sup>7</sup> Under these terms, not only every single element was necessary for a perfect composition, but their correct position was predetermined or even pre-ordained and could neither be changed nor challenged. Therefore, in their perfection and immutability, the platonic forms of the circle and the square were particularly admired.

Such reverence to symmetry and composition meant that Renaissance buildings were to be complete in themselves. Thus, as beauty was inevitably dependent on completeness, it was difficult to apply and impose on cities – particularly existing ones – given their *ad-hoc* nature and ever-changing character. Further complicating the application of such principles and ideas regarding proportion, scale, and symmetry to the urban scale was the practical impediment that there was simply no need – except

from a few notable exceptions – to establish new cities or enlarge existing ones since the great era of demographic expansion and colonization within Europe had ended in the mid-14th century. Furthermore, the new urban elite – the seigniorial governments, which had taken the place of the commune and the various national monarchies – neither possessed the political nor the economic stability needed to embark on long and costly building projects.

Without having the opportunity to found or transform an entire city, the imposition of order envisioned by Renaissance architects and their patrons was limited to partial modifications of existing towns and the sporadic construction of a few isolated buildings. While the construction of an ideal city remained mostly an impossibility, Renaissance architects (as well as writers and painters) were not deterred in imagining and depicting new cities for an ideal society.<sup>8</sup> Based on an unattainable ideal – and idealized – society, these cities were to remain intellectual exercises in theoretical perfection.

Unconstrained by physical construction or socio-political realities, the multitude of schemes and plans depicting the 'ideal city' were effectively accurate depictions of the application of Renaissance principles and ideals to urban planning and design. In these plans, Renaissance ambitions and ideas were forcefully instrumentalized to present a new definition of urban form, one which was no longer the random result of the combination of a multiplicity of heterogeneous parts, but was instead the deliberate result of a homogenous, cohesive whole, where both its constituent parts and the entire whole were defined by and reveled in the same social, architectural, and aesthetic purpose.

## VITRUVIUS

The exercise of contemplating an ideal city was taken up by several Renaissance thinkers, but its origins, much like the Renaissance's own origins, are found in classical antiquity. Effectively, already in the only architecture treatise to have survived from classical antiquity, *De Architectura Libri Decem* by the Roman architect Marcus Vitruvius Pollio (c. 80 BC-15), there were several considerations regarding an ideal urban form. Between the fourth and the seventh chapter of his first book, Vitruvius described several elements for designing new towns, including a city of circular form, with the organization of its urban fabric seemingly based on resolving issues of defense, proper ventilation and exposure to sun.<sup>9</sup>

Vitruvius described this circular city as employing a radial-concentric form, with eight radial primary streets connecting the main forum area in the center of the

circle and the walls of the town. These, however, did not lead to main gateways, but instead to angle towers along the perimeter wall, which Vitruvius claimed would have assisted in resisting adverse winds, but was actually an important defensive military advantage. Within the regularly shaped residential blocks that occupied the different sectors between the radial streets, Vitruvius defined eight secondary open spaces in the middle of each of the sectors. Much like the remaining of *De Architectura*, the section describing these urban conditions was not illustrated and thus Vitruvius' considerations have generally been interpreted and depicted as a centralized form enclosed within an octagonal defensive wall with protruding round defensive towers, from the earliest versions by Fra Giocondo in 1511 and Daniele Barbaro's 1567 commentary on Vitruvius. Given that such centralized form (neither circular, nor octagonal) was never employed in any of the countless towns established by the Romans across their empire, it has thus been claimed that Vitruvius was advocating a theoretical, ideal city plan rather than describing common practice in Rome.

## LEON BATTISTA ALBERTI

Since Vitruvius' text enjoyed a revered position in the *quattrocento*, it was predictable that his ideas on the edification of cities would also be subject of particular attention and reflection. Leon Battista Alberti (1404-1472) was among the first to formulate an ideal Renaissance city, inherently reminiscent of Vitruvian ideas. This was an exercise that was particularly well-suited for Alberti, since he believed that architecture could be a way to address societal order. With the publication of *De Re Aedificatoria* (1443-1452), Alberti assembled embryonic Renaissance ideas on architecture as a cogent theoretical framework, including considerations on an ideal city. With this work, Alberti made a remarkable and long-lasting contribution to the theory of urban planning.

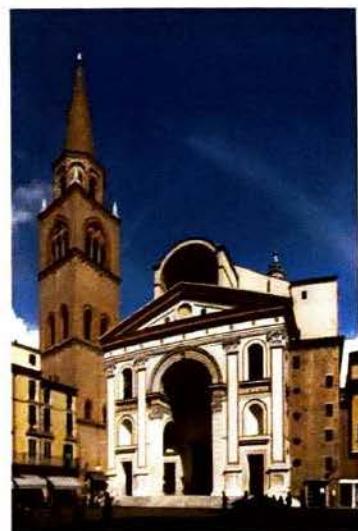
In line with both the Renaissance attitude towards platonic geometric forms and Vitruvius' earlier considerations, Alberti described an urban fabric formalized as a centralized square with radiating streets. In large cities, these streets were to be wide and straight, which Alberti considered would enhance the splendor of the city, facilitate movement, and ensure sanitary conditions by securing adequate amounts of natural light, sunshine, and fresh air to the residential blocks along the street. Conversely, on smaller urban settlements, Alberti favored an undulating street pattern, laid out in a manner of rivers. In both large and small settlements, however, the noble open space at the center was reserved in Alberti's plan for the city's church (or cathedral), in a clear representation of the urban hierarchy intended for the ideal city. The prominence of the church in the wide central *piazza* was further emphasized both symbolically and physically by the long horizontal cornices of the buildings along

## LEON BATTISTA ALBERTI

Leon Battista Alberti was a classical theorist and one of the most important architects of the Early Renaissance. His contribution to architecture is immeasurable, as Alberti was the first proponent of architecture as an intellectual endeavor by separating the intellectual act of design from the physical act of construction. This basic idea established the position of the architect as we know it today.

Having studied mathematics, music, Greek, Latin, philosophy and Roman law at the universities of Padua and Bologna, Alberti was an accomplished scholar, and eventually became one of the most influential Renaissance thinkers. Upon completing his studies, he joined the Papal Chancery in Rome as secretary to the chancellor in 1432. There, he was first assigned general duties but later concentrated on architectural and urban planning, culminating with his appointment as the architectural advisor to Pope Nicholas V in 1447. Alberti's time in Rome was an important formative period in his ideas regarding architecture and Renaissance principles, since it allowed him to observe first-hand monuments of classical antiquity and produce a systematic study of classical buildings through a variety of drawings. These observations provided him with a practical knowledge that neatly complemented his academic understanding of classical antiquity, which became evident in his writing.

Alberti authored several treatises on art, most notably, the first architectural treatise of the Renaissance. Modeled on the treatise of the Roman architect Vitruvius, *De Re Aedificatoria* (*On Architecture*) stated Alberti's application of Renaissance principles to architecture and urban planning by identifying the various elements and proportions of ancient classical orders and establishing a theory of harmonious mathematical proportions that were to be applied to architecture and spatial design. In this treatise, Alberti also considered the problem of the Renaissance city, establishing a clear call to order and defining functional and organizational urban hierarchies. Beyond his role in consolidating the theoretical principles of Renaissance architecture and urbanism, Alberti was also an accomplished practitioner of architecture. He designed several extremely important early Renaissance buildings that attempted to combine old themes and new ideas, most notably, the façade of the *Basilica of Santa Maria Novella* (1456-1470) in Florence, the *Basilica of Sant'Andrea* (1472-1494) in Mantua, the Church of *San Francesco* (also known as the *Tempio Malatestiano*, c. 1450-1468) in Rimini, and the *Palazzo Rucellai* (c. 1446-1451) in Florence.



the approach streets, which converged as lines of perspective to further emphasize the church as the city's most important focal point. Alberti established the remainder of the urban hierarchy as he considered public buildings and the residential quarters for different social classes, from hospitals to prisons, from wealthy villas to more humble residences.

Much like Vitruvius, his Roman predecessor, Alberti also did not include any particular plans or drawings for his ideal city, nor any specific examples of urbanism. Nevertheless, Alberti discussed at great length many aspects of urban planning which would be more comprehensively developed by later theorists. Effectively, the Albertian ideal of the temple of God in the center of a geometrically planned, radial concentric city became the crystallization of a theoretical urban ideal throughout the Renaissance, structuring all subsequent schemes and plans for the ideal city of both architects and painters.

## ANTONIO FILARETE

A multitude of schemes ensued from Alberti's theoretical exercise, with Antonio Filarete (c.1400-1469) drawing the first urban plan based on these ideas. Much like Alberti, Filarete's ideas regarding the ideal city were codified in his architectural treatise written between 1457 and 1464 and simply titled *Trattato d'Architettura* (Treatise on Architecture). However, unlike Alberti's treatise, Filarete's architectural schemes were illustrated, including a drawing of the Renaissance's first fully planned ideal city. At the root of this design was the assumption that since Albertian mathematics, especially geometry, laid at the basis for both arts and science, it should also be at the basis of urban planning as well.

Named Sforzinda (c. 1457-1464) in honor of Filarete's patron, Francesco Sforza (1401-1466), the Duke of Milan, this ideal city was organized in a centralized, radial-concentric fashion, much like Alberti's and Vitruvius' earlier descriptions. However, rather than a circular or octagonal perimeter, Sforzinda presented an eight-point star-shape, produced from two intersecting squares, with Filarete demonstrating its centrality, symmetry, and proportion by placing it within a Vitruvian circle in the drawing. On these star-shaped perimeter walls, the inner angles accommodated gates, while towers were located on the outer angles. Sixteen radial streets (with one of them doubling as an aqueduct) connected both gates and towers to the center of the city, which accommodated a fully developed town center with a variety of public

institutions along a central open space. The town center was composed of three separate squares, the most important of which accommodated the main cathedral and the ruling prince's palace, significant symbols of secular and religious power. To the north and the south of the main piazza, two ancillary squares completed the town center, accommodating respectively a market for foods and a market for other goods. While the foods market was lined by the bathhouses, brothels, and the Palace of the police chief, the goods market was delimited by the town hall, the bank, the mint, and the palace of the Chief Magistrate, i.e. all the functions of municipal administration.

The central area of Sforzinda, particularly the form adopted by its public spaces, is perhaps where the contradictions and ambiguities of Filarete's plan are most visible. Specifically, while the logical result of Filarete's plan would have been either a round or star-shaped – or at the very least polygonal – city center in relation to the street system, Filarete opted for a combination of closed rectangular spaces. Such conflict between the radial system of streets and the rectangular square also reveals the abstract nature of the plan. Moreover, while obviously centralized, this spatial arrangement had much greater affinity to Roman forum-planning than to the highly centralized centers of later Renaissance ideal cities.

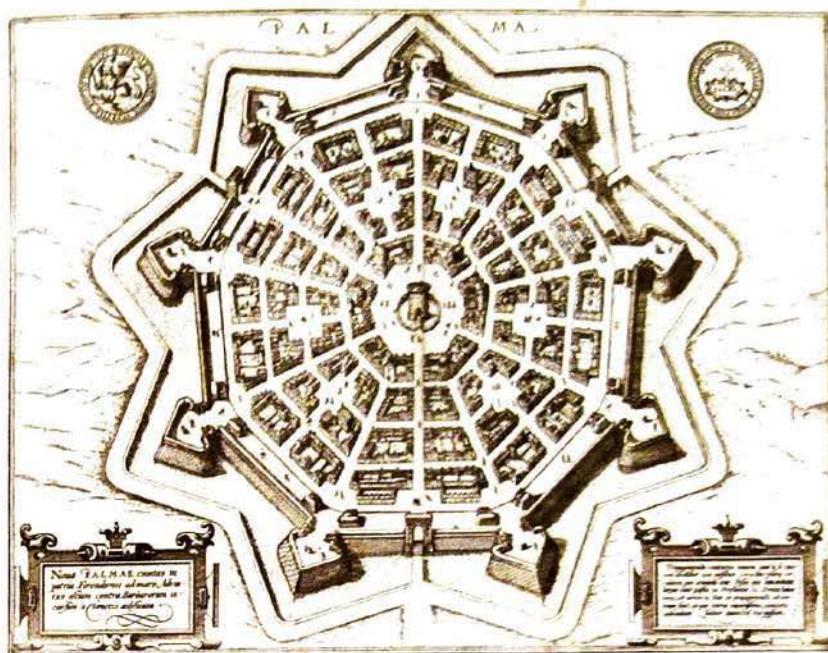
The distance from the center to the perimeter of the city was precisely sixteen blocks, and complementing the central public space, a system of sixteen subsidiary squares was located at the intersection of the also sixteen radial streets and the intermediate ring road, halfway between the center and the periphery. These squares provided open space for both markets and churches on an alternate pattern. The urban fabric also accommodated a system of canals that took the place of every other secondary street and, like the main radial streets, connected the main square at the center with the outlying districts. Filarete also took great care in describing a variety of details, including not only the ornamentation of all public spaces and main streets with continuous colonnades, but also a comprehensive description and design for a variety of buildings. These included the ruler's palace, separate schools for boys and girls, prisons, and a ten-storey house of 'Vice and Virtue' crowned with a statue of Virtue which was intended to further support the citizen's moral perfection. Equal attention was dedicated to the landscape both inside and outside the city, effectively providing one of the first recorded instances of inclusive town and country planning. The impact of Filarete's design of Sforzinda can hardly be overlooked, as his influence radiated widely, with manuscripts of his work being scattered across Europe. Along with Vitruvius and Alberti, Filarete's design formed an important background for other Renaissance efforts regarding the ideal city.

## PALMANOVA

Despite the multitude of plans, the theories of an 'ideal city' were only once put into practice as a complete work, namely in the small, fortified town of Palmanova (1593). Commonly attributed to Vincenzo Scamozzi (1548-1616), this city's design, like so many of the other ideal city plans of the time, was greatly influenced by the writings of Vitruvius and Alberti as well as the pursuit of a perfect form. Construction on the city started in 1593 as a fortified garrison outpost to defend the wealthy Venetian Republic. As such, the design of Palmanova took particular attention to military requirements and strategic considerations. The city's fortification and its perimeter wall were particularly important in the design, being formalized as a nine-sided polygonal wall with arrowhead-shaped bastions at its vertices. The design of the arrowhead-shaped bastions reflected a significant shift in the design of fortifications, particularly from the towers and turrets that had populated medieval city walls. At the origin of such shift was the introduction of gunpowder and heavy artillery to warfare after 1400, which had rendered the vertical medieval walls particularly vulnerable to artillery shots that could easily shatter their masonry construction. Instead of the verticality that had protected the walled cities of the Middle Ages, fortified Renaissance cities like Palmanova required a horizontal expansion comprised of complex landscaping of ditches and moats to prevent enemy cannons to be in range of the walls. But even when these cannons were in range, the town walls were low and earth-sheltered to absorb the impact of the artillery, while the arrowhead shape of the bastions allowed defending artillery to pivot and direct their fire over various angles, even allowing for firing parallel to the town walls, when necessary.

The nine-sided polygon of Palmanova (see Figure on the right) was complemented by a central square in a regular, equally nine-sided, hexagon. Following the basic functional diagram of an ideal Renaissance city, the main civic buildings were located along the main piazza. At its center was a singular round building, in a centralized type of completely symmetrical rotunda providing a similar vista to all the radiating streets. The polygonal shape of the *piazza* represented a direct harmonization of the defensive walled perimeter with the urban layout of the city, as symmetrical streets radiated between the center and the outer polygon in a complex arrangement: three led out from the center *piazza* to an angle of the wall and three others led to the center of a side. Twelve other radial streets start from the innermost ring of the three concentric streets between the *piazza* and the walls, with six of those intersecting the six subsidiary squares in the center of the residential blocks. This organization established the integrated pattern between central *piazza*, urban fabric, and defensive walls which is still visible today, since subsequent developments did not alter the character of the original scheme in any significant manner. As Palmanova has remained contained within its original walls, the unity and completeness of the

design has also been revealed: Palmanova did not experience any further growth or developed any diversified urban life, instead remaining a Late Renaissance geometrical exercise in urban planning.



While Scamozzi's authorship of Palmanova's design has recently been challenged, the similarities between Palmanova's design and the ideal city published by Scamozzi in the 1615 comprehensive ten-volume treatise *l'Idea della Architettura Universale* (The Idea of Universal Architecture) detailing his own architectural experience, are rather obvious. However, the primary distinction between Scamozzi's theoretical plan for a fortified city and Palmanova was the street system, since Scamozzi's plan contemplated the use of an orthogonal grid rather than a radial-concentric system. Scamozzi's grid was organized around five open spaces disposed in a cruciform composition. The functions in each square were defined – as suggested earlier by Filarete – with the large central *piazza* reserved for municipal administrative functions, such as the town hall, while the other four secondary squares were occupied by trade, specifically, by a variety of markets. The other notable difference in the plan was the incorporation of a river, regularized as a canal waterway, which added a counterbalance of asymmetry within the symmetrical urban composition. Although notable, the use of the grid layout in this plan, created a palpable spatial tension between the street pattern and the enclosing polygonal walls. While Scamozzi attempted to combine two favored elements of Renaissance urban design, namely the centralized polygonal plan and the orthogonal layout, the result was unresolved at best, with awkwardly shaped building blocks at the perimeter where the regular grid clashed with the polygonal form.

## IN PURSUIT OF THE IDEAL CITY

While these examples are perhaps the most paradigmatic of the evolution of the ideal city during the Renaissance, they are not unique. A multitude of other architects, planners, painters, and writers also grappled with the problematic of the ideal city with varying degrees of success. Nevertheless, these plans and ideas also helped shape the ongoing discussion and are equally expressive of the changed attitude from the Early Renaissance to the later Mannerism. In this regard, the designs of Francesco di Giorgio Martini (1439-1501), a prominent builder of fortifications, are of particular significance. Despite Martini's emphasis on realistic accomplishments, his interest in strong geometric forms and patterns, over-scaled components, and inherent formal tensions, effectively established a connection between the formalist plans of the Early Renaissance and a subsequent Mannerist period. Other notable studies include Pietro Cataneo's (c. 1510-1574) several schemes for an ideal city based on regular polygonal forms published in his treatise *L'Architettura* (Architecture) in 1554. One of Cataneo's schemes also bore noticeable resemblances with Scamozzi's plan, since it not only combined an orthogonal street layout with a polygonal perimeter but was also organized around one central *piazza* and six secondary squares. Much like Scamozzi, Cataneo was also unable to completely reconcile the city's grid system and its polygonal enclosure, equally creating small and highly irregular building plots. This, however, was a minor issue for Cataneo, since his plan did not attempt a strict symmetry of detail and space, but rather an asymmetrical formal balance. Equally notable – and revealing – was the scheme devised by Bonaiuto Lorini (c. 1540-1611), published in 1592 in his own treatise on fortifications *Delle Fortificazioni Libri Cinque* (Five Books on Fortifications). Beyond establishing a radial street pattern similar to Palmanova's, the intricate defensive system also reflected how, by the end of the 1500s, the horizontal length of the defensive zone was steadily increasing to keep increasingly powerful artillery away from the city's outer edge.

Combined, all the schemes and plans for an ideal city – from Alberti to Scamozzi – present a clear view of the Renaissance ideals and how those were reflected in the city. Such progression reveals the morphological transformations of Renaissance urban thought, and thus provides a clear differentiation between the essential and the accessory in Renaissance urban plans. First and foremost, the plans present the basic idea that the pursuit of beauty through harmony was also to be achieved through urban planning. Cities were to be ordered and designed as a single unity, based on the ideal forms of the square and the circle, which was inevitably rendered centralized cities. While the actual form of the centralized city was fluid enough to accommodate circular, polygonal and star-shaped forms, the establishment of a central public space was fixed and present in all plans. Likewise, the application of straight, linear streets was recurrent in all plans, although sometimes presented in orthogonal and radial

organizations. Overall, Renaissance planners attempted to bring order to the city and establish clear urban hierarchies in a direct translation of the Renaissance guiding aesthetic principle that beauty resulted from harmony, which could be controlled through clear relations between the different parts and the whole. The city was a work of art to be designed and admired, even as it incited the construction of a new society.

With the notable exception of Palmanova, all the plans and schemes for the ideal city remained just that: plans and schemes. Nevertheless, this too reveals the new context in which architecture and urban planning were operating in the Renaissance, since with the advent of the printing press, architectural, urban, and artistic discussions could now be disseminated in pages. Thus, the Renaissance witnessed an increased theoretical dialogue across space and time through the proliferation of architectural treatises, where the vast majority of plans for ideal cities were presented, allowing architects and planners to indulge in these theoretical musings.

However, the development of the Renaissance city was not grounded on the realization of an ideal plan. Instead, it relied on the systematic transformation of the existing medieval towns through sporadic interventions guided by the mathematical perfection of geometry, symmetry and perspective. Thus, Renaissance design principles were introduced to the urban fabric through the construction of individual buildings and the alignment of streets and squares. Unlike the complete exercise that was the ideal city, the transposition of Renaissance ideals to the reality of construction relied on the introduction of singular architectural objects to establish a new urban order. These singular interventions had the specific purpose of correcting and restructuring the existing randomness of the medieval city with the gradual imposition of Renaissance order. Thus, the Renaissance urban order was mainly a question of architecture, brought about by architects. No other city experienced and benefited from this transformation more strikingly than Pienza, in a remarkable transformation from a medieval village into a well-ordered ideal Renaissance city.

# HUMANISM IN PIENZA

The redefinition of urban form throughout the Renaissance was indicative of a radical break with medieval practice. In the Renaissance, the city was no longer the result of a variety of randomly assembled parts, but rather the purposeful combination of balanced elements – accentuated by geometry and harmonious compositions – that provided order to the urban fabric. These were but a formal expression of the humanist intention to imagine an idealized social order and elevate the Renaissance's political and social conditions. While these grand ambitions were most visibly expressed in the various plans (and paintings) of theoretical 'ideal cities', the same intentions would come to shape the development of urban settlements across Europe.

Pienza, a small Tuscan city on a hill surrounding Siena, provides a crucial example of how the theoretical model of the Renaissance ideal city would be applied to existing settlements. As these speculative exercises were confronted with the reality of existing context and construction, the imagined totality of the city was inevitably developed and established through its multiple parts. If in the ideal city the starting point was the whole – or the urban plan – for which the different parts could then be designed (while often being left undefined), in Pienza the process was reversed, as part by part, pope Pius II (Enea Silvio Piccolomini, 1405–1464) transformed his birthplace from a medieval village into a well-ordered Renaissance city.

## A NEW POLITY

When Enea Silvio Piccolomini visited his birthplace in February 1459, the first time he had returned since becoming Pope Pius II, he was saddened. He could not help to remark how this little village on a hill, virtually indistinguishable from other farming villages nearby, was in decline. Soon after, Pope Pius vowed to bolster his birth village's fortunes by using his patronage and influence to improve the community's economic, social, and political situation.

As a leading Renaissance humanist, Pope Pius envisioned that the elevation of his native village would, first and foremost, lead to a complete revolution of its community. Specifically, he hoped that his actions would stimulate the village's citizenry to more broadly engage with civic life, thus promoting not only an educated, articulate, and engaged citizenry that could properly deliberate and act, but also fostering the adoption of virtuous and prudent actions. Based on a humanist rediscovery and study of classical antiquity – particularly of its texts, ranging from

moral philosophy to history and poetry – Renaissance humanists, ambitioned to reform their society through the deployment of culture and the dissemination of knowledge. For Pope Pius, that meant the transformation of a modest country village into a noble city on a hill.

This required an ambitious plan that encompassed not only a massive construction campaign that could transform this farming village into a city of noble architectural character, but also the nourishment of its economic infrastructure. Specifically, Pope Pius provided several grants for craftsmen and artisans – from potters to carpenters – to relocate to Pienza and build new houses there. Similarly, he also provided funds for the renovation and construction of housing for the local population, funded the construction of a new hospital, and stipulated in his will provisions for the construction of a mill on a nearby river to be owned by the community. While these transformations may have been more discrete than the ambitious construction campaign that was undertaken in renovating the village's center, they were nevertheless crucial in both diversifying the local economy and its housing stock. Effectively, these articulated the Pope's understanding that the social and political elevation of the community was inevitably bound to an improvement of its amenities and its physical infrastructure, which should go hand in hand with its urban and architectural renovation.

## A MONUMENTAL CENTER

In Pope Pius' quest to elevate his home village to a refined humanist city, there was no better model than the Renaissance's ideal city. To realize the application of this conceptual model, Pope Pius enlisted the assistance of the Florentine stonemason, architect, and sculptor Bernardo Rossellino (1409-1464) who would direct the city's urban and architectural transformation until his passing. Having previously worked for Pope Nicholas V – Pius II's predecessor – in his large-scale efforts to embed Renaissance thought into the very fabric of Rome, Rossellino had first-hand knowledge of the application of Leon Battista Alberti's (1404-1472) architectural principles as built expressions of a new humanist society. Unlike Alberti, however, Rossellino was not widely familiar with classic principles and building, but he was quick to borrow, absorb, and synthesize the ideas and principles of those Renaissance architects more familiar with antiquity than himself, from Alberti to Brunelleschi. This might account for his looser adoption of Renaissance architectural principles as well as the unusual and, ultimately, inventive ways that he often applied those principles to construction. In Pienza, Rossellino would design and build a new cathedral, a palace for the Pope's family, a palace for the city administration, as well as several palaces and townhouses for bishops, cardinals, and other members of the papal court.

While the ambitions of a Renaissance ideal city had been translated through many designs, plans, and paintings with varying geometries and forms, all those proposals had a noble, open space at their center reserved for the city's ruling powers. This would also be the starting point in Pienza, with Pope Pius deciding to erect two new buildings there shortly after his visit, namely a new cathedral and a palace for his family, the Piccolomini.



As in any ideal city, these two new buildings were to be located at the center of the village, with a dignified public space becoming the connecting element between them. The cathedral square (today named Piazza Pius II; see Figure above) was uniquely designed, with its two lateral walls being established by the façades of the Palazzo Piccolomini and Palazzo Vescovile. These palaces' façades were designed and built at an angle that diverged as they approached the cathedral's main façade, not only establishing a visual perspective that emphasized the cathedral's width, but also providing sightlines from the square, along the cathedral's side wall, towards the landscape of the Orcia valley.

Therefore, although each building along the square had its own architectural expression, reflective of its use and importance, there was nevertheless an intentional harmonization between them. This careful formal distinction and purposeful relation were characteristic of Early Renaissance's humanist aesthetic ideals, but the way it was uniquely organized was expressive of Rossellino's artistic innovation and adaptability. Effectively, the particular disposition for the central square revealed that, beyond any individual buildings, Rossellino was just as interested in the harmonic articulation between them, i.e. in the open space as defined by their façades. Therefore, beyond solid volumes whose façades suggested interior organization or structure, the architectural objects around this square were presented as cubic voids whose façades operated as enclosing walls for the square. The city's urban space was thus conceived by Rossellino as an architectural interior, in which squares were rooms and streets were corridors and staircases. Effectively, for Rossellino, urban planning was nothing more than an extension of architecture, with the city being created through perspectives and the propositional arrangement of various pieces of architecture.

The close relation between public space and architecture is perhaps best expressed in the urban design, the materialization, and the positioning of elements of the central square. Most notably, the square's pavement is presented as a grid of nine squares (3x3) perfectly aligned with the cathedral's façade. This pavement not only mimics that façade's organization and size, but is also punctuated by a circular element – a so-called oculus – much like the cathedral's façade. These two circles establish the main axis organizing the space while also creating a positive-negative relation between the *piazza* and the cathedral. In this mirroring articulation between square and building, it is further expressed how this square (as well as other urban spaces and architecture) was approached and understood as a metaphysical space constructed according to the universal language of mathematics, particularly relying on the rules of proportion (much like Alberti advocated). Further emphasizing the cathedral's significance on the square and its centrality on the plan, the communal water well (decorated with two columns and a sculpted entablature) on the square was positioned along the *Palazzo Piccolomini* rather than at the center, so as not to disturb the perspective approach to the cathedral.

## A CATHEDRAL AND A PALACE

As the central element of the urban composition, Pienza's Cathedral (1459-1462) was the most symbolic and important building in the entire renovation campaign. In its unusual composition and spatial expression, it also expressed Rossellino's design ingenuity in combining various building traditions in a harmonious manner. Rossellino's creativity was first presented in the way the cathedral was designed

to occupy the site of the modest Romanesque church of Santa Maria. This not only required the cathedral to project beyond the cliff off the town's central plateau, but also to adopt a north-south orientation rather than the conventional east-west of most cathedrals. These physical constraints, however, were quickly turned into opportunities, with the foundations being built over the cliff providing the opportunity to build a baptistery underneath the cathedral's apse. This lower church was reached through a series of steps, with three large windows providing light to a space defined not only by great piers, thick walls and massive cross vaults but also by four altars. The prerequisite fountain for a baptistery was rendered in white marble and located within one of the chapels.

The upper church, that is, the cathedral's main floor, has often been described as one of the most unusual buildings of the Early Renaissance. This is immediately revealed by its façade, as it is composed by classical elements but organized in a rather unclassical manner. Most notably, while the façade's composition clearly alludes to a classic temple front—with its large projecting pilasters suggesting temple columns and the framing of its pitched roof suggesting a classical pediment—the way its elements were organized and complemented by a decorative use of smaller columns, arches, triangles and squares was rather original. However, despite its unclassical organization, this façade was still quite expressive of the harmonic compositions typical of the Renaissance, with a variety of geometric shapes (both visible and implied) being used to establish the composition. It was completed by a large circular decoration in the pediment, combining the Piccolomini's coat of arms with a triple crown and keys symbolizing papal power.

The unusual architectural expression of Pienza's cathedral was also revealed by its remarkable volume. Unlike most Italian early renaissance cathedrals that adopted a basilica model of a high central nave sided by lower aisles, Pienza's cathedral was built with aisles as high as its nave in what Pope Pius claimed to be a reference to German and Austrian hall churches. Therefore, the interior was punctuated by eight columns of the same height – materialized as square piers to which half-columns were attached on each face – supporting the roof vaulting and establishing three interior naves, the widest at the center. The large hall was complemented by five altars crowning the altar.

The reference to Northern-European church building traditions was also reflected in the manner in which light was introduced into the cathedral's three naves. The cathedral's semicircular apse was terminated by a row of high and broad windows with gothic-inspired tracery, creating a ring of light beyond the altar which allowed for the entire interior to be revealed at once, with a bright light shining on both altars and chapels. Although these windows clearly referenced gothic building traditions, much

like everything else in this cathedral, there was a clear adaptation to Renaissance aesthetic principles, as their tracery finds a clarity and restraint in form and execution. Ultimately, the originality of Pienza's cathedral is precisely found in its novel combination of classical elements with gothic building traditions organized through studied harmonic proportions.

In developing the new dignified center for Pienza, the construction of the cathedral was accompanied by that of the *Palazzo Piccolomini* (1459-1463; see Figure below), with both works starting a few months after the pope's visit. While the new palace was built over the Piccolominis' former family house in the center of the village, its larger implementation meant that several other houses and gardens had to be demolished to make space for the new palace. With its larger implementation, the *Palazzo Piccolomini* established a new standard in domestic design, clearly breaking with medieval traditions. Instead of the tower-like verticality previously favored around central Italy, Pope Pius' new palace was spacious and open, a massive free-standing block with an inviting, airy exterior that greatly contrasted with the forbidding fronts of other family palaces. Nevertheless, the formal and aesthetic similarities between the *Palazzo Piccolomini* and the Florentine *Palazzo Rucellai* (commonly attributed to Alberti) are immediately visible and have been well documented.



The palace's square plan is presented by three similar façades facing the village, organized as three floors with seven rectangular bays. While the ground floor is enclosed and defined by its large portals, the other two floors are presented by two rows of large windows topped with round arches and bold tracery, each occupying a bay and being divided by a thin column at its center. These bays are established by a system of rows of attached pilasters, with each floor supporting an entablature and thus creating one of the first trabeated articulations of a wall surface on a domestic building in the Renaissance. In the articulation of the palace's wall surfaces, great care was also placed on the façades' textures and decorative elements, with a different architectural order being used for each row of pilasters, namely with simplified expressions of the Doric, Corinthian, and Composite orders framing a uniform channeled rustication. When combined, the design and organization of these façades established a classical effect.

The palace's fourth façade is even more remarkable than the other three. Facing the garden and the landscape (with long vistas stretching all the way to the surrounding Mount Amiata) to the south, this façade is presented as an innovative composition of three stories of loggias that rise the entire height of the building. Much like the other three façades, the garden façade was also defined by a trabeated construction with stone columns rather than pilasters establishing the loggias' bays. Likewise, the same three orders were used in expressing these columns, even if their ordering was reversed from the public façades, with the Doric order occupying the top and the Composite the bottom. With this façade, the *Palazzo Piccolomini* not only incorporated the landscape both near and far into the palace but also became the first Renaissance building to combine the qualities of the two dominant types of (wealthy) residences, namely the openness and airiness of a country villa with the massive block expression of an urban palace.

In the interior, connection to the exterior was also skillfully orchestrated primarily by using natural light and views through various rooms towards the landscape and central, peristyle, courtyard. Ultimately, Rossellino's design for this palace expressed the increased sophistication of the Renaissance lifestyle, with a renewed emphasis on comfort, elegance as well as tasteful ostentation.

## OTHER BUILDINGS

Beyond the *Palazzo Piccolomini* to the East and Pienza Cathedral to the South, the definition of the central square was completed in the second stage of Rossellino's and Pope Pius' renovation campaign, with the construction of the *Palazzo Vescovile* (or Episcopal Palace) to the West and the *Palazzo Comunale* (or Town Hall) to the

North. The Episcopal Palace was designed as an almost cubical form of sandstone construction, punctuated by simplified cross windows in its upper floors, accentuated by simple white travertine linear details that are also used to express its three floors on the exterior. Its interior was organized along a main barrel-vaulted corridor, to which various rooms were connected, in a rather compact organization. The final building in the new civic center was the *Palazzo Communale*, in which Pius intended to accommodate a great hall, storerooms, a prison and all the other functions necessary for the ruling of a city. Designed as a two-story freestanding building with four bays and a pitched roof, the town hall was identified by its open loggia fronting the square and a clock tower above it. Its two floors were separated by an entablature, while four tracery windows provided a rhythm to the upper floor. From these windows, the Piccolomini's coat of arms on the cathedral's façade across the square is dominant, as a constant reminder to the town rulers of Pope Pius's influence and generosity.

By 1464, approximately forty other buildings in Pienza had been built, rebuilt or renovated under Pope Pius' patronage or influence. These included a variety of palaces and townhouses for members of the papal court, as well as several houses for Pienza's citizens. It represented a remarkably high percentage – around 12 percent – of Pienza's housing stock which extended far beyond the monumental center and attempted to directly elevate the entirety of the village by bringing order to its urban space and establishing clear hierarchies for its architecture. By means of these interventions, Pope Pius managed to create a visible expression of Renaissance and humanist aesthetic principles, in a clear attempt to implement the model of the ideal city to his hometown. As the relation between the various architectural objects and the whole of the urban fabric was orchestrated through mathematical and harmonic proportions, this community was forever changed.

Ultimately, the transformation of this modest country village into a shiny city on a hill was so profound and remarkable that by the summer of 1462, as the *Palazzo Piccolomini* and Pienza's cathedral were nearing completion, it was decided that the former village should be elevated to the rank of city and, with it, it should be renamed in the pope's honor. From then on, the former village of Corsignano would become known as the city of Pienza, that is, the 'city of Pius'.

# RENAISSANCE FLORENCE

Due to a particular combination of social and economic conditions, Renaissance thinking emerged in Florence. During that period, Florence not only witnessed the rise of a wealthy merchant class (primarily associated with fine wool trading), but also became the main source of financial services for the whole of Europe.<sup>10</sup> The profits, generated from trading and banking, provided the means for the Florentine elite to offer patronage to a wealth of artists and thinkers. Such largess was not entirely altruistic, since wealthy Florentine families understood it to be an efficient way to engage with local politics and enhance their own social position. Just as important as Florence's economic might in fostering the emergence of the Renaissance, during the quattrocento the city also adopted humanist principles in both government and architecture. Both patrons and artists advocated a new Renaissance worldview of humanism and secularization, which celebrated rationality as well as mankind's ability to act upon empirical observations of the world.

Unsurprisingly, the first expressions of Renaissance ideas in art and architecture have been traced back to Florence, with Lorenzo Ghiberti's (1378-1455) design for the baptistery doors of the Florence Cathedral of *Santa Maria dei Fiori* in 1401 and Filippo Brunelleschi's (1377-1446) design for the *Ospedale degli Innocenti* (also known as the Foundling Hospital, 1419-1425) a few years later as the first artistic and architectural expression of those ideas. These two works clearly articulated the period's search for permanence, repose, but mostly, order and discipline. Effectively, both express calm and beauty and reveal nothing forced or inhibited, uneasy or agitated, but are instead free and complete.

Beyond guiding aesthetic theory and architectural design, the same set of humanist concerns directed the design of the Renaissance city. In fact, the emergence of a unified approach to art, architecture, and urban planning was a significant Renaissance development, with the integration of spatial design and enveloping architecture becoming a fundamental expression of humanist ideals. Suddenly, the city was no longer a result of the accumulations of diverging interests, but instead yielded to a specific architectural conception of ordered and composed effects.

Several dominant aesthetic principles guided the Renaissance's search for order and discipline, which also guided the period's architectural production and urban composition. Firstly, there was a considerable preoccupation with balance and symmetry, with the organization of different elements along clearly defined axial lines to produce balanced compositions. This was expressed in both individual buildings and

urban ensembles, with buildings being integrated into single, coherent, architectural entities, often by employing a repetition of basic, uniform elements. Great importance was also conferred to the completeness of the whole, with urban ensembles often securing their individual definition through the closing of vistas by the strategic placement of sculptural and architectural objects, i.e. monumental buildings, obelisks or suitably imposing statues, at the ends of long, straight streets.

## MAIN AXES, ENCLOSED SPACE, AND GRID PLAN

To achieve their aesthetic purposes, Renaissance architects and planners employed a variety of instruments, but mostly relied on three distinct devices: the primary straight street, the enclosed public space, and the grid plan.<sup>11</sup> Of these, only the introduction of systems of primary straight streets to re-structure the existing urban fabric was a Renaissance invention since the enclosed space of Renaissance piazzas found its origin in Roman Fora while the grid plan had been a cornerstone of urban design since antiquity.

The deployment of primary straight streets revealed an entire new understanding of the street. Specifically, beyond merely providing access to buildings and bringing country roads into the city, these streets became thoroughfares to facilitate movement within the city. Furthermore, throughout the Renaissance the aesthetic idea of the street as an architectural whole was also developed, with architectural uniformity becoming *de rigueur*, with laws and rules formally directing the pursuit of architectural uniformity with three-dimensional openness corresponding to structural clarity. Complementing and emphasizing such strict spatial and visual uniformity, both architectural and sculptural features were employed. Beyond reinforcing the unity of the composition, these also marked focal points of aesthetic delight. So as to enhance the contrast and the climax provided by these terminal features, building façades remained rather plain, in a well-coordinated system of private simplicity and public magnificence.

Often these terminal features were found in Renaissance piazzas, or squares, since these spaces were commonly designed for aesthetic and aggrandizing purposes. Commonly located at the culmination of primary straight streets, the harmonization between urban space and architecture was a fundamental objective of these spaces, with Renaissance architects and planners commonly employing a variety of architectural elements such as colonnades, arcades, terraces, and screens to achieve it. Effectively, the enclosed urban space with uniformity as its dominant element is arguably the most fundamental contribution of the entire Renaissance to architecture and urban design.

The co-option of the grid plan was equally adapted to the service of architectural and urban aesthetic uniformity, with the grid plan being embedded with a particular organizational logic as well as a more disciplined formal expression (often at the risk of monotony). Given its underlying logic based on modular units and its potential for formal regularity, the grid plan model also closely adhered to the Renaissance ideal of urban and architectural urban uniformity. Furthermore, early Renaissance urbanists were eager to adopt this model, since it provided a marked departure from the pronounced irregularity of the organically developed medieval urban fabric. With the grid plan, the city could be disciplined and conformed to the Renaissance aesthetic ideal of repose and order, while also permitting the introduction of ratios and proportions to the very foundation of individual buildings. Much like the Renaissance piazza, the application of the grid plan was indelibly defined by its relation to the system of primary straight streets. Commonly, these main axes were integrated into the grid plan model, even becoming generative elements for the grid implementation, as they either bounded or divided gridded areas, with other streets forming a secondary system of movement. Given the considerable amount of space required to implement a grid plan, however, this device was primarily applied to the few expansion plans developed during this period, namely for residential areas.

Although sometimes the grid plan, the enclosed urban space, and the main straight street were combined as components of composite plans, more often than not, they were disjointedly used. Regardless of the particular devices employed, the desire for discipline and order provided a much-needed respite from the relative haphazardness and dispersion of medieval urban spaces. While the characteristic informal irregularities of medieval space resulted in the picturesque effect of Gothic asymmetrical massing punctuated skylines, and intricate detailing, Renaissance architecture embraced a classical sense of balance and regularity, of order and repose, shifting the emphasis from the vertical to the horizontal direction.

Despite its originating role in Renaissance art and architecture, Florence remained essentially a medieval city without any substantial spatial expression of Renaissance ideals (mainly due to the lack of opportunities for extensive redevelopment). Therefore, although Renaissance architects developed a plethora of conceptual designs for ideal cities, given the practical difficulties of implementing comprehensive urban plans, Renaissance urbanism was mostly limited to the expansion or partial redevelopment of existing towns. In Florence, Renaissance principles became most clearly articulated in the regeneration of parts of the city through the reorganization of its public spaces.

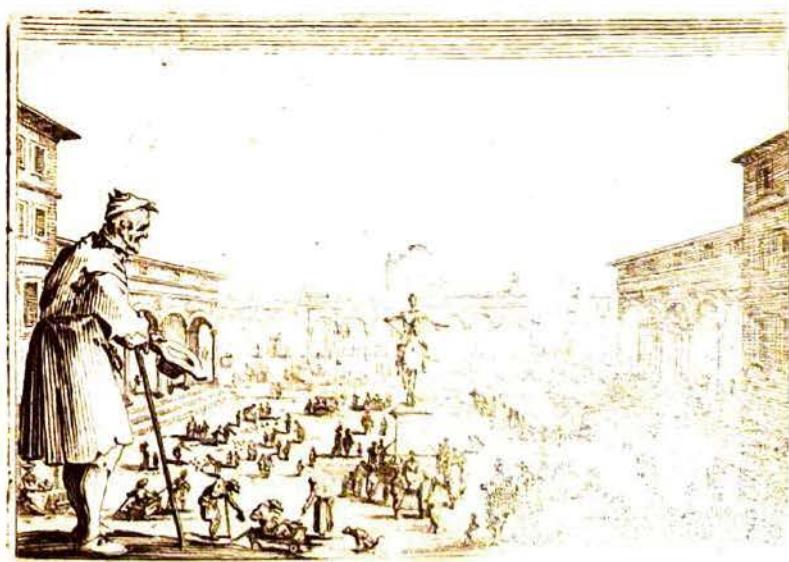
## PIAZZA DELLA SANTISSIMA ANNUNZIATA

Arguably one of the most refined and sublime Renaissance urban spaces, the Piazza della Santissima Annunziata (1419-1608) was the result of the renewal of a part of Florence. With its restrained organization, this square provides the clearest examples of the quiet, self-contained balance strived for by Renaissance architects. As if directly translating Renaissance ideals to an urban space, the Piazza of the Annunziata is essentially limited space at rest.

Designed over the course of almost two centuries, the Piazza della Annunziata found its generating element in the original Renaissance building of the Ospedale degli Innocenti, specifically its arched arcaded portico. Characterized by a subtle integration of classical elements and a clear system of proportions, the Ospedale's long arched, arcaded portico provided a sense of dignified repose to the building. Its sequence of Corinthian columns and corresponding uniform vaults had most forcefully introduced Renaissance principals to architecture by explicitly employing a variation of simple ratios that could be easily and tacitly experienced. When Brunelleschi completed the Ospedale, the portico faced an unresolved space in front of the Church of the Santissima Annunziata (after which the piazza was named). However, it was that same arcade that would come to illustrate the remarkable integration between architecture and urban design, as other architects working on the buildings along the piazza's perimeter introduced, all but exactly, Brunelleschi's arched arcade to their own façades.

The construction of the central bay of the Basilica della Santissima Annunziata provided a first opportunity. Designed by Michelozzo Michelozzi (c. 1396-1472) in 1454, the renewed church's central bay adopted the Ospedale's architectural expression by introducing a one-bay entrance porch to the church and thus attempting a first harmonious integration with Brunelleschi's design.

Despite the aesthetic agreement between two sides of the square, the space and architectural expression of the piazza remained indeterminate. Only when Antonio da Sangallo the Elder (c. 1453-1534) and Baccio d'Agnolo (1462-1543) were commissioned in 1516 to design the Confraternità



*dei Serviti* – the building across the *Ospedale* – which adopted, rather precisely, Brunelleschi's arcade in their façade, did the piazza gain some formal definition.<sup>12</sup> With the length of the piazza already defined by the arcaded porticos, Michelozzo's central bay of the Church of the *Santissima Annunziata* was expanded by Giovanni Battista Caccini (1556-1613) between 1601 and 1604, precisely by attaching an arcaded portico of similar formal expression to the front of the church. With this latest intervention, the piazza became clearly demarcated on three sides by arcades, with only its south-western end being devoid of Renaissance architecture.

As Michelozzo, Antonio da Sangallo the Elder, Baccio d'Agnolo and Giovanni Caccini continued Brunelleschi's well-proportioned and elegant arcade, the arcade itself unified several individual buildings into one spatial unity. The echo of Brunelleschi's arcade across the piazza subtly asserted that while in the medieval period the arcade belonged to individual buildings, in the Renaissance, the arcade was an integral part of urban space, expanding the piazza's space while integrating volume of structure and spatial void. By bringing together urban space and individual buildings the *Piazza della Annunziata* became an influential exercise in the Renaissance's architectural and urban design principles.

The finishing touch came in 1608, when Giambologna's (1529-1608) equestrian statue depicting Ferdinando I was placed on the piazza's central axis to provide some directional accent, concluding almost two centuries of urban development. The result was a small and intimate piazza, one of the finest Renaissance squares where the visual structure of the architectural composition provides a sense of completeness and brings the entire space together.

## PIAZZA DEGLI UFFIZI

A similar effect was intended by Giorgio Vasari (1511-1574) with his design of another notable Renaissance urban space in Florence: the *Piazza degli Uffizi* (1560-1581). Much like the *Piazza della Annunziata*, the basic strategy in developing the *Piazza degli Uffizi* consisted of the introduction of several individual elements and the reconstruction of some façades to achieve a unified and ordered urban and architectural expression. However, there were also some significant distinctions. While the *Piazza della Santissima Annunziata* is paradigmatic of Early Renaissance's approach to architecture and urban design, the *Piazza degli Uffizi* – and its dialogue with the adjacent *Piazza della Signoria* – already incorporates later design principles, particularly a Mannerist attitude toward urban design.

## OSPEDALE DEGLI INNOCENTI



In the early quattrocento, the city's Silk Weavers' Guild (*Arte della Seta*) donated funds to build Europe's first orphanage, the *Ospedale degli Innocenti*, or Foundling Hospital (1419-1444). With Filippo Brunelleschi's design, the *Ospedale* is often considered the first building to express the emerging Renaissance architectural ideas, particularly on its original façade. Built on a stepped plinth and low rising stairs, this façade is defined by its long arched, arcaded portico facing a piazza (later known as *Piazza della Santissima Annunziata*). This portico is created by a row of delicate free-standing Corinthian columns connected by wide semicircular arches and complement-

ed with equal arches spanning the width of the loggia to create a three-dimensional arcading of a sequence of domed vault. The spandrels of the arcade are subtly decorated with medallions of infants in swaddling clothes designed in colored terracotta. Above the loggia, the first floor was defined by generously spaced, moderately sized, rectangular windows under shallow pediments centered on the semicircular arches of the arcade. The first and the ground floor are also divided by a delicately scaled architrave.

Beyond the Roman motif adopted by the window pediments and the arcade columns,

Brunelleschi's reference to Roman architecture in general, and Vitruvian architectural principles in particular, is revealed in the strict and explicit proportioning system that were employed. On the *Ospedale*'s façade, the same dimension is recurrently employed, while other dimensions are derived from simple 1:2 and 2:1 ratios. Specifically, the height of the columns corresponds to the distance between them, which also corresponds to the distance between the architrave and the roof, while the distance between the top of the columns and the architrave is half of it. The same dimension is also used in the spatial definition of the portico, with the width of the loggia employing the same dimension, which together with the columns being spatially equidistant from one

another, creates a series of modular cubes along the length of the portico.

Therefore, all the ratios that constitute this elevation and plan depend upon the singular element defined by the height of the supporting columns, or the distance between columns, indicating a strong relation between elevation and plan. More than anything, this expressed a desire for regularity and geometric order which became a driving element in Renaissance architecture. With its expressive use of proportions and subdued application of classical elements, the *Ospedale degli Innocenti* became a seminal model for other Renaissance architectural and urban designs.

Composed of a linear space, this piazza is reminiscent of a short street, defined – and surrounded – by the *Palazzo degli Uffizi*, both of which were designed by Vasari for Cosimo I de Medici (1519-1574). While the palazzo housed an extension to the administrative center of the *Palazzo Vecchio*, the piazza was to be the dignified urban expression of Cosimo's administration. The palazzo and the piazza engage in a particularly tight figure-ground relationship, where the piazza not only operates as the palazzo's central courtyard, but also is the only place where the palazzo has any façades. Effectively, as the piazza and the palazzo are one and the same, unlike the *Piazza della Santissima Annunziata*, the unified formal expression of the *Piazza degli Uffizi* is the result of one single architect's vision. It was Vasari who devised the singular elements of the building's façades from which the unified space was created.

Built from grey sandstone, the palazzo consists of a long, narrow cortile with corresponding arcades, flanked on its two long sides by multi-floor wings. The elongated courtyard is lined with a Doric colonnade that provides coherence and continuity to the composition on the ground floor while also supporting a mezzanine floor and two upper floors. These are completed with crisply modeled window surrounds and broken belt courses, which effectively prevent a clear gradation of floors and produce instead a resolute uniformity.

The composition's visual emphasis, thus, becomes the two ends of the *piazza*, including the ensemble's finishing accent towards the river Arno. There, Vasari envisioned a loggia, open in a large venetian window on the ground floor and (originally) topped by a colonnade on the upper floor. This detail is quite revealing of Vasari's Mannerist intent, since it was increasingly a preferred way of connecting rooms in which both a Renaissance clear separation of elements and a Baroque free flow were avoided. The other end of the *piazza* discharges into the *Piazza della Signoria*, where the visual and aesthetic experience is even more dramatic, with the transition being visually and spatially marked by a line of sculptures. The scene is completed by the looming tower of the *Palazzo Vecchio* standing off-center and a distant view of the massive dome and campanile of Florence's cathedral. Ultimately, with his design for the *Uffizi*, Vasari both capitalized and enhanced the visual effect produced by this unique ensemble.



The *Uffizi*'s long façades and narrow space act as a unifying mask over irregular buildings and frame a deliberate visual and spatial sequence based on perspective and depth. Such studied sequence interrelates the different sculptures and buildings and engages the viewer crossing the space in a dynamic understanding of the set of visual relations in space, as the various sculptures appear to move in different directions in relation to the space. The *piazza*'s long and symmetrical composition combined with the horizontal emphasis of the palazzo's three cornices and continuous projecting roof ultimately provided a forceful sense of direction and visual perspective, where the stability and uniformity of the long façades drove the eye to the spatial and visual release provided by the two – more animated – ends of the *piazza*, making the *Piazza degli Uffizi* a remarkable expression of perspective in depth.

Rather than creating a static, hermetic, and reposed urban ensemble as could be experienced in the *Piazza della Santissima Annunziata*, Vasari created an open-ended space that combined old and new while emphasizing the importance of motion and change over time. The *Uffizi* framed particular views and allowed for both enclosure and passage without the sense of constricted confinement since there was no sense of formal movement, but of natural flow. Such "tendency to enforce movement/time through space within rigid boundaries is the chief spatial quality of Mannerism".

## FLORENTINE PALAZZI AND CHURCHES

The Piazza della Santissima Annunziata and the Piazza degli Uffizi provide clear examples of the evolution of Renaissance design principles, particularly regarding their application to urban conditions. But throughout the quattrocento, there were several other notable architectural achievements in the city by the Arno, including a veritable construction boom of new urban stately residences to cater to Florence's increasingly wealthy bankers and traders.

Sharing a variety of design attributes, these *palazzi* provided a new outlet for Renaissance architectural principles while also referencing the city's *palazzi* of previous centuries. Most, if not all, of the *palazzi* were three floors high, with each floor clearly bound by a stringcourse. Several degrees of gradation also served to further distinguish the different floors, since not only each floor diminished in height (with the ground floor having the highest free height, and the top floor, the lowest), but also the application of rustication usually decreased with each successive floor (with the heaviest rustication used on the ground floor, while smooth ashlar cladded the top floor). Both portals and windows were generally topped by arches, and while a stone bench ran around the exterior of the ground floor, the top of the building was crowned with entablatures and projecting cornices. These *palazzi* also tended to be rather introvertedly organized, often oriented towards a central arcaded courtyard at the center of the cube-shaped volume that Florentine *palazzi* commonly adopted.

Designed by Michelozzo Michelozzi, the *Palazzo Medici* (1444-1484) served as an important prototype for subsequent *palazzi*, particularly in its use of rustication and in its perceived austerity.<sup>14</sup> Despite its considerable height, the *palazzo* has a strong horizontal emphasis created by the combination of its massive crowning cornice projecting from the building and the horizontal stringcourses between the floors. Furthermore, the three floors are also of decreasing height, which when combined with the vertical gradient from rusticated masonry to smooth ashlar makes the *palazzo* seem lighter and taller. The *palazzo* is distinctive for occupying an entire city block but also for its hanging gardens.

The *palazzo*'s design also reflects Michelozzo's knowledge of Florentine building tradition, as well as his admiration for the *Ospedale degli Innocenti*'s arcade, which is particularly expressed in the *palazzo*'s courtyard. Specifically, since beyond serving as a circulation core, the courtyard was also designed with a perimeter arcade that explicitly referenced the *Ospedale degli Innocenti*'s portico arcade, replicating almost perfectly its dimensions, classical elements, mathematical proportions, and use of symmetry. The delicate qualities of this interior space could not have been more distinct from the austere, fortified, quality of the *palazzo*'s exterior.

While without radical innovations, the *Palazzo Medici* still expressed a domestic adaptation of Renaissance aesthetic principles such as order, rationality, and human scale, and thus greatly influenced the design of subsequent *palazzi*, even if these presented several variations. The *Palazzo Pitti* (1458-1464), for example, differs from the Medici model not only due to its massive volume, but also with its uniformly and greatly rusticated façade. Furthermore, this *palazzo* was also exceptional in Florence, since it faced and defined an equally massive *piazza*, whose width matched the palace's main façade. An even greater contrast to the *Palazzo Medici* was established by Leon Battista Alberti's design of the *Palazzo Rucellai* (c. 1446-1451).<sup>15</sup> Here, Alberti superimposed Doric and Corinthian orders to define the individual floors, reminiscent of the Coliseum in Rome, with further reference to classical construction on the high plinth scored into diamond shapes in a surface texture reflective of the Roman *opus reticulatum* construction. But despite its façade's original formal expression, the *Palazzo Rucellai* still relied on the same introverted organization of all other Florentine *palazzi*.

While *palazzi* are the best expression of Renaissance ideals in secular buildings, Renaissance architecture was based on a hierarchy of values with sacred architecture at its top, as the forms of Renaissance churches either have symbolic value or are charged with particular meanings. Filippo Brunelleschi was among the first to consider the sacred forms of churches according to classical design principles and Renaissance ideals, with his design for the Basilicas of *San Lorenzo* (1419-1459) and *Santa Maria del Santo Spirito* (1428-1487) being exemplary. Similar to the *Ospedale*'s façade, in these buildings, Brunelleschi paid particular attention to the proportions and relations between different dimensions. Specifically, a generating element was found in the columnar arcade of the aisles along the nave, where the square bay of the aisles defines a module that was repeated throughout the building. Roman elements such as the semicircular arch, Corinthian columns, and coffering further reveal a classical monumentality to both *Santo Spirito* and *San Lorenzo*, with these elements being brought together by a unifying system of mathematical proportions.

The adoption of geometrical discipline and mathematical relations in space establishing the proper arrangement and mutual relationships of different elements was a central element of Renaissance architectural and urban thought, revealing a return to a classical language which had a vocabulary of elements based on the orders, and a set of rules, or syntax. Within this system, recovered classical elements that formed the basis for the Renaissance's architectural vocabulary (such as columns, beams, and other construction details), were consistently applied, with each architectural element being both clearly discernible and subordinated to the entire composition. While the use of all these proportions, rules and elements may not be

consciously registered, they nevertheless contribute decisively to the effect of serene order that characterized the Renaissance's architectural conception. First developed in Florence's unique social and economic context, the new Renaissance principles and ideals spread across Europe, indelibly altering the development of architecture.

## FILIPPO BRUNELLESCHI

More than any other single artist or architect, the work of Filippo Brunelleschi (1377-1446) indelibly marked the development of Renaissance artistic and architectural principles. Although born in Florence, Brunelleschi spent his formative years in Rome, where he codified the principles of mathematically and geometrically accurate linear perspective, thus enabling the accurate representation of three-dimensional objects on two-dimensional surfaces. The development of this new system of spatial representation had a profound effect since it was a crucial and necessary step in the rationalization of space, on which the entire conception of Renaissance art and architecture is based. Brunelleschi's contribution, however, was not limited to this discovery, as he is also credited with designing the first building in accordance with the Renaissance principles of mathematical and geometrical perfection in which the parts and the whole are engaged in a harmonious relation with the design of the *Ospedale degli Innocenti* (1419-1425). Brunelleschi's ingenuity, however, was perhaps even better expressed by his inspired solution for the design and construction of the dome of Florence's *Santa Maria dei Fiori Cathedral* (1420-1435).

When the dome was first projected along with the rest of the cathedral, only its massive size of 42 meters was stipulated. Since the Florence dome was to surpass

the already colossal size of the Pantheon's own dome, its sheer size posed a variety of difficulties, primarily regarding the outward thrust that would certainly cause the dome to collapse if it was built with conventional medieval construction techniques. Instead, Brunelleschi's devised an elegant solution that combined Gothic traditions of the pointed arch to reduce the dome's outward thrust with the ancient Roman construction technique of radial and concentric ribs to reduce the dead load of the structure. To the vertical and horizontal ribbed structure, Brunelleschi also added tension rings to further stabilize the gigantic structure. With this introduction of classical construction techniques to pragmatically resolve Renaissance construction problems, Brunelleschi paved the way for the rediscovery of classical structures as significant references to architecture. When the dome was completed, its size caused such a strong impression that it was even noted that the towering construction was "vast enough to cover the entire Tuscan population with its shadow".<sup>16</sup>

Beyond inspiring a rediscovery of classical construction, building the first building in the Renaissance idiom, or discovering linear perspective, Brunelleschi was also a prolific architect. Any of these singular achievements would have already sufficed to establish Brunelleschi as a leading Renaissance thinker of unique status.

# THE 17TH CENTURY ABOVE AND BELOW THE ALPS

## RATIONAL VERSUS IRRATIONAL TENDENCIES

In the 17th century, the transition from Renaissance to Baroque was experienced as a significant shift in both style and culture. Furthermore, the transition from Renaissance to Baroque has been associated by some, such as sociologist Pieter-Jan Bouman, with a growing tension between rationalism and irrationalism.<sup>1</sup> Such tension—in which one of these forces plays a dominant role in one period only to be displaced by the other in a subsequent period—has been argued to continuously play a part in the development of cultural history.



According to Bouman, before the Renaissance and Baroque periods, the contrast between rationalism and irrationalism was only expressed in the opposition between the strictly classicist composition of logical mathematical rules and the unbridled imagination of the Faustian pursuit of the infinite. These, however, were not entirely

antagonistic, since even the normative classicist side of the Renaissance which originated from rationalism, could easily connect with irrational elements: the glorification of absolute princely power, the seigniorial court culture or the revival of faith. It was in this unforeseen combination that the baroque originated.

The combination of unexpected ideals was continued in the formal expression of Baroque architecture and urbanism, with philosopher Ernst Bloch recognizing Baroque's double nature in the combination of 'geometrical city building' that becomes the bourgeois culture's ideal, and the 'culture of hedonism' associated with the Counter-Reformation. Furthermore, he recognized that Baroque thinking was "as much interested in human passions as it [was] in mathematics" culminating in a "contrast between an inorganic, mechanical world view and excessive, organic ornaments".<sup>2</sup>

However, within this framework, the transition from Renaissance to Baroque can also be understood through a geographical distinction (between 'below' and 'above' the Alps). According to Bouman, this geographical distinction neatly expressed a division between rational culture and irrational tendencies, since according to him, while a rational culture had developed in Western Europe, in Central European countries irrational motives continued to play an important role. Therefore, it is argued that the phenomenon of the Baroque manifested itself to a greater extent in Central European countries, while developments in the Low Countries could hardly—or not at all—be regarded as Baroque. The Baroque as a style was, after all, connected with absolutism and the Counter-Reformation and neither of these played a role in the nascent Dutch Republic. Therefore, in Western Europe the Baroque became more commonly expressed as the sleek architectural style of Neoclassicism, where the city increasingly emerges as the backdrop for the luxurious lifestyle of the bourgeoisie.

## THE MEANING OF THE BAROQUE

On its face, the Baroque is characterized by pomposity, by fanciful and luscious shapes, or even theatricality, as the 'invention' of the opera can illustrate. But the Baroque is also paradoxical in itself: if on the one hand there is pomposity, on the other hand there is a strict geometrical arrangement, even of nature. Therefore, an important and characteristic part of Baroque thinking is the conception of space. The quest for infinity along with the discoveries of astronomy—most notably with Galileo Galilei (1564-1642) recognizing that the Earth was not at the center of the cosmos, but was only a part of an infinite system with various planets—resulted in a new conceptual model of the cosmos, which also became a model for the city. Philosopher Stephen Toulmin identified this as the emergence of the cosmopolis.<sup>3</sup> The city became

a miniature solar system, consisting of the geometrical arrangement of both nature and architecture. This principle can be observed, quite literally, in the Baroque city, as the city itself came to resemble a cosmos, a new, different universe, based on the absolute power of a specific powerful ruler, such as the French King Louis XIV (1638-1715), the 'Sun King'. Thus, the city became a megalomaniac, distinctly contrived, construction where, through the application of geometry, nature became artificial and a part of the architecture, leading to the development of landscape architecture. Further reinforcing this unnatural and fabricated character of the city, exotic flora was also introduced.

While culminating in the Baroque, the subjectification of the city was initiated in the Renaissance, with the emergence of an urban elite that determined urban planning and building also as an assertion of its power. It is their city, in the first instance. This process merely continued during the Baroque, as the elite's power was concentrated in the hands of an absolute ruler: the prince, the city governor, or the church prelate. In fact, the ruler became the designer of his city, with his palace becoming the institutional center of the world, the expression of absolutism.

## ADVANCES OF REASON

Beyond the stylistic development of the Baroque, the 17th century was also an era of rapid development in knowledge, most notably in the fields of philosophy and natural sciences. Discoveries made by several scientists—such as Sir Isaac Newton's (1642-1727) discovery of gravity—changed the understanding of the cosmos from a metaphysical to a scientific interpretation.

As a result, the role of reason in society—which had already been recognized during the Renaissance—became even more emphasized. The importance of human reason was most notably expressed by philosopher René Descartes (1596-1650) when he stated: "I think, therefore I am."<sup>4</sup> Descartes doubted everything, except the 'rational self,' even making a distinction between body and mind, matter and consciousness. This distinction dominated thinking up until the 20th century and, as the role of physicality was reduced, the city became a product of thought. To Descartes, geometry was a most appropriate model for rational thinking, with the 17th century becoming dominated by the *esprit géometrie* along with the understanding of space as the expanse in which objects are situated. As such, the city that had developed historically was a source of irritation to Descartes, an irrational monstrosity that had been grown solely as a result of chance events. But in contrast to Descartes' *esprit géometrie*, mathematician and theologist Blaise Pascal (1623-1662) proposed the

*esprit finesse*, arguing that apart from ratio, feelings were also of importance, in what would become another articulation of the dualism between rationality and emotion.

Philosopher and mathematician Gottfried Wilhelm Leibniz (1646-1716) further explored this duality by questioning Descartes' primacy of space and proposing that, instead, it was objects in space that were paramount. In fact, the *monads*, as Leibniz called those objects, were characterized by differentiation, but nevertheless expressed a predetermined harmony. While Descartes had argued that all things in space were clear and independent, Leibniz assumed that not each and every object was inherently clear. Nevertheless, they had monadic strength and could reflect the universe, albeit of varying vigor. Translating this conception to architecture, every building is a design of itself, but also has symbolic significance and relates, in its difference, to other buildings. This metaphysical conception of the world would be further supported by Pascal and Leibniz's work on differential and integral calculus. As they laid the foundation for algorithmic thinking, this became a way of using practical rules and procedures to connect situations and ideas, something which Leibniz termed as *ars combinatoria*. Ultimately, concepts are combinations of ideas, a principle which can also be observed in the artistic idea of designing 'objects in their context'.

## EVOLUTION OF MODERNITY

Beyond the emergence of the Cosmopolis, Stephen Toulmin also identified the beginning of modernity that was to dominate Western thought in the 17th century, culminating in the 20th century. Specifically, he claimed that due to the strong emphasis on rational order there was a retreat from the first phase of modernity, the humanistic rationality of the Renaissance, that was still characterized by a high degree of tolerance of mutual ideas. Therefore, Toulmin identified four crucial shifts, typical of this second phase of modernity: from oral knowledge to written knowledge (where objective, formal reasoning replaces argumentative reasoning); from special knowledge to universal knowledge (in which there is a move away from case study); from local knowledge to general knowledge (where concrete events, with their great diversity are replaced by abstract axioms, that provide a reductionist blueprint of reality); from time-bound knowledge to timeless knowledge (where knowledge is no longer understood to be restricted to a place or a time but is, instead, timeless, general, universal and objective and anybody, anywhere can acquire and apply that knowledge).

Ultimately, many aspects of this 17th century thinking return in 20th century modernity: the city as a product of thought; the role of the *esprit géometrie*; the principle of metaphysical destruction in the dismissal of the city's historical structures;

the love of space as an expanse, as well as the significance of the universal and the general, among others. Eventually, a critical reflection on these principles and ideas would only emerge in the late 20th century, as postmodernist thinking increasingly challenged the assumptions of the modernist project.

## THE GOLDEN AGE IN THE LOW COUNTRIES

For the Low Countries, the 17th century was a prosperous period. It has been argued that there were, in fact, two Golden Ages, that of Antwerp in the 16th century and that of Amsterdam and the Dutch Republic in the 17th. If at first many tradesmen, artists and scientists had travelled from Southern Europe to Antwerp, later they travelled to Amsterdam. Those were the days of Hugo de Groot (1583-1645), Rembrandt van Rijn (1606-1669), Christiaan Huygens (1629-1695), but also of the philosopher Baruch Spinoza (1632-1677), who laid the foundation for the early Enlightenment, a way of thinking that continued well into the 18th century.

Colonial trade in general, and the establishment in 1602 of the United East India Company (*Verenigde Oost-Indische Compagnie*, or VOC) and in 1621 of the West India Company (*West-Indische Compagnie*, or WIC) in particular, were crucial for Amsterdam's Golden Age. However, it has been argued that the existence of the Hanseatic League was even more important.<sup>5</sup> Furthermore, as sociologist Max Weber has pointed out, Calvinist thinking that originated from the Reformation, was an important factor in the development of a capitalist mentality, which was especially prevalent in the Dutch Republic where, due to the Reformation, Protestantism had become the dominant religion. While tradesmen and salesmen were eager to make a profit (which, as well as any losses incurred were seen as the will of God), they were also thrifty and socially minded, founding hospitals and orphanages. But for the growth of trade and prosperity, the creation of new money and new forms of transaction were also important, with securities trading and double-entry bookkeeping being first developed in Amsterdam.

The Dutch Republic did not have an autocratic ruler, nor a central authority, with power being instead dispersed through the assembly of the provincial states of the States General (*Staten-Generaal*), the most important official body in the Dutch Republic, and the Stadholder (*Stadhouder*) who was responsible for the armed forces. Ultimately, while the republic was organized into provinces, the actual power remained in the hands of the cities, with Amsterdam being the most powerful.

The city was governed by the Regents, composed of members of the higher bourgeoisie, with its society being composed of several social classes: the higher

bourgeoisie (mostly composed of merchants), the ordinary citizenry (from skilled workers to shop-owners), and the common people. This societal structure was reflected in Amsterdam's architecture and urban structure, with wealthy citizens living along the canals, the ordinary citizenry living along the radial canals, and the common people living in the outskirts, in the Jordaan district.

Beyond the urban development of cities, the creation of the non-urban landscape must also be mentioned, most notably the artificial polders that came to dominate the territory of the Republic. In the early 1600s, Jan Leeghwater (1575-1650) would supervise the drainage of several polders—including de Beemster polder—while also advocating for the reclamation of the Haarlemmermeer. As new land was reclaimed from the sea and lakes, a polder landscape of strict geometrical patterns appeared. Inspired by the consultations of the provinces, that had to come to some agreement in the States General, as well as by the physical landscape newly created by Leeghwater and others, the foundations were laid for the polder model, physically and mentally, materially and psychologically.

# THE BAROQUE AND THE MERCHANT CITY: FROM ROME TO TURIN, FROM ANTWERP TO AMSTERDAM

During the 17th century, different social and cultural conditions conspired to establish two very different urban expressions in Europe. The distinction was particularly striking when comparing the urban form of cities 'below the Alps' that embraced Baroque urban expansions and its corresponding architecture, with the urban form and architecture 'above the Alps' fostered by increased commercial activities, effectively resulting in a divide between Baroque and merchant cities. Such distinction was further explicit when considering the specific urban developments of Antwerp and Amsterdam with what was simultaneously occurring in Rome and Turin.

## FROM ROME TO TURIN

Below the Alps, in the Italian Peninsula, Baroque ideas and principles had taken a hold. Stimulated by the patronage of a Catholic Church intent on transmitting its values through art and architecture, as well as the ambitious plans of several Papacies to restore Rome to its former glory, Baroque urban and architectural expression became characterized by a theatrical quality present both in the use of movement in the organization of the city and the use of plays of light and shade to allude to movement in architecture. As the seat of the Papacy, Rome became the cradle of Baroque ideas as well as its artistic, architectural and urban expression. It was also in Rome that, arguably, Baroque ideas were more clearly presented to full effect. This was mostly indebted to the work of Pope Sixtus V (1521-1590), whose master plan to organize the city through movement between its most important monuments established the template for Baroque urban planning. It was also in Rome that the first and most dramatic Baroque buildings were built, from the massiveness of the early Baroque expression of the Church of *Il Gesù* (1568-1576) and Saint Peter's Basilica (1546-1564, 1606-1612), to the studies in complex geometric arrangements in the later Church of *Sant'Andrea al Quirinale* (1658-1670) and the Church of *San Carlo alle Quattro Fontane* (begun 1634). Likewise, these buildings defined the qualities against which all other Baroque architecture was judged. Combined, these urban and architectural works ensured that the Eternal City was ever more grandiose with its newfound Baroque expression at different scales.

Much like Rome, during the 17th century Turin was the object of deep structural urban and architectural interventions that infused the city with a discernible Baroque

character. As the capital of the Duchy of Savoy, the city was expanded with a clear ambition to express the House of Savoy's increased military prominence, as well as its political ambition. Thus, much like Rome, Turin's Baroque expansion instrumentalized a lavish urban monumentality and erected a variety of architectural embellishments to impress and overwhelm, effectively transforming the city into a tool to further establish the power of the House of Savoy. Unlike Rome, however, Turin was located in a greatly contested area at the north of the Italian peninsula—between French, Spanish and Austrian territories—and thus its plan would also come to include strategic defensive elements that would allow the city to resist the advances of roaming armies.

Therefore, throughout the 17th century, Turin was transformed from an old Roman garrison settlement (still organized by the perpendicular axes of the *cardo maximus* in the North-South and the *decumanus* in the East-West) into a modern fortress town. The city's first expansion developed Turin's Roman grid towards the South, in a plan designed by Carlo di Castellamonte (1560-1641) in 1619. Fifty-four years later, Castellamonte's son, Amedeo Castellamonte (1613-1683) was responsible for the second expansion plan which extended the city eastwards, towards the river Po.



If the older Castellamonte had merely expanded the existing grid, the younger Castellamonte continued the same pattern, but introduced a greater variety of spaces with the inclusion of assorted squares and varying street widths. Furthermore, the

city's medieval castle was transformed into a veritable urban focal point to adequately express its function as the city's administrative center. This focal point was achieved by both clearing the space around the castle—which effectively transformed it into a free-standing building in the middle of a square aptly titled *Piazza Castello*—as well as making it the conclusion of an axial connection between the city and the river. The *Via Po*, as the street was called, connected the *Piazza Castello* to the *Piazza Vittorio Veneto* (and thus to the river *Po*), cutting diagonally through the new plan, which although being a straightened version of an old Roman trail, was still visibly reminiscent of Sixtus V's master plan in Rome.

Clearly developed in continuity, the two plans by the Castellamontes formalized the ideas put forward by the Duke of Savoy around 1615, combining strategic military defense elements with a civic architecture that could express in built form the power of the emerging Duchy. Effectively, these plans seemed to develop the geometrical forms of Renaissance ideal-city planning by reconciling them with civic magnificence and military display so as to create an urban monumentality. Such monumentality was expressed not only through ample streets and grand stately squares, but also with the building along them, with the main streets being defined by uniform façades and continuous arcades. These buildings with ground-floor arcade became the most prominent device expressing the Savoys' forceful aesthetic and ideological intentions to create a beautiful and ordered city which could enhance the glory of the House.

The city's third and final enlargement was designed by Filippo Juvarra (1678-1736) in 1714, when he became chief court architect to the House of Savoy. His plan expanded Turin towards the West, while still maintaining the urban articulation previously defined by the Castellomontes. Therefore, much like with the previous two expansions, Juvarra's plan used the regular layout originally established by the old Roman lines to organize the city's new area. However, to break the monotony of the original Roman grid plan, Juvarra also introduced varying distances between streets and diverse squares. Even though Juvarra's plan appeared to simply continue previous ideas, he would go on to significantly alter the face of the city by not only designing several new Baroque squares and redesigning the city's entrances, but also by creating wide, straight boulevards that opened views towards the surrounding Alps and beyond. Juvarra's time in Turin was rather prolific, as he would also design sixteen palaces and eight churches, extending the expression of the House of Savoy's power also into dramatic pieces of late Baroque architecture. Ultimately, Juvarra's plan concluded the remarkable transformation of Turin, as the city not only expanded from 100 hectares and 25,000 inhabitants in 1619 to 180 hectares and a population of 60,000 inhabitants in 1714, but also firmly established a rather theatrical and eclectic urban, as well as architectural, articulation to the city.

The Baroque qualities of Turin's expansions were clearly discernible in both its urban planning and urban design. Accordingly, the new centrality of the old medieval castle at the center of *Piazza Castello* was arguably one of the clearest expressions of Baroque urban principles in the city. Not only did it rely on both axial connections and the articulation of specific monuments as strong urban focal points to accomplish its goal, but along both *Via Po* and *Piazza Castello* (as well as the other important urban spaces and streets of the city), the continuous arcade established a strict uniformity of the façades that also created a continuous play of light and shade. Turin's Baroque character, however, was not exhausted in these main elements, as other buildings in the city—particularly churches and palaces—adopted the same architectural vocabulary.

Among Turin's dramatic Baroque architecture, the work of Guarino Guarini (1624-1683) was particularly exemplary and revealed how Baroque architecture was transformed in Turin. The chapel of the *Santissima Sindone* (begun in 1667) was added to Turin's cathedral (and connected to Turin's Royal Palace) to house the religious relic of the Holy Shroud. For that design, Guarini developed a spatial and architectural complexity from basic geometric elements. If in plan this was created by inscribing an equilateral triangle into a circle for the main chapel, complemented with similar landing vestibules of straight access stairs with circular steps, for the dome he created a complex structure with three pendentives topped by a sinuous composition of curves and counter-curves in a network of ascending hexagonal arches. This resulted in a Baroque theatricality that was infused with mystery and dynamism. The effects of this complex architectural structure were made even more dramatic by the natural light filtered through the cupola from an interlaced-arch oculus topped by a spiraling lantern.

Guarini, an avid mathematician, would continue his exploration of Baroque architectural principles and theatrical effects through geometrical compositions in the nearby Church of San Lorenzo (1668-1680). Much like in the *Santissima Sindone*, although the plan already presented a remarkable geometrical complexity, the most dramatic effects were revealed in the church's dome. The dome's structure was established by eight intersecting arches forming an open lattice with an eight-pointed star at its center, reminiscent of mosque designs. An octagonal lantern topped the dome which, in combination with smaller windows in the areas between the arches, filtered natural light into the space. As before, this combination of geometrical complexity, varying planes and diverse openings allowed Guarini to instrumentalize natural light to create dramatic effects in the church's interior with the architectural complexity also being represented in its exterior through an orchestrated play of concave and convex forms.

The prolific work of Filippo Juvarra would be equally influential in establishing Turin's unique Baroque architectural expression. From all the palaces and churches that Juvarra designed and built in Piemonte, the Basilica of Superga (1717-1731) in the outskirts of Turin is perhaps most symbolic of his approach. Built at the top of a nearby hill, the Basilica commands views over the city and the surrounding Alps while conversely establishing a dramatic visual focal point from the city. The Basilica's construction was thus also an exercise in power, with the building not only rising above the city but being also aligned with one of the city's main axes, as a constant reminder of the Savoys rule. While adopting several Baroque principles, Superga also references earlier buildings and styles, most notably, Michelangelo's dome of Saint Peter's, which can easily be recognized as the model for Superga's own dome. Similarly, the two slim, asymmetrical campaniles flanking the dome as well as the Basilica's temple front entrance also find inspiration in Roman baroque buildings but are here combined in a new theatrical composition. In the interior, the oversized cupola emphasizes the Basilica's centralized plan with its considerable height dominating the space. Juvarra's ingenuity is further revealed by the seamless integration of the Basilica to the monastery in its back, with the monastic wings connecting to the transepts of the church on the short side, thus skillfully connecting the round, soft, and pliable forms of the Basilica to the square, rectilinear ones of the monastery.

Rome and Turin exhibited all the qualities of Baroque architecture, urban planning, and urban design. On an urban scale, both cities became organized along straight axial connections between important urban elements (primarily buildings of religious significance), with ambitious schemes attempting to provide some form of grand urban uniformity. Accordingly, the urban morphology of these two cities was rather similar since they were based in the same design principles. On an architectural scale, buildings in these cities became characterized by their massive size, spatial tension, and the drama created by light and shade, all the hallmarks of Baroque architecture in its intention to overwhelm and impress. While Rome and Turin were nurturing their newfound Baroque character, above the Alps, a completely different type of urban form was emerging.

## FROM ANTWERP TO AMSTERDAM

Stimulated by the ever-increasing commercial activity associated with maritime trade and financial operations, first Antwerp and later Amsterdam experienced a remarkable urban development. Similarly to what had occurred in Florence during the *quattrocento*, these cities' increased economic power stimulated new urban developments that would come to define their further development. In Antwerp, the

natural conditions on the bend of the river Scheldt fostered the city's growth, with the river's width and depth—as well as the marshy ground of the western bank—determining the city's semi-circular growth pattern on the eastern bank, establishing an urban pattern that has been generally followed since then. As a deep-water inland harbor, Antwerp became a leading commercial and financial center at the end of the 15th century, with the shipping traffic navigating down the river Scheldt exceeding four times the traffic in London during the same period. Antwerp's prosperity during its golden age (1490-1585) allowed it to become the cultural, economic and financial center of all Seventeen (Dutch) Provinces and exercise a considerable influence on the political activities of leading European powers as a hub for German, Italian, Spanish and French financiers.



The city's increased trade activity attracted a growing population which, inevitably, demanded a first major expansion to both the city and its harbor. Therefore, plans were created for developing the area just outside the city's northern walls with the construction of a new dock and a new city wall around it (1543-1545). Preparing and building on the swampy terrain, however, proved to be more laborious (and thus more expensive) than originally anticipated, leading the implementation of the plan to slowly

come to a halt. In 1549, however, the development of this northern area was revived with the formal acceptance of a comprehensive plan proposed by the land speculator Gilbert van Schoonbeke (1519-1556). Essentially, van Schoonbeke proposed to undertake the construction of the entire area by himself in return for the rights to develop the 25 hectares of land as a harbor and industrial estate. Specifically, he proposed to build a residential area, aptly named the *Nieuwstad* (New Town), and four new wharfs with berths and various support buildings. From the three wharfs that were actually built, the *Middelvliet* became Antwerp's pride, since it could effortlessly accommodate large ships where their goods could be quickly loaded and unloaded.

By 1560, the enormous *Oostershuis* (also known as *Hanzehuis*) was built between the *Middelvliet* and another wharf, the *Timmervliet*, as the seat of the Hanseatic League in Antwerp. Measuring 80 by 62 meters and organized around a large courtyard, the *Oostershuis* took over an entire block, with its basement and ground floor housing warehouses and other utility areas, while the upper floors were occupied by offices and quarters to be rented out to visiting merchants. The main entrance at the center of the Eastern façade, was the focus of the mostly utilitarian architectural composition, since it was marked by a soaring 55 meter high tower. Up until 1893, when it was completely destroyed by a fire, the *Oostershuis* remained one of the most impressive buildings in the port of Antwerp.

With the *Oostershuis* at its center, the *Nieuwstad* became an important reference for the development of port cities with its model later being applied in (and adjusted to) Amsterdam. Specifically, the entire *Nieuwstad* was organized by large canals (closed off from the river by locks) with docking berths for ocean-faring ships on both sides. These canals occupied the middle of the streets and were complemented by several drawbridges that were operated to allow the passage of either people or ships. With its combination of living and working, the *Nieuwstad* quickly became a popular port area and the heart of Antwerp's economy.

Given Antwerp's leading commercial status, its natural flat topography, and its location at the intersection of several warring powers, the construction of fortifications became a clear necessity. Therefore, much like Turin, Antwerp would develop some of the most elaborate defensive systems in Europe, with military considerations guiding the city's development during the 1560s. This included the construction of a remarkable pentagonal fortified citadel and the Esplanade, as well as ten new bastions that formed a semi-circle enclosing approximately 200 building blocks.

A later extension, undertaken during Antwerp's Calvinist period (1577-1585), was intent on accommodating the city's growing population and followed a model that had already become established in previous expansions. Specifically, with each extension, a new rampart was built around the city, with the leveled former rampart becoming a

circular, concentric street complemented by a network of radial streets that organized the city. All these plans shared the same underlying logic since all expanded the city outwards while creating new canals for the harbor and industrial activities in the periphery of the existing urban fabric. Just as former ramparts were turned into circular roads, inner canals were taken over by residential and commercial functions, which also contributed to the proliferation of a typology that combined those two functions in the same building and, sometimes, even in the same space.

While Antwerp's incremental development prevented the adoption of Baroque urban models based on monumentality and the overt display of power, Baroque ideas would nevertheless emerge in the design of several churches and merchant homes around the city throughout the 17th century. In Antwerp, the most significant and exuberant expression of Baroque architecture was nevertheless a church, specifically, the Jesuit Saint Charles Borromeo Church (1615-1621). Directly inspired by one of the first Baroque buildings in Rome, the also Jesuit Church of *Il Gesù*, the design of Saint Charles Borromeo employed similar principles of architectural composition, formal ornamentation, and lighting. Organized in three stories (rather than two), the church's façade was designed as a magnificent showpiece with a typical Baroque composition combining expressive figures and richly decorated elements to establish a central focal point. In the interior, the space's baroque splendor was developed through several altar sculptures and paintings—including a unique altarpiece which, through a system of wire pulleys, was used to quickly change the large paintings adorning the altar—as well as hidden sources of natural light that provided a heavenly atmosphere. The church's impressive formal expression and ornamentation was further enhanced by the famed artist Peter Paul Rubens (1577-1640), as he not only produced the multitude of paintings in the church's interior, but also provided decorations for its façade and steeple.

This church's opulent Baroque architecture, however, contrasted greatly with Antwerp's economic and social conditions, since the city's fortunes had dramatically declined at the end of the 16th century as it became the focus of political and religious struggles between the Protestant North and Catholic South, that is between the Dutch Revolt and the Habsburg King Philip II of Spain. Most notably, in 1576, the city was sacked by Spanish forces, who, after a fourteen-month siege would come to occupy it in 1585. As a result, and under the terms agreed for the city's surrender, Antwerp's Protestant population was allowed to settle their affairs and leave the city, with many of them migrating North, primarily to Amsterdam. The city's economic decline was only further accentuated by the ensuing blockade of the river Scheldt by Dutch fortifications, which would last for 200 years. This inevitably resulted in a serious economic and social decline for Antwerp, becoming little more than a provincial town despite a few grandiose churches and homes.

The massive influx of new inhabitants to the city by the Amstel and (consequent economic might) provided a crucial impulse to Amsterdam's development, which, combined with Antwerp's decline, propelled it to become the leading mercantile and banking center of Europe. Accordingly, the city entered a new stage of growth and expansion, culminating in the development of the ambitious plan that would become known as the *Plan of the Three Canals*, which would be implemented during the course of a century. Much like Antwerp's *Nieuwstad*, while primarily utilitarian, the *Plan of the Three Canals* developed a notable urban form and a remarkable beauty with canals as the organizing element of its urban fabric. Furthermore, similarly to Antwerp's expansion model, it guided Amsterdam's expansion through a series of concentric rings enveloping the city's urban fabric. The buildings that composed this plan were equally notable, as they combined volumetric uniformity with a diversity of facades. But also, behind these facades were significant typological developments in the combination of warehouses and residential homes, which in many ways, refined the living-working typology established earlier in Antwerp.

## DIVERGENCE AND CONVERGENCE

In Antwerp and Amsterdam, the urban development of the merchant city became most clearly articulated. This was not only visible as these cities' plans were developed by merchants and for merchants, or in the utilitarian character of their designs, but also in their implementation through collaboration between public authority and private initiative. Unlike the Baroque city's massiveness, monumentality, and theatricality, the merchant city favored small, unassuming buildings and coordinated urban interventions. The clear divergence between these two types of 17th century urban form and architectural expression had its origins in the fundamentally opposing types of governance and intentions, which accounted for the larger distinctions in both morphology and typology of these cities. Specifically, while in Southern Europe power was concentrated in a clear vertical political hierarchy with an absolute leader at the top, in the Low Countries a diffuse horizontal governing system was favored, primarily composed by city councils.

The contrast between the horizontality and verticality of their political system was immediately reflected and observable in the forms adopted by the cities above and below the Alps. Specifically, while in Rome and Turin the expansion of the city was based on grand schemes that would simply cut through existing urban fabric, in Antwerp and Amsterdam, the expansion of the city relied on the construction of concentric rings (of both roads and canals) through which the existing city was extended outwards from its center. Therefore, Baroque urban planning – but also the grand gesture that came to be associated with Baroque architecture –

required the strong, absolute power of a (largely) uncontested leader, be it a pope or a duke. Conversely, the urban form of the merchant city was the direct result of the negotiated cooperation between public and private initiative and capital. While the Baroque city aimed to overwhelm and amaze, the merchant city was guided by a utilitarian efficiency. While the Baroque city instrumentalized theatricality and drama, the merchant city co-opted practical elements to further rationalize its trading activities.

Beyond the morphology of the plans, the opposing verticality and horizontality of the cities' governing bodies was also directly reflected in the architecture that composed them. Specifically, while Baroque cities were characterized by unique grand buildings that provided significant focal points to the city and enhanced its sumptuousness, merchant cities were composed by modest, small-scale buildings in which only the spires of churches broke through the uniform (and rather modest) height of the cityscape. Therefore, Baroque urban fabric was animated by singular buildings, while the merchant city was defined by its assemblage of ordinary structures. While the Baroque character of Rome and Turin is best understood by their singular architectural objects, Antwerp and Amsterdam are best expressed by the combination of their constituent urban elements. Ultimately, the greatest contrast between the architecture of these cities could best be described as a contrast between monumental and ordinary, which inherently produced different, yet equally extraordinary and impressive, architectural effects.

However, although the architecture and urban design of the concurrent Baroque and merchant cities were positioned at two opposing ends of the spectrum, the design of their urban plans relied on similar underlying design principles and organizing forces. Most notably, despite their different morphology and typology, the urban plans of both the Baroque and the merchant city instrumentalized movement and perspective in their organization. Effectively, movement was a fundamental element to appreciate both the long straight streets of Rome and the gently curving canals of Amsterdam. While in Amsterdam it was impossible to see one stretch of the canal in a single sweeping panorama and in Rome the focal points only established their relations through the main axial system, both systems required movement to be fully understood, be it as a series of individual vignettes, or a purposefully organized sequence of architectural impressions. Only by moving through the bending canals and the straight roads could a true idea of the complexity and vast scale of the two urban forms be fashioned.

Either despite or because of their formal divergence and underlying convergence, both types of plan became crucial points in the history of urbanism and architecture, as they established fundamental precedents in both design and procedures that are still commonly employed today.

# AMSTERDAM'S GOLDEN AGE

While Antwerp experienced its Golden Age in the 16th century, in the 17th century it was Amsterdam's turn. The two developments were connected, since Amsterdam's rise was a direct result of Antwerp's decline in the second half of the 16th century, when political and religious struggles between Protestants and Catholics resulted in the closure of the river Scheldt and, with it, the collapse of the city's economy.<sup>6</sup> As many of Antwerp's merchants were forced to flee North and settled in Amsterdam, the city along the Amstel river quickly became a center of world trade, a dominance eventually expressed with the establishment in 1602 of the VOC (*Vereenigde Oostindische Compagnie*), the Dutch East India Company.

Much like the demise of Antwerp was connected to a particular religious context, so was the rise of Amsterdam, with sociologist Max Weber arguing for a connection between a Protestant work ethic and the development of the capitalist mentality that would further intensify Amsterdam trading activities and, with its, its prosperity.<sup>7</sup> Specifically, Weber argued that the Calvinist Reformation advocated by Johannes Calvijn (1509-1564) resulted in a specific ethos, that was very conducive to economics and trade.<sup>8</sup> Dutch merchants were driven by diligence, industriousness, thrift and other virtues, while devoutness and trust in God meant that suffering losses in trade was regarded as a punishment from God, that had to be resignedly accepted. Profits were shared, to some degree, in the sense that money was spent on care for the poor and the orphans.

The life led by the regents and the rich merchants who ruled Amsterdam was in sharp contrast with the baroque court life in other European countries. For instance, El Escorial, the gigantic Baroque monastery with a court and an abbey (1563-1584) built by Spain's Philip II in the outskirts of Madrid, greatly diverged from the Western European Renaissance. Ultimately, these expressed two fundamentally different world views: Castilian court life with its aristocratic figures in contrast with the progressive spirit of world trade and industry of the merchants. This stark contrast was perhaps best revealed when Dutch merchants visited William of Orange's son at the El Escorial, where he was being 'educated,' with the Dutch being portrayed as chattering drunks.

## AMSTERDAM'S TOWN HALL

The Republic of the Seven Provinces did not have a monarch. Consequently, there was no palace that could express grandeur through its imposing architecture. However, as the Republic was at the peak of its power and immensely wealthy, midway through the 17th century, a town hall was built in Amsterdam (currently used as a royal palace) that could compete with the royal and imperial residences in other countries.

Built from natural stone in a city of brick, Amsterdam's town hall was designed with an important symbolic function, connecting Amsterdam to the world. If above the façade, Atlas is carrying the heavens on his shoulders, in the tympanum below, the peoples of the world present their goods to an allegorical representation of Amsterdam, while the maps of the sky and the earth are inlaid in the marble floor of the enormous Citizen's Hall. Besides that hall, the first floor housed court rooms, council chambers, mayor's offices, treasury, and offices for the secretariat, for the regents of the orphanages and for the board that dealt with civil affairs, such as insurances and bankruptcies. On the ground floor, there were the prison cells, waiting rooms, interrogation rooms and rooms where corporal punishments were administered, the armory, the janitor's house and of course the city bank, the

first and largest bank in Northern Europe. Conversely, the upper floors were mostly empty since the building provided more space than was necessary.

Jacob van Campen (1596-1657), the architect of this town hall, built in a strict, classical style, starting what would eventually become known as the Dutch Baroque. Inspired by the work of Andrea Palladio, the town hall was characterized by symmetry and ideal dimensions. Possibly, Van Campen was more of a theoretical than a practical architect, as he was among the first master builders who were not in charge of both the design and the construction. Specifically, after Van Campen prepared a few sketches of the design, the construction was left mostly to various master builders, including Pieter Post (1608-1669), who would later become an important architect in his own right. If Post worked out the sketches, Daniel Stalpaert (1615-1676) was in charge of the day-to-day implementation and as Van Campen withdrew from the project in disappointment, Stalpaert, who was also a designer, became more prominent. From the town hall, Amsterdam was governed very efficiently, but also possibly very despotically by a small, self-perpetuating oligarchy of four mayors and seven aldermen, assisted by a city council of 36 people.

## AMSTERDAM'S DEVELOPMENT

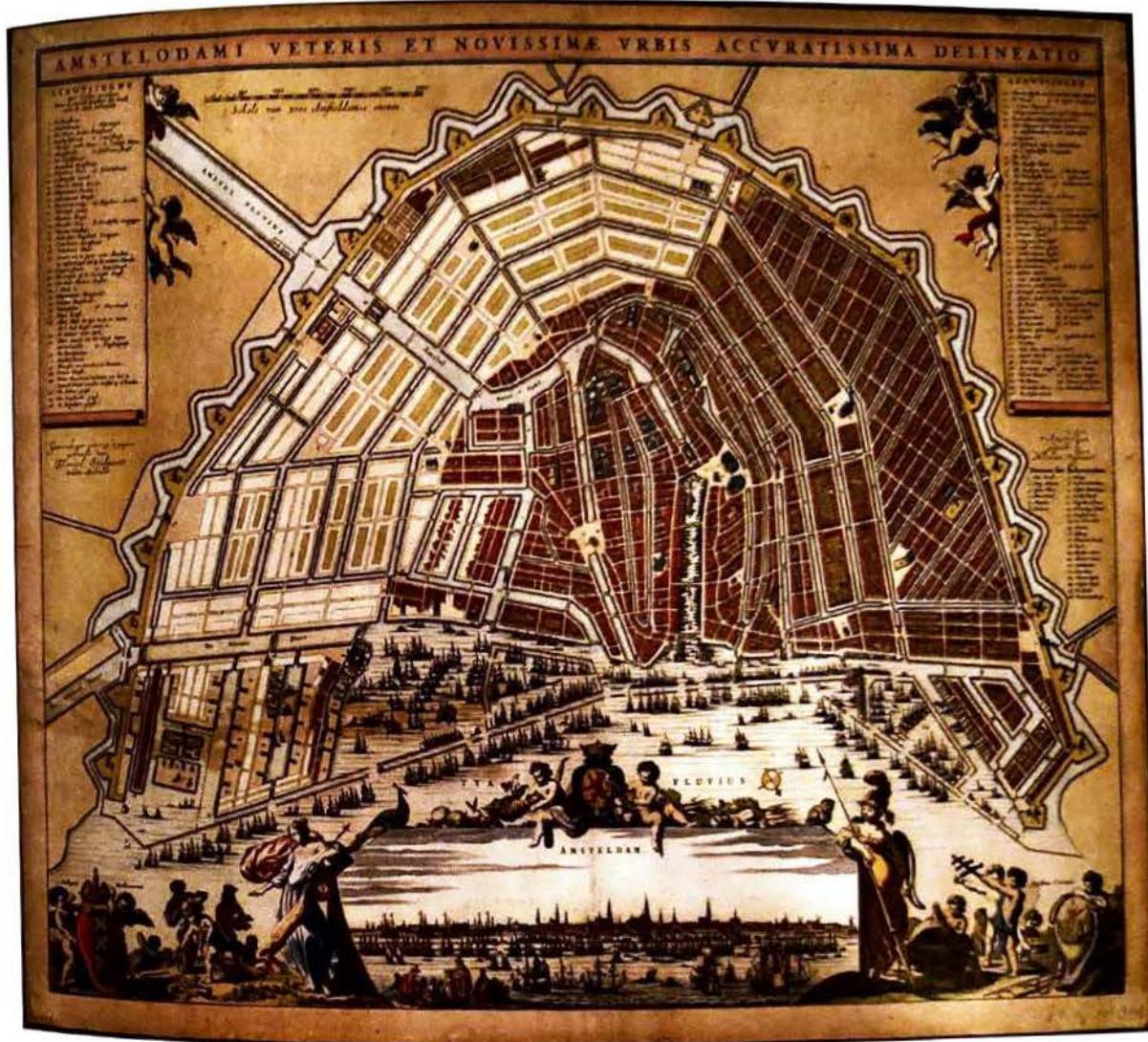
Such diverging worldview was also expressed in the development of Amsterdam's urban fabric where the canal, as a functional element of the city, became a central component. This was achieved through several expansions to the city during the 16th and 17th century which would firmly establish Amsterdam's canals as a standard type of urban morphology. Arguably, the most famous planned expansion of the city was the plan for the Amsterdam ring of canals designed by Hendrick de Keyser (1565-1621) and Hendrick Jacobsz. Staets (c. 1558-1639) in 1610.

Amsterdam's development can be concisely described with reference to its spatial principles and characteristics during the Republican era, with the city's development up to the Dutch Renaissance having been identified by German art historian Wolfgang Braunfels with three separate developments: a dike city, a dam city and, finally, a canal city.<sup>9</sup> These three types of city, Braunfels explains, were developed by the Dutch in their constant struggle against the water, flooding and rivers which in Amsterdam were expressed as consecutive stages of spatial development. Although Amsterdam's development progressed more swiftly than that of other cities in the Republic, Amsterdam was not at the forefront. This allowed it to benefit from the experience of other cities, such as Leiden, Haarlem and Delft.

The name of the first phase is debatable since, at first, Amsterdam was not a dike city at all, but a fishing village on the Amstel near its estuary in the *IJ* river. Nevertheless, dikes did protect the land against flooding and the first groups of houses were built along those dikes. The city's origins can be recognized in the names of several present-day Amsterdam streets, with the *Zeedijk*, the *Haarlemmerdijk*, the *Warmoesstraat* and the *Kalverstraat* making up the old dike along the river Amstel. The second phase was defined by the construction of a dam in the Amstel, the *Plaetse*, on which the town hall (currently the Royal Palace) and the *Nieuwe Kerk* were built. With the dam's construction, two harbors were also created, one on each side of the dam, that is, one directly connected to the *IJ* river and another developed as an inland harbor. Much like the original dike, these harbors are still recognizable in Amsterdam's present names, respectively the *Damrak*, or dam harbor and the *Rokin*, or 'rak-in', the interior harbor. The third—and most defining—phase would arrive as two defensive canals, or outer moats, were dug and connected to the Amstel. By this time, Amsterdam had acquired the form that Cornelis Anthoniszoon (1505-1553) made visible in his famous 1544 copper engraving.

As the city continued to expand, its defensive ring was continuously moved. By 1585, Amsterdam would go through its first expansion as a canal city, which was primarily intended to update the city's fortified walls so as to make them effective against (the

then new) attacks of heavy artillery. With this expansion, not only the previously defensive moat of the Singel was transformed into a residential canal, but also the largely expanded eastern harbor was incorporated into the city. The following expansions would be much larger, as between 1610 and 1662 a ring of canals would become the main organizing element for the urban planning for the quickly expanding city.



With the city's population continuing to rapidly increase (more than doubling in the early years of the 17th century, going from 50,000 inhabitants in 1600 to 105,000 in 1622), the paths outside of the city walls were increasingly occupied by informal settlements. Thus, in 1610 the Amsterdam City Council agreed to develop an ambitious third expansion of the city. This would become known as the *Plan of the Three Canals* (see Figure above), since it intended to substantially expand the city along the new Herengracht, Prinsengracht and Keizersgracht. By 1613, however, given the scale and complexity of the works, the City Council decided to divide it into two parts, a western and an eastern extension. This division also stipulated that

works would begin on the western section, connecting it to the existing city near the Heiligewegspoort and stopping short of the Overtoom waterway which connected Amsterdam to Leiden and The Hague. This expansion would introduce significant changes to the way Amsterdam's urban fabric was developed since it introduced what could best be described as an autonomous formal urban principle in which the new system of quays, canals was designed separately from the existing landscape. Effectively, unlike previous plans, this plan was not based on existing structures in the landscape (polder ditches).

Even though it was reduced, this plan would still be developed as different sections. If the *Jordaan* area established an adapted informal development, the *Herengracht* and *Keizersgracht* were defined as residential canals, while the *Prinsengracht*, between the two other canals, was intended as a main traffic waterway lined with industrial buildings and warehouses as well as some housing. When parceling the plots along the Amsterdam canals, a uniform measurement system was used and certain rules were established. For example, there was the possibility to purchase either one or two building plots, resulting in the construction of single or double mansions. Furthermore, under the guise of preventing plots from being divided up into slums and alleys, influential merchants reserved the main canals for themselves by specifying them as residential areas and stipulating that the land could only be sold as large building plots. Moreover, it was also stipulated that the buyer of a plot would have preferential right on the purchase of the adjacent plot which, besides inflating prices, often resulted in two adjacent plots being bought simultaneously to build three houses. Such re-parceling can be seen as an alternative to the prohibited practice of subdivision, and which would lead to the great variety in the types of houses that were built in the first part of the canal ring. Ultimately, land policy played a very significant role in the development and implementation of the plan.

While a part of Amsterdam's urban expansion, the *Jordaan* area, however, was treated rather differently. Specifically, its development did not follow the same autonomous formal urban principle, being instead parceled according to the structure of existing polder ditches, some of which were deepened and widened into canals, others were filled in. Mostly populated by people of limited means, who before the expansion had lived in the disorganized informal settlements outside of the city's walls, the *Jordaan*'s simple adaptation plan revealed how the Amsterdam City Council, its ruling regents and wealthy merchants, were not as concerned with the formal organization of the areas intended to house the poor. Effectively, the *Jordaan*'s development provides the best evidence that, apart from the regents and the wealthy merchants' own direct spatial interest, they lacked the interest to implement comprehensive plans, as both residential and public buildings in those areas were hardly managed in spatial, formal, or stylistic terms. But beyond a lack of interest, a consistent and systematic approach

to those areas was also hindered by the fact that various people in power speculated with land that was to become part of the expansions and thus actively prevented the restructuring of the plots necessary to implement any comprehensive plan.

Effectively, Amsterdam's third expansion directly expressed the interests of the regents and the wealthy merchants, economically as well as socially. It was set up by them and for them in such a way that they could have grand houses built on large building plots while paying little attention to those areas that were not under their own direct spatial interest. This created a city of functional and architectural contrasts, with the luxury of the tree-lined canals diverging starkly with the bleaker *Jordaan*, where cheaper living areas were mixed with various industries and where all the typical urban inconveniences that were excluded from the canals could be found, namely pollution, noise, and congestion.

The second part of the canal plan was initiated in the 1650s. Between 1654 and 1660, new plots of land were issued in the eastern part of the city for the construction of shipyards and other harbor activities, specifically at *Kattenburg*, *Wittenburg* and *Oostburg*. This was followed by plans to also secure this part of the city with fortifications and by 1662, the final expansion plan—that would become Amsterdam's fourth extension—was approved. This plan continued the work of the third extension and adopted several lessons learned from it, either by continuation, such as the completion of the concept of the canal district in a consistent plan, or adaptation, as legal and organizational frameworks were adjusted to optimize the conditions for planning and realizing the project. Specifically, new plots that were not intended for the construction of streets and canals were sold by public auction and the preferential rights of existing owners were abolished. Likewise, building regulations were made more stringent by adding stipulations on the maximum depth of the plots and the exclusion of industrial (and certain commercial) activities towards the city's periphery.

The spatial structure of the two areas of the plan would also be different, as the newer eastern part adopted an even more orthogonal and systematic layout due to the condition of its soil. Conversely, the western area had been built on more load-bearing ground, which meant that the geo-morphological preconditions had a greater influence on its spatial structure.

The city's expansion was not intended as a major architectural or propagandistic feat but was instead born out of military and economic necessity. Its direct aim was the prosperity of the city, but it was also an important instrument in the hands of the city's regents, who strived for economic power and freedom at the expense of the surrounding towns and rural areas. Ultimately, Amsterdam's 17th century expansions attempted to accommodate a rapidly increasing population (which was mostly living in informal settlements outside the city walls), but also to respond to the growing spatial



needs for trade and industry, while developing an attractive residential area for the ruling merchants and city regents. Most notably, however, Amsterdam's expansion took the form of concentric rings to the existing city, with the new canals eventually enveloping the entire existing urban fabric.

Amsterdam's urban expansion also aligned with several formal and morphological urban planning principles that had been first developed in the Italian Renaissance, particularly those associated with the design of the ideal city. As such, Amsterdam's urban expansion was, for example, also based and implemented as part of a fortification plan where the ruling body—in this case, the city's regents—could better control the city's development. Most notably, however, it also attempted to have an ideal organization of society, particularly expressed by a geometrical ordering of the city's urban structure that combined certain aesthetic qualities (from functional and formal coherence to particular visual alignments) with a spatial segregation of various social classes.

The 17th century development of Amsterdam also aligned with the 1599 theoretical treatise *Ideal Plan for a City* authored by the mathematician and engineer Simon Stevin (c. 1548-1620) and published posthumously in 1649. This was unsurprising, since in this treatise, Stevin not only described a plan for a city that could be made great and powerful through trade and industry, but was also greatly influenced by the Renaissance principles for an ideal city. Much like Amsterdam, Stevin's ideal city was located at a river mouth and was cosmopolitan, as he imagined that it would naturally accommodate the necessary population growth.

Furthermore, the shape of Stevin's city was geometrical, even rectangular so as to facilitate efficient parceling, with its streets and canals also fitting into an orthogonal layout, running perfectly straight, thus defining the city's spatial system. Effectively, the entire city was divided into parceling blocks that were either combined or divided in order to create specific urban conditions, with Stevin dealing with the parceling method in a distributive way, with simple symmetries and repetitive patterns. Notably, most public squares or buildings were treated as a single (parceling) plot, with some special exceptions being formed by the combination of several plots. What is striking, however, is the absence of an articulation of the urban space, with even the access to the city's centers of political power—be it the royal palace or the square with the town hall—being treated as residual, unarticulated space. Stevin, however, used this regularity to evenly integrate all the necessary public amenities (such as squares, markets, churches and canals) within the city's orthogonal layout, divided proportionally so that all citizens could have access to them. The same uniformity was to be extended to residential buildings, with Stevin providing much consideration to natural lighting and fresh air supply.

## THE OLD DUTCH FORTIFICATION SYSTEM

In the field of defense and fortification of cities, the Netherlands has earned quite a reputation, particularly from the work of Simon Stevin (c. 1548-1620). Born in Bruges, Stevin moved to Leiden to attend Latin School in 1581, where he would become a leading figure in the nascent Leiden University and would advocate for the use of Dutch as a scientific language. While Stevin was responsible for several discoveries, he became particularly involved in developing practical applications to mathematics and physics, including the design of defensive systems.

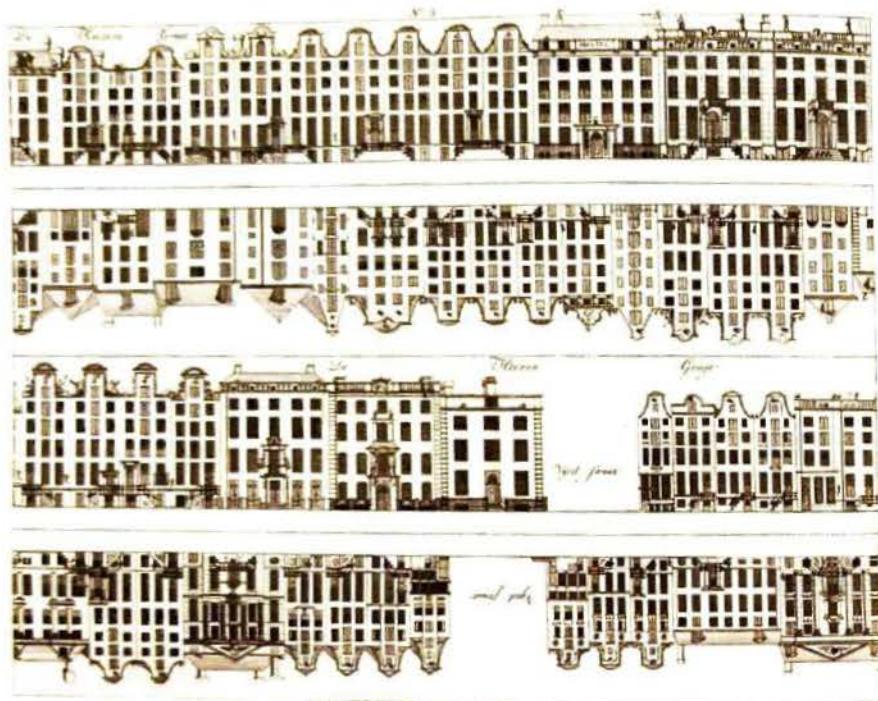
After studying several fortification systems, especially in Italy, Stevin developed what he considered to be a system for ideal fortifications with bastions, which he described in his 1594 book *The Art of Fortifications* (*Sterctenbouwing*). The starting point for these fortifications, he determined, was the regular hexagon and the use of the pentagonal, flanking bastion, an Italian invention. Furthermore, much like its Italian precedent, this system relied on the construction of outworks that could absorb the impact of artillery. However, the Dutch variant would become primarily characterized by the construction of easily surveyable ensemble of quite low earthworks that flanked each other. Thus, in Stevin's system, the walls were to be made of brick or earth (which was easi-

er, lighter and cheaper to build, especially in the marshy Dutch landscape) while the flanks of the bastions were to be placed perpendicular to the curtain walls. Water, primarily instrumentalized through the strategic placement of moats and ditches, was also to be used as a crucial defensive component which, in comparison with traditional stone bastions, greatly minimized the use of masonry.

The system described by Stevin would be applied in the Netherlands primarily to improve existing fortifications by his contemporary Adriaen Anthonisz (1527-1607) in Alkmaar, Utrecht and other places. Despite its idealized condition, the strict geometrical application of the Old Dutch fortification system would be greatly criticized since it often required that practical military requirements related to the local situation were compromised. The construction of these fortifications across the republican cities, however, expressed a combination of theory and practice since the new earth walls could be quickly and cheaply built and proved quite capable in withstanding artillery attacks. Ultimately, from these earth walls a new type of defense system was developed, which was so exclusive and typical of the Netherlands, that it became known as the Old Dutch system.

Stevin's *Ideal Plan* for a City gained significant relevance as a theoretical contribution to Dutch urbanism, particularly since it was used in the actual practice of urban expansions as well as in the establishment of new trade outposts for the VOC across Southeast Asia.

## AMSTERDAM ARCHITECTURE



Stevin's uniform approach to residential buildings would also become visible (and explored as a formal device) in the architecture being built in Amsterdam. Specifically, while the size and height of buildings in Amsterdam were greatly defined by the plan's spatial and regulatory framework (both by the determination of equal plot sizes and the imposed limitations to the height of construction), their specific architectural expression (particularly of their façade), remained unique and diverse. Effectively, the combination of the urban ensemble's uniformity and the diversity of buildings façades came to represent the viability of a working relationship between public authority and private initiative. Specifically, it represented how in Amsterdam, the municipality controlled and coordinated the individual actions of its members in order to produce the most efficient result (see Figure above).

## DUTCH RENAISSANCE

Between the mid-16th century and mid-17th century, architecture in the Netherlands primarily adopted a style that became known as Dutch Renaissance, with Hans Vredeman de Vries (c. 1527-1607), Lieven de Key (1560-1627) and Hendrick de Keyser (1550-1621) being some of the main proponents of the style. Dutch Renaissance spread from the Southern Netherlands, as Cornelis Floris de Vriendt (1514-1575) built Antwerp's town hall (1561-1565) using predominantly Renaissance motifs and shapes, which would be replicated in The Hague's town hall soon after (1565).

Hans Vredeman de Vries played a notable role in the development of the style as he published (in Antwerp) several books on architecture presenting many examples of Renaissance applications, ranging from columns and pillars to all kinds of ornaments. Vredeman de Vries' books inspired bricklayers, carpenters and other builders, who used those examples at every opportunity, thus turning into built work Vredeman de Vries' theoretical application of classical and Renaissance motifs and ornaments to ordinary (brick) houses. Furthermore, since in so doing the strict regulations that governed the Ionic and Doric orders were ignored, a Renaissance 'ornamental style' was developed. The gables of houses is an ornament that became particularly famous.

The *Vleeshal* (1602-1603) in Haarlem, attributed to Lieven de Key, is typical in this regard. In its attempt to create as rich an impression as possible, it established an entirely new architectural expression with spectacular façades decorated with various cartouches, scrollwork, ornamental vases, blocks of natural stone, consoles and obelisks. As the ornamental Vredeman de Vries' style reigned supreme, the use of Renaissance style and classical principles remained inconsistent.

In Amsterdam, Hendrik de Keyser was a crucial figure for the dissemination of the style, both in his position at the *stadsfabriek* where he was responsible for public works as well as in his own practice. His design of the so-called *Bartolotti House* (1617-1620) built on the Herengracht is particularly well-known, as he materialized Guillermo Bartolotti's desire to have a palatial residence by indulging in the use of several renaissance details, such as cups, masks, vases, and scrolls. De Keyser eventually became renowned for his use of particular motifs such as linked pilasters and accolade arches with ornaments. Furthermore, while he was interested in symmetry and structural logic, those elements did not play a dominant role. Instead, his designs were influenced by practical possibilities and his own imagination, echoing the ideas established by Vredeman de Vries' in his books.

The various houses that came to adorn the canal district mostly adopted (and expressed) the architectural qualities of the Dutch Renaissance which translated, rather directly, some visual and formal qualities of Italian Renaissance architecture, including the use of pillars, pilasters, pediments and rustication along the ground floor. These architectural elements were often combined with an emphasis on horizontal lines and, particularly in Amsterdam, with a stepped gable. Hendrick de Keyser was one of the most influential proponents of this architectural style, having designed and built not only the Westerkerk (1620-1631) along the Prinsengracht but also several houses along the canals in this style, from the relatively restrained Gilded Dolphin (c. 1600) in the Singel, to the grandiose and exuberant Bartolotti House (1617-1620) in the Herengracht.

But if Hendrick de Keyser's ideas dictated the design of canal houses during the first few decades of the 17th century, the following period would be greatly influenced by Philips Vingboons (c. 1607-1678). Vingboons' simpler designs would be best expressed in Herengracht 168 (1638) which not only avoided de Keyser's lavish ornamentation but, most notably, also adopted the first neck-gable in Amsterdam instead of the step-gable which had been preferred up until then. The neck-gable would come to dominate the architecture of Amsterdam canal houses during the subsequent period of Dutch Classicism (1640-1665), with Amsterdam becoming identified with the neck-front façade first adopted in that building. Vingboons would continue to innovate in subsequent designs, not only articulating a sensibility to combine classical elements into the narrow canal houses' façades, but also an ingenuity to organize interior spaces. Effectively, behind these Amsterdam façades, there were significant typological developments in the combination of warehouses and residences, in many ways refining existing living-working typology.

The combination of living and working as well as the modest expression of the Amsterdam canal houses were but an architectural translation of the utilitarian nature of Amsterdam's plan. It was through these modest and small-scale buildings, through this assemblage of unassuming structures coordinated into urban interventions that, throughout the 17th century, Amsterdam's territory increased fivefold.

# THE URBAN PLANNING AND ARCHITECTURE OF BAROQUE ROME

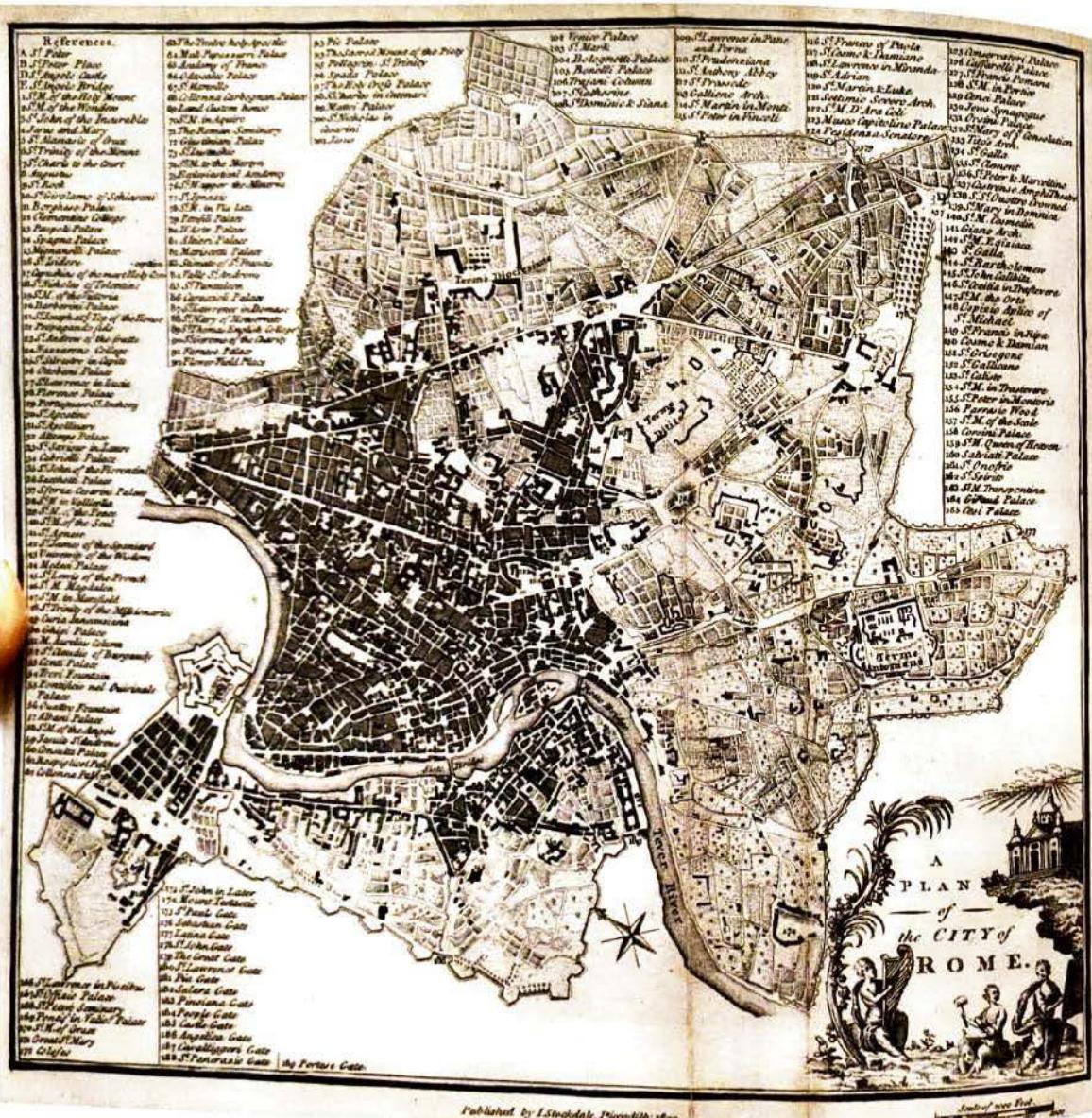
By the end of the 16th century, Renaissance ideas of beauty and aesthetic delight were increasingly questioned. The harmony, perfection, and repose that characterized art, architecture, and urban design of the *quattrocento* were gradually replaced by completely contrasting ambitions and qualities. In fact, while the goal of Renaissance architecture and urban design had been to create a calming visual order, free of tension, or unresolved geometry where the control and stability of architecture and urban design would allude to a serene social system, the emergence of the Baroque completely upset these ideal ambitions by being openly guided by the search of dynamic and forceful compositions of impetuous reach and theatrical illusion.

If the emergence of the Renaissance had necessitated the conditions created by the rise of a merchant elite, the advent of the Baroque also found a catalyst in a specific political and social occurrence: the Catholic Church's counter-reformation plan. In response to the Protestant Reformation initiated by Martin Luther in 1517 against the festering corruption within the Church, the Catholic Church devised a counter-reformation program. Specifically, the Council of Trent convened between 1545 and 1563 decided on significant changes in liturgy and declared that art and architecture were crucial instruments for spreading the prestige and teachings of the Church. Such a decision not only ensured that the Catholic Church became the primary patron of art and architecture (particularly in and around Rome), but also resulted in architectural works that were openly propagandistic and emotional. Through excessive ornamentation, the collusion of architecture, sculpture and painting, as well as through spatial complexity, and an exploration of both tension and illusion, Baroque architecture was both dynamic and dramatic.

## SIXTUS V'S MASTER PLAN

In the 16th century, Rome became the cradle of Baroque architecture, urban planning and urban design. This resulted not only from being the seat of the Papacy, but also from the papal offices having seized authority over Rome's urban planning and design matters in the previous century.<sup>10</sup> The most visible expression of Baroque planning – and one which would become a prototype for several other cities – was the complete overhaul of Rome's urban fabric envisioned by Pope Sixtus V (1521-1590, papacy 1585-1590) and carried out by architect-planner Domenico Fontana (1543-1607).

While previous popes had actively attempted to refashion and modernize Rome, Sixtus V was the first to think of the city as a whole rather than a combination of singular interventions and buildings.<sup>11</sup> However, despite creating a comprehensive system of thoroughfares across the city, each and every one of these new roads was established between two points of interest, be they the seven churches of Catholic pilgrimage, ancient ruins, or city gates.



With this plan, Sixtus V established a basic comprehensive design structure in the form of a movement system as an idea, in the form of circulation as an organization of the urban fabric, while also anchoring the city's critical elements as crucial material forms that could not be easily removed. The ambition to connect points in the city that could interest visiting pilgrims was rather deliberate, with the papal plans for

rebuilding Rome intending, to a considerable extent, to facilitate the movement of pilgrims between the city gates, the seven main churches, and classical monuments, while impressing upon those visitors the Catholic Church's might and power. For that, Sixtus' plan was intent on curbing undirected and undifferentiated movement, which due to its meandering nature impressed upon pilgrims a series of blunted visions of scattered houses, churches, and patches of rolling countryside, by establishing instead an organized sequence of purposeful architectural impressions that adequately articulated the grandeur of Rome as a city worthy of the Holy See.

The imposition of this new street system on Rome's aging medieval fabric articulated a clear conceptual intent, namely the imposition of order through movement to an environment of urban chaos. In constructing this image of the city, Sixtus amplified the clarity and grandiosity of the new thoroughfares that cut through Rome's existing urban fabric with visual, vertical markers to signal ending points of the movement system and special moments in the city's urban choreography. Since these accents should guide and focus the road space without obstructing or cutting off its flow, Egyptian obelisks were used for this task. Four obelisks were placed in important locations around the city, namely in Saint Peter's Piazza (in front of Saint Peter's Basilica), in the *Piazza del Popolo* (the main gate to the city), in the *Piazza di San Giovanni* (in front of the Lateran Palace), and in the *Piazza del'Esquilino* (in front of *Santa Maria Maggiore*), positioned in such a way that they extended the influence of the surrounding architecture along the connecting throughfares.<sup>12</sup> Despite being only a tiny part of the whole composition, these markers dominated their urban spaces by becoming organizing forces in entire urban ensembles.

With this plan, Sixtus fulfilled the three main ambitions of the city's urban renewal, namely it aired and improved the medieval core, it opened up new residential areas to be occupied by a growing population, and it established clear connections between the focal points of the great basilicas scattered across the landscape and the city's center. Most importantly, however, Sixtus' plan achieved all those objectives while also clearly articulating the message of a triumphal Catholic Church. Naturally, when straight streets are superimposed over an existing urban fabric, they are always statements of power and thus Sixtus' plan enabled the authority of the Holy See to be openly displayed in majestic buildings, impressive memorials and other grand elements seemingly planted by the hand of God himself.

Ultimately, the overhaul of Rome proposed by Sixtus V was so compelling that the plan would not only continue to be carried out in subsequent centuries, but would also influence urban design across Europe and America. Though organizing an experience along an axis of movement through space, Sixtus' plan effectively brought an end to the Renaissance concept of static, self-contained spaces. While by defining –

what would become the characteristic urban experience of the Baroque – dynamic axial connections between important urban points. Sixtus' short-lived papacy had an immeasurable impact in the development of not just Baroque architecture, but subsequent architectural and urban developments.<sup>13</sup>

## PIAZZE OF ROME

Many of the plans devised by Sixtus and Fontana were only implemented in subsequent decades, and even centuries. These included not merely the imposition of new thoroughfares through the existing city, but also the design and construction of several Baroque urban spaces around Rome. These squares and *piazze* operated in combination with the system of streets to mark special moments in the city, primarily intended for the enhancement of the prestige of the church.



As the main northern gate to the city and an important node in the new street system, particular attention was dedicated to the *Piazza del Popolo* (see Figure above). The trivium constituted by the three converging roads completed earlier by Julius II was thus enhanced with a vertical marker at the center of the piazza, which provided a monumental focus and organized the space around it.

## GIANLORENZO BERNINI AND FRANCESCO BORROMINI

Gianlorenzo Bernini (1598-1680) was one of the most prodigious Baroque artists, architects, and urban planners. One of his assistants, Francesco Borromini (1599-1687), was just as talented, and became a towering figure in Baroque architecture in his own right. While their individual work clearly illustrates different Baroque expressions and moments, combined, it has indelibly shaped our understanding of the period's intentions and principles.

With the favor of Pope Urban VII, Bernini dominated Baroque work in Rome, completing several important commissions including Saint Peter's Basilica, where he served as official architect for over almost five decades. Both the basilica's interior and exterior bear his mark, as he designed the refined composition of the two *piazze* defining the approach to the basilica as well as the sculptural ornamentation within the basilica itself, including the massive bronze *Baldacchino* (1624-1633) at the center of the crossing and under Michelangelo's (equally massive) dome. Bernini's work was thus characterized by an overwhelming massiveness and subliminally orchestrated tension, two devices employed by Bernini even at more modest commissions, as exemplified by the chapel of *Sant'Andrea al Quirinale* (1658-1670). Borromini, on the other hand, favored complex manipulations of architectural forms and elaborate geometrical combinations to equally overwhelm and impress.

Through these original devices, Borromini created grand compositions of light and shade intent on fluid, rounded masses that produced the illusion of movement. Borromini's particular geometric-derived prowess of Baroque effect was on full display in the undulating *Church of San Carlo alle Quattro Fontane* (1638-1646) as well as in the later *Church of Sant' Ivo alla Sapienza* (1640-1650). While at *San Carlo* the dome was composed by an intricate pattern of octagons, hexagons, and crosses that diminished in size towards the top to accentuate perspective, at *Sant' Ivo*, the dome reflected the conceptual geometrical structure of the plan below, namely the two interlocking triangles that defined the entire plan and organized the relations between the center nave and the surrounding ancillary spaces.

As the larger figures of Roman Baroque, Bernini and Borromini were also engaged in a bitter rivalry. Nowhere was it more evident than in *Piazza Navona*, where Borromini's *Church of Sant'Agnese in Agone* was notoriously eschewed by Bernini's sculptural fountain. Effectively, the ever-increasing expectations of Baroque architecture were fundamentally forged by Bernini and Borromini, as the dialogue established by their work—both in collaboration and opposition—only served to further expand the theatricality of Baroque architecture and urbanism to unparalleled heights.

The composition was further reinforced in the 17th century through a simple regularization of the square. This was mostly achieved with the construction of two (seemingly) identical domed churches in the spaces between the three radiating streets at the edge of the *Piazza*, intended to create a dignified portal framing the city while creating an impression upon visitors. There were, however, some difficulties with this regularization plan, since not only the actual sites for the twin churches were trapezoidal, but they were also of different widths. Such difficulty was approached as a geometric dilemma, resolved by Carlo Rainaldi by designing one church, the *Santa Maria dei Miracoli*, with a circular plan and the other, the *Santa Maria in Montesanto*, with an oval plan to accommodate its narrower site. Despite creating two slightly different churches, the difference was almost imperceptible, with the two churches appearing identical when seen from the center of the *piazza*, due to their prostyle porticos and domes.

The construction of the churches effectively regularized the space and enhanced the dignity of the *piazza*, but also served to further focus attention on the axis established by the city's gate and the central obelisk, and how it pivots to the three radiating streets. Thus, upon arrival at the city's gate, visitors entered the new *piazza* which provided a spatial and experiential introduction to the city's new urban order. By and large, these interventions were successful, as the grandeur and spacious welcome of the *Piazza del Popolo*, with radiating streets becoming a crucial reference to all such radiating combinations of squares and streets across Europe.

Designed by the Baroque master Gianlorenzo Bernini (1598-1680), the *Piazza* of Saint Peter is another quintessential Baroque urban space of Rome. When Bernini began designing the square, the public space in front of the basilica was quite disorganized. Without any particular order, the space already contained the massive obelisk relocated there by Domenico Fontana in 1586 and a single fountain built by Carlo Maderno in 1613. But beyond incorporating these elements into his design, Bernini also had to minimize the dominant expression of the much too broad façade of the great Basilica. After several designs, Bernini settled on a composite design. Therefore, although a unified composition, the *piazza* is actually composed by two separate parts, namely an oval section (*Piazza Obliqua*) and a trapezoidal space (*Piazza Retta*).<sup>14</sup> While the *Piazza Obliqua* finds its central focal point in Sixtus' Vatican obelisk, the *Piazza Retta* establishes an axial connection between the obelisk and the façade of the towering Basilica of Saint Peter. Ingeniously, Bernini employed the *Piazza Retta* to address the shortcomings of the Basilica's façade and the *Piazza Obliqua* to establish a consistency to the existing elements.

Perceived as a rectangle, the trapezoidal form of the *Piazza Retta* was used to correct Maderno's design and further aggrandize the Basilica. Specifically, it accentuates the

church's verticality and sheer size by not only imperceptibly compressing space, but also by subtly diminishing the height and spacing of the flanking Corinthian colonnade as it approaches the church's façade. Despite being fully maximized, the trapezoidal form of the piazza was also fundamentally determined by the oblique placement of the adjacent Vatican Palace to the extended narthex of the church, and the equally oblique miscalculated placement of the obelisk. While establishing the approach axis of the *Piazza Retta*, the obelisk is located at the center of the *Piazza Obliqua*. In this incorporation of the obelisk into the urban ensemble, Bernini demonstrated his mastery of Baroque space, using it to not only establish a focal point to the entire space, but also as a culminating point of opposing spatial tensions as it established both the axial approach to the church and the cross axis of the *Piazza Obliqua*.

Composed by two semi circles attached to a square at the center, the *Piazza Obliqua* is not only slightly wider than the basilica's façade but is also defined by a dominant cross-axis. This was established by Bernini through the addition of a second fountain symmetrical to Maderno's existing fountain in relation to the obelisk. With this, at once, the space was unified and infused with the invisible, yet palpable, tension of the perpendicular axis in relation to the church's approach. But the piazza's spatial tension was further enhanced by its perimeter, with its enveloping a four-columns deep, 15 meters high, Tuscan colonnade in a radial arrangement, not only creating a porous boundary between the enormity of the piazza and the much smaller surrounding urban fabric, but also introducing a continuously shifting play of light and shade. This created a sense of enclosure without confinement, defining the space without separating it from the surrounding city.

Combined, the two spaces create a symbolic embrace for visiting pilgrims, operating as an enormous, enclosed forecourt to the most important basilica of the Catholic world. But the geometrical forms of the ellipse and the trapezoid, also clearly articulated the changing mood heralded by Baroque design. Specifically, the shift from centrality to directionality, from static to dynamic forms, from clarity to illusion, as they came to replace the Renaissance preferred forms of the square and the circle. Previously, Michelangelo had already used these forms in his design for the *Piazza del Campidoglio*. But while there the trapezoid and the ellipse were combined in the same space and served to provide some order to a highly irregular space, its use already anticipated the preference for conspicuous spatial tension and a complexity of expression that would come to characterize Baroque architectural and urban expression.

There were other urban spaces in Rome that attempted to capture the emerging Baroque mood. Spaces like the *Piazza Navona*, the *Piazza di Spagna*, or even the *Fontana di Trevi*, also utilized "[d]ynamism, impetuous reach, sensate passage through space.

the illusion of theater, sculptural monumental props," which had become "the driving motives and devices of the city's planners".<sup>15</sup> The combination of these elements has best been described as a strategy of growth by tension, one in which the growth of the city and the design of its urban spaces was directed by the establishment of lines of force across different landmarks of the old city, and across different elements in the newly designed spaces. In this strategy, the consistent element is the line of force rather than the volumetric form. Therefore, the interrelationship of these lines and their interaction with the existing structures set into play a series of design forces which became the dominating element in the architecture work along them. In fact, the construction of Baroque architectural and urban effects depended upon the reciprocal relation between buildings and the space between them, with both buildings and space having a definite presence.

## CHURCHES OF ROME

Unsurprisingly, the qualities explored in Baroque urban compositions were equally present in Baroque architecture. In achieving similar effects of dynamism and tension, Baroque architects relied on creating plays of concave and convex curves while favoring forms that combined both axial and centralizing qualities, like the ellipse or the oval. Such devices more often combined with a deliberate integration of both sculpture and painting with architecture in an attempt to create illusions and dissolve physical boundaries within forms. The result was a continuous expression of movement and spectacle that attempted to elicit emotional responses, an expression which enabled the Baroque to become identified as the 'painterly style'.

One of the earliest expression of Baroque principles in architecture was found in the Church of *Il Gesù* (1568-1576) (see Figure on the right). While seemingly unassuming, this building initiated by Giacomo Vignola (1507-1573) and completed by Giacomo della Porta (1537-1602) established the template that was used by virtually all Baroque churches in and around Rome.<sup>16</sup> Built as the main church for the recently established order of the Society of Jesus, *Il Gesù* presented several innovations, both in its exterior formal expression as well as in its interior organization, that is both in the composition of its façade as well as in its interior plan.

On the exterior, the most defining element was the renewed importance garnered by the church's front façade as it became a magnificent showpiece (while the side façades were completely neglected). In this façade, it becomes clear that the systematic Renaissance composition was completely displaced by a free style composition of painterly disorder intent on creating an illusion of movement.



In *Il Gesù* (and subsequently in other Baroque churches), the façade consisted of two stories separated by a broken frieze, complemented by vertical subdivisions of bays of different sizes. The central bay, rather wider than the rest, contained the main entrance with its own elaborate statuary, occupying a pride of place as the dominant element of the façade composition. Effectively, the main entrance was the focal element of a rich and spirited façade composition that combined highly animated figures and rich decorative surrounds.

The elements in the façade were organized in a new compositional principle in which each bay was no longer a satisfied, self-contained whole. Niches, for example, were almost squeezed between pilasters, thus being forced upward, pushing up against the zone of the capitals and sometimes even penetrating it. However, there was also an underlying order at work in this façade, as it moved from the calm of the peripheral bays and upper floor to the agitation of assemblage of sculptural elements of the main entrance, which inevitably drew the eye to the center of the composition and kept it engaged by its animated composition of sculptural elements and architectural massing. Effectively, in the Baroque façade, Renaissance coordination was replaced by an emphatic subordination, creating an effect that was both animated and weighty, where individual parts only gained meaning through their combination as a whole.

The church's interior space experienced the same process of unification. There too, self-contained subordinate spaces were combined into one single overwhelming central, axial space. At *Il Gesù*, this was achieved with a simplified, Latin-cross ground plan, in which conventional aisles were replaced by a single row of dark chapels, with the church's unified nave commanding as much height and width as possible, abandoning any and all relation to human proportions. This served the Baroque aim to both intimidate and overwhelm, with visitors being subdued by the colossal space and massive elements. The unification of the space is further reinforced as the articulation of structure is purposefully absorbed into a continuous barrel vault that operates as a complete surface for decoration. Along the vault, boundaries between architecture, sculpture, and painting were completely abolished, replaced instead by a unified composition. This was complemented by the dramatic use of light, with the vault being pierced by lunettes of different forms that introduced top light from hidden sources.

In *Il Gesù*, art and architecture were cleverly leveraged to elicit strong emotional responses and emotionally engage with its audience. The theatricality of its exterior expression and interior composition, of its concentrated façade and massive longitudinal nave, quickly became the norm for Baroque churches. Even when the same longitudinal organization was not favored (or was simply not possible), the same basic themes of movement, spectacle, and emotion, were present such as, for example, the chapel of *Sant' Andrea al Quirinale* (1658-1670) and the Church of *San Carlo alle Quattro Fontane* (1638-1646).

The influence of Baroque principles for architectural design and urban planning spread far and wide across Europe, but it was in Rome where its effects were most forcefully and cogently expressed. It was in Rome that Baroque architecture and urbanism in its integration of theatrical effect and movement was most expressive and dramatic.

## THE PAINTERLY STYLE

At the tender age of twenty-three, the Swiss art historian Heinrich Wölfflin (1864–1945) completely changed the way the Baroque was perceived with the publication of his seminal study *Renaissance und Barock* (Renaissance and Baroque) in Vienna. With this study, Wölfflin presented the Baroque not as an eccentric anomaly in Renaissance culture, but as an artistic expression with defining principles, ideals, and intentions. So as to reveal the (until then unperceived) order of Baroque art and architecture, Wölfflin developed the concept of the 'painterly'.

Wölfflin began by claiming that the goal of the Baroque had always been to animate or create the illusion of movement. This, he considered, was inherently associated and communicated through painting, since painting's lack of a physical reality made it dependent on effects of illusion, the condition which he dubbed 'painterly.' Therefore, Wölfflin identified the main constituent elements of the painterly style as being mass, movement, and elusiveness. While distinct, these elements operated in tandem to elicit specific effects such as, for example, masses are broad, vague, rounded, and plastic with entire compositions made up of areas of light and dark with their contours barely indicated (if at all), always alluding to other elements that are absent, hidden, or unclear. Ultimately, the illusion of movement through mass (compositions) was the main effect of painterly



art and architecture, effectively dissolving "the regular, straight, well-defined line with the irregular, rounded, ambiguous volume, thus becoming a free style or one of painterly disorder."<sup>17</sup>

Architecture was particularly expressive of those painterly qualities, and in animating architecture, absolute unity became the rule. All subordinate parts were to be sacrificed, as the painterly style was better served by large unarticulated masses than by many separate parts, by blunted and softened shapes than by hard and pointed shapes, as well as the multiplication of contours with the sole intention to impress and overwhelm. To Wölfflin, with the painterly style, architecture became dramatic and only through the whole did the individual parts gain value and meaning.<sup>18</sup> To Wölfflin, with the painterly style, architecture became dramatic and only through the whole did the individual parts gain value and meaning.

# 17<sup>TH</sup> CENTURY PARIS AND VERSAILLES

As the Baroque moved away from Rome, its formal expression inevitably shifted and adapted to the specific conditions in which it was deployed. In France, the Baroque was enthusiastically embraced by Louis XIV (1638-1715), as the Sun King prompted the construction of one of the Baroque's most monumental expressions in the, up until then, remote rural village of Versailles. If in Italy the Baroque had been mostly—if not entirely—supported by the Catholic church, in France the style would flourish to an impressive new scale with the official patronage of the French royal court, as it came to glorify the king and became an important instrument for royal power.

When in 1643 Louis XIV was crowned King of France, the city of Paris had already experienced several expansions towards the periphery, in an attempt to counteract the constraints of the city's existing urban structure. If the construction of the royal squares *Place Royale*, *Place Dauphine* and *Place de France* in the early 1600s had attempted to introduce some order into the expanding urban fabric, the ever-increasing size of new construction projects could only find suitable sites along the city's open edges, from the Luxembourg Palace (1615-1645) in the south to the *Palais-Cardinal* (1633-1639, later dubbed *Palais-Royal*) in the north.

Both these palaces already presented a particular type of Baroque expression, one which, while inspired by Italian precedent, exhibited a distinct, relatively sober yet grandiose form of architecture that would come to be associated with France. While notably less dynamic than its Italian counterpart, the French Baroque is defined by its emphasis on a remarkable combination of classical architectural principles, monumental façades and the extensive use of colonnades and cupolas. Effectively, the grand manner of the French Baroque proved to be a particularly well-suited architectural expression for the new type of institutions that were increasingly needed to govern a nation. Paris' outward expansion only accelerated in the following decades with the construction of several Baroque buildings and complexes, ranging from the Observatory (1667-1671), the first complex for scientific research in Paris, to the gigantic *Hôtel des Invalides* (1671-1678), a home for old and injured soldiers. At the end of the 17th century, Paris was surrounded by great Baroque buildings, raising the question "whether they served or strangled the growing city".<sup>19</sup>

Ultimately, the center of Paris would move westwards, particularly stimulated by the construction of two urban projects designed by Jules Hardouin-Mansart (1646-1708), namely the *Place des Victoires* (1685-1692) and the *Place Royale* (1698, currently *Place Vendôme*). The round *Place des Victoires*, which would become Paris'

new center for financial services, was characterized by a unified, monumental, façade erected around a gilded statue of Louis XIV. From this central space, several streets radiated, organizing the expansion of the city beyond its boundaries. Similarly, the square-shaped *Place Royale*, which was originally intended to accommodate the royal library and academies of art but eventually was occupied by grand residences of the upper classes, was another focal point for Paris' westward development. Much like the *Place des Victoires*, the *Place Royale* presented the grand manner of the French Baroque through a unified monumental façade (even if it obscured the variety of grand residences lining the square) with a classically-inspired colonnade and a rusticated base. Combined, these two squares provided a crucial new impetus for the expansion of Paris, while providing the city with new grand Baroque urban spaces that directly expressed the absolutist intentions of the French king.

Although originally the streets connecting to these squares were more significant to the city's urban structure than the squares themselves, their design and construction ultimately introduced to Paris the Baroque urban model of approaching the city as an open and dynamic system. A model similar to Rome's, in which the squares operated as dynamic focal points for continuous movement with a centrifugal effect. A model of ever-moving vectors in which an infinite space was implied.

## THE PALACE OF VERSAILLES

But even though Paris was expanding and transforming, its (mostly) introverted medieval urban fabric, the masses of people, and its political unrest, were still lingering issues.<sup>20</sup> This was not the case in the remote village of Versailles, some 20 kilometers southwest of Paris, where Louis XIV had spent some time as a child in the chateau built by his father, Louis XIII (1601-1643). The small chateau had been designed by Louis XIII's royal architect, Philibert Le Roy (?-1646), and was of simple, yet elegant, construction with an open courtyard defined by three wings built of cream-colored stone and red brick, complemented with a roof of dark blue slate tiles. There, the Sun King found an urban, architectural, but also political, *tabula-rasa* onto which his power could be monumentally expressed and experienced.

While minor alterations had already been done to the old chateau, the construction (1661-1678) of an entire new building that enveloped it from the garden side marked the start of the first significant expansion to the structure. Designed and supervised by the royal architect Louis Le Vau (c. 1612-1670), the enveloping three new wings were presented towards the garden as a long block of twenty-five bays, with the middle eleven bays being set back behind a central marble terrace. Marking the center of the composition, the terrace established the connection between the two

symmetrical wings overlooking the garden, each of which accommodating a row of seven and five apartments composing two Grand Apartments on their first floor, respectively one for the king and another for the queen. These were connected to the ground floor through a monumental stairway that provided direct access to the plateau overlooking the expansive gardens and through which visitors would have access to the king's Grand Apartment, where he conducted official state business.

The new wings expressed a new-found horizontality, emphasized by their nearly-flat roofs broken only by the use of statues and a rusticated ground-floor which, in the tradition of Italian *palazzi*, were topped by a story decorated by Ionic pilasters. With its clear massing and ingenious façade design, the Palace of Versailles' first expansion articulated a combination of classical principles with a feeling for grand scale, as Le Vau's design defined the palace's blocks in a simple, clear, cubical expression, animated by its projecting central frontispiece with coupled columns.<sup>21</sup> Beyond providing a new frontage to the gardens, the three new wings also allowed the inner façades of the original château to occupy the very center of the palace's expansive composition. This was to become the Marble Courtyard, which remained an entry court open towards the opposing side (see Figure below). Furthermore, with the ingenious enveloping solution, Le Vau's design also created two additional courtyards in the space between the new wings and the existing château, with their interior façades designed in stone and brick so as to harmonize with the château's own façades.



Within the palace, the formulation of Baroque theatricality surpassed the building's already imposing exterior as well as the most elaborate of Baroque interior spaces. Effectively, it would be the lush and magnificent grand style that embellished the palace's interior that would come to fully articulate Louis XIV's ambition to impress and awe, expressing his absolute power through a dramatic spatial experience. Commissioned to the court painter, Charles Le Brun (1619-1690), the palace's extensive interior decoration was based on a combination of richly sculpted stucco reliefs, elaborate paintings (mostly of figures in compositions), and intricate arabesques. Although Le Brun relied on a small army—or, actually, a small academy—of artists to execute the palace's dazzling decoration, he remained in control of the entire endeavor, designing not only the various paintings, sculptures and reliefs that adorned the halls, but also the paneling, the tapestries, the silverware and even the keyholes to the palace's doors.

If in Rome, Baroque churches had intended to articulate through art and architecture the magnificence of the church, in Versailles, the palace's lavish decoration and combination of painting, sculpture and architecture aimed to glorify Louis XIV's role in the political, military, economic and artistic elevation of France into the most important nation in the world. This idea was continuously repeated throughout the artistic blitz adorning the palace, in a degree of sumptuousness that was unmatched by any other royal palace across Europe.

While the rich and complex decoration of Versailles found precedent in the Italian Baroque's attempt at dramatic theatrical effects, the grand manner through which painting, sculpture and spatial experience were combined in the palace's interior established an even more overwhelming expression of material and visual spectacle. The height of this exuberance was perhaps best expressed by the commissioning of several pieces of furniture made of solid silver, from tables, benches and candelabra to a massive throne and an enormous balustrade. Designed by Le Brun, the first set of 167 pieces of silver furniture took almost twenty years to be completed (1664-1682) and weighted over twenty tons. All decorated with the king's monogram and his sun symbol, the silver furniture was first placed in the king's Grand Apartment, so that all visitors to the palace could be in awe of Louis XIV's magnificence as he conducted official state business. Eventually, most pieces would be melted in 1689 to provide funds for France's ongoing war effort.

The palace's second expansion, designed and supervised by Jules Hardouin-Mansart, would further enhance the palace's opulence. The focus of the design was the central elements of the complex, with the construction of two grand salons—the Salon of War and the Salon of Peace—and what would become the most symbolic of all the spaces in the palace: the *Grande Galerie*, or the Hall of Mirrors (see Figure on next page). To create this new space, Mansart enclosed Le Vau's central terrace through the addition

of a wall with arched openings that framed garden views and introducing an opposing wall with matching arches filled with mirrors that reflected the light entering the space. Measuring approximately 73 by 10.5 meters, the glazed and mirrored arches (interspersed with marble pilaster topped with gilded capitals) provided a rhythm to the long space as well as the perfect canvas for Le Brun to portray the Sun King in all his glory. The thirty paintings along the room's ceiling exalted Louis XIV's government by using historical allegories to represent several important moments in his (until then) eighteen years of reign. These ranged from depictions of the implementation of several reforms to military and diplomatic victories, culminating in the central panel with a painting of Louis XIV in a Roman armor, assuming absolute power at the head of the nation.



The most prominent elements in the room were, however, the mirrors that gave it its name. This was not only due to the association of mirrors to luxury and opulence (as the rare and expensive pieces that they were in the 17th century), but also to the sheer number of them used in the hall's decoration. Effectively, much like the rest of the palace, the Hall of Mirrors' magnificence was created through richly decorated elements deployed in dizzying quantities, producing an excessive ornamentation that explored both visual illusion and spatial tension to create dynamic and dramatic effects. However, beyond creating particular Baroque effects, the 357 mirrors positioned within the arches opposite to the windows also alluded to France's economic prowess, signaling how it had rivaled Venice in the manufacture of these rare objects.

The splendor of the Hall of Mirrors was, in fact, strategic. Since most members of the court passed daily through the Hall of Mirrors and most visitors had to transverse, the hall's spectacle was to be a constant reminder of the king's absolute power. The instrumentalization of this space became particularly dramatic when it was used to welcome foreign dignitaries, as the king's silver throne would be positioned at the end of the hall and foreign visitors would walk the length of the room while being observed by the entire French court.

While the focus of Mansart's work was at the center of the complex, his expansion also included the addition of two massive new wings to accommodate the growing number of people in Versailles. Beyond living quarters, the two wings also housed an important new addition to the complex, the Royal Chapel in the new Northern wing. While designed by Mansart, the chapel would only be completed later, in 1710, during Louis XIV's final construction campaign, with the height of its vaulted roof greatly disrupting the severe horizontality of the palace's roofline.

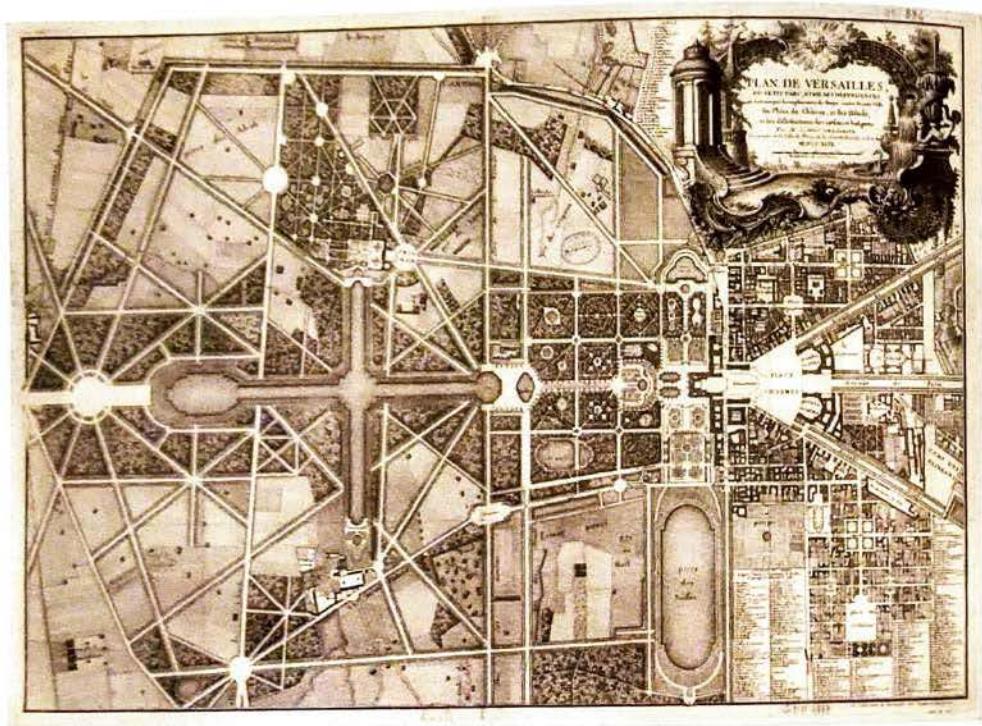
The northern wing would be further remodeled several decades later, in the Palace's final expansion as Louis XV commissioned Ange-Jacques Gabriel (1698-1782) to design a suitable opera house for the palace. Much like the rest of the Palace of Versailles, the Royal Opera combined a great deal of decorative refinement with an unmatched size, making it the largest and most advanced concert hall in Europe at the time.

## THE GARDENS OF VERSAILLES

Once completed, the Palace of Versailles was Europe's largest royal domain, covering over 67,000 square meters, distributed over 700 rooms. But just as remarkable as the Palace was the development of the gardens and the park in the estate, where Baroque spatial ideas were equally present and developed at an even greater scale. In transforming his father's simple chateau into a sumptuous palace, Louis XIV paid as much attention to the construction of the palace and its decoration as to the estate surrounding it. Thus, already in the first construction campaign, Louis XIV commissioned landscape designer André Le Nôtre (1613-1700) to complement the palace's magnificence with lush gardens and hunting grounds, in a work that lasted approximately four decades.

Having studied perspective, optics and geometry as well as architecture and mathematics, Le Nôtre would create a new standard for French formal gardens in Versailles. His design took as a starting point the palace, establishing a main terrace just in front of it, from which the expansive terrain below could be taken as a whole.

This started with the gardens which, while developed around the natural accidents of the terrain, were still organized into recognizable geometrical patterns clearly expressing ideas of order and rationality as structuring elements of a regulated society. In the platforms closer to the palace, Le Nôtre applied a geometrical model inspired by Italian Renaissance gardens, where large square modules were subdivided into smaller squares, even as gentle slopes defined specific views towards unique focal points. The symmetry and order of the palace was simply extended onto the landscape as Le Nôtre developed what would become the most exquisite example of a classic French formal garden.



Source: gallierandfr / Encyclopédie universelle

Although the gardens were shaped and ordered along paths of strict geometrical patterns, complemented by hedges precisely cut to regular shapes and water flowing along a controlled system of canals, the use of symmetry and the imposition of order onto nature that came to define the classic French formal garden was most clearly expressed by the instrumentalization of a grand perspective. Stretching from the palace's upper terrace well into the horizon, the existing grand perspective was enhanced by Le Nôtre to make clear the dominance of the king's absolute power even over nature. For that, Le Nôtre not only widened the Royal Way but also dug the almost 1700 meters long *Grand Canal* at the center of the estate, transforming the perspective from the palace into a long open vista stretching as far as the eye could see. This became the visual and spatial structuring element for the entire composition, with two perpendicular canal sections providing access to other sections of the park.

(namely the zoo of exotic animals of the *Menagerie* to the south and the informal retreats of the *Trianon* to the north) while boulevards radiating towards infinity extended geometrical order to the rest of the estate (see Figure on left page).

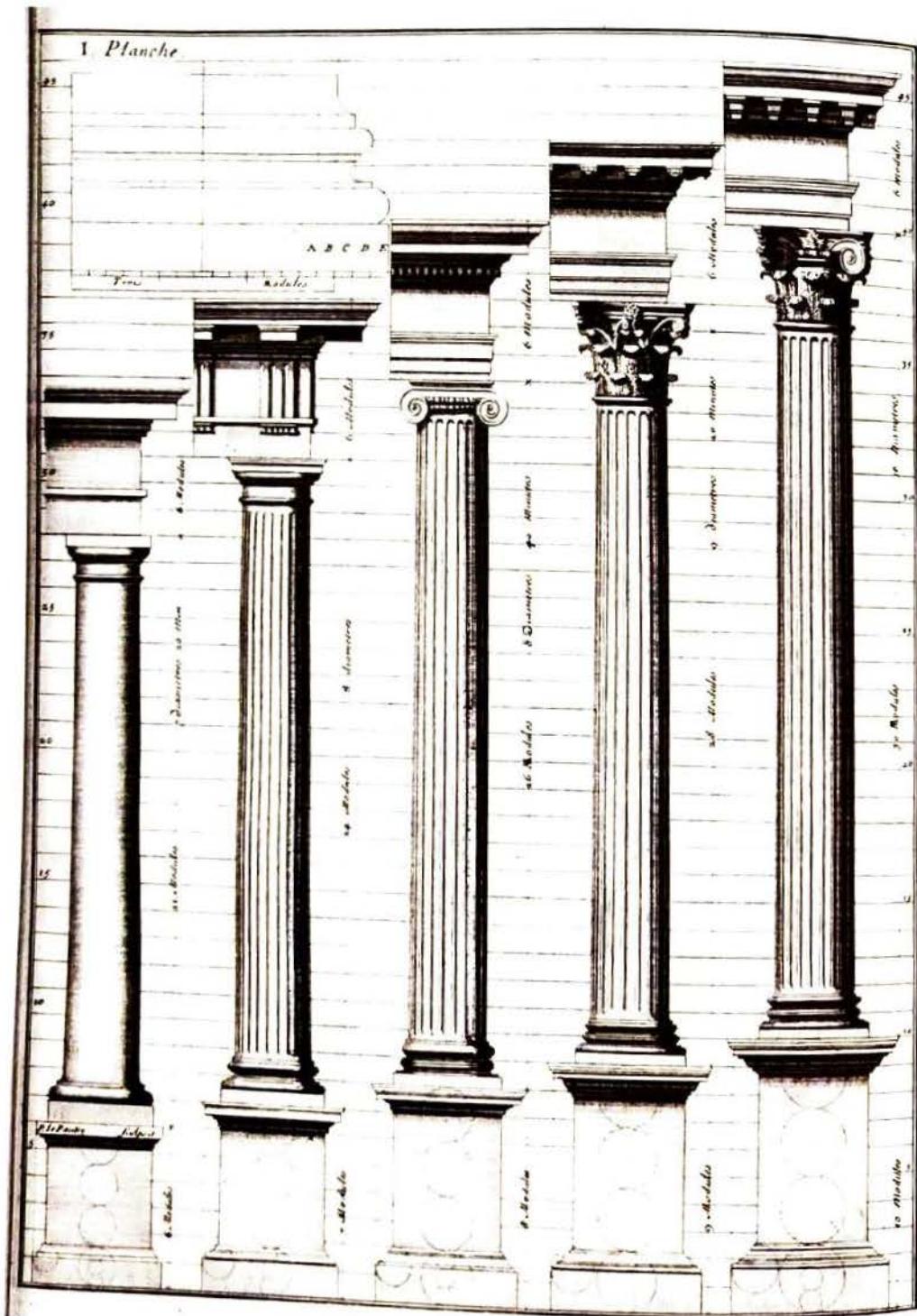
Throughout the grounds the palace's artistic and decorative project was continued, with Le Brun designing and installing countless statues, fountains and other sculpted elements. Both statues and smaller pieces of architecture fitted easily into the formal layout of the gardens, often being used to define sightlines and focal points. Other notable elements in the composition included the *Orangerie* to the south and the *Grotto of Thetis* to the north both of which recreate natural elements in an ordered fashion.

The system of boulevards cutting through the gardens and park of Versailles presented a clear parallel to Sixtus V's and Fontana's Baroque urban plan. Much like in Rome, Le Nôtre's plan for Versailles relied on perspective and movement to create a coherent spatial composition organized with far-reaching axes meeting in cleared spaces marked with sculpted elements. Furthermore, like in Rome, Le Nôtre enlivened the system of Versailles with optical solutions, controlled vistas and specific focal points ensuring visual connections over long distances. The formal device of radiating boulevards—a core element of Baroque urban planning first deployed in Rome's *Piazza del Popolo*—would eventually also be used to organize the town of Versailles, with three boulevards radiating from the palace's front court. The composition of this square was completed with two open-court buildings, symmetrical over the central axis and mimicking the spatial organization of the palace's own entrance court.

If Sixtus V's plan expressed onto the urban fabric of Rome the centralized power of the Pope, the gardens of Versailles expressed the absolute power of the king over his subjects, as well as over nature. To create the gardens of Versailles, the original meadows and marshes had to be manually leveled, drained and cleared. These monumental works were carried out by thousands of men at a time, with approximately thirty-six thousand men, some of which from entire regiments, working on the site in 1685.

Versailles is notable not only as an exuberant palace and extensive gardens where Italian Baroque aesthetic ambitions were combined with French grandeur, but also as a great monument to Louis XIV's absolute monarchy. Throughout its successive construction campaigns, Versailles was transformed into a magnificent (and unmatched) showplace, a built expression of glory and power achieved through a dramatic combination of art, luxury, and spectacle. Versailles would remain the center of political power in France until 1789, when the storming of the Bastille in Paris would light the fuse to the French Revolution.

# THE RATIONALIZATION AND CLASSIFICATION OF KNOWLEDGE



## THE 18TH CENTURY AND THE ENLIGHTENMENT

Certain moments in history are probably more important than some entire historical periods. Moments of change, moments that break with previous periods, as preludes to new eras. The Enlightenment marked, precisely, the beginning of a new age as a pivotal moment where modern thinking based on rationalism and empiricism was first established. But a counter movement also emerged in Romanticism, as romantic emotion became the opposite counterpart of enlightened reason.<sup>1</sup>

Although the Enlightenment has been commonly associated with the 18th century, its origins are found as early as the 17th century, with the English Revolution, while its conclusion can be recognized in the early 19th century Napoleonic wars. Nevertheless, at the turn of the 18th century, society was still characterized by a bourgeois morality and lifestyle. The built environment, with its Neoclassical architecture and urban development, provided the scenery for a kind of theater that was being staged, one that appeared as an imitation of the exuberant court life at Versailles: a seigniorial lifestyle. As cultural sociologist Norbert Elias once described it, a 'conserved cultural heritage' of wigs, perfumes and dolce far niente where the bourgeoisie lived off the 17th century accumulated wealth with a decadent lifestyle that openly flirted with Rococo, Chinoiserie and other flamboyant architectural expressions.<sup>2</sup> As old and new times sometime overlap, Enlightenment philosopher Voltaire (1694-1778) would be seen in a Baroque setting during his stay at the court of Frederick II of Prussia (1712-1786), specifically, in the Rococo Sanssouci Palace (1745-1747) in Potsdam.

## GEOGRAPHICAL DIVERSITY

The term Early Enlightenment is commonly used when discussing the late 17th century developments in which the Dutch philosopher Baruch Spinoza (1632-1677) was an important figure. Through his writings, he abandoned any belief in God and developed instead a belief that reality was, in itself, divinity expressed. Accordingly, everything was an expression of an all-encompassing, transcendent god. Spinoza believed that such pantheism revealed how God was expressed and involved in nature. Tolerance was another important aspect of his thinking, making a distinction between man and faith. Faith was a private matter, but as an autonomous 'human', one was first and foremost independent of any authority. Individualism would thus also become a hallmark of Enlightenment thought. Early Enlightenment emerged most clearly in England, spreading afterwards to France and Germany, with great thinkers rising to prominence in these three countries. Among them, however, there were also

differences in understanding of Enlightenment expression, with the focus on reason invariably being an antithesis to others that emphasized the importance of feeling and passion.

In England (including the Scottish Enlightenment), the focus was clearly on empiricism and utilitarianism. Francis Bacon (1561-1626), John Locke (1632-1704), David Hume (1711-1776) and Adam Smith (1723-1790) became important figures, whose influence was felt in many different disciplines. The work of Anthony Ashley-Cooper, the 3rd Earl of Shaftesbury (1671-1713), would also become influential, particularly in landscape architecture. Conversely, in France, Pierre Bayle (1647-1706), Montesquieu (1689-1755), Voltaire, and the Encyclopédistes Denis Diderot (1713-1784), Jean-Baptiste Le Rond d'Alembert (1717-1783) and Julien Offray de La Mettrie (1709-1751) established the basis for enlightened discussion. Either arguing for the toleration of others, the separation of powers, the collection of human knowledge, or even materialism, these thinkers shaped not only the French Enlightenment, but modern political and social thought. Jean-Jacques Rousseau (1712-1758) also significantly shaped the ongoing development of Enlightenment thought, even if his work already contained the seeds for Romanticism. This was not only expressed in his literary novels, but also in his pronounced views on the city, as he more than once described it as the place where man became a cannibal.

Influenced by Rousseau, Immanuel Kant (1724-1804) became a prominent thinker in Germany (and, eventually a central figure in modern philosophical thought), authoring one of the most famous definitions of the Enlightenment, namely that Enlightenment was man's release from his self-incurred tutelage. Kant later expanded his views when developing the fundamental ideas for 'critical reasoning' where he attempted to reconcile empiricism and rationalism. Reason, he argued, assessed our observations of phenomena and ordered them in space and time, but was entirely based on human autonomy. In fact, Kant would even claim that human understanding established the basis for the general laws of nature that structure all of our experience. Such notion, derived from Kant's Ding an Sich concept (the thing-in-itself), claimed an autonomous existence for every object, independent of (human) observation. Ultimately, Kant's philosophy would inspire various design approaches, most notably, based on the notion that reason, as a genius, can create order in space and time. Although Kant already had critical reservations against reason, he also found a critical counterpart in the writer Johann Wolfgang von Goethe (1749-1832), who studied the organic structure of nature.

Such tension, while finding its roots in the opposition established between rationalism and irrationalism, also brings to the fore a diagram that has been used in discussing various forms of architecture and urban development to present movements and approaches. If in *Rationalism and Romanticism in Architecture* the Polish architect and educator Wojciech G. Lesnikowski presented a similar dichotomy, the American scholar Nan Ellin further expanded on that notion by referring to the Classicist and the Romanticist deep structures—that is, frames of reference for ideas and actions—identified earlier by the sociologist Alvin Ward Gouldner, with the two alternating in a pendular swing. Specifically, these would swing from the rational and objective towards the religious and artistic; from universal values towards unique characteristics; from the functional demands of society to personal development; from the usual, common and normal towards deviant and different, as well as from an established order to the community. Considering the opposition between these two structures, it is quite remarkable that in the 20th century, modernism—in keeping with the main line of the Enlightenment—adopted a classicist deep structure but rejected the classicist form language.

From this societal context, the Enlightenment emerged as a broad movement striving for knowledge, intent on making discoveries and inventions out of a rational approach where science and art were equally significant. Particularly important in this context was the emergence of critical reasoning and empiricism. Either by aiming to impartially question and evaluate all ideas and beliefs or by claiming all knowledge to be based on observable experience, both schools of thought contributed to (and were influenced by) the quest for knowledge.

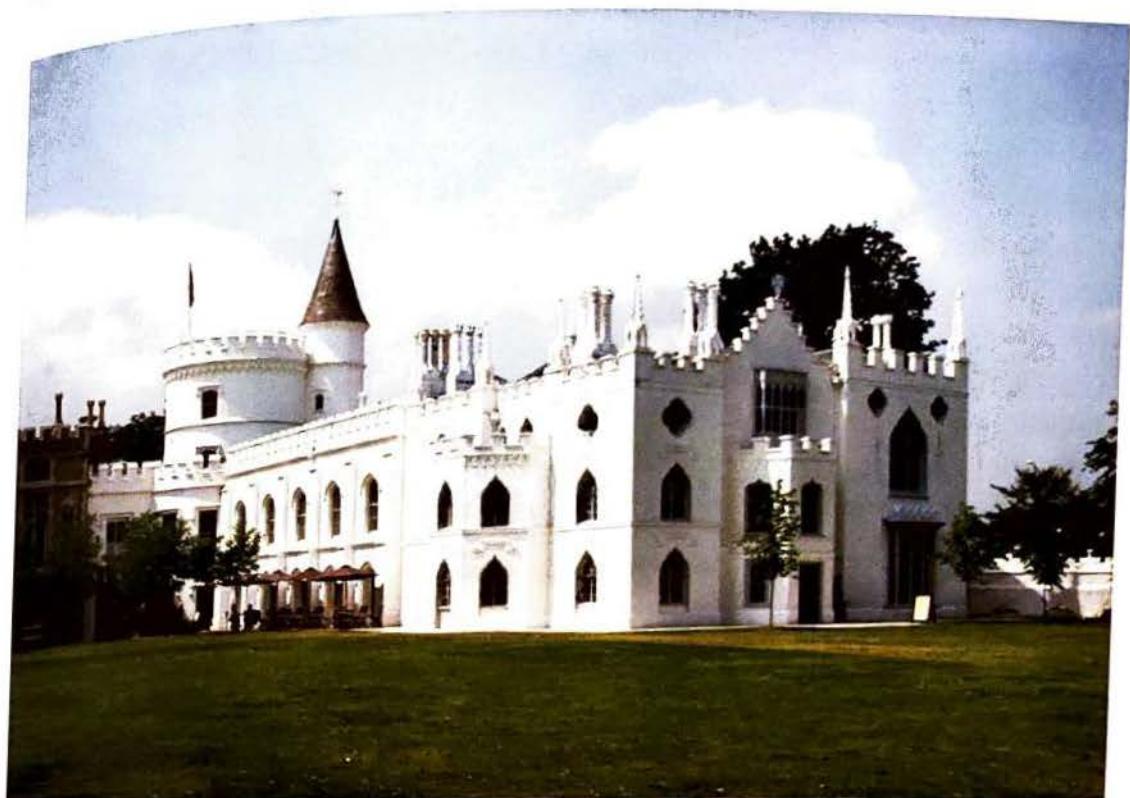
Since several enlightenment thinkers also believed in naturalism, namely that the observable world is governed by natural laws and forces (rather than supernatural or spiritual ones), the development of natural sciences became particularly important. Just as mathematicians such as Gottfried Wilhelm Leibniz (1646-1716) and Sir Isaac Newton (1643-1727) became towering figures, natural sciences were seemingly being practiced by everyone. Effectively, while all wanted to be erudite, they were, at the same time, dilletantes, with theologists making scientific discoveries, such as Joseph Priestley (1733-1804). Theologists could do that without any moral or theological contradiction, since Deism had paved the way. Ultimately, Deism regarded the world as a natural system once created and set in motion by God. But while God may very well have created the world, He had not interfered since. He may have been the great Clockmaker, but it was up to the natural sciences to discover the laws and regularities of that clock, of our deist world.

## THE SUBLIME AND NATURE

The experience of the sublime, as explored by Edmund Burke (1729-1797) in his seminal study on the subject, also became a defining discussion of the period. In opposition to beauty, in which reason and imagination were in harmony, the sublime was a dual experience, both overwhelming—fraught with fearsome shapes and frightening events—as well as fascinating and somehow pleasurable. Such sentiment could be experienced in, for example, disasters and major natural events. In the postmodern aesthetics of the second half of the 20th century the notion of the sublime returned in reaction to the modernist geometrical, emotionless architecture and urbanism that had failed to 'fascinate' people in any way at all.

During the Enlightenment the concept of Nature became a synonym for reality, based on the argument that Nature had no *a priori* condition and was accessible for reasonable thinking. Furthermore, considering that Nature contained everything and was everything, it became appreciated in a threefold manner: aesthetic, ethical and scientific. Regarding Nature's aesthetic valorization, to the Enlightenment nature was sublime or beautiful, due to its "vastness, obscurity and solitude or its sensuousness or smoothness, gentle curves, polish and delicacy".<sup>3</sup> This aesthetic philosophy was primarily applied in the picturesque tradition, a tradition based on the idea that knowledge was achieved through experience and sensation. Following the empiricism of John Locke, who claimed that the knowledge of the existence of any other thing, we can have only by sensation, Jean-Baptiste le Rond d'Alembert further elaborated on this reasoning by dividing our knowledge into direct and reflective knowledge, just to declare that since all our direct knowledge can be reduced to what we receive through our senses, we owe all our ideas to our sensations. Ultimately, what is perceived in Enlightenment thought is, on the one hand, the doctrine of nature as an instrument for knowledge and, on the other hand, the doctrine of experience as a means for making judgments. With the revival of Gothicism in the 19th century, however, this ideal naturally faded.

## ROMANTICISM AND THE PICTURESQUE



While Neoclassical architects were busy instrumentalizing reason, there was a parallel sensibility in art and architecture that emphasized the role of emotion and imagination: Romanticism. In some respects, Romanticism emerged as a reaction against the order, regularity, rationality, harmony, balance and calm found at the heart of both Neoclassical architecture and the Enlightenment project. Effectively, since Romanticism directly addressed emotion and feeling, rather than reason and intellect, it proved to be much more immediate and easily understood than the intellectual precepts of a small elite. Therefore, although

Romanticism first emerged in England and Germany, it quickly spread across Western Europe.

Although Romantic ideals were never truly codified, Edmund Burke's seminal essay 'Origins of Our Ideas on the Sublime and the Beautiful' resonated with Romanticism as it attempted to analyze the impact of natural order and primal emotion on Man. In its most famous discussion, Burke analyzed the qualities of 'Taste', just to claim that our primal emotions cannot be changed neither through education or reason. The primal quality of both the sublime and the beautiful made them, he concluded, inevitable and inescapable.

Accordingly, Romanticism developed the picturesque as its aesthetic concept. This too was established in opposition to Neoclassicism, since it valued natural appearance above all others, particularly when the marks of time could be perceived, in contrast to the straight lines and precise order dictated by the ever-present reason of Neoclassicism. Ruins, thus, became a subject of Romantic interest, since their fragmentation, irregularity and wildness aptly expressed the powerlessness of men when facing the inevitable erosion of built works when faced by natural forces.

Romantics also delighted in the asymmetrical and the irregular for their highly picturesque qualities, particularly valued in the combination of architecture and

landscape. Thus, the construction of (often medieval and gothic-inspired) small pavilions in gardens became a particular exercise of Romantic expression. One of the most notable fully functional buildings to articulate the esthetic principles of the picturesque was Strawberry Hill (1749-1777) in Twickenham, England. Here, form was broken in both massing and the organization of spaces in plan, as to create a sense of playfulness and an impression of different additions having been made at different times. The eclectic combination of different construction details that animated Strawberry Hill and characterized Romantic (or picturesque) architecture, became a crucial element in the emergence of eclecticism in the 19th century.

The basis for nature's scientific valorization was found in the premise that not only nature was both rational and true, but also that reason and truth were naturalistic. Such assumption became an *a priori* condition for Enlightenment thought, with all knowledge being evaluated on the basis of that assumption. The aim was to discover the original state of affairs, which is the natural state of objects and phenomena. Arguably the most notable example of this reasoning in architecture is found in abbé Marc-Antoine Laugier's (1713-1769) 1751 *Essay sur l'Architecture*, where, beyond claiming that the origins of architecture are to be found in the primitive hut, Laugier also argued for that hut's origins in nature and how all forms of classicism were recognizable in it. Accepting the primitive hut as the *a priori* architecture became a question of imitating the original shapes.

Another discussion regarding architecture's origins was also instigated by the establishment of archeology. In this discussion, the main question pertained to which culture was at the basis of Western European culture at the time, namely if Greek or Roman. In other words, the question pertained to what was the natural state of that culture. Among others, Johann Joachim Winckelmann (1717-1768) argued for the Greek origins of Western European culture while Giovanni Battista Piranesi (1720-1778) boastfully claimed the supremacy of a Roman precedent.

Finally, Nature's ethical valorization was particularly embodied in Jean-Jacques Rousseau's idea of the 'noble savage,' examining societal development in terms of progress, civilization and urban culture. Specifically, it questioned if societal development made people any happier, pondering if a 'natural state' would not be preferable. With the advance of the industrial city in the 19th century, this discussion started again in all its intensity, particularly the debate regarding the relation between town and country, as well as the relation between crafts and industrial production. Even in modern times, these three dimensions are still recognizable when discussing nature; aesthetic: there is beauty in unspoiled nature, which we want to preserve; ethical: the corrupt state of the artificial and mechanized society, that cannot compete with nature's harmony; and scientific: the law of variation, selection and natural evolution.

Ultimately, these different strands of Enlightenment thought would directly shape architecture, with the Neoclassical style becoming its predominant expression. This was not only aligned with both Roman and Greek antiquity but also with the belief that architecture's origins could be found in nature. Similarly, the predominant empiricism and rationalism was equally influential in architectural thought, as it became fashionable to examine architecture and urbanism through a systematic dissection of its history. Notably, the history of historical types of architecture and cities was, effectively, finite and could be studied and categorized. Herein laid the naturalism of Enlightenment architecture: history has its patterns, and architectural design is to be based on mimesis and imitation, it is to say: emulating nature. With this classification, nature becomes natural history, and architectural types become architecture.

The intellectual and artistic development that came to dominate the 18th century, was nothing short of a revolution of minds. As it became widely believed that only reason could confer authority and legitimacy while rationality and intellect would emancipate society, this period became known as the Age of Enlightenment, or the Age of Reason. Reason alone, was claimed, could provide complete knowledge of man, society, nature and the cosmos, enabling society to develop a critical stance of the political and religious status quo, while creating the foundations for a utopian future. Effectively, proponents of the Enlightenment were determined to both understanding the world and actively changing it. Most notably, new rational forms of government were proposed, intent on replacing the existing political system with a more egalitarian society, intentions which were put into practice after the French and American revolutions.

# THE 18TH CENTURY CITY: PARIS, LISBON AND EDINBURGH

While the Enlightenment project originated with philosophers, scientists, and mathematicians, it quickly spread to other fields—even spurring the foundation of several new disciplines based on scientific enquiry—all aiming to further knowledge and the understanding of the world. Among those new disciplines created was archeology which, when coupled with a new systematic approach to history, led to a more accurate chronology of world events as well as a more inclusive understanding of the architectural development of different Western civilizations. As a direct result of greater historical awareness, during the 18th century there was a renewed interest in the architectural expression of classical antiquity, most clearly articulated in the emergence of Neoclassicism.

Such rekindled interest in classical precedents also served to expose in architecture the opposition between two diverging views already framing the period's larger intellectual discussion. The opposition between—in essence—progress and authority became known as the *Querelle des Anciens et des Modernes* (the Quarrel of the Ancients and the Moderns) which, while being initiated within literary circles, soon reached architecture. Generally, the Ancients argued that Antiquity had produced the most perfect example of any sort of works, and the contemporary artist (or architect) could only hope or ambition to imitate the great Ancient examples. Conversely, the Moderns claimed that ancient knowledge—despite all its extent—could never be a measure to their own enlightened time, and that modern scholarship not only allowed the modern man to surpass the ancients but also allowed for the creation of new disciplines and genres that were more appropriate to their enlightened condition.

The transposition of the discussion to architectural discourse was focused on the interpretation of the Classical Orders in architecture. The two opposing positions were primarily taken up by Nicolas-François Blondel (c. 1618-1686) for the Ancients and Claude Perrault (1613-1688) for the Moderns, in their respective books, *Cours de l'Architecture Enseigné dans l'Académie Royale d'Architecture* (1683) and *Ordonnance des 5 Espèces de Colonnes* (1683).<sup>4</sup> While Blondel (and the Ancients) claimed that classical orders were composed of absolute elements and proportions, Perrault (and the Moderns) argued that these orders and corresponding systems of proportions were, in fact, relative or probable and were never always absolutely the same. While seemingly a minor point, it was quite significant for either accepting progress or the authority of ancient structures. The questioning of the absolute character of the dimensions and proportions of classical orders also implied a questioning of an absolute truth (that had been either handed down by a dogmatic church or

monarch, as well as an unequivocal reading of ancient knowledge), and displaced it with the principle of the relative correct. Ultimately, within the context of scientific observation, also the very essence of architecture was being questioned, resulting in a variety of architectural ideas and experiments often expressing competing visions and theories.

If the Enlightenment vision for a new society was directly expressed in architecture as Neoclassicism, it was complemented in urbanism with the ambition to rationally organize the urban fabric and the (growing) public spaces of a more egalitarian society. Ultimately, it became widely believed that only the construction of large public buildings and spaces could foster a renewal of civic public life, effectively instrumentalizing architecture and urban planning to fashion an engaged citizenry emancipated by reason and rationality. The concept of the city thus resulted from a combination of elements which, while based on economic and social changes, also incorporated scientific and philosophical principles. It was in the new functions and spaces of the enlightened city that a 'public sphere' first emerged, a sphere often discussed as occupying the territory between civil society and the state apparatus, in which critical discussion of public matters could be pursued.

## PARIS

As the most prominent center of Enlightenment thought, Paris was among the first European cities to translate Enlightenment principles to urban form. The application of rational order to Paris was ever more pressing, since a few voices were raised to express the increasing awareness of the social ideals and moral principles that should direct the design of the city. Most notably, the abbé Marc-Antoine Laugier exposed the degrading and shocking housing conditions of the masses by criticizing the medieval character of the city as a mass of houses crowded together haphazardly without system, planning or design. Deeply influenced by the philosophical questions of the day, Laugier proposed a more rational approach to the city, one that would make it visually ordered and legible, focusing his attention on entries, streets, and buildings. If entries were to become the introduction to the city, clearly separating town from country, streets were to be straight and regular, radiating from central plazas, providing a proper balance between order and variety. Regarding buildings, Laugier advocated—similarly to Blondel—that the city should accommodate a hierarchy of building types in accordance with their function and character, ranging from common residences to buildings associated with the crown. With this hierarchy of buildings, social and aesthetic issues became directly related, while simultaneously fostering a variety within the regularity of the overall urban order.

One way to achieve the necessary distinction between buildings became a crucial principle of Enlightenment urban theory, namely the principle of *dégagement* where a building was detached from its surrounding urban fabric, thus allowing the open space in the city to frame the building and, by doing so, suggesting it to be a work of architectural art to be admired. Almost immediately, *dégagement* created a hierarchy between monumental buildings of the ruling powers and the background urban fabric of private citizens. This urban strategy was particularly expressive in the construction of the Comédie-Française (later Théâtre de l'Odéon) (1767-1782; see Figure below) in which Charles De Wailly (1730-1798) and Marie-Joseph Peyre (1730-1785) treated the theater as a monument to the public. Beyond the unprecedented use of a temple front for a theater façade, de Wailly and Peyre also orchestrated a remarkable setting for the building. Thus, the theater's main façade was fronted by an urban space shaped as a grand amphitheater, defined by a purposefully sober row of apartment buildings and complemented by a series of radiating streets that ensured different vistas to and from the theater's portico.<sup>5</sup>



The application of Enlightenment principles to Paris' urban fabric continued to rely on the construction of discrete public buildings to reorganize small sections of the city, as it became widely understood that a renewal of public civic life should also be fostered by monumental public buildings and inclusive public spaces. Therefore, beyond theaters, other new functions such as museums, public libraries, coffee and smoke houses, department stores and (later) railways stations, were built during the 18th century and served to reorganize the city in a piecemeal fashion. By the second half of the century, there was tremendous building activity in Paris, with about 10,000 new houses being built—or a third of Paris—with most public efforts being concentrated on the Places Royales and the public gardens of the Tuileries, the Luxembourg, and the Palais-Royal.



In its quest for the rationalization of knowledge, Enlightenment ideals also stimulated a greater interest in understanding the past through rigorous scientific enquiry, with the first archeological discoveries at Pompeii, Herculaneum, and Paestum stirring great admiration across Europe. As such, during the late 17th and 18th century, the custom of completing a 'Grand Tour' of ancient classical sites to admire their art and architecture – as well as the Renaissance work inspired by them – became well-established within European polite society.

From all those who found their way into Italy, Greece, and beyond, architects were among the most enthusiastic about re-

discovering the lessons of classical antiquity. In their travels, architects not only experienced firsthand the monuments of classical antiquity, but also documented and codified the architectural ideas of these structures into drawings, models, and casts. Given that the measurement and drawing of classical monuments was believed to be a fundamental component (and an important rite of passage) in the training of the architect, comprehensive sets of architectural references were accumulated, quickly becoming indispensable tools for the dissemination of information regarding (classical) architectural history, as well as the object of serious debate.

It didn't take long for fascination with classical architectural expression to be translated into new designs, particularly in France, where the École des Beaux Arts became equated with the teaching of Neoclassicism in architecture. Neoclassical architecture simply co-opted the great catalog of classical forms (documented in the measured drawings of ancient buildings) and organized them in new designs dictated by objective reason and rationality, and which could also be representative of new building typologies. Beyond the use of columns and pediments, these designs often adopted similar organizing forces, such as axial symmetry, reasoned proportions, and a sober expression. However, the movement was

anything but a revival, since it can best be understood as a continued discussion of the very bases of architectural form and meaning, with Neoclassical designs often displaying an implicit progressive attitude, as their proper classical exterior was often complemented by new forms of interior organization and a new instrumentalization of material – particularly iron. The Panthéon des Grands (1757-1790) by Jacques-Germain Soufflot, the École de Chirurgie (1769-1774) by Jacques Gondoin, the Bank of England (begun 1788) by John Soane, and the Altesmuseum (1823-1828) by Karl Friedrich Schinkel, are among the most notable examples of Neoclassical architecture.

While the various developments throughout the city remained discrete, there was a clear need to consider Paris' overall structure. That became most visible when in 1767 Pierre Patte (1723-1814) produced a composite plan of the different ideas and schemes proposed at the time for Paris (particularly the projects for Places Royales). This plan revealed the lack of coordination between the different schemes and thus effectively demonstrated how an overall coherent vision for the entire city was necessary.

Understanding the proposals' shortcomings, Patte began advocating for wider urban reform toward improving the city's health, social order, and security. Specifically, Patte compared the urban design operations which were carried out with much needed surgery on the city, but one which should be complemented by a comprehensive and systematic treatment of the city's underlying ailments. Given its bad air and lack of fresh water, Patte diagnosed the state of Paris as pathological, proposing the construction of more fountains to deliver fresh water, the opening of new squares to promote the circulation of air, the removal of cemeteries from over-crowded churchyards within the city, and the separation of hospitals from markets. Patte also proposed a model street (1769), in which the ratio between the width of the street and the height of the building was legislated as to ensure that plentiful air and light reached the buildings, but also where a separation between pedestrians and vehicles could be maintained.

Patte's vision of the city as a crucial element for promoting a healthy citizenry eventually resulted in a 1783 royal decree establishing a minimum proportion between the width of streets and the height of houses. Such building regulation was rather innovative, as it only became more commonly adopted by other cities in the following century. By enabling the dimensions of streets and buildings alignments to be legislated by royal authority and devise standards for new construction, Patte attempted to codify the Enlightenment ambition of a progressive renovation of the city.

At the end of the century, as the Revolution confiscated large properties (from clergy and emigrants), there was a prime opportunity to finally implement a comprehensive redevelopment plan for Paris. Thus, in 1793 a Commission of Artists was established to devise and implement a general beautification plan for the city. Although most of the ideas presented in the resulting *Plan des Artistes* were discarded, the plan presented an interesting combination of the main trends that had shaped French urbanism during the preceding centuries and that were to dominate it in the following century. Most notably, the regular orthogonal street system, the diagonal and radial streets converging on circular or semicircular squares, the symmetrical rigidity, and the short and long vistas, which remained significant influences in subsequent plans, including Baron Haussmann's famous 19th century plan for reconstruction.

While no comprehensive Enlightenment plan was applied to Paris, the basic underlying enlightened principles and their translation to urban form inevitably shaped urban and architectural thought. The difficulty of implementing a comprehensive enlightened plan would only be overcome in other European cities in which there was space to build, that is, in which a certain *tabula rasa* condition could be found.

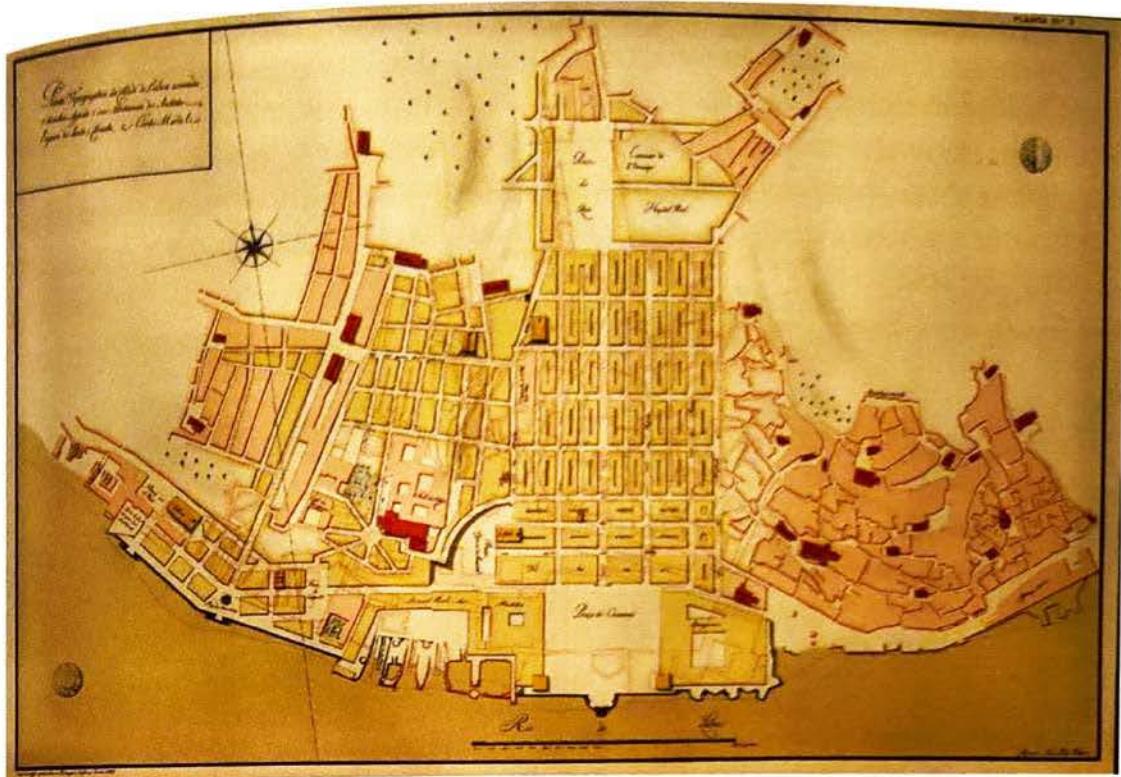
## LISBON

In the mid-18th century, a *tabula rasa* condition was violently created in Lisbon. On All Saints' Day 1755, the city was hit by a triple natural catastrophe: a devastating earthquake, a great fire, and a sweeping tidal wave. The disaster would have a lasting impact on European science, religion and philosophy, ultimately affecting the entire conception of how humans should think and act in a world where such catastrophes occurred. While the very occurrence of the cataclysm enabled many Enlightenment thinkers to question the presence of God, the city's reconstruction efforts provided a template for the implementation of Enlightenment principles, particularly the improvement of the citizenry's lives through the rationalization of urban planning.

Once the dust had settled, it became clear that the entire city center had been turned to rubble, and a new reconstruction plan had to be devised. Under the despotic leadership of Portugal's prime minister, Sebastião José de Carvalho e Melo (1699–1782, known as the Marquis of Pombal), a new city would arise accompanied by several structural reforms to regulate and strengthen the country's commercial activity in a concerted effort to rationalize and reform one of Europe's most traditional monarchies.

Pombal's ideas regarding Lisbon's urban and architectural reform had been maturing for a long time, since the experience he had developed during his diplomatic stays in London and Vienna had significantly shaped his views on the matter, particularly concerning a pragmatic and rational approach to urban development. The new Pombaline plan (see Figure on the right) was designed by military engineers Manuel da Maia (1677–1768) and Eugénio dos Santos (1711–1760) and was approved in 1758. In it, the city's previously organic and overly densified urban fabric was replaced by a regularized grid-system of orthogonal streets. Beyond the city's central valley (the low town, or Baixa), the rationalization of Lisbon's urban fabric also extended towards one of the neighboring hills in a fashion slightly adapted to the topography. Another significant quality of the plan was how it created variety in a balanced unity by accommodating two main orientations, namely perpendicular to the river in the northern section of the plan and parallel to the river in its southern section, thus breaking the design's monotony and highlighting instead the shape of the two main squares.

At the center of the new plan, a grand new urban square was created. Facing the Tagus River in a C-shaped design, the square was defined by its surrounding buildings, where a unified composition was further enhanced by the arcades running along the lower floor. While two large towers marked the two endings of the built perimeter, the center of the composition—which connected to the other main square of the plan along a main, structuring axis—was expressed by a triumphal arch. As most visitors arrived in the Portuguese capital by boat, the grand square was to be a magnificent entrance to the city while also setting a new stage for public life. Named the Praça do Comércio (Square of Commerce, completed 1775), the new square not only took pride of place in the plan, but also occupied the place of the former Royal Palace destroyed in the earthquake. In its stead, the buildings along the new square housed a centralization of administrative offices, particularly those necessary to command Portugal's maritime empire (such as custom houses).<sup>6</sup> It was a significant symbolic statement that the power of the state was no longer expressed by the crown, but instead by reformed and rationalized administrative offices, particularly those dedicated to commercial activity.



The connection between Lisbon's redevelopment plan and Pombal's wider economic reforms, as well as the organization of commercial activities was made even clearer in the grid-plan, as each street was given a specific commercial function, directly reflected in their name. Most notably, the plan incorporated streets like the *Rua do Ouro* (Goldsmith's Street), *Rua da Prata* (Silversmiths' Street), and *Rua dos Sapateiros* (Cobbler's Street), each organizing a cluster of these different professions or guilds. The rationalization of Portugal's governance was equally, if not even more, present in the very basis of the plan, since it required a radical redistribution of land in order to accommodate the new urban pattern.<sup>7</sup> Legislation also served to further the application of Enlightenment urban principles, as both hygienic measures and the formal unity of the Pombaline Baixa were carefully defined in legislated house façades, pavements, and sewage systems.

The Pombaline plan was also the implementation of a theoretical understanding of the city, namely one that reflected the pragmatic approach espoused by military engineers. Much like sustained in arguably the most comprehensive Portuguese work known today on town planning in the 18th century, the urban treaty *Tratado de Ruacão* (1760), in the Pombaline Baixa urban space was always arranged by the regular disposition of the streets representing its structuring spatial element, but the urban grid also extended from a central square, emphasizing the square's symbolic and functional character. The translation of empirical knowledge to the plan was further extended with the implementation of several building technology innovations

primarily intended to minimize the impact of any future natural disasters. Beyond the imposition of fireproof material for all reconstructed buildings (complemented by firewalls between buildings that extended above the wooden structure), the Pombaline plan was among the first examples of earthquake-resistant construction. Specifically, all new buildings included a structural wooden-lattice cage (dubbed the Pombaline cage) intent on distributing forces during earthquakes, thus preventing the buildings' collapse.

As the Pombaline plan brought the entire city under control through geometry and rational planning, while also legislating the city's reconstruction regarding materials, construction techniques and buildings' height limits to ensure air and light reached the streets, many Enlightenment thinkers identified in Lisbon the emergence of an enlightened public administration. With the implementation of Portugal's rational reforms and their direct translation to the urban environment, Lisbon became a symbol of the triumph of reason over the fierce forces of nature.

## EDINBURGH

Influenced by the Enlightenment's intellectual milieu, other European cities were increasingly considering how rational urban planning could serve as a catalyst to a newly emancipated society. In Edinburgh, as the ruinous and overcrowded medieval center demanded an expansion of the old town, the application of Enlightenment principles presented a prime opportunity to respond to the growing aspiration for providing Edinburgh with an architectural and urban dignity that could enhance both Scotland's cultural identity as well as its economic prosperity. With its urban model for order and public well-being, Edinburgh's new town not only attempted to forge a new alliance between enlightened ruling power and its citizenry, but also intended to forge a new relationship between urban developments and nature, one in which nature was not only close by, but was also purposefully introduced into the urban fabric.

In 1752, the appalling conditions of Edinburgh's old town became more visible with widespread news of collapsing dwellings, thus providing the much-needed excuse for a forceful promotion of an Enlightenment idea for the city. The pamphlet *Proposals for Carrying on Certain Public Works in the City of Edinburgh* published that same year became the opening salvo in a sustained campaign to improve the city's condition. In it, the urban conditions of Edinburgh were severely criticized, identifying as nuisances the city's streets due to their steepness, narrowness and dirtiness, as well as its houses, considered to be more crowded than in any other town in Europe, and which were built to a height that was almost incredible, since the lack of new urban expansions had forced a vertical densification of the inner town. Such grave

indictment of the city served only to claim the need for a great want of free air, light, cleanliness, and every other comfortable accommodation and articulate several detailed proposals for the city's improvement, including the city's northern extension by building a new bridge and turning the North Loch into a canal, with walks and terraces on each side. In general, most (if not all) of the measures advanced by the Proposals were eventually carried out in Edinburgh up until the end of the 18th century.



In 1766, the city council launched a competition by inviting architects and planners to submit plans for a new town, including streets of proper width along with service lanes, as well as a reservoir and any other public buildings which might be considered necessary. From the six plans submitted, the council selected and adopted James Craig's plan. Craig's plan for Edinburgh's New Town was remarkably simple: three long east-west streets along the ridge, complemented by seven shorter perpendicular cross-streets, with the central long street connecting two squares, each at the end of the ridge, thus establishing an orthogonal grid structure. Eight large blocks of buildings were created by this orthogonal system, while four smaller blocks defined the remaining sides of the two squares. All these blocks were divided into two parts by a service road providing access to mews and stables.

Despite the regularity of the street plan, there was, at least initially, no planned unity in the design of the buildings' façades beyond the continuity of building lines (particularly in height), since it was feared that too many restrictions could alienate possible tenants. Later, however, the council enacted stricter legislation, regulating not just the width of pavements or the introduction of a common sewage system and the stables in the service street, but also the maximum pitch of the roofs and the impossibility of building storm windows—or any other types of windows for that matter—on the roof besides skylights.

Craig's plan served as a template for further expansion of the city, but with some considerable adaptations. Specifically, the expansion of Edinburgh further North—aptly dubbed Northern New Town—adapted Craig's basic linear scheme by combining its organized formality with an interplay between urban fabric and surrounding landscape. This was primarily achieved through the combination of the regular orthogonal streets of the plan serving to connect a series of clear contrasting geometrical elements, most notably, a series of circles, semi-circles, and ellipses. These were used to create the New Town's larger public spaces in which the natural landscape was invited into the urban grid.

## INSTRUMENTS FOR AND OF THE ENLIGHTENMENT

Enlightenment principles were translated in different forms to the urban fabric of cities across Europe. If in the piecemeal application of Paris the focus was squarely on individual and discrete projects and how these could almost independently create the spaces and forms for a newly emancipated society, in comprehensive applications such as Lisbon and Edinburgh, the focus seemed to lie on the unity and uniformity across the entire plan and corresponding architectural expression. Despite their different expression, the architectural and urban articulation of Enlightenment thought was primary characterized by interlocking ambitions that remained variations of the same theme across different implementations. Specifically, there was a fundamentally new understanding of the relationship between architecture and the historical past which was complemented by a growing attempt to uncover the essence of architecture through scientific enquiry, while enhancing urban planning through systematic rationalization.

With Enlightenment principles setting the intellectual milieu of the period, urban planning gradually evolved to a more multifaceted subject based on the application of rational precepts to the improvement of urban conditions. Its main ambition thus became to develop an urban environment where a truly modern society could thrive, an urban environment that was both more agreeable and more functional. Such

grandiose ambitions were mostly reflected in a common morphology of organized formality as well as a reintegration of the orthogonal grid plan. Despite the numerous experiments on the orthogonal grid plan, these were but attempts to expand upon its basic regularity. The combination of variety and unity became an underlying intention of 18th century enlightenment architects and planners.

The same set of concerns were present in architectural production. Also in architecture the unity of any design was balanced with a varying degree of diversity in order to stave off monotony. This too was momentous, as the adoption of a Neoclassical approach to architecture ensured not only the revival of classical forms, but also their adaptation to the building programs of a new modern society, inherently fostering the emergence of a wide range of architectural solutions and experiments of both symbolic and formal qualities.

Both urban models and architectural forms merely expressed the widespread conviction that monumental public buildings and urban spaces could be catalysts for the renewal of civic engagement. This basic understanding not only ensured that architecture and urban planning were crucial instruments in the advancement of the Enlightenment project, but also became one of the most significant legacies of Enlightenment thought with architecture. But beyond setting the stage for an enlightened civic life, architecture and urbanism also poignantly embodied, more than anything else, the period's ambition to combine an understanding of progress and a broad agreement on an immutable truth that remained one of the fundamental ambitions of the period's varied theories and philosophies of human and natural history.

# ENLIGHTENMENT LONDON

Much like Paris, during the 18th century London also experienced a remarkable population boom and became another crucial center of Enlightenment thought. During this period, London replaced Amsterdam as the most important center for trade and finance, while growing into the largest city in Europe by the late 18th century to become the first Western city with a population of one million. The British capital also expressed better than any other city – even Paris – the effectiveness of an Enlightenment city particularly with its purposeful operative connection between urbanization, economic development and social improvement. Furthermore, London was perceived in Europe as the capital city of Parliamentarianism, economic private initiative, and cultural affirmation of new social values, all of which demanded great admiration by most Enlightenment thinkers and were expressed in the city's renewed urban form and architecture.

London's urban form was also significantly different from that of any other capital in Europe. Rather than being organized on a municipal plan or being developed around monumental schemes of the ruling power, in the 18th century, London was a mosaic of small private enterprises. The first great middle-class city consisted of a repetition of urban form in an unprecedented scale that produced a new and disconcerting urban environment with a vast sprawl spread in all directions that gradually faded into the countryside, blurring any definite boundary. The basic architectural element extensively developed and reproduced by speculative building was a residential unit based on vernacular and new classical formulas that was both sober and functional: the London terrace house.

## TERRACED-HOUSING ESTATES

As a response to London's growing population, the city's expansion beyond the City of London's boundaries was primarily residential and driven by private initiative, with old landed estates being developed with rows of terraced houses and green squares. For the first time not only were multiple housing units being built simultaneously in a unified composition, housing was also being developed to generate a profit.

Beyond the rows of terraced domestic units, the defining quality of these housing estates was their formal connection to green spaces, specifically the integration of large central communal gardens to be (privately) enjoyed by the estate inhabitants.

as the focal points of their urban layout. The careful introduction of greenery into terraced estates was commonly presented as geometric arrangements (mostly of squares, circles and semicircles) that emphasized the contrast between nature's unruly character and the ordering facilitated by the city's construction, effectively confining and organizing nature within the framework of the (new) city.

Grosvenor Estate and Bedford Square are among the most notable (and early) examples of London terraced estates, setting a clear example for the urban morphology and architectural typology for decades. Started in 1720, the Grosvenor Estate was developed over the following sixty years as an exercise in disciplined and pragmatic urban planning – with a regular grid of broad straight streets and a large square at its center – which made no concession at all to the site's irregular boundaries. Laid out by the surveyor of the estate, Thomas Barlow, in a functional and socially conscious manner, the estate was of an enormously ambitious scale, with just the square at its center, Grosvenor Square. Measuring approximately 37,000 m<sup>2</sup>, it became the largest square in London at the time.

Although during the 1720s and 1730s it was not quite possible for a landlord to impose uniform, regular façades, a few attempts were made in Grosvenor Square to combine individual housing façades into disciplined architectural compositions. These, however, remained spread far and wide, with the aesthetic sensibilities of the time for high-class domestic buildings still favoring individual expression over formal consistency. While buildings along the surrounding streets were much more uniform and disciplined, this was mostly due to the interest of economy of means rather than aesthetic concerns. Ultimately, while ambitious in scale, the Grosvenor estate was aesthetically unadventurous, particularly in its buildings.

Developed a few decades later in 1776, the terrace houses along Bedford Square on the Bedford Estates were significantly more daring, presenting an early example of an entire square designed as a unified composition (see Figure). Attributed to Thomas Leverton (c. 1743-1824), Bedford Square was designed and built with strict control over the design of its façades, particularly in terms of materials, dimensions and surfacing. With a clear classical inspiration in its symmetrical and balanced composition,



the meticulous design for this composition of terraced dwellings presented the growing appreciation for uniformity, consistency, symmetry, and proportions—as well as for dignified yet restrained ornamentation—among English architectural tastes. Facing the garden at the center of the square (which remains private to this day), a white stucco-pedimented façade marks the center of the grand unified composition, breaking the uniformity of the continuous flat brick façades. Along the individual dwellings, their uniform flat façades, simplified tall, regular windows and recessed doorways not only established a clear rhythm along the square but also became representative of Bedford Square's particular expression (recognizable by the polychromatic brickwork framing the doorways) of a broader architectural style.

In due course, the qualities of uniformity and the subordination of individual buildings to a unified urban composition were no longer confined to the large estates. Even as the rigid requirements of successive London building acts severely limited the possible variations on the standard terrace house, the Georgian style application of a simplified vocabulary of classical architecture to more modest housing estates came, eventually, to replace English vernacular architecture for most of new middle-class housing developments and public buildings. Thus, by the 19th century, the implementation of the terrace-house typology had expanded beyond London and was used to accommodate a broad range of social classes.<sup>8</sup> With this expansion and inevitable variation, the terrace-house typology became a fundamental component of English architecture and urban planning, particularly as it was a widely adopted model for developing high-density working-class housing in following decades.

## THE GEORGIAN STYLE

Although varying in size and aesthetic ambition, these privately developed (and owned) housing estates consistently adopted a common architectural expression. This was particularly perceived not just in their common use of bricks, symmetrical façades and plans of double depth, but also in their radical distillation of ornamental elements down to a few key essentials with an implied, rather than applied, architectural order. The use of these architectural qualities combined with a similarly classically-inspired interior design and decorative arts became so widespread during this period that it soon became known as the Georgian Style. Deriving its name from the first rulers from the house of Hanover, namely George I, George II, George III and George IV, who ruled England between 1714 and 1830, Georgian architecture emerged as England's first, truly, national style.

While clearly sharing some affinities with European Neoclassical architecture, Georgian architecture was, nevertheless, unique to England and directly represented the English social and political condition. Specifically, while similarly favoring symmetrical, proportional and balanced architectural and urban compositions with a clear horizontal emphasis emulating classical repose, Georgian architecture was equally defined by an inexpressive plainness, presented in both flat volume articulation and a simplified detailing of doors and windows. Most notably, while European Neoclassical architecture exulted in monumentality, English Georgian architecture favored a dignified simplicity of elevated aesthetic delight that was also both functional and serviceable. Ultimately, with the harmonious urban fabric produced by the private market with London's Georgian terraced estates, the pattern of English urban planning was established for over a century.

## ENGLISH NEO-PALLADIANISM

The adaptation of classical architectural qualities and models in the Georgian style reflected not merely a shifting artistic appreciation, but also England's new political condition. With the start of the Hanoverian rule and the rise to prominence of the Whig political party, along with a policy of aggressive mercantile capitalism, also a reform in architectural taste was forcefully pursued.

From 1714, when Richard Boyle (1694-1753, also commonly known as Lord Burlington) was appointed to the Office of Works, English architecture entered a forty-year period during which a small group of architects and wealthy amateurs exerted considerable influence in determining what was considered appropriate. This period in English architecture has been aptly named the Rule of Taste. Sometimes endorsing (other times imposing) a set of clear ideas as to what was to be understood as good architecture, as well as standards based on the perceived excellence of certain architects and works, this group of architects and patrons favored the adaptation of a classical tradition in accordance with the ideas of the Italian Renaissance architect Andrea Palladio (1508-1580). If in the development of terraced estates in London this was expressed as a simplified, yet dignified, Georgian style, in the design of free-standing country houses, this was translated into slightly more elaborate 'Neo-Palladian' designs.

Beyond the renewed interest in classical antiquity, attention to Palladio's work was greatly sustained by the first translation to English of Palladio's own *I Quattro Libri dell'Architettura*, as well as the 1715 publication of *Vitruvius Britannicus* by the Scottish architect Colen Campbell (1676-1729). Effectively, the dissemination of simple plans and plates through these volumes was central for the growing influence

of Palladian ideas. By providing relatively simple, yet prestigious models to imitate, Neo-Palladian architecture could be easily mastered and, thus, copied. In contrast to Palladio's treatise, where an entire body of architectural discourse was theorized and applied, Campbell's publication was more akin to an illustrated catalogue of English country houses by Inigo Jones (1573-1652)—who had earlier introduced Palladio's work to England—as well as other prominent architects of the time. Throughout its three volumes, Campbell argued for the superior quality of both Palladio's and Jones' work, particularly since it represented a remarkable achievement in the appropriate expression of the natural laws of proportion, symmetry, and balances. As façades, plans, and volumes were unified into a formal whole, these designs achieved a fine balance between palatial grandeur and simple modesty, one that was particularly aligned with the Whig ideology of the time.

Along with Campbell, no one was as influential in fostering a widespread appreciation for Palladian architecture as the architecture dilettante and Whig politician Lord Burlington. Beyond forcefully advocating for Neo-Palladianism in the Office of Works, Burlington supported and designed several buildings in the style. Chiswick House (1726-1729; see Figure below), in the outskirts of London, was his most important work, representing his own interpretation of Palladio's seminal Villa Rotonda combined with a variety of other sources.



Slightly smaller than Palladio's original, Chiswick House's square plan is occupied by a series of connected rooms organized around a central octagon, creating a type of organization established by a contrasting sequence which had not been previously employed in England but which was to become important and enshrined as a fundamental element of the English classical tradition. The house's interior already revealed the integration of a wealth of references to this building, from the long room with apsidal ends surrounded by a circular and an octagonal rooms inspired in the sequence of spaces in Palazzo Thiene in Vicenza to the central drum and dome, which have been traced back to Palladio's own student Vicenzo Scamozzi's (1548-1616) design for Rocca Pisana (1576), to certain elements of the detailing that emulate Inigo Jones drawn studies and works. Effectively, the entire house can be perceived as an architectural laboratory, where different sources are harmoniously combined in an attempt to perfect the adaption of classical architectural qualities to the English context.

As Neo-Palladianism grew in influence and was introduced in a variety of domestic designs, it was transformed and even bastardized, with Palladio's ideas often becoming only façade-deep. Specifically, while the external detailing mostly adhered closely (if not always directly) to Palladio's work with rusticated bases, pilastered upper elevations, and pedimented entrances, his attention to the careful and balanced organization of spaces, particularly their direct relation to the proportions of the façade was more often than not lost. Nevertheless, even as the revival of other historic architectural forms became more fashionable (already signaling the architectural eclecticism that would emerge in the late 19th century), a strong sense of symmetry and proportion remained present in English architecture.

## PUBLIC PLANNING AND ARCHITECTURE

As private initiative continued to shape London's expansion, the limits of this approach and its effects to the city became increasingly clear. In 1766, architect and engineer John Gwynn (1713-1786) began campaigning against the loose control over building in the city and its suburbs, particularly lamenting how Sir Christopher Wren's (1632-1723) plan for the reconstruction of London after the Great Fire of 1666 had been sacrificed to appease the selfish interests of private property. Thus, Gwynn not only supported greater control over planning in London with the development of a general plan, but he also advocated for London to follow the example of Paris and utilize monumental public works to improve the living conditions of the citizenry and provide the appropriate dignity to the sprawling metropolis. Gwynn insisted that public works were of the utmost consequence, further arguing that these created not only beautiful and convenient ways to organize the city but were also as necessary to the community as health and clothing to the human body.

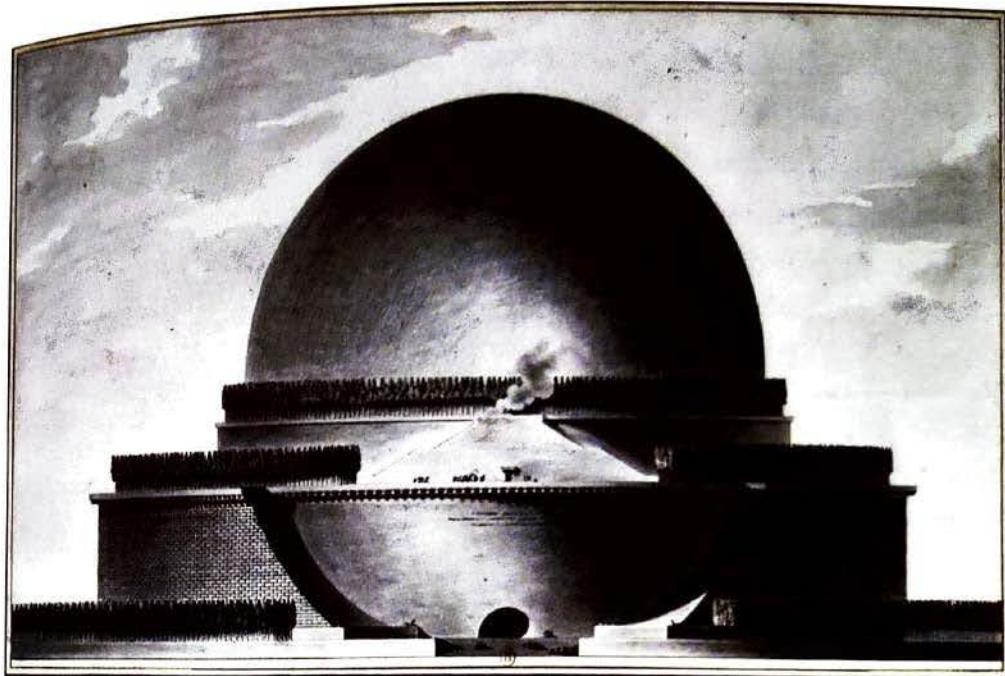
Although there was no comprehensive order that reflected the glory of the British empire and the reign of reason, a certain vision for the city was already legible in the fragments of planning within the estates developed around London's private squares. Effectively, the main role of private initiative and the lack of a global plan did not exclude the existence of a program for the city and its architecture; the ideas of regularity and proportion in order to create a better urban environment were already present. However, Gwynn was first to express the basic logical conclusion of an enlightened approach to the city, namely that public convenience and national prestige could only be achieved by urban regularity and architectural quality, which demanded a unified and comprehensive urban planning. Thus, Gwynn was early to recognize that the speculative growth of modern cities through private initiative was greatly eroding the unified compositions, the visual order, and the hierarchy that was so valued by Enlightenment theorists.

Understanding the city as a fundamental social unit, Gwynn continued to propose schemes for the comprehensive improvement of the city. Most of these were intent on curbing London's burgeoning sprawl by legislation and organizing the urban fabric of the city with regularly planned wide streets and ample squares complemented by significant public buildings. While most of Gwynn's proposals remained unheeded, there was a changing mood regarding the effect and need for significant public buildings in the city, specifically regarding the rationalization of administrative processes and the expression of the glory of the empire. The construction of the Somerset House (begun 1776), a new grand building to centralize all the different administrative offices of the empire along the bank of the Thames, was the direct result—and most clear expression—of this emerging school of public architecture.

That these administrative offices should be grouped conspicuously and efficiently, rather than dispersed throughout the city, represented itself a turning point in how the public role of government and architecture was understood in England. Since beyond representing the modernization of public governance the Somerset House plan was also to be an architectural object of national splendor, the design was to be developed not only by paying close attention to the functional requirements for conducting the business of Public Offices, but also with an eye to the embellishment of the city. Therefore, the Somerset House was to become a monument to the taste and elegance of His Majesty's Reign.

Sir William Chambers (1723-1796), Surveyor-General of Works, was commissioned the design. Envisioning a veritable city quarter, a modern-day campus, Chambers proposed a variety of complex schemes, eventually settling on a rigorous C-shaped plan materialized in a unified composition around a central courtyard. Access to the complex was granted through a free-standing ceremonial entrance building along the

## ARCHITECTURE PARLANTE (CLAUDE-NICOLAS LEDOUX AND ÉTIENNE-LOUIS BOULLÉE)



While proponents of the Enlightenment were exploring reason and intellect, some architects were extending the basic language of primary geometric forms in architecture (namely the cube, sphere, and pyramid) to its breaking point with imaginative schemes. The boldness and massing of their proposals, however, was not exhausted in their primary volumes, since often they also expressed, quite literally, the function of the building, following the fashionable theoretical concept of architectural character. Given its immediate – and ostentatious – communicative character, critics derided this architectural expression as *Architecture Parlante* (Speaking Architecture).

Claude-Nicolas Ledoux (1736-1806) and Étienne-Louis Boullée (1728-1799) were the most inventive (and notable) architects working in this idiom, constantly developing ever more fantastic proposals. Boullée's Cenotaph to Sir Isaac Newton (1784) was quite paradigmatic, articulating Enlightenment thought and architectural principles not only in its formal expression, but also in its program. Specifically, Boullée made use of the sphere and the cylinder on a gigantic scale to create a monument to the discoverer of the laws of classical mechanics, and whose mathematical ordering of the universe opened up new knowledge to the Age of Reason. Without any real program, the proposed building was purely symbol-

ic, with the purity of the spherical form, as well as the unexpected gradation of light in the interior, representing the life and work of Sir Isaac Newton. Other notable projects of *Architecture Parlante* include Ledoux's ideal city for the Saline de Chaux (1775-1779) in which the entrance took the shape of a Neoclassical ionic portico and a cavernous hall that gave the impression of entering an actual salt mine, the hoop-makers' house took the form of barrels, the river inspector's house directed the river through its center, and the brothel was shaped like an erect phallus. Despite its blatant whimsical quality, the Saline de Chaux also forcefully articulated Enlightenment ideals, particularly expressed in the (final) circular organiza-

tion of the city which organized an egalitarian community of workers around the collection of salt, with the center being occupied by the saltworks and the director's home.

While the Saline de Chaux was partially built, the vast majority of *Architecture Parlante*'s grand utopian proposals remained paper projects and were never built. Nevertheless, the dissemination of Ledoux and Boulée's ideas through expressive drawings and perspectives made their hypothetical and inventive work rather influential in both framing architectural debate, as well as in the practice of their fellow architects.

Strand, the road parallel to the river. Within the complex, the courtyard alluded to the formal conception of London's residential squares with uniform façade treatments. Specifically, Chambers established the unity of the composition by cleverly employing the entire range of classical orders (from a massive Tuscan in the utilitarian sections of the building to a refined Corinthian in the entrance façades), thus also creating a visual hierarchy.

But as required by the commission, the Somerset House also engaged in a specific dialogue with other important monuments along the river, particularly the dome of Saint Paul's Cathedral (1675-1720) and the nearby Mylne's Blackfriar's Bridge (1760-1769). Thus, along the river, the façade rises from a great rusticated arcade to link pavilions which reflected Chambers' French training but whose undersized dome reflected the English difficulty with architectural monumentality. There are, however, other aesthetic principles being instrumentalized here, as the sweeping horizontals of the podium and the cornice in combination with the series of heavily rusticated arches stretching indefinitely seem to materialize the main qualities identified by the philosopher Edmund Burke (1729-1797) as 'sublime', specifically, an endless extent and a feeling of massive weight and scale. However, Chambers also combined that with a manipulation of light and shade reminiscent of Piranesi's observations of Roman construction in provoking awe and to trigger the imagination, effectively

striving to explore new aesthetic sensations in an attempt to orchestrate a set of images for a building that was to elevate the most mundane of government functions to become imposing symbols of the state's splendor and thus instrumentalize the aesthetics of the sublime towards the elevation of citizenship.

While the ambition of classically-inspired architecture originated in the belief that architecture could foster a renewal of civic life, in London those lofty ambitions were combined with the pragmatism of private initiative. With the expansion through terrace-house estates, the emergence of the Georgian style and Neo-Palladianism, as well as the construction of the Somerset House, the application of Enlightenment principles and mercantilist ideology to London found a broader formal expression. However, much like Paris, that was still achieved in a piecemeal manner, but in London, the collective formal and aesthetic consistency was driven as much by aesthetic sensibilities as private initiative and the invisible hand of the market.

# BARCELONA'S PLAN EIXAMPLE

One of the most significant qualities of Enlightenment thought was the ambition to continuously make sense of the world in an objective manner. This ambition was also extended to architecture, since "the possibilities and capacities of architecture were questioned, expanded, and debated as an integral part of those processes of secular human reason, of scientific observation and experimentation, that characterized the Enlightenment in philosophy and in science".<sup>9</sup>

Ildefons Cerdà (1815-1876) was the first to exhaustively study city form and urban processes with an objective and rigorous scientific approach. The scientific study of the city was so crucial for Cerdà that, when he codified his theory of the city with the 1867 publication of the General Theory of Urbanization, he found the need to develop new terminologies that could better describe a completely new approach to the city, an approach based on reason and the scientific method. Thus, Cerdà coined words such as *urbanización* (urbanization), with which he intended to define a new field of activity, a new science of the city for which there was of yet no appropriate term. Ultimately, however, Cerdà realized that while theory consisted of expounding the general principles, only their application could lead to a perfect urbanization.

The application of Cerdà's continuously evolving theories of urbanization came about with a proposal to increase almost ten times the area of Barcelona, connecting the old city and the surrounding towns with a planned extension of orthogonal grid blocks: Barcelona's *Plan Eixample* (1859). In the mid-19th century Spain embarked on a nationwide effort to expand existing cities, but Barcelona seemed to be particularly primed for such development as the city's living conditions were appalling and its walls had greatly constrained its urban growth.

## THE SCIENCE OF URBANIZATION

Trained as a civil engineer, Cerdà approached the city as a problem to be resolved in the most efficient and rational manner. For that, he required as much information as possible, collected through a rigorous analytical method based on classification and systematization. Thus, even before Cerdà prepared any plan, he had already attempted to diagnose Barcelona's ailments by analyzing the living conditions and social structure of the city's old town, including a rigorous description of the population's professions and building's functions. From this study, Cerdà easily

identified the lack of basic services such as schools and hospitals as significant issues, effectively relating the population's general lack of education and high mortality rates to the city's urban form. With this systematic approach, Cerdà became the first to bring together a variety of disciplines to understand the city, calling his attempt to explain everything found or happening within the city as a science.

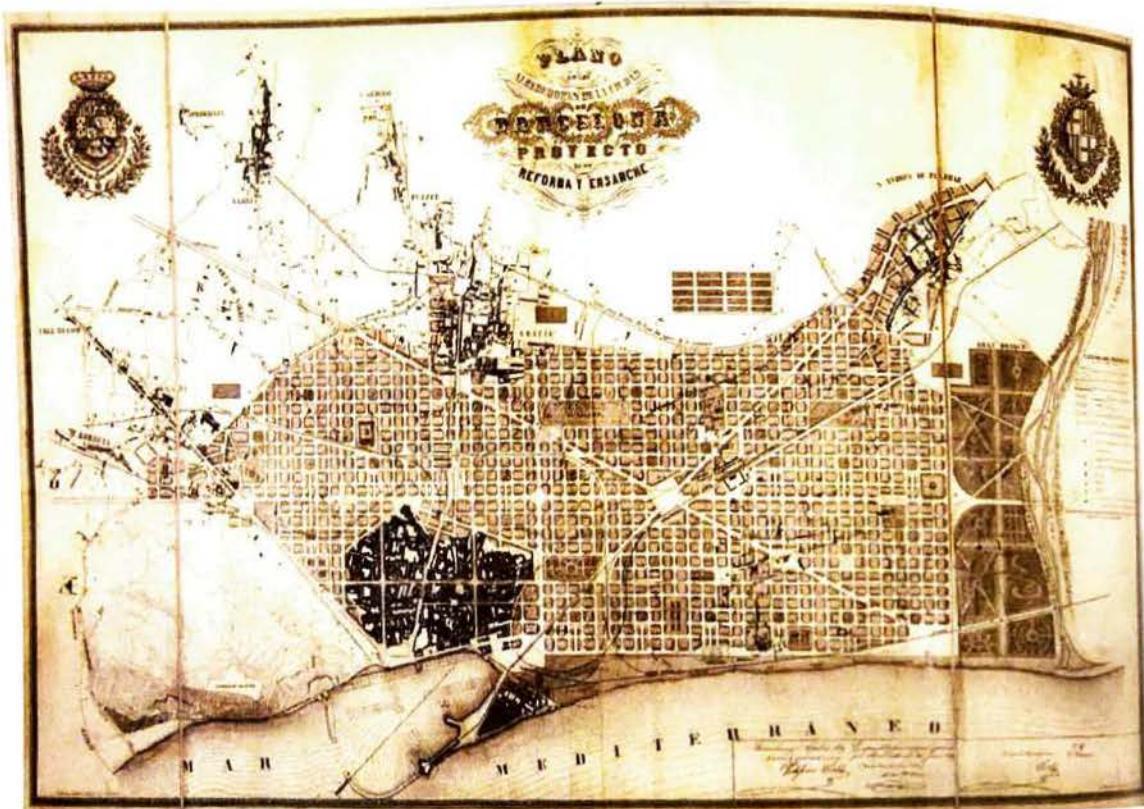
In accordance with Enlightenment principles, Cerdà believed that a city's social order was inevitably embedded in its urban environment, and that altering a city's urban environment would, accordingly, improve its social order. Thus, Cerdà's comprehensive compilation of the statistics of the living conditions of the working class and the diagnosis of urban dynamics were the basis for his proposal for Barcelona's expansion. The strict relation between the scientific basis of the study and the plan was perhaps most clearly revealed in the remarkable formula he designed to determine the distance between city blocks.<sup>10</sup> With this arithmetic formula, Cerdà attempted to subordinate the size of the city blocks not only to the width of the streets, the side of the block, the depth of the building site, or the height of the façade, but also to the number of inhabitants per house and the number of surface square meters per person. Although Cerdà never publicly disclosed the exact origins of the formula (nor the origins of the values of its variables), it still served to further reveal *Plan Eixample*'s 'enlightened' nature.

Ultimately, beyond the improvement of the specific living conditions of the working class, Cerdà was also concerned with establishing the framework for the emergence of a more egalitarian city. In his attempt to devise such a city, his research study and expansion plan were fundamentally guided by two concerns: traffic and hygiene.

## PLAN EIXAMPLE

Given these twin concerns, Cerdà paid particular attention to the street system. The street, he considered, was the quintessence of urbanization, an intricate connecting tissue of a city, not only linking different parts of the city, but also establishing the connection between the different scales of architecture and urbanism. Cerdà's position regarding the street presented many points of coincidence with the ideas of the 'enlightened' Parisian planner Pierre Patte (1723–1814), with the *Plan Eixample* being based on Patte's model street. Beyond the separation of traffic, the introduction of sewage systems, the planting of trees, or the inclusion of streetlamps, the *Plan Eixample*'s streets were equally contingent on the ratio between the width of the

street and the height of the buildings. For both Cerdà and Patte, the city was an organism and the street along which its houses formed an interlocking system to provide light and air, process waste, and move traffic.



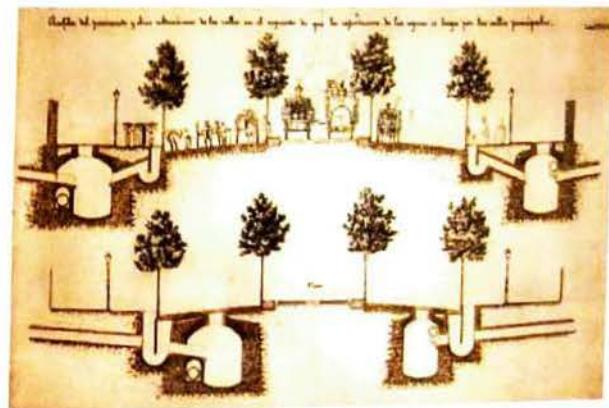
Although the street was regarded as the main element of a city, streets should not be merely understood in their singularity, but, most importantly, as part of a network of roads, whose global form determined not just the design of the city, but also its functioning. Such understanding required the streets to be dealt with as a whole. Unsurprisingly, this too was the subject of a scientific study, with Cerdà considering the qualities and weaknesses of a variety of propositions and layouts, ranging from pure radial, concentric, and grid systems to several compound variations. While abstract geometric forms were the starting point for this study, for Cerdà the application of these layouts to specific locations, as well as their particular geographic and social conditions, were just as important. Only once all these points had been analyzed, the planner could determine the appropriate layout for the urban fabric.

After much analysis, Cerdà determined the optimal layout for Barcelona's extension to be a regular system of parallels that intersected perpendicularly at equal intervals: a square orthogonal grid system (see Figure above). To support his determination,

Cerdà compared the grid system's diverging applications in a variety of existing cities with excruciating detail. Beyond the quantification and objective observations, Cerdà also offered his considerations on these cities, from the monotony produced by the excessive regularity of the streets and symmetry of Turin to the perfection achieved by the grid applied in Philadelphia which, in his view, resulted in the most beautiful city not only in the United States of America, but also of the entire world.

Such assessment of the actual implications of the grid model (and its variations) in real cities, allowed Cerdà to also develop his own variation: the orthogonal layout of chamfered square grids. This too, was the subject of intense study by the Catalan planner, who after analyzing a variety of possibilities for the crossings, deemed the chamfered corners to be the most optimal. Specifically, this configuration facilitated maneuvers at intersections with the chamfered layout not only allowing for an appropriate turning angle for coaches, but also creating the space for smaller public spaces at each corner (see Figure below). Since an orthogonal square grid with chamfered corners was best at both distributing traffic uniformly and reducing friction at crossroads, Cerdà concluded that it was also the most advantageous layout for a modern city.

Beyond all the objective reasoning, the selected square grid plan also presented some underlying ideological qualities that clearly reflected Cerdà's socio-political ideas and their Enlightenment influences. First and foremost, the square grid presented an egalitarian character unmatched by any other layout, with Cerdà even claiming that the square grid represented justice itself and equality of rights since it prevented the emergence of artificial inequalities from the urban plan, be they economic, social, or traffic-related. Specifically, the basic square grid layout denied any type of hierarchy, even among the two perpendicular directions that composed it, favoring instead uniformity and regularity. Because all city blocks have the same octagonal shape, a regular distribution was created that avoided privileged building zones and thus avoided economic discrepancies between the different lots. Such uniformity also implied that the (former) city center would no longer be as important, since in a city completely distributed along its entire grid, all locations benefit from the same basic



spatial structure. Secondly, the square grid also allowed the possibility of continuous, unlimited expansion. This was a crucial matter, since it not only implied that the city was a mere node within a spatial system that could cover the entire region, but also that there were no real limitations to the actual extension of the city. Therefore, the square grid was complemented by diagonal transcendental ways that were to connect the city to the surrounding region and the outside world. The Gran Via, Avinguda Diagonal and Avinguda Meridiana converged at a large open square within the city, establishing the Barcelona node for the worldwide highway system.

The egalitarian nature of the basic square grid was further expressed as it became the backdrop for the planned rational distribution of basic public services to Barcelona's population. The uniformity of the urban layout ensured that schools, hospitals, markets, and other services were rationally placed throughout the *Plan Eixample*'s grid in order to meet the basic needs of the entire population and not only of the privileged class. Furthermore, when all parts of the city were equally well served, not only the centrality of specific areas is undermined, but all areas (and all people) had the potential to succeed. The idea of equality was also present in the size of the blocks (approximately 113 by 113 meters) which was justified as an attempt to increase the population's living standards to match Cerdà's understanding that 6 m of air per person and per hour were needed in order to breathe correctly. From the single dwelling, to the block, to the streets, Cerdà's *Plan Eixample* aimed at a wholly egalitarian city, one that was completely imbued with humanism, that was explicitly and implicitly founded on equality, liberty, and social cohesion.

## FROM IDEA TO REALITY

Cerdà's *Plan Eixample* added approximately 2000 hectares to Barcelona's medieval core, increasing the city's area ten-fold and extending its urban grid all the way to the surrounding villages. Such vast expansion was established through an orthogonal grid of streets that defined approximately 1000 new square urban blocks. The majority of the streets were 20 meters wide, with their width being simply divided among pedestrians (with 5 meter wide sidewalks on each side) and vehicles (with a 10 meter wide road at the center). Wider, 30 meter roads established a supra-network and served to define the boundaries of the grid's districts—composed by areas of 10 by 10 blocks—with the crossing points of these wider streets established the city's major intersections. Only the Avinguda Diagonal, which was superimposed on the regular grid system and was designed to connect the city to a regional level of mobility, was significantly wider than the rest, with its 50 meters width. Originally, this avenue would have crossed the Avinguda Meridiana, another equally wide avenue in the Plaça

de les Glòries Catalanes, which was to become not just Barcelona's own node in the regional mobility system, but also its new city center. Since Avinguda Meridiana was never built, Plaça Catalunya emerged as Barcelona's new center, a newly-built square connecting Barcelona's old town and expansion, and thus in an important position between the two urban realities.

Concerns with sun exposure were also at the root of the specific orientation of the blocks, and consequently, of the plan, with the entire grid rotated 45 degrees along the cardinal points. This way, most of the façades would enjoy direct sunlight at different points of the day, with only one chamfered corner facing northern exposure (and thus only having indirect light). This grid orientation was also particularly suited for the site, since it ran both parallel and perpendicular to the Mediterranean Sea on one side and the surrounding mountains on the other.

The occupation of the block itself was also quite particular and of crucial importance. One of the *Plan Eixample*'s explicit goals was to maximize the qualities of the city and the countryside, following Cerdà first claim in his General Theory of Urbanization: "ruralize the urban and urbanize the rural".<sup>11</sup> As such, Cerdà conceived the blocks as a combination between city and country which, clearly inspired by the Enlightenment Plan for Edinburgh's New Town, were to be only have buildings on two sides, with the interior of the block being occupied by communal and private gardens.<sup>12</sup> The gardens within the grid's blocks were complemented by other green spaces evenly spread out throughout the plan, as each district (again, composed of 10 by 10 blocks) had a city park, two larger parks were located at both ends of the plan and .

Such generous allocation of land for green spaces meant that only 40 percent of the block would be occupied by construction which, when combined with the explicit egalitarian goals of the plan, ensured that there was significant resistance to Cerdà's ideas. The regularity of the *Plan Eixample* was also severely criticized, particularly by local architects, who accused it of introducing a high degree of monotony in the expanded city, which not only showed little imagination, but also established a purely mechanistic vision of the city.

Given the resistance to the plan, Cerdà introduced several compromises for its implementation. However, the plan's implementation would suffer even further unwanted modifications, considerably altering its formal qualities and, inevitably, its social character. Most notably, while the plan's street layout was approved and implemented, Cerdà's economic plan and his building regulation accompanying the plan were ignored. The dismissal of Cerdà's building legislation was particularly significant, since it defined the physical conditions for all the buildings in the plan by stipulating a variety of parameters ranging from the minimum and the maximum

height, width, and depth to the ways of joining with neighboring blocks, as well as the structure of each block by stipulating how much area each block was to occupy, where buildings were to be positioned, as well as their intended use.

While Cerdà had originally stipulated a maximum 20 meters of both height and depth for buildings (which would result in approximately 67,300 m<sup>3</sup> of construction), by the mid-1860s, the depth of the buildings was increased to 24 meters, which decreased the size of the inner gardens but increased the construction volume by almost 30 percent (to 96,600 m<sup>3</sup>). Perhaps even more crucial, the stipulation of only building on two sides of the block was completely disregarded, and all four main sides of several blocks were occupied, further decreasing the plan's open area. The blocks' building height was also increased, with buildings commonly expanding two or three floors from the original 20 meter restriction (although these additional floors were stepped back, to ensure that natural light still reached the street). With all these modifications, the *Plan Eixample*'s blocks have long surpassed Cerdà's original stipulation of 67,300 m<sup>3</sup> of construction per block, currently being close to 295,000 m<sup>3</sup>. Ultimately, the plan that was implemented, and that today organizes Barcelona's urban fabric, is quite distinct from Cerdà's original vision.<sup>13</sup>

While at first glance Cerdà's plan seems but a variation of the orthogonal grid, it included significant elaborations. Specifically, the *Plan E* attempted to future-proof the city not only by paying particular attention to hygienist principles and providing abundant light and air, but also by attempting to accommodate the fast-changing reality of mass transportation. Cerdà's plan was also much more ambitious, as it operated on both a city and regional level, with a great diagonal cross-axis superimposed over the regular orthogonal grid that connected the city to the wider region and provided a backbone for the unlimited expansion of the devised plan. Furthermore, much like other Enlightenment initiatives, Cerdà took equal care with the plan's formal design as well as its legal framework, proposing legislation that would steer the city's development within the ideas that he had devised.

Although the impact of *Plan Eixample*'s was mostly limited to Spain (and even then, it suffered from a conscious self-censorship until a few decades ago due to its political context), Cerdà's understanding of the city as the confluence of a variety of disciplines, as well as his approach of comprehensive research as the basis for urban planning and design, became a standard in modern practice. Perhaps due to his formation as an engineer, Cerdà privileged the resolution of 'functional issues' which not only left aside the formal and symbolic aspects of the new city, but also ensured the underlying rational character of *Plan Eixample*. When considering the rational method process conducted by Cerdà, the establishment of the 'science of urbanization' based on an integrated and interdisciplinary view of urbanism (specifically relying on the five bases

of technical, legal, economic, administrative, and political), the concern with hygienist principles, and the intention of establishing an egalitarian city, it is easy to understand how the *Plan Eixample* features among the most enlightened plans to ever be enacted. Based on intellect and reason, the *Plan Eixample* was the culmination of Cerdà's methodic analysis of cities. Effectively, there is hardly any other urban plan that has consistently engaged so clearly the core ideological principles of the Enlightenment project, as Cerdà's comprehensive, scientific and techno-humanist vision distinguishes him from other urban theorists and demand greater attention.

# POLITICAL REVOLUTIONS AND AN INDUSTRIALIZED SOCIETY

The history of 19th century Europe was defined by significant changes that would forever alter its political, cultural, social, and economic landscape. These were perhaps most clearly expressed in the various revolutions of 1848 and the rise of an industrialized society concentrated on ever-expanding cities. Often, this period is discussed as the 'long' 19th century, the 125 years between the French Revolution in 1789 and the beginning of World War I in 1914, in which much of what we today understand as modern Europe was defined.

The emergence of modernity was signaled by an entirely new and dynamic landscape, one that American philosopher Marshall Berman identified as a landscape of vast new industrial zones with steam engines, automatic factories, and railroads; of crowded cities that grew overnight with dreadful human consequences; of daily newspapers, telegraphs, telephones and other mass media, communicating on an ever wider scale; of increasingly strong national states and multinational aggregations of capital; of mass social movements fighting these modernizations from above with their own modes of modernization from below; as well as of an ever-expanding world market embracing all, capable of the most spectacular growth, of appalling waste and devastation, capable of everything except solidity and stability.<sup>1</sup> Effectively, the landscape, conditions, and the very experience of modernity were made possible by the displacement of rural, agrarian, and handicraft production by an industrial production dominated by machine manufacturing. The impact and magnitude of this shift was such that it has become known as the industrial revolution.

This initial shift (approximately until 1850) has been identified as merely the first of three industrial revolutions and was primarily fostered by the development of steam technology, the use of iron, and the industrial production of textiles in what could best be described as the rise of science-based inventions and innovations. The second industrial revolution, also known as the Technological Revolution, would follow (approximately between 1870 and 1914). Characterized by advancements in production and manufacturing technology, the discovery of electricity as well as the development of the combustion engine and the use of crude oil, during this period, there was a widespread adoption of technological systems such as railroads and telegraphs, which allowed for a much greater movement of goods, people, and ideas. Although a third industrial revolution has been identified in present contemporary times (specifically since 1950) with the development of digital tools and the rise of an information society and service economy, the term industrial era is commonly associated with the first and second phases of industrialization, which radically changed Europe and ushered modernity.

Inevitably, this was a period of transition, where old and new political and social systems often clashed, and an entirely new society emerged. Furthermore, the fast changes brought about by the industrial revolution demanded new frameworks for understanding the world. Such shift in perception was perhaps most clearly expressed in how the speed of the train established an entirely new relation between the traveler and the landscape. Many writers claimed to experience the train as a projectile since their visual perception of the surrounding landscape was diminished by the train's velocity, with Victor Hugo (1802-1885) claiming that in a train, flowers were no longer flowers, but flecks and streaks. This merely indicated that old modes of perception and thought were inevitably challenged by modern conditions and entire new frameworks were needed to fully grasp the transformations at hand.

The emergence of mass media would have an equally profound impact in the social structure and political organization of European society. As the pervasiveness of newspapers and telegraphs became normalized for the dissemination of ideas, the German philosopher Jürgen Habermas (\*1929) recognized the emergence (or the culmination) of what he dubbed the public sphere. For Habermas, the information provided by newspapers and telegraphs was the key element for allowing private individuals to come together to discuss societal issues and conduct critical public debate, serving as a counterbalance to political authority. This consciousness of the 'bourgeois' public, according to Habermas, was a fundamental element in fostering the transformation of feudal and monarchic societies into liberal constitutional systems and modern democracies, particularly in the 19th century.

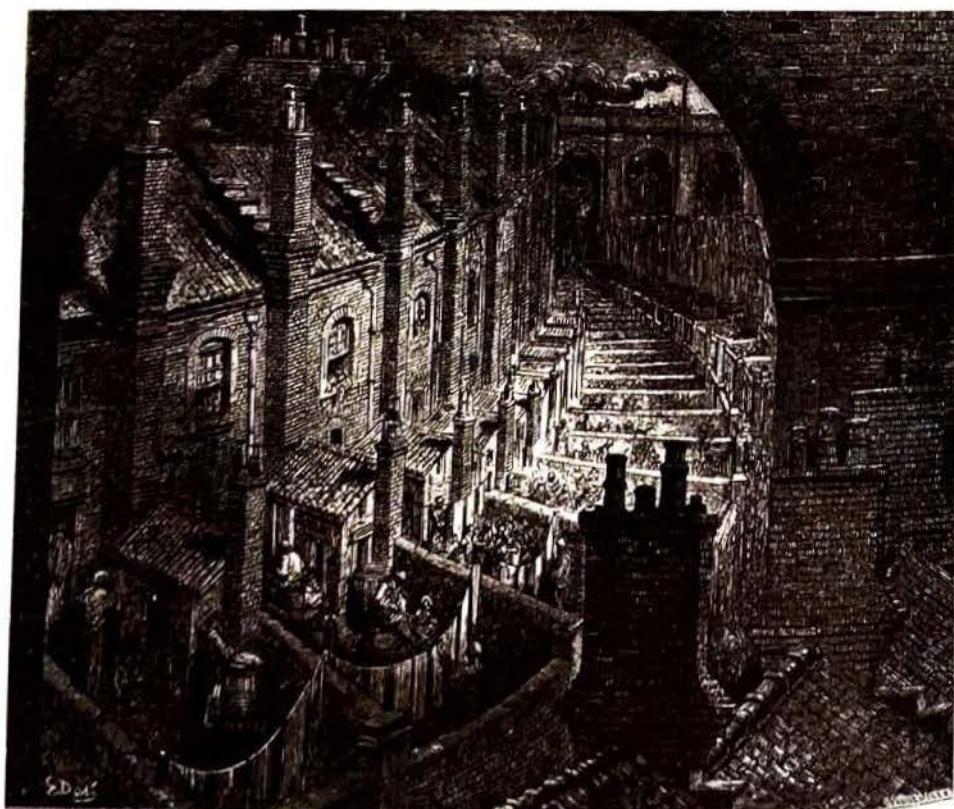
Much of the discussion identified by Habermas was conducted in face-to-face meetings in not only public spaces but also in the new coffee houses and cafes of the 19th century metropolis. Such a public engagement served to establish new social relations within the developing European industrial metropolises which greatly differed from the relations previously established and developed in more agrarian settings. As philosopher and sociologist Georg Simmel (1858-1918) has argued, the entirely new environment of the 19th century metropolis required an adaptation of individuals to the social detachment of the metropolis which, much like the speed of the train, also demanded a new way to understand the world.

For French poet Charles Baudelaire (1821-1867), both the sheer size and the new environment of the modern metropolis fostered the emergence of (the figure) of the *flâneur*, a leisurely stroller that observed and participated in the modern city but remained detached from it. Commonly presented as an ambiguous figure, the *flâneur* represented an urban connoisseur and explorer which wandered and experienced the metropolis with no other purpose than to observe and comment on the industrialized contemporary life. Eventually, the *flâneur* became not just a crucial representation of

the new world created by the industrialized metropolis, but also a symbolic archetype of the new urban and modern experience, which, paradoxically, brings people together in large numbers but also keeps them separate from one another.

## DENSIFICATION AND EXPANSION

If in the 18th century there had been a decrease in urbanization in Europe, in the 19th century urbanization gained a new momentum. As the expansion of cities accelerated in an unprecedented scale, new patterns of urban life and new modes of experience emerged. As a result of industrialization, i.e., of growing trade, of the relatively fast adaptation of industries to modern techniques and organization, of the increase in industrial activities and the start of infrastructural works, the nature of cities began to change. Consequently, there was also a massive growth in the urban population, which gave rise to problems in urban society that required attention from architecture and urban development: the miserable living conditions, unhygienic circumstances that caused diseases and epidemics, frequent cyclical unemployment, the long working hours, bad working conditions, and even alcohol abuse. The image of the industrial city, as it appeared then (see Figure below), was perhaps best captured by Charles Dickens (1812-1870) in his novel *Hard Times*, that is as a city where everything was black, factories and houses, streets and people.



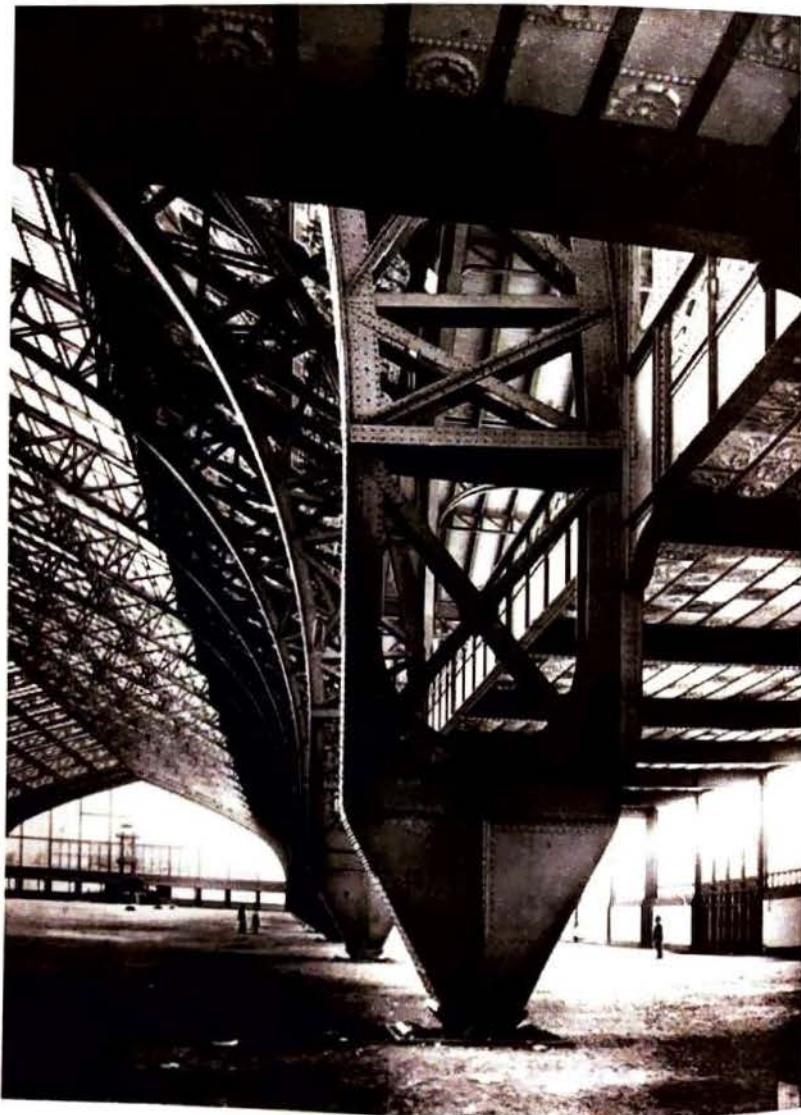
The pressure created by such a rapid urbanization and extreme population growth, would lead to a radical densification of the existing urban fabric, naturally causing a decrease in the quality of living conditions in cities, as backstreets, court yards, and any available plot was filled with new buildings, with families living in every part of those buildings, from cellars to attics. Therefore, in the industrial city, poor districts and backstreets became increasingly overcrowded, with want and poverty visible with every step.

It was precisely this observation that spurred German philosopher Friederich Engels (1820-1895) to conduct in the early 1840s a study of the condition of the working class in England. Admittedly political, Engels' study considered workers' wages and living conditions to conclude that industrial workers were worse off than their pre-industrial peers. In this study written from his 'personal observations' of the living and working conditions of the working class and 'authentic sources' of statistical and documented accounts, Engels not only detailed the abject poverty that afflicted almost half of the English population of unpropertied, destitute, working people, but contextualized those conditions in relation to the market system of the new industrialized society. Crucially, Engels' study provided an understanding that the conditions of the working class were, effectively, universal and what he had observed in England was already being reproduced in France and Germany.

Engels' claim that the condition of the working class was the point of departure of all social movements, would be further developed as he co-authored with fellow German philosopher and political theorist Karl Marx (1818-1883) the influential pamphlet *The Communist Manifesto* (1848). Written and published in London, the manifesto presented a thorough analysis of historical and then-present class struggle of the industrial proletariat, arguing that capitalism and its production created social conflicts that could not be easily resolved within the existing societal framework. Ultimately, the manifesto summarized Marx and Engels' theories concerning society and politics concluding with their view on how the deplorable conditions created by the capitalist society of their time would, inevitably, lead to a forcible overthrow of existing social conditions and political systems culminating with the displacement of capitalism by socialism.

Besides the conditions of the working class, the writing of the communist manifesto was also spurred by the various political revolutions that had begun to erupt around Europe. The first revolution emerged in the Spring of 1848 in Paris, as artisan leaders demanded political reform and universal suffrage as well as the institution of a regime in which workers could have greater control over the means of production. Civil unrest quickly spread to Italy, Austria, Hungary, and Prussia where not only similar grievances were aired, but was also fostered by the rise of nationalist currents

aimed at national unification in, for example, Italy and Germany. Therefore, while uncoordinated, this series of political uprisings (which have since became known as the 1848 Revolutions) shared similar goals and attempted to resolve similar grievances. Led by (temporary) coalitions of reformers, the bourgeoisie and workers, these revolutions were mostly democratic and liberal in nature and ultimately attempted to provide more widespread political agency (to the people themselves) by displacing existing monarchical systems of (nearly) absolute power and create independent nation-states. Although most revolutionary efforts were eventually defeated, significant changes resulted from these uprisings, with new rights provided to peasants, workers, and artisans alike.



## BELLE EPOQUE

The subsequent period of stability and prosperity at the turn of the 19th to the 20th century in Europe would become known as the Belle Epoque, a Golden Age. This, however, was a period with two contrasting faces. If, on the one hand, cities still presented an impoverished image, on the other hand, the influence of modern times could be seen in the form of advertising, entertainment, department stores, that is, in the rise of a bourgeoisie. Effectively, there was a social divide between the bourgeoisie and the common people, as the bourgeoisie lived in stately city streets and villa parks, while common people tried to escape from the dark industrial slums.

Away from the dark slums, bourgeois culture fostered the emergence of entertainment, with arcades, department stores, and theaters being built to accommodate the entertainment needs of this rising class. In Paris for instance, the department stores of the Galeries Lafayette (1903-1912) and Le Bon Marché (1869-1875) were built during this period, translating into a built form the sumptuousness and optimism of the era. Well-off citizens in the bourgeoisie would, however, often attempt to escape the trapping of the metropolis, with wealthy families sometimes moving out of the city to go and live in the country.

Villa parks seem to be a logical consequence of the bourgeois lifestyle. As early as the 17th century, the upper classes moved out of the city to the countryside, with rich merchants taking residence in country estates. In the 19th century, this desire to live in the countryside resulted in the growth of villa parks, particularly stimulated by the increasing means of mobility, such as the construction of railway lines. In the 20th century, the ambition of living in the country would be continued as suburban living, resulting in suburbanization as a mass phenomenon and the emergence of the 'commuter' as a new type of person.

Ultimately, during the 19th century and the Belle Epoque many new approaches to architecture and urban planning emerged. People were struggling with the arrival of a new time, a time characterized by fast industrialization and rapid urbanization, where a new kind of society developed, from which the old notions of community had all but disappeared. The anxieties caused by such shifts would send shockwaves throughout society and would also be experienced in architecture. Questioning how crafts and industry, art and technology compared, or what value the familiar architectural vocabulary of the Gothic and Classicism still possessed, or how the bourgeois kitsch of the ugly age could be ended became crucial elements in architectural discourse. All of the various architectural movements (and styles) that would emerge in the following decades—from the Neo-Gothic to the Arts & Crafts and Art Nouveau—were examples of the reflection on these questions.



## ART NOUVEAU / JUGENDSTIL

The Jugendstil / Art Nouveau movement was not so much characterized by an orientation towards history, rather it originated from a criticism that neo-Gothicism had deteriorated into eclecticism with a random application of ornamentation while the romantic nostalgia for the Middle Ages of the Arts & Crafts movement remained focused on craft and craftsmanship, as opposed to industrialization. In the Jugendstil movement this romantic tendency was extended to an orientation on nature. Depending on the country this movement or a similar movement has a different name, from Jugendstil to Art Nouveau.

Primarily, this was an approach to art, in which the sources of inspiration were nature and organic forms – flowers, trees, clouds, rocks, as well as running water and wavy female hair. The movement thus tried to abandon rigid historicism and offer an alternative to mechanical ways of production by focusing on the role of craft and the designer's personality. However, the use of new materials was not rejected, in fact iron was a perfect material to create flowing shapes, which can be easily recognized in, for example, the entrances to Paris' metro stations (around 1900) designed by Hector Guimard (1867-1942), a combination of glass and iron shaped into a kind of flower. Iron was no longer hidden

behind layers of plaster, it came to be used as material to make designs, for instance the staircase in Villa Tassel (1892-1893) in Brussels by Victor Horta (1861-1947), as the application and design of iron itself became decorative.

Some have argued that the mentality and theoretical explorations of movements such as Art Nouveau are more important than the concrete shapes that they created, because these reflections were the starting point of modern design. This has been recognized, particularly in architecture, not only in the continuous emphasis on linearity, but also in the dynamism expressed by Art Nouveau's tendency towards flow, movement, grace and a light touch - which was to be expected in a time of enormous acceleration in means of transport (train, car and airplane), means of communication (telephone, wireless telegraphy) and even images (film). Furthermore, it was of even greater importance that Art Nouveau proponents strove towards respect for the material, as building materials should no longer be 'violated' or hidden but should instead be handled and presented in accordance with their natural characteristics. The aesthetic, decorative effect had therefore to be created by the material as well as by the construction and its function.

# FROM SLUMS TO WORKERS' UTOPIA

As cities grew throughout the 19th century, the understanding of how to deal with the city greatly changed. Therefore, two main approaches were (mostly) adopted by urbanists and urban planners in this period. There were those who attempted to correct specific urban phenomena, the urban reformers, and those who favored a completely new, desired, alternative urban situation, the urban utopians.<sup>2</sup>

The second group believed that urban planning had to start from scratch (what would later become known as *tabula rasa*) and deal with completely new, purely theoretical types of societies, that were entirely different from existing urban situations. Their aim was often highly utopian, as they pursued a vision of a non-existing, entirely new, reality. Conversely, urban reformers, believed that every problem and every defect encountered should be considered and resolved in isolation which meant that an overall perspective on the city was not needed or procured. The distinction between urban reformers and urban utopians corresponds with philosopher Karl Popper's distinction between a 'piecemeal' approach (to social engineering) and a comprehensive approach of holistic and utopian scales. Popper regarded this last approach as a dangerous threat, since it aimed to impose a world on people, and only a piecemeal form of social engineering could not only be rationally justified but could also be expected to be successful, since its small scale and incremental nature allowed it to be continuously amended in response to ongoing experience.<sup>3</sup>

## URBAN REFORMERS

The group of urban reformers included not only architects and urbanists, but also several specialists and civil servants who attempted to enact change through legislation. Specifically, they introduced health regulations and public services to cities, in a procedure that laid the foundation for legislation as the structural element of modern urbanism and spatial planning, in which improvements are cultivated through technical and legal means.

As a result of fast industrialization and urbanization, in the 19th century cities were quite unhealthy. This stimulated the rise of a sanitary and hygienic approach in dealing with the industrial city (firstly in England), with hygienism becoming a significant element in the movement that dealt with partial problems in a pragmatic way. The starting point, in this case, was the relation between improper housing, working, and

living conditions (mostly of industrial workers) and the prevalence and spread of epidemics. If in the factories people – both adults and children – were making the same repetitive movements, like human machines, housing units were overcrowded, with six or seven people living in one space, without decent sanitary facilities, running water, sunlight or fresh air. In the cities, disease was rife, and mortality figures were high. In 1832 the cholera epidemic was particularly alarming, but in 1858 in London people spoke of the Great Stink.

In the city, hygienists or sanitary reformers became active and appeared in many forms, including not just doctors, but also industrialists and philanthropists. Their work, which was often organized in urban Boards of Health, ultimately resulted in legislation that aimed to ensure healthy cities. Houses had to satisfy minimum requirements of size and exposure to sunlight, while streets had to be paved. Domestic waste was to be collected, with systems for sewage and safe drinking water becoming required, and functions perceived as potential origin of diseases (such as slaughterhouses) to be kept at a safe distance. While in England this legislation was at the basis of Victorian city expansions, as builders, project developers, and landowners developed speculative buildings, housing units only just met the legislated minimum. Therefore, while hygienist legislation became the template for building, the actual situation fell far short of the ideal images of the hygienists.

As a consequence of the hygienic approach and the connection that was made between health and the built environment, a cartographic and demographic approach was developed, which resulted in urban demographic research. The physician John Snow (1813-1858) laid the foundation for epidemiology when he discovered that a polluted water pump in the London district of Soho was the cause of mortalities in that neighborhood. He did so by famously mapping out the number of deaths, establishing the causal relationship between the built environment and disease and in so doing, he further developed statistical methods for the analysis of the city. Benjamin Ward Richardson (1828-1896), one of Snow's close friends and colleague, would further develop this notion of the relation between health and the urban environment, even if on the opposing end of the spectrum. Specifically, Richardson gave a celebrated lecture in 1875 in which he described what a city would look like if sanitary science would be developed in a proper manner. His imagined *Hygeia*, a city of health, would later become a source of inspiration for Ebenezer Howard, when he developed his ideas on the garden city at the turn of the century.

The hygienic approach to the city would lay the foundation for 20th century urbanism, after all the key words of the so-called functionalist urban development were light, air, and (green) space. Some, like the French historian Alain Corbin, have argued quite forcefully how the deodorization of the city was a project that, while having

started in the 19th century with a hygienic approach to the city, was only completed with the emergence of the postwar 20th century residential areas with their open configuration, low density and dwellings with ample opportunities for ventilation.<sup>4</sup>

Biological-medical thinking has had a great deal of influence on the jargon of urbanism. In line with the hygienic imperative, a biological metaphor of the city was also commonly adopted. For a long time, much like the human body, the city was regarded as a living organism. A city's population was considered as the body that had to be maintained in good condition and vital, for example, by means of a birth surplus. A city's parks were its lungs that had to supply fresh air, with its network of streets often being compared to the vascular system, while its urban center gradually becoming the city's beating heart. The way of thinking of doctors and hygienists will undoubtedly have contributed to the formation of this biological comparison. It would take several decades before urbanists would dismiss this way of speaking about the city, denouncing the rather unscientific use of biological metaphors, a position which was supported by the sociologist Hans Paul Bahrdt, who decried the mistake of biologism in urban planning.<sup>5</sup> Despite notable opposition to this way of understanding the city, the biological metaphor influenced urbanist thinking well into the 20th century. The city was continually regarded as an organism and there was a demand for cities and residential districts to be laid out in an organic way.

While also driven by hygienist concerns and heavily relying on legislation, most bureaucratic approaches in reforming the city did not rely on biological metaphor nor did they approach the city as a living organism. Both the complete reconstruction of the city of Paris in the 19th century, led by Baron Haussmann (1809-1891) as well as the transformation of Birmingham by Mayor Joseph Chamberlain (1836-1914) are clear examples of such a bureaucratic approach. In both cases, a neoclassical architecture and urban style was implemented, combined with a baroque typology of a system of boulevards, avenues and roundabouts, where movement and uniform urban expression became crucial conceptual elements. If Haussmann found inspiration in London, Chamberlain did the same in Paris. In this way, English classicism returned to England via Paris.

Instead of biological metaphors, both the bureaucratic and the engineering approach in reforming the industrial city were based on a discourse of functionality, efficiency and pragmatism. The work of German civil engineer Reinhard Baumeister (1833-1917) is particularly remarkable in this regard, as he wrote about urban planning as a scientific technical-organizational issue, much like Ildefons Cerdà before him. With the publication of his book *Town Extensions: Their Links with Technical and Economic Concerns and with Building Regulations* (1876), Baumeister established himself as a leading urban planning theorist. In it, not only did he stress the importance of an urban

plan to confront uncontrolled urban development while also guiding a city's future development for the general good, but also identified how urban development should be regulated with the assistance of ordinances and rules. In this book which was used as the primary textbook in the first urban planning course in Germany, Baumeister argued for a balanced and universal urban planning that integrated the demands of traffic, health, economics, and aesthetic. Understanding the development of the city as the combination of various dimensions, Baumeister was also quite critical of the property speculation that had led to the emergence of tenement developments in industrial cities, pointing out instead the importance of ensuring green and open spaces in the ever-expanding cities.

German urban planner and architect Josef Stübben (1845-1936) was another leading figure in the burgeoning engineering approach to the city. Although Stübben had already been instrumental in the urban expansion of several cities in Germany and abroad, his position was cemented by the publication of his book *The Construction of Cities* (1890) as the ninth volume of the *Handbook of Architecture*. This encyclopaedic work presented several examples of urban plans and street typologies (including boulevards, avenues, and alleys) as references for future development. In it, Stübben focused especially on traffic advances since he believed that the traffic system and its flows directions were the basis for the construction of cities. It has been argued, however, that by merely focusing on traffic systems and picturesque compositions, Stübben lacked a vision of the city.

That was certainly not the case of Austrian architect and urban theorist Camillo Sitte (1843-1903) who conceived urban planning as a form of art that, while based on, should always transcend any technical requirements. Sitte's ideas were disseminated (and became quite influential) with his seminal publication *City Planning According to Artistic Principles* (1889) in which he documented and analyzed the traditional development of cities in Europe, paying particular attention to the position and composition of public spaces. In Sitte's work we encounter a historical approach and a certain nostalgia for the former city, an appreciation for the historical dimension of urban planning and development as he questions which role history should play in the future development of (European) cities. Based on this analysis Sitte would argue that the city should not be designed by technicians, engineers or entrepreneurs, but by artistically trained architects and designers.

Although Sitte expressed his admiration for the achievements accomplished by 'modern' urban planning (especially in regards to hygiene), he questioned if the conflict between the picturesque and the practical had to result in the elimination of all beauty. Instead, Sitte argued that the simplification of urban planning to a mere technical task had to be countered with the inclusion of an artistic task to

urban planning. Specifically, Sitte pointed out that the technical considerations of modern plans were expressed in the organization of street patterns in grid, radial and triangular systems which, while not encompassing any artistic importance, also did not exclude artistic aspects. Therefore, Sitte considered that modern systems and artistic principles could go together and that a compromise between artistic interests and principles of traffic and hygiene was both possible and desirable.

As Sitte argued for an intersection of historical and modern times, this compromise could be easily achieved by developing a few main streets and squares with artistic principles while allowing new residential areas to remain business-like (for that, however, modern urban planning would have to learn to properly deal with trees and greenery). Through these interventions in streets and squares, not only the monumental character of the city could be preserved, but the human spirit could be captivated by this charm. Therefore, Sitte gave urban planning also a task for social charge, with main streets and squares becoming highlights as well as the pride of the population, so that they could awaken 'civic consciousness.'

The combination of monumental new streets with more utilitarian infills of residential areas was arguably best expressed in the Amsterdam-Zuid Expansion Plan of the Dutch architect Hendrik Petrus Berlage (1856-1934). Closely related to Sitte's view on urban planning, Berlage organized the new districts of his plan as districts with their own structure, characterized by the monumental course of the streets that restored an order analogous to that of the canals in old Amsterdam. Therefore, according to Berlage, two important concepts must be distinguished in the design: the monumental and the picturesque. If the monumental relied on a classical regularity and symmetry as well as on an observable rhythm, the picturesque emerged as apparently accidental, irregular, and asymmetrical. But as Berlage demonstrated (and as Sitte had previously argued), these two concepts are not mutually exclusive and can, in fact, complement one another. In Amsterdam-Zuid, Berlage's thus developed a hybrid character for the plan, one that was both monumental in construction and, picturesque in detail. Specifically, the urban plan's monumental emphasis was complemented by the picturesque architecture style of its building blocks, the so-called Amsterdam School.

The hybrid nature of the plan was also expressed in the combination between the design's monumental structure of its main streets and squares with the network of regular streets between them, with both systems being intertwined. If the secondary network connected to the existing urban fabric to the east while providing continuity to the plan and forming the grid for the building typology, the monumental structure presented all the characteristics of classical urban planning, evoking associations with Renaissance and Baroque concepts. Wherever the two systems connected, special solutions were created, namely as purposefully designed corner solutions.

Urban and architectural design were also instrumentalized to explicitly express social norms and values. Social aspirations, in particular the emancipation and elevation of the worker, were symbolically expressed throughout the plan's architecture and urban planning, while special communal functions such as schools, libraries and bathhouses were intentionally organized in a striking way in relation to one other and the residential blocks. Furthermore, for Berlage, the building block was not only a generally accepted urban design type, but also a generally accepted social concept.

Berlage, like Sitte, advocated for the fundamental importance of the artistic foundations of both architecture and urban planning. Accordingly, architecture and urban planning had to be more than technology or technique, they had to be artful. In this regard, Berlage opposed the movement of New Objectivity, disparaging the emerging movement by claiming that by omitting all emotional elements and accepting purely technical considerations, the New Objectivity fitted completely with the new era of rationalization. Since such a rationalized mode of production was, for Berlage, dominated by the ambition to produce (in this case, architecture) as quickly and cheaply as possible, it revealed a capitalist tendency.

Conversely, the Viennese architect Otto Wagner (1841-1918) argued for a functional approach to the city, where urban monumental qualities of the street (similar to Berlage's own plan) were used to facilitate movement and traffic. As such, Wagner was concerned that style and ornamentation in new urban expansion plans, such as Vienna's own Ringstrasse, were merely used as an expression of the architectural style of the bourgeoisie and referred to the old Viennese culture. Questioning the rationality and even the legitimacy of architectural style and ornamentation, Wagner drew attention to how industrialization not only led to new urban developments, but also to the emergence of new production and design methods that were at odds with architecture and urban planning as artistic activity. Ultimately, Wagner pleaded for approaching urban planning on a utilitarian-functional basis, which paid attention to the development of the entire city, not just to the needs of the bourgeoisie.

## URBAN UTOPIANS

While these approaches pertained the transformation of existing cities by engaging with specific elements of their development, urban utopians, on the other hand, called for a complete regeneration of the city and included the so-called social utopians who aimed for an ideal society, but who – contrary to earlier utopians – also undertook practical actions to realize their utopian ideas. These utopians often developed their solutions outside of the city as, for example, in the development of special workers' villages and the garden city concept.

Villages for workers – as a kind of working class equivalent of the bourgeois villa parks – were often founded by Enlightened factory owners, with a philanthropic inclination, such as the brothers George and Richard Cadbury, who built a factory (in the garden) in Bourneville, on the outskirts of Birmingham, in 1879 and Joseph Rowntree, who would establish the model village of New Earswick, in York, in 1902. New Earswick was designed in a picturesque, medieval style, by architects Raymond Unwin (1863-1940) and Barry Parker (1867-1947), who later went on to make important contributions to urbanism and architecture with their implementation of the garden city.

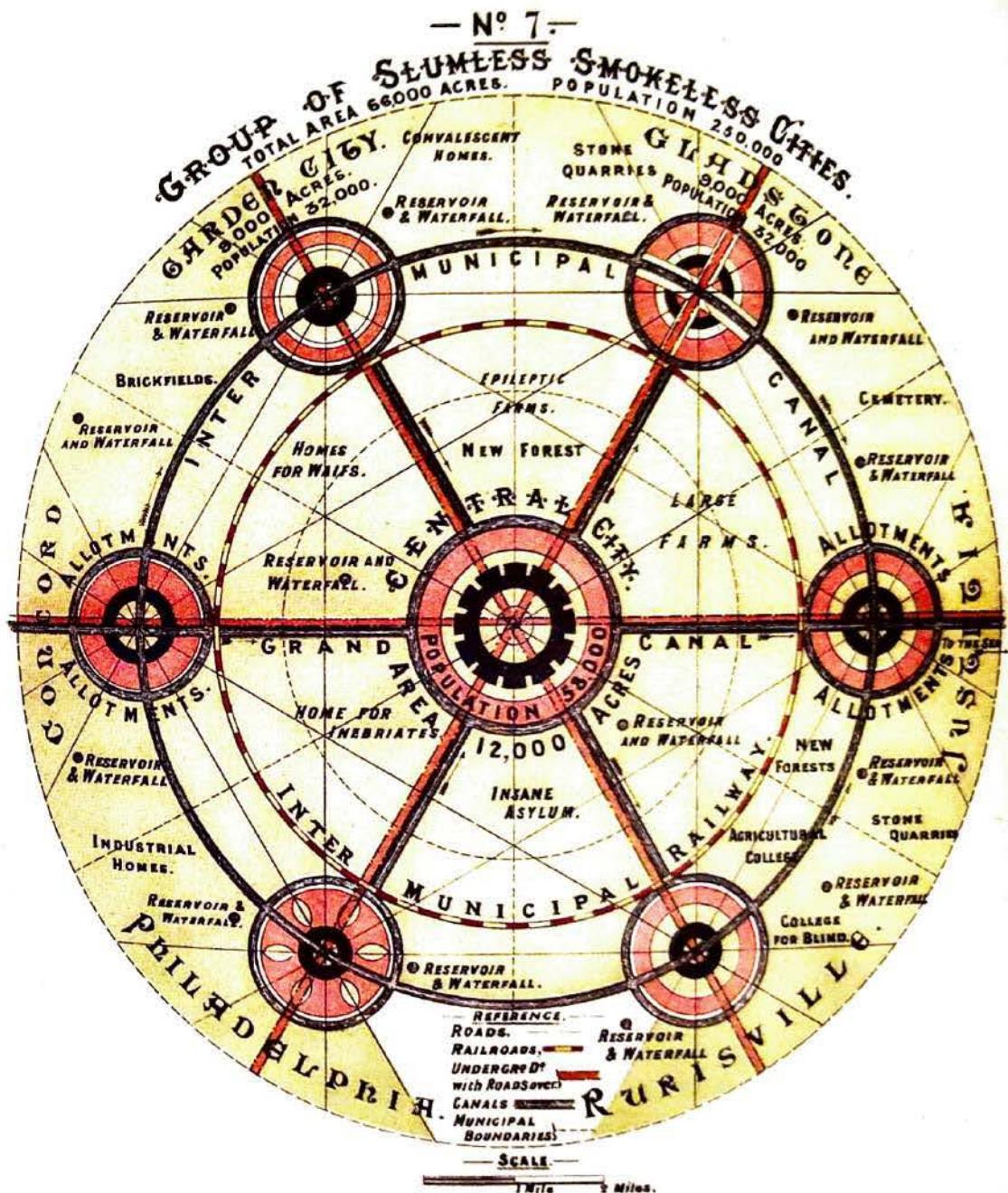
Other examples of so-called 'model villages' are also found in the village of Saltaire (1851), built by textile manufacturer Titus Salt in the Aire River valley, near Leeds-Bradford as well as the soap manufacturer Lever's Port Sunlight (1888) in Bebington, near Liverpool. In Germany, similar examples are found in the Siedlungen built by the Krupp factories in the second half of the 19th century, as well as the garden settlement of Gronauerwald founded by the Siemens company in 1895.

These model villages were already indicative of a changing attitude towards workers' living conditions which would culminate in the Garden City model. The garden city, however, is a peculiar mix. Although a completely idealistic concept, it is nevertheless clear that it is a concept that perfectly represents the values of the middle class and bourgeois society, namely, suburban living. On the one hand, it is based on the principle of a society that is organized on a cooperative basis; on the other hand, it is based on the Victorian tradition, in which individual privacy and the unity of family life rank favorably.

The garden city model was an 'invention' of the English stenographer Ebenezer Howard (1850-1928). However, his ideas about 'slumless and smokeless cities' can best be understood as an elaboration of the concept of industrial villages and they were first explained in his manifesto-publication *To-morrow: a Peaceful Path to Real Reform* (1898) which would spark the garden city movement first across England and then across the world. Howard must be credited for developing the private initiatives of the enlightened factory owners into a socially more coherent concept.

Every garden city had to be an autonomous village, a social and economic spatial unity, providing both housing and employment for a very diverse labor force. The garden city would therefore have to be a complete city, with its own administrative and commercial center, its own (small-scale) industry and other employment opportunities, with well laid out and attractively designed residential areas that were to be established in beautifully locations in the countryside. Notably, the garden city should not be too large, to prevent big city problems developing and not too small, to ensure that the city could remain self-sustaining. Howard's aim was to achieve

a synthesis of the advantages of urban living and the healthy climate of a village in the country. As he anticipated that from this synthesis a new hope, a new life, a new civilization would emerge, he regarded the garden city as a genuine alternative for the social and economic degeneration and spatial chaos of the 19th century city.



Howard elaborated on the garden city concept (see Figure above) in his subsequent publication *Garden Cities of To-morrow*, but he still emphasized that this elaboration was only a 'diagram', not a design or plan, that such a design of place could only come about through the influence of specific spatial circumstances of the location in which

the plan was to be implemented, from landscape to topography. His diagram of three magnets, the city, the country and the garden city, is perhaps best known, as Howard attempted to express how the garden city was to combine the advantages of the city and the country, while avoiding their disadvantages, and how that was the magnet that would most strongly attract the population.

According to Howard, the population of a garden city would have to be 32,000 people, living on a ground area of 6000 acres (2428 hectares), of which only one sixth would be designated for the village's built-up area. Howard's village diagram shows a circle with a diameter of approximately 1200 meters (surface area 450 hectares – population density 70 inhabitants per hectare), with the center designated as a public park, surrounded by public buildings. In a broad strip around this circle, residential housing was envisaged, surrounded by a narrow strip intended for industrial activities. On the outer ring of the circle, there were agricultural businesses, adjacent to the 'green belt', a green area surrounding the entire garden city, designed to contain the development of the built-up area (much like medieval walls had previously done to traditional cities). Given the strict form of the garden city, and the inability (and undesirability) of it expanding further, if the city's population should expand to more than 32,000 people, new garden cities would be set up in a similar way, as part of a garden city conurbation, organized around a central city with a maximum of 65,000 inhabitants. The plan was that the various garden cities would be connected to each other by a local ring and radial (electric) railway system, linked to the inter local railway network.

Starting from this concept, Howard worked on the development of Letchworth (First Garden City Company, 1903) and Welwyn Garden City (Welwyn Garden City Company, 1920) with Raymond Unwin, the father of British town planning. Although only these two experimental garden cities were developed, they have greatly influenced suburban development in Western Europe from an urbanist and architectural perspective. Eventually, Howard's ideas contributed to a great extent towards England's postwar spatial planning (Town and Country Planning Association), which was reflected in the 1946 'New Towns Act'.

Another attempt to reconcile town and country was formulated by the Spanish engineer and urbanist Arturo Soria y Mata (1844-1920), namely the concept of the *Ciudad Lineal*, that is, the Linear City. In 1882, thirty years after Ildefons Cerdà's plan for Barcelona which already contemplated the idea of a continuous urbanization for Europe, Soria y Mata published his ideas in a Madrid newspaper. The starting point for his plan was the development of various forms of traffic which, logically, would result in a linear shape for the city. According to Soria y Mata, since the construction of infrastructure was the basis for any efficient city planning, it should also dictate the shape and layout of the city. Therefore, centrally across the *Ciudad Lineal*,

a tramway would run, alongside a traffic route for motorized vehicles. The city itself, a 400 meter wide strip, was attached to both sides of the central traffic axis, becoming longer (along that axis) rather than wider as there was the need to expand, so that every district would be easily accessible to the traffic infrastructure. For the built-up area, Soria preferred a regular pattern of plots that could be repeated on a large scale in 200x200 m squares, with only about 20 percent within each lot being dedicated to single-family housing. This was an important stipulation, since one of the most central intentions of the plan was to create a good connection between the open landscape and the built-up area, organized along a good public transport network, or line, as it was. Soria's concept was primarily that of a practically inclined engineer, focused on housing, traffic, and transport rather than a complete city concept. The various points of contact between his ideas for the Linear city and Howard's ideas for the Garden City have been widely analyzed, even being typified as a strip-shaped garden city.

Regardless of their specific approach, the impetus for 19th century urban development was clear and was made visible by all these plans. If in its unregulated development the industrial city had produced some of the bleakest urban conditions imaginable, through planning and policy, every urban reformer and utopian aimed to counteract those original tendencies and resolve the ailments of the city once and for all (even if it meant abandoning it).

## ARTS & CRAFTS



In England, the Arts & Crafts movement developed, with representatives such as John Ruskin (1819-1900) and William Morris (1834-1896). Morris' social utopian idea was greatly influenced by the ideas of social innovators such as Robert Owen (1771-1858), who wanted to found settlements for his employees according to an entirely new approach. The name of that settlement, New Harmony, was very telling. There was to some extent a glorification of rural existence, that clearly related with the recurring idealization of life in small rural communities. Effectively, the Arts & Crafts movement represented a nostalgia for romanticism and simplicity in contrast with a modern, industrialized society that was based on rationality and geared almost entirely towards profit.

In Ruskin's work, the organic *Jugendstil* and *Art nouveau* shapes are recognizable, as he called for more attention to be given to craftsmanship, for alignment of production and actual needs, for a connection between the city and the country while criticizing modern production processes, in which human beings greatly suffered from the consequences of the division of labor. Effectively, Ruskin's Gothic revival ran parallel to the medieval ideal that William Morris described. Specifically, according to Morris, Gothic architecture was an architecture, pure in its principles, reasonable in its practice, and beautiful to the eyes of all men. In a lecture on Gothic architecture for the Arts & Crafts Society, Morris argued that architecture had reached its fullest development in the Middle Ages.

and thus, in order to have architecture at all, the thread of tradition could only be taken up from there and nowhere else so that any future architecture should only be developed in a Gothic style. It has been said, however, that (Neo-)Classicism stood for buildings without emotion, Neo-Gothicism for emotions without buildings.

A movement that is related to the Arts & Crafts movement is *Der Deutsche Werkbund*, an important movement in which architects, artists and designers wanted to confront the problems of the times. The continuity with the Arts & Craft

movement is evident, most notably in the significance attached to craft and art. However, unlike the Arts & Crafts movement, the *Werkbund* espoused a very open attitude towards the new age of the machine and towards the modern spirit of industrialization. In addition, the movement favored a relationship between artists and industry. Gradually, the *Deutscher Werkbund* tried to disconnect itself from the English Arts & Crafts movement, as it became a cradle for modern architects and designers that continued to be significant during the 20th century.

# THE URBAN PLANNING AND ARCHITECTURE OF INDUSTRIAL BERLIN<sup>6</sup>

## POLITICS, ART AND INDUSTRY

What is needed for a city to develop into one of the world's most important industrial centers? It requires a combination of circumstances, developments in scientific and technical domains, increase of production without (as inevitably happened in earlier times) ensuing unemployment and poverty, the availability of a sufficient workforce, and minimal bureaucratic formalities, to name but a few. Some of these necessary conditions can be facilitated through a deliberate policy, as was the case in Prussia, for example. That Berlin, the Prussian capital, could grow into an industrial metropolis is not due to any special natural or geographical circumstances, but is entirely artificial, as the result of a deliberate, sustained, policy. That explains why around 1900 Berlin had become the economic and—particularly—the scientific heart of an economy dominated by factories and transport, to which researchers, inventors and technicians flocked from all over the world. The rise of Berlin illustrates the decisive significance of social, political, and economic reforms, but also the importance of deliberately making the latest inventions available, to both entrepreneurs and the general public alike. In this historical development, it would seem that the Berlin Academy of Arts (*Akademie der Künste*) and its later offshoots have played a remarkable role, both in designing policies and in spreading the idea that Prussia's future laid in an economy modernized by technological innovation.

While it may seem strange that the Academy of Arts became one of the pillars of industrialization, this is explained by the intimate relationship between art and the way art is created: the production techniques, invariably termed *mechanica* at the time. Around 1786, then director Friedrich Anton von Heynitz (1725-1802) reformed the academy, setting up a training program for artists and craftsmen to stimulate simple and beautiful form, with the aim to improve the national industry through art. As the academy's work comprised of systematically collecting, cataloguing and exhibiting art objects (in the broadest sense of the word) as well as training craftsmen, artists and technicians, art and industry virtually overlapped, with art and technique being practically merged.

Yet, however important all these initiatives were, more was needed for a major reform of the economy. Based on the work of Adam Smith (1723-1790), specifically the notion that labor and not land is the basis of prosperity, Prussian authorities initiated several political and economic reforms after 1806 as preconditions to foster

an industrialization similar to what England had experienced and thus stimulate the national economy. These included an agricultural reform, the introduction of various standard measurements, the lifting of restrictions for trade and industry, as well as the modernization of public administration.

Christian Wilhelm Beuth (1781-1853) would be a key figure in this transformation, even being considered as the founder of Prussia as an aspiring industrial state and Berlin as an industrial city. In 1821, he established the Association for the Promotion of Industry and Trade (*Verein zur Beförderung des Gewerbefleißes*, or *Gewerbeverein* for short) with art and Industry still being regarded as two sides of the same coin. Apart from the departments of Chemistry and Natural Sciences, Mathematics and Mechanics, Handicraft and Trade, the Association also had a department of Architecture and Fine Arts chaired by his friend Karl Friedrich Schinkel (1781-1841).

While traveling through England, Beuth and Schinkel were gripped by the new industrial architecture, with Beuth even claiming that, more than anything, the miracles of the new times were the machines and buildings previously called factories. He was impressed by the sheer size of these buildings, which despite appearing of a flimsy construction (with walls almost as thin as cardboard) had been standing for thirty or forty years in the same condition as when they were first built. Schinkel seized upon their journey to familiarize himself with the Louvre in Paris and the plans for new buildings of the British Museum in London, as a source of inspiration for his own plans for the *Altes Museum* in Berlin. These two museums, however, turned out to be about the only works of high architecture that he visited, since his main goal was to investigate the latest developments in building technology and industrial building, and he was not disappointed. In fact, Schinkel was stunned by the look of the English factory towns, describing them as enormous building masses executed in red brick by constructors, without architecture, and built solely for functionality. Furthermore, he described the hundreds of new factories for cotton milling in Manchester as being formed by several building complexes, each about the size of the royal castle in Berlin, and all surrounded by thousands of smoking obelisks of the steam machines, destroying any impression of the church spires with their great height.

The extension to a baroque palace on the *Klosterstrasse* for the exhibition of industrial objects completed in 1829, seems to be the most convincing evidence of the impression that the journey to England made on Schinkel. The building looks like a miniature factory, neatly fitted into the street: red brick, hardly any decoration, and a cast iron supporting structure. Schinkel, however, had also designed a real industrial building on the Spree, namely, The *Packhof* (1829-1831). But while he considered that these two buildings lacked the historical and poetic aspect that is characteristic of architecture, in his later design for the *Bauakademie* (1832-1836) he would combine the lessons of industrial construction with those of architecture.

## THE IMAGE OF THE INDUSTRIAL METROPOLIS IN THE MAKING

In the 1830s, factories with smoking chimneys started to dominate large parts of Berlin. They appeared in an urban context that stemmed from the times of the old residential city. A map from 1810 shows how Berlin developed from a settlement on an island in the Spree (the original Cöln), with historical Berlin to the east, and to the west a number of expansions. The first of those expansions was the Werdersche suburb, a small strip along the western branch of the Spree near the island, followed by Dorotheenstadt with the first large boulevard, *Unter den Linden*. In 1691 Friedrichstadt was completed, a distinctive, elongated triangle that extended into the landscape south of *Unter den Linden* like a wedge of cake, which would only become an administrative part of Berlin in 1710, as Dorotheenstadt and *Unter den Linden* were extended westward. In the beginning of the 18th century, expansions to the north and east followed, surrounded between 1734 and 1737 by what was one of the most remarkable structures of the city for a long time: The Berlin Customs Wall. Originally fifteen, later seventeen, gates provided access to the city. As early as 1840, however, more than half of the city already laid outside the customs wall, which is why toll booths were established on the roads leading out of the city. Only in 1860 did the toll booths lose their function, and the remnants of this wall, including almost all gates and toll booths, were demolished between 1867 and 1870. The most well-known remnant is the *Brandenburger Tor*, which in 1788 replaced a less illustrious predecessor from 1734.

The first factories appeared just outside the customs wall or on the Spree, the most important transport route at the time. In 1836 August Borsig (1804-1854) started his machine factory on *Torstrasse*, accelerating the industrialization of the city. The factory would specialize in the production of steam engines, with Borsig naming a new, revolutionary type after Beuth. Other machine factories soon followed, completely changing the city's appearance, in a fast-paced growth that could hardly be regulated by urban planning. In 1840, the landscape architect Peter-Joseph Lenné (1789-1866), famous for creating the large park landscapes near Potsdam, was commissioned to make plans for Berlin. Together with Schinkel, he designed *Friedrich-Wilhelm Stadt*, north of the *Brandenburger Tor*, which made it necessary to move the customs wall to the north, where the *Neue Tor* was built. In that same year, Lenné also published his vision for urban greens in Berlin, with a plan titled 'Projected Decorative and Border Strips of Berlin, with the Adjoining Area' which already indicated that the old residential city owed its status to primarily also be a beautiful city. Earlier, Lenné had already made plans to embellish Berlin's squares and parks, combining these proposals into a unified vision for the whole city. The construction of a number of canals, however, was his greatest contribution, with the *Landwehrkanal*, intended to relieve congestion on the Spree and the *Berlin-Spandauer Schifffahrtskanal*, that was

## CRYSTAL PALACE



The design and construction of the Crystal Palace (1850-1851) in London in the mid-19th century constituted a breakthrough. If Cerdá's plan for Barcelona is a product of Enlightenment thinking and industrial development from an urban planning perspective, the Crystal Palace is the same but from an architectural perspective.

Developed in 1851 for the World Fair (Great Exhibition) by the garden designer Joseph Paxton, the Crystal Palace's layout was entirely designed for presenting artifacts and material reflecting, as it were, the Enlightenment's encyclopedic thinking of displaying human knowledge and science in a systematic way. Essentially, an enormous shed presenting all types of innova-

tions and inventions, the Crystal Palace was 600 meters long, 120 meters wide and 34 meters high. Its unusual formal expression was adapted from the typology of greenhouses on botanical gardens, where nature was framed and presented by the most recent developments on building technology, i.e. steel and glass. These were the two most important materials used in this building, effectively creating an enormous space with an outer layer made of steel and glass.

The Crystal Palace's construction method was quite unconventional, as the building was entirely built with standardized and prefabricated elements, standing as an example of a rational construction method. Only by using prefabricated and standardized, industrially produced elements was it possible to have the construction elements (including 3000 columns and 2300 beams) manufactured by several firms simultaneously and quickly assembled on site. This allowed the Crystal Place to be completed in only

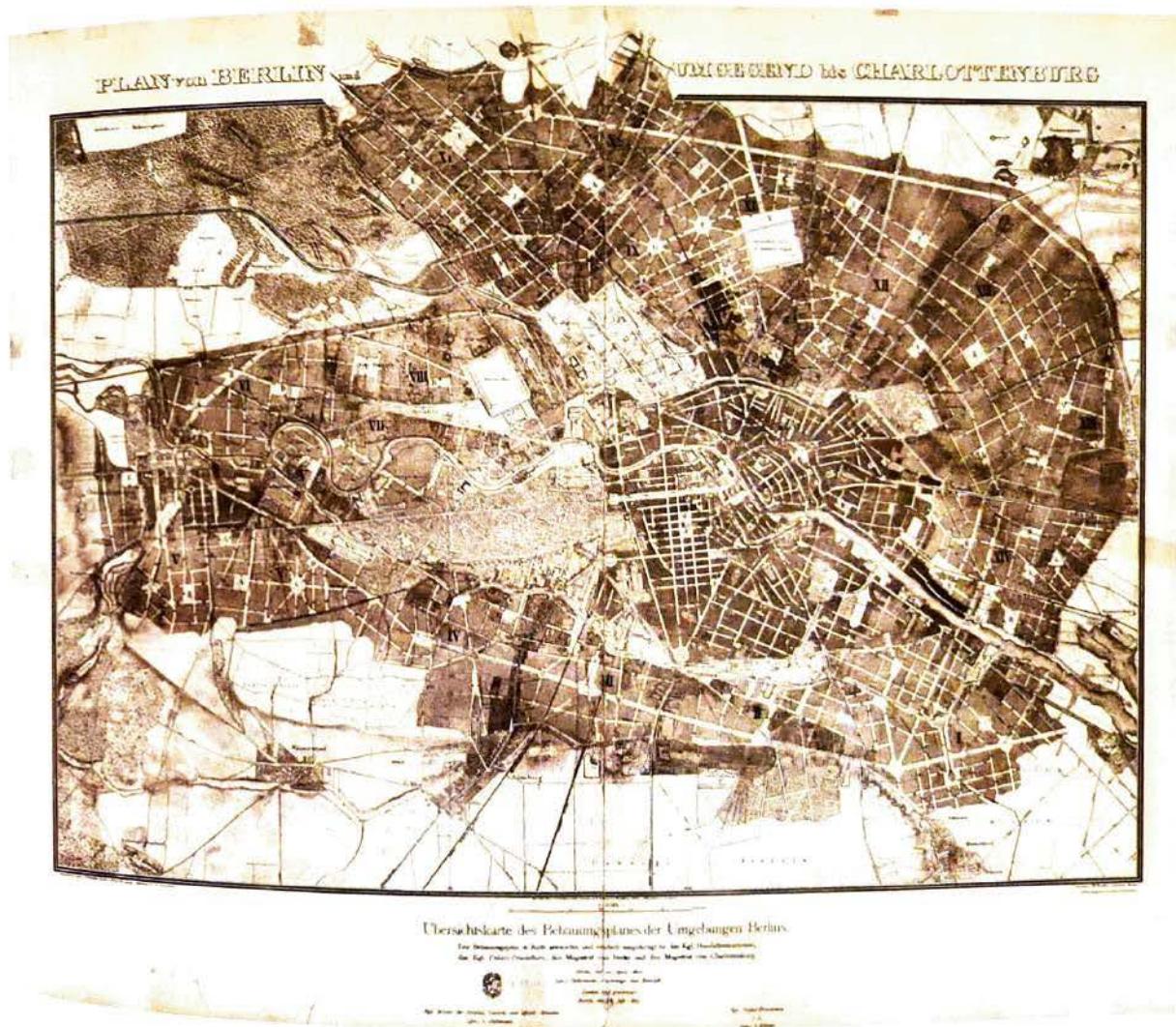
seventeen weeks, largely by unskilled laborers, with eighty men placing over 18,000 glass plates per week. This the most original building of the 19th century, but one which many architects did not consider to be architecture, for Crystal Palace was originally disregarded in architectural circles, it revealed a virtually unprecedented sense of space, transparency and lightness that would become a model for modern architecture and skeleton construction.

After the World Fair, the building was rebuilt in the outskirts of London, where it was eventually destroyed by fire in 1936. Ultimately, as the Crystal Palace gave a coherent form to the iron girder, it was also the starting point of engineering construction, that would gradually gain significance, as typical 19th century construction tasks such as market halls, arcades, bridges, stations and exhibition halls were realized in this way.

also the western border of Friedrich-Wilhelm Stadt and Oranienburger Vorstadt, being built to the north of Friedrich-Wilhelm Stadt. The emergence of suburbs outside the customs wall had already made it clear that urban planning had been overtaken by events, as Berlin was growing increasingly faster. If in 1815, Berlin had a population of 191,500 people, by 1831 this had already increased to 231,000, and to 322,626 in 1840.

Railways played an important role, with several private companies building lines with end stations in or around the city. The first line, which became operational in 1838, ran from Potsdam to Berlin, ending near the Potsdamer Tor, with other lines being completed in 1841, 1842 and 1946 and finishing, respectively close to the Anhalter Tor, the Hamburger Tor, and the Neue Tor. The only end station within the customs wall was the Frankfurter Bahnhof, which was also completed in 1842. With the stations

nearby, the old gates acquired a new role, becoming crucial connections between Berlin and the trains that connected it to, at first, the surrounding region, and later, also to the rest of the country. In the second half of the 1860s, not long after Prussia had decisively defeated Austria, the construction of railways accelerated once again, with several new stations being built. While originally there were no connections between these end stations, this changed in 1867 with the construction of the circular line which did not surround only Berlin, but also the equally fast-growing cities in its vicinity, such as Charlottenburg and Schöneberg, thus anticipating the later formation of Greater Berlin. Fast and cheap transport literally resulted in the mobilization of the working population throughout the city, which had a positive effect on the dynamics of the industrial metropolis.



Except for the expansion of the railway network, which had a high degree of coordination, even though it was operated by a large number of private companies, the growth of Berlin happened mostly without a plan. Unhygienic circumstances

necessitated the construction of a sewage system and facilities for clean drinking water, which proved to be one of the reasons for regulated urban expansion. In 1858, James Hobrecht (1825-1902) was charged with making this plan, that had to comprise not only Berlin but Charlottenburg and other cities nearby as well. The starting point was a precise map of the existing situation, in which Holbrecht would integrate previous plans, including the proposals made by Schinkel and Johann Carl Ludwig Schmid (1780-1849), who in 1825 had drawn up an expansion plan for Luisenstadt, and Lenné's great plan. The so-called Hobrecht plan was implemented in 1862 which, at the king's insistence, included a 'Parisian' boulevard, the so-called Generalzug, although the number of demolitions in built-up areas had to be kept to a minimum. In addition to this boulevard that was somewhat flawed from the start, the plan consisted of several ring roads as well as a few main roads. It had to facilitate efficient construction of a sewage system and thus laid the foundation for a health campaign in the continuously fast-growing metropolis.

While the urban plan did not contain any regulations about buildings, connecting it to the 1853 building regulation—the *Baupolizeiordnung*—it resulted in the development of tenements, the so-called *Mietskasernen*. A maximum of six floors and a 20 meter building height was permitted by the building regulation, which also stipulated the minimal size for courtyards based on the turning circle for Berlin fire engines. The large building blocks were also preferred based on the intention to mix poor and rich people in one residential block as well as the intention to have diversity of functions, a mix of, for example, industry in the courtyards and dwellings on the outer edges. In only a few decades Berlin grew into Europe's largest tenement town.

## BERLIN AS A TECHNOPOLIS

If the first industrial revolution was characterized by the steam engine and mechanical engineering, the second one was fueled by the electrical engineering industry. From the 1870s, as tremendous progress was made in the field of transmission of electricity, polarity, the condenser, the principle of the telegraph and the electrometer, Berlin would develop into a center of electrical industry, most notably once it became technically possible to transport electrical current over long distances with the development of alternating current in the 1890s. From that moment on, the expansion was unstoppable. The number of workers in the electro-technical industry grew explosively, especially in Germany, with this industry becoming an enormous driving force for the city's and the country's economy. Building on the foundation laid by Beuth, at the end of the 19th century Berlin could rightfully claim the title of high-tech industrial center of the world: the Silicon Valley of its day.

One of the first—and most crucial—applications was lighting. While the first deployment of electric street lighting was in Paris in 1878, in the same year, Siemens developed a variant of this. Another important application of electricity was its use for powering trams, with Siemens & Halske demonstrating an electrical railway line at the *Berliner Gewerbeausstellung* in 1879. During the 1890s, America and Germany were at the forefront in electrifying their tram networks. In addition, electricity was used in factories on a large scale. In Berlin, two large companies were dominant around 1900: the Siemens & Halske (S&H) established in 1847, and the Allgemeine Elektrizitäts Gesellschaft (AEG) founded in the 1880s. Despite Siemens' early lead, as early as the 1890s it was overshadowed by AEG, which experienced an explosive growth.

In this second phase of the industrialization, the construction of factories continued to have a strong influence on the city's landscape. What was striking, however, was that now there was a move towards areas outside the city. Until the beginning of the 1880s, construction mainly took place inside the circular railway line, hence within a radius of four kilometers from the center. That is where the Siemens and AEG factories originally were located. However, stimulated by the availability of inexpensive building plots and fast, cheap accessibility by means of suburban trains and trams, the city's industrial development expanded outwards. If in 1895 over 80 percent of industrial laborers were working in the old Berlin and Charlottenburg, by 1933 only 40 percent of the industrial workforce still worked there.

Around 1900, the conviction grew that the Hobrecht plan no longer sufficed. Not only were new plans needed, but also expanding the powers of the urban politicians became important. The absence of a strong administration that had control over the entire urban area was increasingly understood as problematic. A comprehensive vision on the entire urban area, both inside and outside the circular line became necessary, but could only be developed after a large-scale annexation. To develop this idea, a competition for *Groß-Berlin* was organized in 1910 by urban planner Werner Hegemann (1881-1936). Hegemann advocated for a radial structure to the city that would allow for green wedges to penetrate far into the built-up area, as well as for the construction of garden cities in the region. In this way, the city and the countryside would merge together, with fast transport connections allowing for a combination of the best of both worlds. The competition generated several plans, which were presented in an urban planning exhibition organized by Hegemann. One of the innovations that can be attributed to *Groß-Berlin* is the design of the super block—a large urban ensemble with higher buildings on the outside, cordoning off lower rows of houses in a green environment. While the *Groß-Berlin* competition is considered a milestone in the development of international urbanism, the main aim of combining all the cities around Berlin would not be achieved until 1920.

Although the location of garden cities was not part of the program, Hegemann was convinced that some of the urban problems could be addressed in this way. He thus anticipated the integration of the garden city movement—that had initially resisted the big city—and aspiring urban planners who not only accepted the city as inevitable but considered it the economic and cultural engine of society. Around Berlin, several garden cities appeared as early as 1900, including in 1899 the Schwartzkopff Siedlung near Wildau, for the workers of the machine factory of the same name, and in the 1910s, the Gartenstadt Falkenberg. Built between 1913 and 1916 and designed by Bruno Taut, the Gartenstadt Falkenberg was particularly unique, because of its expressionistic use of color. The plan consisted of around 1500 houses for 7000 people in which Taut further developed Ebenezer Howard's garden city concept, combining urban and rural curved streets and irregular building on hilly land of around 70 hectares. Every house had its own color and access to both gardens and public space. Furthermore, if along the traffic streets, Taut mainly planned multi-family homes, along the courtyards and residential streets, he introduced single-family homes. While the construction plans were disrupted by World War I, the garden city would eventually become known as the 'paint pot district' (*Tuschkastensiedlung*), intended as criticism of the abundant use of color and the patterns on the façades.

Due to Berlin's purposeful development into an industrial metropolis, that first led to the city of steam-driven machinery manufacturing and then to the Technopolis driven by electro-technical industry, and to the way in which urban planners tried to steer these developments with varying degrees of success, Berlin became the capital of a new world, and one of the birthplaces of modern urbanism. A version of the Berlin exhibition could be seen in Düsseldorf in 1912—a spectacular event at the time, which attracted among others a large delegation of Dutch visitors, most of who heard for the first time about the birth of the new discipline of urbanism.

# THE TRANSFORMATION OF PARIS UNDER BARON HAUSSMANN

## PARIS BEFORE HAUSSMANN

Between the French Revolution and the mid-19th century, the population of Paris almost tripled. This rapid increase occurred in a city which had physically not much changed since the Late Middle Ages; it was a maze of narrow streets and alleyways in which traffic could impossibly move and where daylight hardly entered. The population density was extremely high, and any form of modern infrastructure was lacking. Travel diaries of contemporary visitors abound with descriptions of the stench and filth of Paris, describing it as a dark, damp and almost subterranean place. Sewers were few, in a bad state, and constantly overtaxed; most streets had open gutters which stank and were prone to overflowing. Poverty was rampant: an estimated 100,000 people woke up every morning not knowing how they would eat in the evening. And although most of the water used in the city came from the *Canal de l'Ourcq* (constructed under Napoleon), its supply could no longer meet the ever-increasing demand. More and more water was poured from the Seine – which also doubled as the city's central sewer. In such conditions, diseases spread very quickly. Cholera epidemics indeed ravaged the city in 1832 and again in 1848, killing five percent of the inhabitants in the poorest parts of town. The city was also a cradle of discontent and revolution; between 1830 and 1848, seven armed uprisings had broken out, whereby residents had taken up pavement stones and blocked the narrow streets with barricades.

Even when it became clear, towards mid-century, that the bourgeoisie had started to establish itself beyond the city walls, little structural remediation was undertaken. Apart from regulations over façades, there were almost no restrictions in terms of urban planning. At the turn of the century, Napoleon had started laying out the rue de Rivoli along the northern boundary of the Tuilleries, but he was able to build only a small part of it. Yet, it provided the blueprint for the later street layout across Paris: arcades, three full floors above it, and continuous balconies to create an effect of continuity and perspective. In 1833, Rambuteau, the new prefect (governor) of the Seine department under king Louis-Philippe, also made modest improvements but his budget and powers were limited. His only real achievement was a wide new street that eased the access to the central market at Les Halles (1854-1874), known today as rue Rambuteau.



## NAPOLEON III AND THE APPOINTMENT OF HAUSSMANN

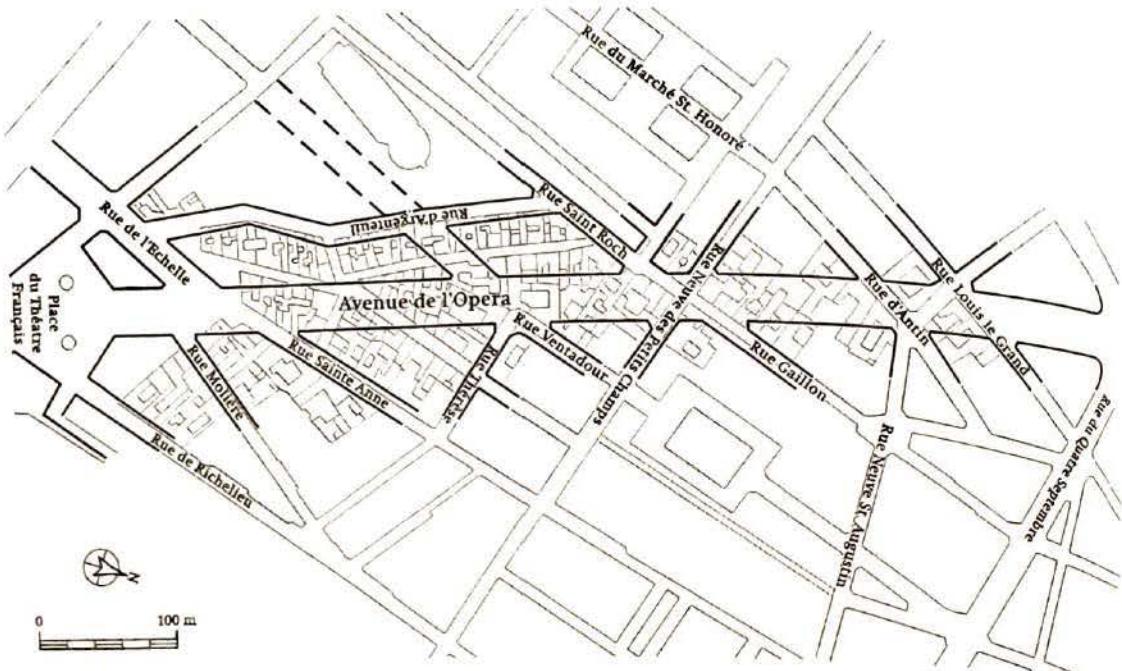
After Louis-Philippe was overthrown in 1848, Louis-Napoléon Bonaparte (1808-1873), the nephew of Napoléon Bonaparte, won the first direct presidential elections ever held in France. His famous name helped of course, but his promise to try to end poverty and improve the lives of ordinary people also appealed to many. Though born in Paris, he had spent a large part of his life in London, where he had appreciated the wide streets, squares and large public parks. This experience inspired him to develop a vision about his future capital. His ambitions were frustrated, however, by the then prefect of the Seine department, Jean-Jacques Berger (1790-1859), who seemed unable to get things moving. When it appeared that the Constitution limited Louis-Napoléon Bonaparte to one term, he staged a coup d'état in 1851 and declared himself Emperor Napoléon III the following year. Immediately after, Berger was replaced by Georges-Eugène Haussmann (1809-1891). Of modest descent, Haussmann had risen through the ranks of the administration and had made a name as prefect in Bordeaux. Tall, self-confident, energetic and audacious, he was the type of man Napoleon III needed to bring light and air into Paris; to connect and unify its different parts; and to make it more beautiful. The task was daunting: never before, a single man had been instructed to rebuild an entire city.

Unafraid, Haussmann set out to work and brought together a small but very competent team: Jean-Charles Adolphe Alphand (1817-1891) was entrusted with special engineering work; Eugène Belgrand (1810-1878) with water engineering; and

Eugène Deschamps with the planning section. First, Haussmann completed the work commenced by his predecessors and focused on realizing the *grande croisée*: a great cross in the center of Paris that would permit easier communication from east to west along the rue de Rivoli and rue Saint-Antoine, and north-south communication along two new axes, the boulevard de Strasbourg and boulevard de Sébastopol. This was the first *réseau*, as Haussmann classified his operations according to their financing (in this case, with financial aid from the state). Completed by 1859, it was received very favorably in the public opinion, not only because of its aesthetic effect, but also for reason of its favorable impact on local employment.

To be fair, it must be said that Haussmann had greater power and means at his disposal than his predecessors. In the first place, as a protégé of the Emperor, he enjoyed almost unlimited decision power. Further, he was able to fully capitalize on two recent innovations he is often mistakenly credited for. First, in February 1851, the French Senate had simplified and expanded the laws on expropriation, giving local authorities the possibility to expropriate land also outside the boundaries of new streets and sell the land at the new use value. The second innovation was the principle of 'productive expenditure', a form of deficit spending based on the assumption that once redeveloped, the expropriated land could not only be sold off with large enough a profit to compensate for the initial investment but also that the massive employment, property speculation and higher rents would generate more tax revenue for the city. Thus, the city could safely indebt itself for, in the long term, the public works would pay for themselves at zero cost for the taxpayer. Moreover, by outsourcing the redevelopment operations to private companies, at their own expense, the financial sector also largely benefited by providing credit. While these ideas were not new, Haussmann was the first to apply them structurally, and at such a scale.

The second phase of Haussmann's campaign centered around the single concept he is most associated with, namely that of the *percée*: the cutting across existing neighborhoods by the creation of new boulevards. These new arteries had multiple functions. Their primary role was to infuse light and air into the city, and foster mobility by connecting the center with the new train stations, the new gates of the city. But critics were quick to point out that the boulevards also served other strategic purposes and argued that the demolitions were deliberately designed to clear working-class neighborhoods, potentially prone to revolutionary agitation. Haussmann never denied this, openly admitting that such areas constituted nests of crime and thus better be removed. Much has also been debated about the latent military role of the boulevards for their width would facilitate the movement of troops and disable rioting – a popular hypothesis that was contradicted during the Commune of 1871, when the new streets were as easily occupied as before. In total, the second *réseau* consisted of approximately 26 kilometers of boulevards and was realized between 1859-1867 (see Figure on next page).



Despite their scale and cost, the new boulevards were in fact only one part of a much more comprehensive scheme, much of which was in fact imperceptible to the eye. In 1852, Paris had only 142 kilometers of sewers, which could carry only liquid waste. This system was expanded fourfold between 1852 and 1869, by building new sewer tunnels under each sidewalk of the new boulevards. Large enough to evacuate rainwater as well as wastewater from both industries and individual households, the new tunnels allowed men to work standing up, and were cleaned using specially designed wagons and boats moving up and down on rails. The channels flowed into ever larger tunnels and finally converged in a central 'cloaca' that, from a central convergence point at the Place de la Concorde, ran straight across the Seine and rejoined the river at Asnières a few kilometers downstream. Excretions from humans and horses continued to be taken away manually, however, requiring fifty teams of five man working nightly – only in 1894 did the city agree to the principle of *tout-à-l'égout* ('everything into the sewers'). No less important was the supply of fresh water, to which effect Belgrand constructed a system of aqueducts that tapped water directly from its source (and later also from the river Vanne). Under the simple force of gravity, it was brought to the city, and discharged in massive reservoirs; this nearly doubled the amount of water available per person in only a matter of years.

A major component of Napoleon III's vision for Paris was the creation of parks and squares. Under Alphand's supervision, two parks were created by recuperating old stone queries, namely Buttes-Chaumont (1867) in the northern part of town, and Montsouris (1875) in the south. The epitome of the romantic park, Buttes-Chaumont became an instantaneous hit amongst the bourgeoisie; the belvedere, from where the emerging metropolis could be contemplated in all its glory, became a favorite destination for the afternoon walk. The culminating achievement in this regard was

the transformation of the two great 'Bois,' or woods: the Bois de Boulogne in the West; and the Bois de Vincennes in the East. Thus, there was now a major park at each of the cardinal points of the city, while its entire fabric became permeated by twenty-two public 'squares', modelled on the example of London.

Whereas public reception was initially positive, Haussmann became increasingly criticized for the incessantly expanding cost of his projects; estimated initially at 180 million francs, the cost for the second *réseau* ultimately grew to no less than 410 million francs. This was partly due to the inclusion, on his insistence, of some additional boulevards but also to expropriated property owners winning a legal case entitling them to larger payments. Also, the latter found ingenious ways to increase the value of their properties by inventing non-existent shops and businesses, and charging the city for lost revenue. The annexation of the *banlieue* in 1860 (the area between the actual city limits and the defense line created in the 1840s) further added to the deficit, despite substantially enlarging the city's tax base. Although building in the suburbs had been discouraged since the early 19th century, numerous factories and workshops had been established there in order to avoid the *Octroi*, the tax on goods and materials.

After the annexation, Paris grew from twelve to twenty arrondissements: its area doubled in size and its population augmented with 400,000 people (bringing the total to 1.6 million inhabitants). Haussmann accordingly enlarged his plans, constructing new boulevards to connect the new arrondissements with the center and encourage residential development. To this effect, within the new city limits, the use of inflammable materials became forbidden as part of a strategy to ban, or at least discourage, industrial development. This third phase of renovations, totaling 28 kilometers of new boulevards at an estimated cost of 280 million francs, was approved in 1869, but only after fierce opposition from the Assembly (the French Parliament), which by then had become embroiled in the struggle for the transfer of essential public powers from the Emperor to elected representatives. Haussmann, who – it must be said – behaved as an autocratic ruler and abhorred to be held to account, became the personification of the kind of governance the Assembly sought to abolish. It therefore attacked him head-on in order to weaken Napoleon III's position.

A first series of attacks had to do with the financing of the operation. After he had been called to order by the Court of Accounts for improper management, left-wing journalists like Jules Ferry ridiculed Haussmann in the newspapers, putting him and his staff up as incompetent and fraudulent. Whether this is true or not, remains food for debate still today. The fact is that, whereas the rapid inflation of real-estate values in the 1860s could perhaps have been foreseen, no one expected the generosity of judges in awarding indemnities for condemned property, nor the *Conseil d'Etat*'s ruling in 1858 that compelled the city to return surplus of the expropriated land to its

former proprietors, including the added value. As a result, the city's debt exploded to 2500 million by 1870 and would continue to represent over 40 percent of its ordinary budget for the next decade. To his defense, it must be pointed out that Haussmann was never out to enrich himself; in his memoirs, he recalled three separate incidents when attempts were made to bribe him, without success. Yet, the fact remained that he had been reckless, and purposely evading public control. Weakened after the 1869 elections, and due to his poor health and the looming Franco-Prussian War, Napoleon III gave in to the opposition in January 1870 and dismissed Haussmann. Eight months later, he was captured himself by the Germans, and the Empire was overthrown. This did not signal the end of Haussmann's project, however; the leaders of the new Third Republic understood that there was in fact no other option than continuing and completing the transformation of Paris, which was further carried out by Haussmann's former right hand Alphand. It would take until 1927 before the last boulevard was completed – named, quite fittingly, after Haussmann himself.

## THE HERITAGE OF HAUSSMANN

The opaqueness of his financial strategy was not the only critique ousted by Haussmann's contemporaries: from the start, his lack of concern for the medieval heritage of Paris provoked reaction. This was most dramatically illustrated on the île de la Cité, one of the oldest but also poorest parts of the city, enjoying a duteous reputation. Haussmann mercilessly tore down its dense, medieval tissue and replaced it by huge public buildings that were both symbols and tools of surveillance and control, such as the *Hôtel-Dieu* (1867-1878), the *Prefecture de Police* (1863-1867) and the *Palais de Justice* (1857-1868). The square in front of the *Notre Dame* was also widened and the church freed from parasitic structures. The monotonous aspect of the new cityscape was also heavily commented upon, especially since it relied in fact on the 1784 building code. Only for the largest boulevards, the standard building height of 17.5 meters was changed to 20 meters, but the envisaged horizontal effect remained all the same. The prototypical five-story apartment block with two balconies dated back in fact to Louis XIV's time, just like the limestone used to build it. Thus, unity of style was achieved in the simplest possible way by relying on a well-known model and imposing it on the builders and their clients. Working within extremely tight constraints, architects managed to express their own individualism, nevertheless, producing an extraordinary diversity within this rigid framework.

Haussmann's obsessive attention to detail and uniformity found its application not only in buildings but also in the street furniture such as lamp standards, benches, bus stops and protecting grills for trees that decorate the city until the present day. It is precisely this combining of disciplines (urban planning, architecture, landscaping,

engineering and furniture design) into one coherent whole that made his approach unique and almost unrepeatable. It inspired ambitious reforms in numerous other European capitals (the Hobrecht-Plan for Berlin; the Central Lanes in Brussels under mayor Jules Anspach and king Leopold II; and, of course, the construction of the Ringstrasse in Vienna) but none achieved the enchanting effect of Paris, where a dilapidated medieval city had been transformed into the 'capital of the 19th century' (as Walter Benjamin called it later) in only two decades.

Yet, it should not be forgotten that the spatial restructuring of Paris under Haussmann also introduced a new social structure, the effect of which is still felt today. Whereas he prided himself of the fact that in the central arrondissements, the population density had decreased despite its increase by over half a million people, and that the number of dwellings for the poorer classes had grown, he conveniently forgot that those dwellings were no longer in the same place as before. The sharp rise in rents obliged the lower incomes to seek refuge in the newly annexed suburbs, where they had to compete with the endless stream of immigrants. Scholarship is divided as to what extent Haussmann and Napoleon III consciously engineered this social segregation, but the fact remains that Paris evolved from a socially mixed city into an almost exclusively middle-class enclave, surrounded by a ring of industrial and working-class suburbs. The *embellissement* of Paris thus led to an actual *embourgeoisement*.



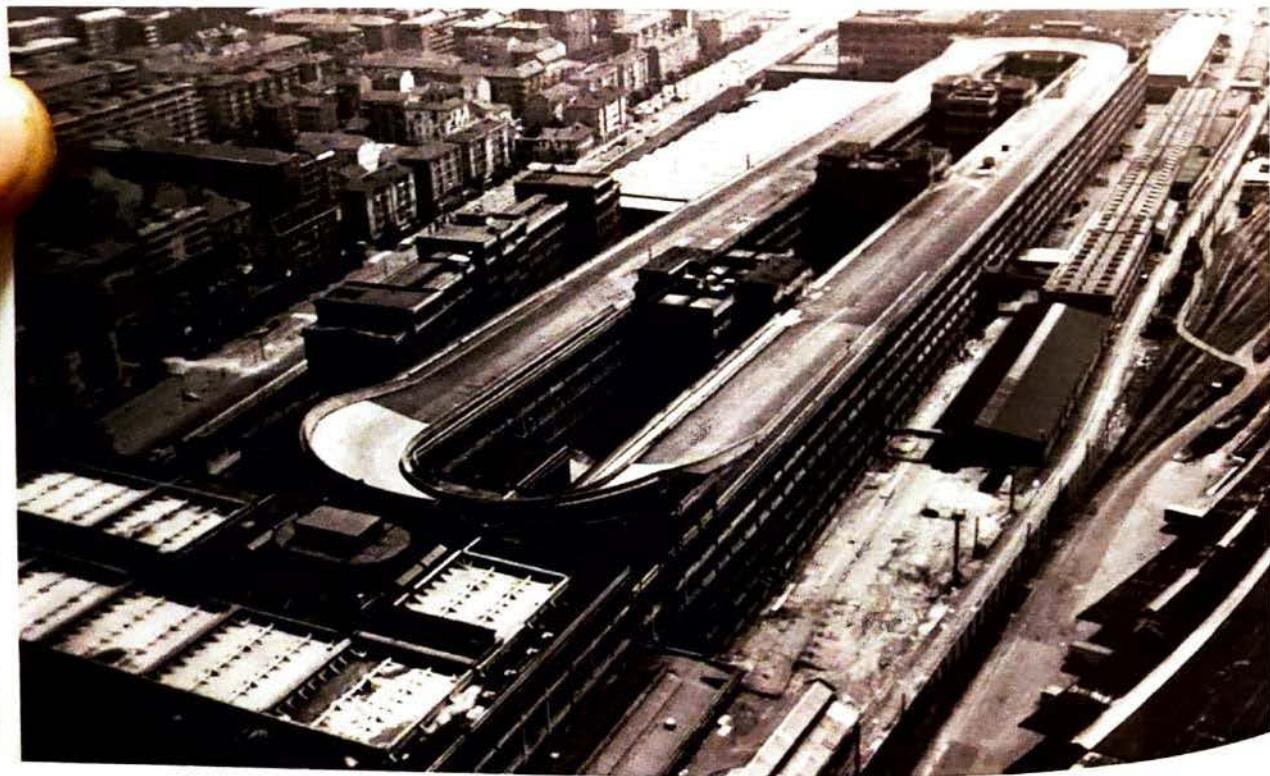
The corresponding shift from production to consumption gave rise to a new urban culture, based on the separation between a private interior and public space. This phenomenon was masterfully depicted by Gustave Caillebotte (1848-1894) and later theorized upon by Walter Benjamin (1892-1940). Caillebotte poignantly captivated the latter's idea that the new boulevards were not just everyday streets but theatrical spaces designed for display. Indeed, *Rue de Paris: Temps de Pluie* (1877; see Figure on previous page), one of his most ambitious paintings, showed how the new bourgeoisie almost became accessory in this new urban environment, which he represented as an elegant, orderly but also empty décor. As Benjamin theorized, the private interior of the apartment, by contrast, became the personal museum of the modern subject: decorated with objects that reminded him of his own past and earlier travels, it provided a familiar anchor point in an urban environment that had unrecognizably changed in just one generation's time. It is therefore not a coincidence that the balcony constituted one of Caillebotte's favorite themes: on the border between outside and inside, it functioned as the threshold between the public and private world, and the present and the past.

Whether Haussmann's herculean endeavor is to be labelled a big success or a gigantic failure remains open for debate. Attention for it has remained vivid ever since, however, and every new generation seems to appreciate his achievement differently. Interest in Haussmann revived particularly in the 1990s, when his approach was conveniently hailed as the penultimate blueprint of the mixed-economy model. Today, in the second decade of the 21st century, Haussmann's city blocks are appreciated for their great flexibility. Ensuing a great diversity of programs and functions, this model possesses an ability to absorb changes across space and time, and is therefore increasingly seen as a remarkably resilient and durable model for sustainable urban development.

# MODERN TIMES

## THE CONCEPT OF MODERNITY

At the dawn of the 20th century, the major social and technological transformations initiated in the 19th century were greatly accelerated, setting the stage for the reshaping of not only the economic but also the social and cultural landscape in Europe. With the increased normalization of industrialization and mechanization, the shift from rural to urban existence in the industrializing world was no longer a novelty but an entrenched reality experienced by many in the sprawling metropolis. In the industrial city, the contradictions emerging from past attempts at reconciling old and new, natural and mechanical, ideal and utilitarian, were increasingly smoothed over through several processes of abstraction. None was more important than the notion of modernity and (the process of) modernization, which were quickly becoming dominant forces for an industrialised society. Modernity, as it were, was to be a product of unstoppable technological and scientific progress, the most crucial result of sweeping economic and social changes brought about the capitalism of the industrial revolution.



If during the 19th century the shockwave of newly industrialized modernity had been mostly understood as a process of fragmentation and disintegration of previous patterns and existence, by the early 20th century the reading of modernity was focused instead on unlimited technological and practical progress as well as the possibility for an unbounded metropolis and modern experience. As a fundamental process of social development, modernity was effectively experienced through the advent of industrialization, mechanization and technological development. Furthermore, urbanization, population growth, the rise of newly empowered nation states, democratization, and the expansion of mass media and communication systems as framed by an ever-expanding capitalist system were equally important. The notion of modernity thus became a crucial framework by which to understand an ever-changing present, with several key thinkers and writers exploring this notion to reconcile their observations and experiences of the modern world. Arguably, German philosopher and cultural critic Walter Benjamin (1892-1940) best captured the spirit of modernity in his writings, as he commonly associated the cacophony of the modern metropolis and its crowds, as well as the euphoria of the new, with the decaying fabric of buildings and the obsolescence of past experiences. For Benjamin, these were two sides without which any understanding of modernity would be woefully incomplete.

The dissonance and complexity of modern experience were perhaps even better expressed (and made much more directly evident) with the development of cubism in painting and sculpture which would also inspire similar movements in literature, music and architecture. Invented around 1907-1908 in Paris by the Spanish artist Pablo Picasso (1881-1973) and the French artist Georges Braque (1882-1963), cubist artworks analyzed, disassembled and reassembled their subject (often objects and figures) to depict them from a multitude of viewpoints – rather than a single viewpoint – often resulting in paintings and sculptures that appeared fragmented and abstracted. Cubist fragmentation and abstraction was created by breaking down their subjects into distinct planes which, when reassembled, presented a multitude of viewpoints at the same time to suggest their three-dimensional form, while emphasizing the flatness of the painting's canvas. Such a collusion of viewpoints established a radical break with previous European tradition of depicting real space from a fixed viewpoint using a linear perspective. With these formalist innovations, cubism not only revealed an entire new way to treat and represent visual reality in art, but also provided a new way to see the world, aptly representing the unease and fragmentation brought about by the transitions experienced in industrialising societies at the start of the 20th century. Cubist artists, however, would be among the first to fully absorb and adapt to the end of tradition and the rise of the machine age, embracing and depicting the new ways of living in the brave new world of the modern metropolis. As cubist artworks explored the essence of their subjects from a multitude of viewpoints, they also signaled how in the early 20th century, modernity had

become associated not only with the present but also with the new, the current, and the momentary, as the specific quality that made the present different from the past and that indicated a way toward the future. Therefore, as modernity set a definitive break between present and past, it also represented everything that rejected previous traditions and the ideas of the past.

## BREAKING WITH THE PAST

As the notion of modernity became central in understanding this new age, many (including thinkers, writers, artists and architects) were increasingly convinced that no progress was possible without radically breaking with an oppressive past. With high hopes for the future, it became increasingly understood that anything that stood in the way of progress could (and should) be sacrificed in order to achieve it. Increasingly, there was an almost dogmatic belief that progress, made possible by industrial and technological development, was inherently positive, by contrast with 19th century fears that it might also involve a form of decline. The emergence of a progressivist bias was based on a reading of modernity as unproblematic, a reading of modernity without contradictions, in which progress would be inevitably achieved through rationality and functionality.

No other group was more forceful and militant in its dogmatic belief in progress and in its calls to break with the weight of the past than the (Italian) Futurists. Their hostility towards tradition and the past was immediately clear in the group's foundational manifesto authored by the Italian poet Filippo Tommaso Marinetti (1876-1944) and published in the French newspaper *Le Figaro* on 20 February 1909. The manifesto was a lively attack on traditionalism in culture and argued for an artistic expression nourished by contemporary forces and the poetic sensations released by a new industrial environment, as they recognized in technology the basis for a new culture of the masses. With bombastic rhetoric, Futurism announced its iconoclastic principles to the complacent bourgeoisie of the Belle Epoque through the eleven points of the manifesto. The first four points extolled the virtues of temerity, energy, and audacity, while asserting the supreme magnificence of mechanical speed, in a (now famous) passage that declared the modern racing car to be more beautiful than the Greek statue of the winged victory of Samothrace. The manifesto's concluding points called for the destruction of academic institutions of every kind and itemized the ideal context of a futurist architecture. Anarchist in inspiration, the Futurist outlook had no particular political affiliation, but was in favor of revolutionary change, speed, dynamism of all sorts, and an aggressive adulation of the machine. However, as the stability of institutions stood in the way of change and progress, the Futurist Manifesto suggested the destruction of museums and academies. For

the Futurists, the vitality of modern life was opposed to the tiredness of inherited art forms. This was best experienced in the modern metropolis, the typical subject matter of Futurism. Effectively, the modern metropolis was perceived as a sort of collective expression of the forces of society, an inherent homage to the triumph of industrialization, with a proclamation of the cultural primacy of a mechanized environment. Futurists had a nationalist bent and glorified the aesthetics of war, as the culmination of mechanization, speed, destruction and, inevitably, change. They would soon have the opportunity to experience the destruction of war first-hand, as World War I (1914-1918) erupted in Europe on 28 July 1914 and several Futurists quickly enlisted in the Lombardy Volunteer Cyclist Battalion.

While sparked by a bilateral issue between Serbia and the Austro-Hungarian Empire, through a series of interlocking alliances, most of Europe was enlisted in two opposing alliances. Through the warring nations' colonial territories and their global allies, the war between the Allied Powers (primarily composed of England, France, Italy, Russia, the United States, and Japan) and the Central Powers (primarily composed of Germany, the Austro-Hungarian Empire, the Ottoman Empire and Bulgaria) quickly became a global affair. With newly developed mechanical capabilities and the ruthless efficiency of machines, the first industrialized war inflicted unprecedented devastation and casualties across the continent. Leaving behind a previously unimaginable level of destruction, World War I became a defining moment for Europe's political, economic, cultural and social conditions. Moreover, to prevent the escalation of localized disputes into global wars, new mechanisms for international cooperation were established, such as the League of Nations (1920-1946), to ensure dialogue and diplomacy. However, beyond the political and territorial reconstitution of Europe (with the dissolution of several of the warring powers and the eruption of varied revolutions and uprisings), the economic impositions of the winning faction over the defeated powers would lead to the rise of several totalitarian and nationalistic political regimes as well as tremendous financial instability and political unrest (especially in Germany's Weimar Republic).

With the destruction, many saw in the war's aftermath the opportunity to start anew, with a definitive break with the past and tradition. Effectively, World War I had destroyed most traces of pre-industrial Europe and ultimately even spelled the collapse of the colonial system and thus industrial technologies and capital were now unimpeded in their irreversible advances. Across Europe the war seemed to provide a clean slate for a new social and cultural order, as it accelerated not only a dissolution of boundaries among social classes (through the camaraderie of war), the advancement of the women's rights movement (with women's suffrage becoming more common), and the establishment of welfare state programs. It was now the time to forcefully articulate new social visions and suggest alternative ways of life that

defined rather than reacted to the modern condition with ambitious projects and grand ideas that explored the full social and aesthetic possibilities of the industrial age.

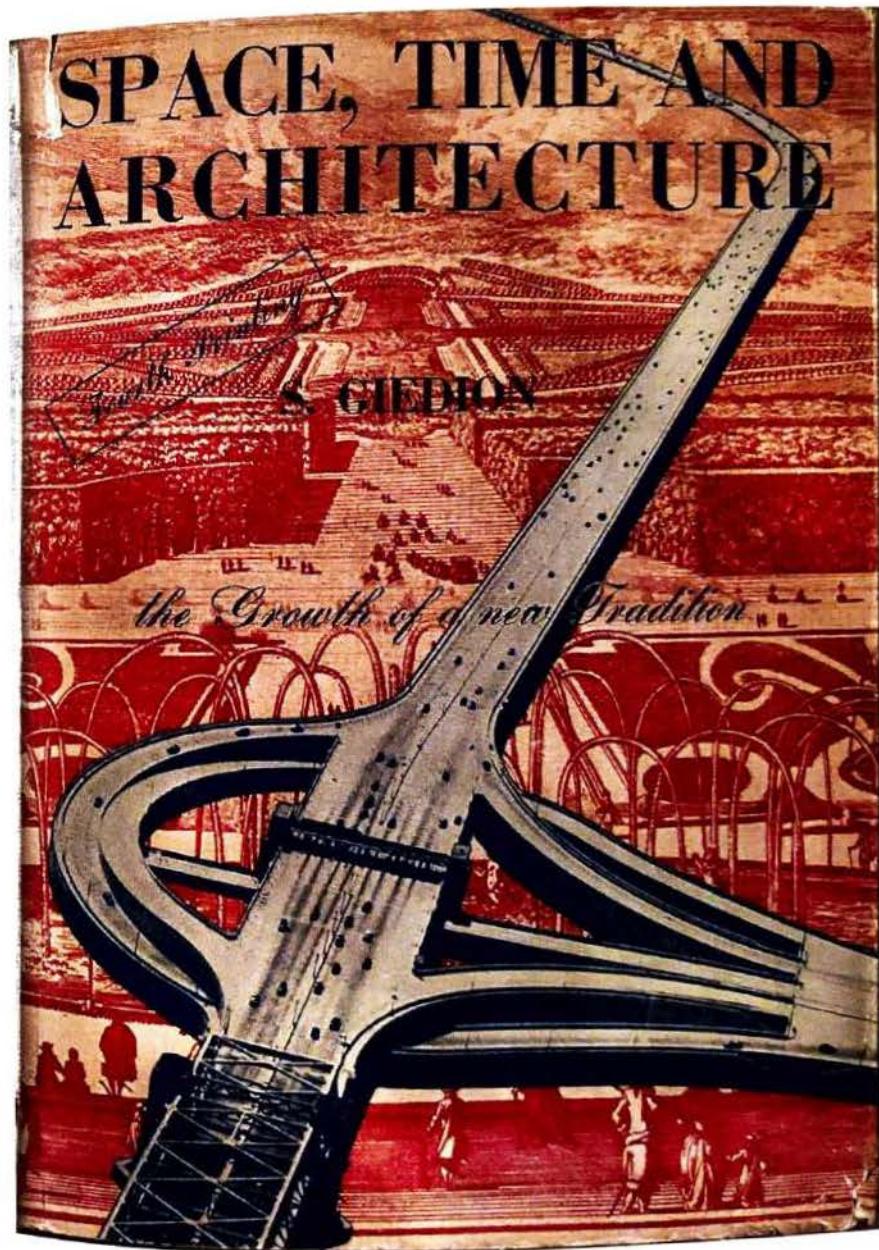
In Russia, already in 1917, a series of uprisings and revolutions (culminating in the Bolshevik Revolution) incited a new societal order, toppling the tsarist rule and establishing the first socialist state, the Soviet Union. In rejecting pre-revolution institutions and images of the Tsarist Russian Empire, mechanization became almost equated with the social and historical dimension of progress, quite understandably since the then industrial lag of the Soviet Union meant that industrial imagery was quite foreign to the large majority of the population and could not be associated with the previous order. Effectively, the rise of a machine aesthetic seemed to embody the underlying social and political forces, as industrialization and mechanization were used to express the inner dynamism of the revolutionary process.

## AN INSTRUMENT FOR SOCIAL CHANGE

Effectively, even as Europe experienced extreme political and financial instability, the interwar years were a period of consolidation of previous artistic experimentation, particularly the integration between art and industry. Given the enormous task of rebuilding Europe (and the desperate need for housing), architecture would become a particularly prolific field for the advancement of new ideas as a new generation of architects came to believe that architecture should be the instrument for the broader transformation of society. This was the basis for the rise of the Modern Movement in architecture (or modernism), where function, form, structure, and meaning were combined with a conviction of inevitability. Effectively, modern architects believed in rational thought, particularly as it served to deliver efficiency, functionality and economy (of means) which could best be produced through mechanization. Such a consolidation was marked by several defining events (to such an extent that the interwar period is often referred to as the heroic period of modern architecture). If in 1919 the Bauhaus was established by Walter Gropius in Weimar, in 1923 Le Corbusier would publish *Vers Une Architecture*, in 1928 the CIAM (*Congrès Internationaux d'Architecture Moderne*, or the International Congress of Modern Architecture) would be founded, and in 1932 the exhibition *Modern Architecture: International Exhibition* would be held at the Museum of Modern Art (MoMA) in New York.

Modernists believed that their concept of architecture constituted the only legitimate answer to the modern experience and to the issues and opportunities resulting from the industrial age's process of modernization. As they attempted to break with the immediate past and the 19th century bourgeois culture in their

functional and rational approach to architecture (which also implied a formal and aesthetic break), they believed that their work was simply resolving the problems of the metropolis. Modernity was no longer merely an intellectual concept but could now be instrumentalized everyday anew in the urban environment. The rationality of the urban environment became a definite starting point in response to the industrialization and mechanization of society. Not only building production was being industrialized and mechanized, houses and the city itself became machines to live in, with the machine becoming a metaphor that formed the basis for modern architecture and urban development. Ultimately, the modern movement attempted to reconcile the forces of the industrial age with an idealized vision of society.



# THE EMERGENCE OF URBANISM AS A MODERN DISCIPLINE

## THE 'URBAN INTERNATIONALE'

In the early 20th century, town planning developed into a discipline of its own, with proper associations, journals and conference cycles. Stressing the underlying idea that urban problems were universal and could be solved through cross-border cooperation, the French historian Pierre-Yves Saunier refers to this moment as an 'Urban Internationale'.<sup>1</sup> Its first high point was the RIBA Congress in London, 1910, the aim of which was to show how far urban planning had progressed.<sup>2</sup> Attended by more than 1400 architects and planners, it featured no less than 120 paper presentations in four different languages, and was accompanied by an extensive exhibition – a format that would become typical. The conference also installed another pattern, however, namely the use, by its organizers, of an international conference to push through a local agenda. In this case, it had to do with the RIBA's concern that it had not been included in the 1909 Housing and Town Planning Act as a statutory body. The event was therefore meant to emphasize the importance of (British) architects in shaping the emergent field of town planning. Ironically, however, it also uncovered the relative weakness of Britain's town planning tradition, dominated by Howard's Garden City ideas: Germany was much more advanced in addressing the problem of city expansion and civic administration, while the French were developing a strong tradition in publicly led technical and aesthetic urban improvements as could be derived from Tony Garnier's *Cité industrielle* (Industrial City, 1917), Eugène Hénard's (1849-1923) *Etudes sur les transformations de Paris* (Studies on the Transformations of Paris, 1903-1909) – and the founding of the Société Française des Urbanistes (SFU) – the name of which comprised even a neologism to designate the modernity of this approach. By contrast, Daniel Burnham's massive Beaux-Arts inspired master plan for Chicago, also on display, looked old-fashioned.

Two years later, at the 1913 World Fair in Ghent, an even more ambitious congress was organized, primarily aimed at politicians, administrators and technicians interested in town planning and administration.<sup>3</sup> At Ghent, this group too created a dedicated forum, namely the *Union Internationale des Villes* (UIV), which bore the particularity that it was an association of institutions (namely municipalities and municipal organizations). Besides its technical and professional goals, the organization was also fuelled from the start by an utopian ideal of universal co-operation; its founders even imagined that the UIV might perhaps once serve as the basis for a

## TONY GARNIER: UNE CITÉ INDUSTRIELLE



Having been awarded the *Prix de Rome* upon graduating from the École des Beaux-Arts in Paris in 1899, Tony Garnier (1869-1948) spent four years at the Villa Medici in Rome. Supposed to be studying ancient Roman ruins and Greek temples, he devoted his time instead to outlining a detailed vision of a new industrial city for 35,000 inhabitants, which was based on the separating of zones according to their main activity or 'function', such as industrial, civic, residential, health related, and entertainment. In particular, the *Cité Industrielle* was divided into two spatial units separated by a green zone: a residential city, with public services and cultural amenities in its center; and an

industrial city where all manufacturing activities were concentrated. This principle of 'zoning' (functional segregation) became a central ingredient of the CIAM doctrine and was almost universally applied by mid-century. Another innovative characteristic of the *Cité industrielle* was its linear structure, which made it possible to separate the various functions while still guaranteeing an effective communication between them. This principle signified a conscious break with the traditional concentric structure of the city.

Although it was designed for a precise, yet fictitious location between a mountain and a river (to facilitate access and take

advantage of hydroelectric power), Garnier's design was more than a detailed design for a particular city. Considering industry as a positive force in the future economic growth of towns, it was first and foremost meant as a model for the coexistence between both. Further, and typically for the utopian undertones of many such projects in the early 20th century, the *Cité Industrielle* was not only to foster a healthier climate for its citizens, but also to enable their peaceful co-existence. In Garnier's vision of a future socialist society, where land would be collectively owned and people would live in simple, uniform dwellings (all oriented north-south and built in reinforced concrete, then a novel

material) there would be no need any more for religion or other forms of moral and legal control. Rather than a church or town hall, the center of the residential zone therefore features a large citizens' hall. Considering the context of Garnier's Beaux-Arts training, it could thus be said that he was less interested in the formal aspects of the ancient Greek polis, than in reviving its social aspect in a modern form. Garnier's drawings were initially exhibited in 1904, but it took until 1917 before they were published as *Une Cité Industrielle: Etude pour la construction des villes*, which formed a major contribution to the development of modern town planning.

## PATRICK GEDDES

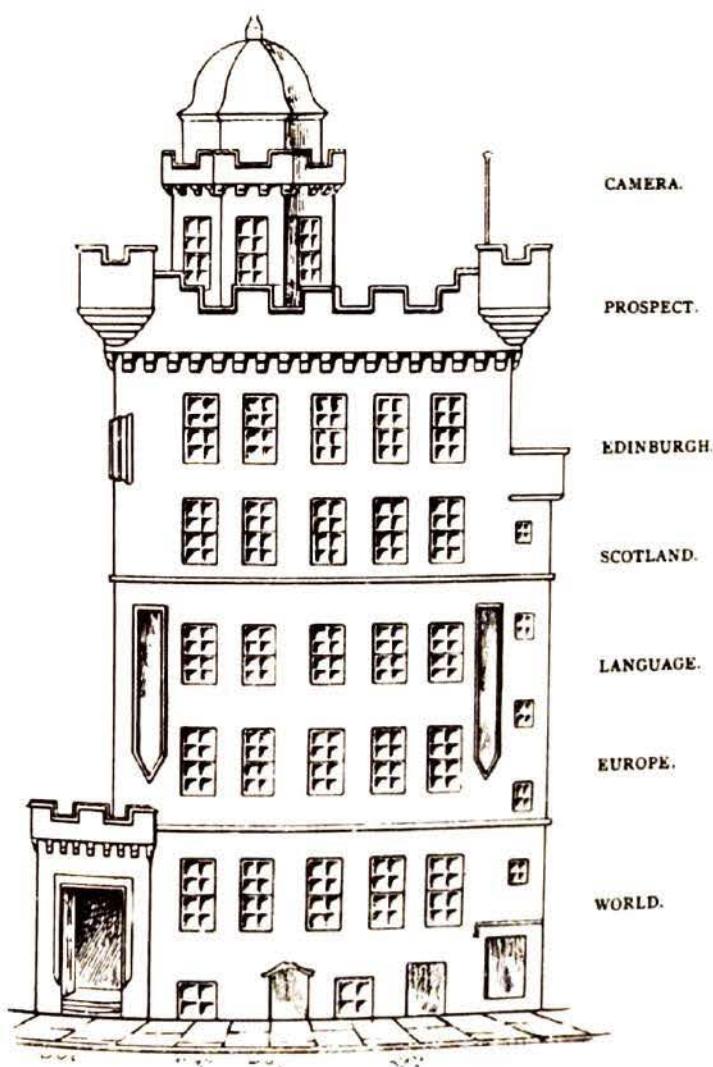
One of the central figures in the emergence of urban planning as a modern discipline was Patrick Geddes (1854-1932). His influence extended well into the 20th century, but his thinking was firmly rooted in 19th century science and culture. While he thought of himself primarily as a sociologist, it was his commitment to close social observation and his ability to turn these into practical solutions for city design and improvement, that earned him a place amongst the founding fathers of modern planning. For example, Geddes introduced the notion that informed planning decisions could only be made based on a careful study of the area under consideration; his slogan '*survey before plan*' became a mantra in planning theory in the 20th century. Geddes' attention to

aspects of growth and form had to do with his training as a biologist and his fascination for the evolution theory developed by Charles Darwin (1809-1882), whom he knew personally. Hence his belief that biological evolution could be applied to explain social phenomena – and cities in particular, as he demonstrated in *Cities in Evolution* (1915) and his so-called 'valley section' (1923), representing an image of human evolution in terms of essential 'occupations' (such as fisherman, gardener, farmer, etc.) and their typical topographical locus.<sup>4</sup>

For Geddes, the city was "the form that human life in its highest evolutionary development (...) could and should take."<sup>5</sup> Social life was considered to be

characterized by communitarianism and corporatism. These aims he expressed in a field of study he termed 'civics', meaning "a focus on cities, their function in evolution, and their internal structures and institutions" and "most notably, the necessity for citizens' engagement."<sup>6</sup> For this last notion to become effective, it was necessary that citizens experience the city and discover the relationships with the specific, unique history of that city. To this end, Geddes created the so-called Outlook Tower in Edinburgh (see Figure below), from where people could view the city from a camera obscura, and where, as one descended from the

tower, the historical evolution of the city was explained on the different floors. In this educational process, architects and artists were given a special role as the "natural and eternal leaders of the new order."<sup>7</sup> Although Geddes' overall aim was to develop a *useful geography*, it was a practical stance he suffered criticism for from scientific circles throughout his lifetime. Yet, his idea that cities develop in relation to their region and his concept of 'conurbation' (a coherent aggregate of disparate settlements) constitute the conceptual fundamant of town and regional planning today.



future world government.<sup>8</sup> At the same occasion, Patrick Geddes presented one of the iterations of his acclaimed Cities and Town Planning Exhibition. Still in the same year 1913, the International Garden Cities and Town Planning Association (IGCTPA) was founded, as a spin-off of the Garden Cities Association (itself founded in 1899 by Ebenezer Howard to promote the construction of Letchworth Garden City).<sup>9</sup> In 1919, the IGCTPA held an important conference in Brussels dedicated to the reconstruction of Belgium, and another one in London (1920) that focused on housing – a fact that highlighted the association's assumption that town planning remained primarily about housing, to be situated in city extensions on garden city lines. Nonetheless, the organization contributed significantly to the professionalization of the discipline by establishing, for example, international norms for urban cartography and a comparative glossary for housing and planning.<sup>10</sup>

In 1924, the UIV and the IGCTPA organized a joint congress in Amsterdam.<sup>11</sup> Over 500 participants from 28 countries attended, debating a wide array of topics such as housing, traffic problems, land policy and public green space inside and outside the city. This resulted in seven 'resolutions', stating in the first place that the self-destructive and unbridled expansion of cities should be halted, for it led to the congestion of the city centers, and a loss of contact with nature.<sup>12</sup> The idea of creating a belt of satellite cities was considered a sensible, but not universal, solution – and if applied, should be coupled with a 'green belt' for agriculture and livestock to interrupt the endlessly expanding housing settlements. Traffic within cities as well as in relation to the extensions was also found to be of major concern, but no specific solutions were put forward. The main contribution of the congress lay perhaps in its emphasis on regional planning. Robert Schmidt's 1920 regional plan for the Ruhr, involving over 300 (!) municipalities, was an eye-opener in this regard, for it showed that halting the consumption of open land required also considering problems of an administrative and legal nature, competing economic interests, questions of land ownership, etc. As far as the Netherlands were concerned, the conference bore its fruit, for it is generally regarded as the starting point of the rich tradition of the regional planning the country is now known for.<sup>13</sup>

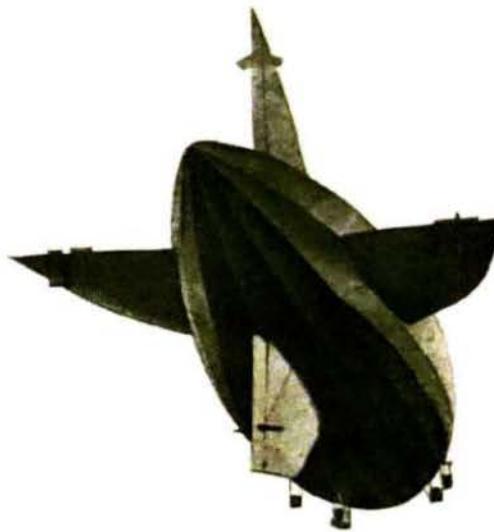
## THE DISCOURSE ABOUT THE CITY AMONGST THE ARCHITECTURAL AVANT GARDE

During the 1920s, various avant-garde groups shared the idea that entirely new architectural and urban forms were a necessary component of a new social as well as artistic order. The Italian Futurists were a typical example. Antonio Sant'Elia's (1888–1916) *Città Nuova* (1912–1914) resembled an immense, tumultuous shipyard where

urban life became rationalised and centralised into one fast-paced machine. The city thus became a vast, interconnected and integrated mechanism, to be transformed by every new generation of inhabitants.

The Futurists' call for action was not lost on Russia, where in the aftermath of World War I, the Union of Soviet Socialist Republics (USSR) originated after a communist revolution led by Vladimir Lenin (1870-1924). His goal was to realize a new, egalitarian society ruled by the workers (the so-called *proletariat*). This was to be enabled through mass electrification and heavy industry, a program that culminated in the first Soviet Five-Year Plan in 1928. The terror and atrocities induced by Jozef Stalin (1878-1953) to enforce it would only become known in Europe in the late 1930s, which explains the public admiration for it, then, by many Western intellectuals and politicians, and the eagerness of many architects and artists to participate in it. This led to an intensive exchange between the avant-garde in Western Europe and the USSR, as embodied by the presence of El Lissitzky (1890-1941) at the Bauhaus or Le Corbusier's regular visits to Moscow in the late 1920s.

The reorganization of the new capital (Moscow instead of Saint Petersburg) installed a huge debate between the so-called 'urbanists' and 'disurbanists'. While the former advocated the dissolution of existing cities and their replacement by new, collectivized settlements of 40,000 to 60,000 people with common facilities (kitchens, bath houses, bakeries, etc.), the disurbanists proposed that society be atomized by giving each individual his own living cell - thus realising the ideal of a decentralized society as put forward by Marx. Nikolay Milyutin (1889-1942), for example, proposed to organize the industry according to the natural flow of production, from raw supplies to finished goods, and organize cities accordingly as a series of functionally specialized sectors



parallel to the production process. Workers, for example, would settle directly across their factory, eliminating the need for transportation. The competition for a one-industry town for 20,000 in Magnitogorsk in 1930 became the testbed for these ideas. The constructivist architect Ivan Leonidov (1902-1959), for example, proposed to organize the city on a stretch of over 20 kilometers along a route which led from the industrial hub to the state farms, laid out in a square grid pattern (see Figure on previous page). The development of Magnitogorsk was finally entrusted to a team headed by CIAM-members Ernst May (1886-1970) and Mart Stam (1899-1986) (cf. further), but what was finally realised only remotely resembled a linear city and was a far cry from May's original intentions.

The developments in Russia greatly influenced the cultural climate in the so-called 'Weimar Republic' (1918-1933), which installed a wide range of progressive social reforms, and stimulated housing construction in particular. Initiatives with regards to modern art and architecture were publicly supported, such as the *Deutscher Werkbund*, an association of designers and industrialists which aimed to integrate traditional crafts and industrial mass production techniques, as a way to improve the competitiveness of German companies in global markets. The *Werkbund* was instrumental in the founding of the Bauhaus, and took the initiative for the *Weissenhof Siedlung* in Stuttgart, a model neighborhood consisting of 21 buildings designed by an international group of 17 architects, comprising sixty dwellings in total.<sup>14</sup> Despite the diverging backgrounds and nationalities of the designers, the final result displayed a strong consistency: simplified façades, flat roofs used as terraces, window bands, open plan interiors, and a (relatively) high level of prefabrication. In this respect, it was the most radical of the very many *Siedlungen* (settlements with public housing) that arose all across Germany at that time as a hallmark of the social-democratic ideology. Advertized as prototypes for workers' housing, the *Weissenhof* dwellings were in fact customized and far out of a normal worker's reach. Nonetheless, it drew huge crowds and became the undisputed flagship achievement of the modernist movement in architecture.

In terms of proposals for future cities, the Weimar period produced very contrasting visions.<sup>15</sup> On the one hand, the Expressionists emphasized the distortion and dislocation of modern life, turning to nature to generate visions of prospective cities. Bruno Taut (1880-1938), for example, designed medium-sized star-shaped towns with houses shaped like crystals and monumental civic buildings (*Stadt Kronen*) intended for city centers. On the opposite pole stood Ludwig Hilbersheimer (1885-1967), whose *Hochhausstadt* (Highrise City, 1924) was a radical interpretation of Le Corbusier's *Ville Contemporaine* (1922). Consisting of a seemingly endless repetition of widely spaced housing slabs, to be built above elevated pedestrian walkways, with office buildings at ground level and limited-access highways and rail lines below,

it reduced the city to its utmost essence, namely the abstract building block, the individual cell, and circulation. Thus, Hilbersheimer brought the then prevailing tendency towards abstraction to its logical conclusion.

The practical relevance of such ideas for the problem of mass dwellings in the major cities remained limited, however. One exception was Frankfurt, where Ernst May had become *Stadtbaudirektor* (i.e. head of the department of housing and city planning), and was building no less than 10,000 housing units in the space of only five years.<sup>16</sup> Meant to function as relatively independent satellite settlements, his *Siedlungen* were self-sufficient in terms of amenities such as schools, churches, community centers, co-operative shops, etc. and functioned as satellites (*Trabanten*) at a certain distance from, but with good transport connections to the center. The latter remained the 'heart' of the agglomeration, containing all the important civic amenities and the main commercial, political, administrative and economic activities. Thus, as the famous *Flächenverteilungsplan* makes clear, May's take on the planning of Frankfurt constituted an early example of functional segregation (zoning) between housing (in the *Siedlungen*), work (in the industrial areas along the Main river), trade, culture and education (in the center), and the connecting infrastructure of roads and railways.<sup>17</sup>

To be able to construct at such a scale, the dwelling needed to be reduced to its very essence. The resulting notion of *Existenzminimum* had a cultural and ideological meaning in the first place, however, for its rationality and functionality were initially seen as liberating forces that could free the people from the intolerable living conditions in the *Mietkasernen* (rental barracks).<sup>18</sup> This was also the message spread by *Das Neue Frankfurt*, the monthly magazine edited by May, which aimed at shaping the common man's understanding and appreciation for the new dwelling culture. After the stock market crash of 1929, which hit Germany particularly hard, the notion of *Existenzminimum* became stripped of its cultural meaning and became reduced to maximum building economy. This shift became painstakingly clear in the two most paradigmatic examples of the Frankfurter *Siedlungen*: Römerstadt and Westhausen. In Römerstadt (see upper Figure on next page), May sought to reconcile a rational and functional approach with the picturesque qualities of the Garden City (which he had become familiar with when working with Raymond Unwin in England). Situated along a slope adjacent to a flat, open area of the valley, the settlement was structured by a couple of broad thoroughfares, while the relatively narrow local streets espoused the topography of the terrain. The resulting long, rectilinear blocks were left open on their short sides, providing access to the dwellings via a pedestrian lane from the back. The houses were small but well designed, carefully detailed (as illustrated by the little canopies above the street entrance) and equipped with all sorts of modern amenities such as a prefabricated kitchen (designed by Grete Lihotsky, 1897-2000), running water, electricity, cable radio and comfortable, mass-produced built-in furniture.

At Westhausen, by contrast, the careful landscaping made way for the principle of *Zeilenbau* (see second Figure below): standardized, single open-ended rows of apartments, spaced so as not to block the sun and located perpendicular to through streets that were connected to one another by pedestrian walkways. The apartments itself (1100 in total) were no more than two rooms deep as to ensure the direct penetration of sunlight.<sup>13</sup> Heliotropic concerns and accessibility now constituted the main design determinants, resulting in a uniformity that, furthermore, enabled significant savings for gas, sewer and water pipes. The outcome was a monotonous, yet universally applicable solution, that soon would become applied in urban design schemes all across Europe. Precisely such universalist aspirations caused increasing irritation amongst conservative forces, however, for fear that Germany was betraying its traditional values. Therefore, after the economic depression of 1930 brought the National Socialist Party to power, it immediately made an end to May's experiment in Frankfurt.



Frankfurt a. M.: Städtebau Westhausen

## THE CONGRÈS INTERNATIONAUX D'ARCHITECTURE MODERNE (CIAM)

Frustrated by the rejection of Le Corbusier's entry for the League of Nations competition (1927) in favor of a more academic design, a number of progressive architects decided in 1928 to form an international coalition to overturn the dominance of the Beaux-Arts culture. Their central idea, as expressed in their 1928 La Sarraz Declaration, was that problems of architecture ought to be linked to the general economy, and not be dealt with in isolation on a formal(ist) basis.<sup>20</sup> Also, rather than serving the establishment, architects ought to emancipate the working masses by addressing their biological, psychological and social needs. Town planning, in this regard, was defined as "the organisation of all the functions of collective life in the city and the countryside together", these 'functions' being dwelling, work, recreation and traffic.<sup>21</sup> Stating further that democratic access to decent dwellings for the masses could only be achieved through quicker and cheaper building processes, the Declaration held that building components needed to become standardized, and that the design and construction of buildings needed to become rationalized. It also emphasized that architects should seek to influence public opinion in favor of this new approach, for neither the people themselves nor the authorities showed a real understanding of the current housing problem. From the onset, CIAM thus saw itself both as a think-tank for the development of a new architectural culture, and as the motor of an international lobby defending its values and interests.

CIAM met regularly in various European cities between 1929 and 1959 and exerted a tremendous influence on urban planning after World War II. According to Kenneth Frampton, its evolution can be divided in three phases.<sup>22</sup> During the first, 'Doctrinal' phase (the first three congresses), the German-speaking group was dominant. Mostly adherents of the *Neues Bauen* movement, they sought to move architecture away from its artistic pretensions, espousing it with rational building techniques instead: hence their practical and pragmatic focus. During this phase, Karl Moser (1860-1936) was president, while the Swiss art historian Sigfried Giedion (1888-1968) assumed the function of secretary; Victor Bourgeois (1897-1962) and Walter Gropius (1883-1969) became vice-presidents. The second, 'Utopian' phase (from CIAM 4 to CIAM 7) was characterized by the dominance of Le Corbusier. Less interested in technical issues than in architecture's potential for political and cultural change, he shifted the focus to the urban scale. The last, 'Idealist' phase became characterized by self-reflective discussions about the social responsibility of the architect and planner: while the organization expanded internationally, it became increasingly dominated by the core members of the later Team 10, who dissolved the organization in 1959.<sup>23</sup>

The first real CIAM congress ('Die Wohnung für das Existenzminimum') was held in Frankfurt and devoted to the topic of the minimum dwelling, in honor of May's efforts. Yet, this did not mean that this was the only initiative in this respect, nor that CIAM was the only organization studying the theoretical aspects of mass housing: for example, the less ideological IGCTPA mentioned above (rechristened International Federation for Housing and Town Planning (IFHTP) in 1926), had devoted its 1928 Paris congress to the topic, and did so again in Rome in 1929.<sup>24</sup> Typically for CIAM, however, were its excessively ambitious goals, namely "to make up the balance of the actual housing shortage, investigating its causes and its solutions".<sup>25</sup> To this effect, all national groups were asked to fill in an extensive questionnaire, with a view to obtaining detailed information about the local culture in terms of public housing. In his keynote address, 'The Sociological Basis of the Minimum Dwelling', Walter Gropius stated that man had evolved from living in a tribal organization via the later family to the present individualism and would in the future come to live in a cooperative association. He saw the emancipation of women and the declining birth rate as evidence of this evolution, which, in his view, explained why the inheritable one-family house was making way for the rented apartment. Extrapolating this evolution, the only relevant dwelling typology of the future thus consisted in high-rise apartment buildings with collective amenities such as communal dining, day care and recreational facilities. Gropius also presented a series of sectional diagrams showing parallel buildings from one-story terraced houses up to ten-story slab blocks – illustrating that the taller buildings allowed for more open green space between them and thus ought to be preferred.<sup>26</sup> Gropius' conclusions highlighted how May's take on the matter was all but admired by the more outspoken members of CIAM. A clear, workable alternative was not offered, however, and thus CIAM 2 did in fact not fulfil its goals: the extent of the housing shortage was not assessed, the questions regarding its causes were not answered, and further lectures by Bourgeois, Schmidt and Le Corbusier offered little theoretical insights. This disappointment was obscured, however, by the success of the accompanying exhibition, displaying 105 analytical ground plans of minimum dwellings designed by modern architects from across Europe.

One year later, CIAM gathered in Brussels, where a significant number of new estates had been commissioned by progressive-minded, cooperative housing associations. Entitled 'Rationelle Bebauungsweisen' (Rational Site Planning), the congress' goal was to discuss how minimum dwellings ought to be combined into functional housing settlements. This topic became narrowed down, however, to the previous discussion about low-rise versus high-rise building. That Le Corbusier took the latter for granted, can be derived from his *Ville Radieuse*, which he presented there for the first time. His preferences were contradicted by two architects from May's group, Boehm and Kaufmann, having examined in great detail the actual cost of buildings with two to

twelve floors. As they stated, on economic grounds, medium-rise construction in brick of five floors was the better option. Gropius, in turn, contested this reduction of rationality to its economic aspects and invoked social arguments to condemn medium-rise dwellings as only combining the disadvantages of both low- and high-rise building.<sup>27</sup> As the most authoritative voice within CIAM (apart from Le Corbusier), Gropius' appeal was accepted; the conference proceedings effectively recommended high-rise construction in dealing with the housing problem. Thus, as Auke Van der Woud has pointed out, CIAM came to a particularly 'irrational' conclusion, for there was scarcely any experience available within it ranks concerning this building type.<sup>28</sup> Moreover, the problem of land-organization and ownership, as well as the planning of urban districts – crucial aspects of the conference theme – were not really discussed. Yet, the exhibited material, showing abstracted renderings of schemes as diverse as Pixmore Hill (Letchworth Garden City) to Gropius' radical Haselhorst district in Berlin-Spandau, made one thing clear: CIAM rejected all previous forms of urbanism, considering them only as evolutionary stages leading toward its new methods.<sup>29</sup>

As the political climate in Germany became increasingly hostile towards modernist culture, many architects (amongst which May) moved to the Soviet Union. With the latter and Le Corbusier as intermediates, the intense contacts between CIAM and its USSR counterparts culminated in the idea to hold the 1932 congress in Moscow. In the meantime, Cornelis Van Eesteren (1897-1988), who was doing pioneering work as an urban planner at the newly created Urban Development Section of the Amsterdam Public Works Department, had been appointed President, instead of Victor Bourgeois (the vice-president). This illustrated the latent rivalry between the German and Francophone fractions within CIAM, which derived from their divergent materialistic-deductive and idealistic-inductive approaches respectively.<sup>30</sup> Representing the first one, Van Eesteren managed to impose the method and graphical conventions of his Amsterdam Extension Plan as the blueprint for the next congress, entitled 'The Functional City'. Faithful to his idea that existing cities first needed to be analyzed thoroughly before making any new plans, the congress would be devoted to the careful study of existing cities on the basis of uniform, detailed plans of each one to be discussed.

During the preparations, Stalin's regime took an increasingly authoritarian and conservative turn, which became embodied by its discarding of both Le Corbusier's and Hannes Mayer's (1889-1954) proposals for the Palace of the Soviets competition in 1932 – once more, to the advantage of an academic, neoclassical design. This led to the next congress finally being held aboard a cruise ship (the *Patris II*) between Marseille and Athens. A provisory solution at the onset, the trip became the culminating point of modernist architecture's heroic period. Apart from formal addresses by Van Eesteren and Giedion, and Le Corbusier's speech

(see Figure below), in which he repeated his preference for the concentrated, high-rise city (portrayed as the locus "where an equilibrium could be reached between the two contradictory and hostile fates of the individual and the collective"), most of the time was spent on council meetings and discussing the same-scale plans of 33 industrial cities.<sup>31</sup> During the stop in Athens, the proceedings resumed with various other talks for a couple of days, after which the *Patris II* set sail back to Marseilles.



The fourth congress was important for CIAM for it gave the feeling that at last, the ideal of international collective work had actually been realized, and that it had now found its *modus operandi*.<sup>32</sup> As far as the results were concerned, things were less clear, however. Various, slightly diverging statements were published shortly after, but never officially endorsed by the CIAM council. Regarding dwelling, they stated that the old city centers and the 19th century districts were overcrowded, that 'extremely unhealthy conditions' prevailed there, and that the densest building was generally situated in the most unfavorable places.<sup>33</sup> Suburbs were generally unplanned and missed an organic link to the center, whereas residential areas ought in fact to be sited in the most favorable parts of the city, both climatologically and geographically. Regarding recreation, it was concluded that there were generally

too few green areas, and in case they did exist, they were poorly distributed across the city. As far as work was concerned, it was noted that workplaces ought to be distributed in accordance with their purpose and should be sited at the shortest possible distance from the residential areas – yet separated from them by green buffers. Finally, regarding transport, it was said that the existing road network was out-of-date; the creation of separate routes for various types of traffic was put forward, with crossings at different levels and the differentiation of streets according to their use. In addition, and at the insistence of the Italian group, a section was added on historical monuments, stating that buildings were worth conserving if they truly represented the past, if they neither constituted a health hazard nor stood in the way of required improvements.

On the whole, these statements were common truths and differed little from what other groups, modernist or otherwise, put forward.<sup>34</sup> In any case, it took until 1936 before the official publication of the proceedings became visible under the form of a popular, illustrated book (to be coordinated by José Luis Sert), and a more scientific volume collecting all the comparative material (to be supervised by Mart Stam). While the latter never materialized, the former was published as *Can Our Cities Survive* in the USA in 1942, after which Le Corbusier expanded the guidelines into 95 dogmas published as *La Charte d'Athènes* (The Athens Charter) in 1943.<sup>35</sup> As Rayner Banham would later famously state, this little booklet was perhaps "the most Olympian, rhetorical and ultimately destructive document to come out of CIAM", for reason of its universal claims and its very narrow conception of both architecture and town planning.<sup>36</sup> Nonetheless, it became extremely influential and had a long-lasting impact on planning policies after World War II.

By the time the next CIAM congress took place at the 1937 Paris World Fair, the context had dramatically changed: National Socialism had killed modern architecture in Germany, May and his team were preparing to leave the USSR, and Le Corbusier failed to have his urbanistic visions adopted in France and elsewhere.<sup>37</sup> Nonetheless, he now steered CIAM almost single-handedly, discarding, for example, the provisional program for CIAM 5 and proposing instead to investigate the urban problem closest (in his view) to the dwelling, namely that of recreation. The theme he devised for the conference ('*Logis et loisirs*', Dwelling and Recreation) was in fact a direct response to recent legislation in France by the newly elected Popular Front, introducing paid holidays and therefore foreshadowing new programs for cultural and outdoor recreation. Le Corbusier's overt use of the congress to strengthen his position with the newly elected government contradicted earlier agreements that CIAM would remain a-political. At the same time, he pragmatically steered CIAM away from Van Eesteren's analytical, deductive approach, stressing the importance of town planning in producing a well-rounded society instead.<sup>38</sup> Thus, by beginning to transcend its earlier Taylorist and technocratic approach, and now moving towards a more broad-based appeal to the perceived needs of the masses, CIAM entered its last, idealist stage. A follow-up conference was planned in Liège in 1939, the goal of which would be to discuss concrete applications of the Athens Charter, but had to be postponed due to the outbreak of World War II. Little did the organisers realize at that moment that their event would never happen, and that CIAM would convene again only ten years later, in a context that presented a totally different outlook than the one in which the organization had come about.

# LE CORBUSIER URBANISTE

## FROM THE VILLE CONTEMPORAINE...

At the 1922 Paris Salon d'Automne, the then relatively unknown artist and editor of the *L'Esprit nouveau* magazine, Charles-Edouard Jeanneret, showed a project for a 'Contemporary City of 3 Million Inhabitants'. It was a bold way to capture the public attention and impose himself on the emerging scene of urbanism.<sup>39</sup> It was a theoretical manifesto about the city in the age of mechanization and industrialization, based on four main principles: decongestion of the city center; increase of the density of the center; enlargement of the means of circulation; enlargement of the landscaped areas. Situated on an ideal, flat terrain, its two main axes were large express routes for rapid circulation of 40 meters wide. At their intersection lay a transportation hub with a huge landing platform that formed the center of a giant complex of 24 sixty-story cruciform skyscrapers for 10,000 employees each. Around the office towers there were two types of housing: *immeubles à redents* and *immeubles-villas* for 600,000 inhabitants in total. While the latter consisted of six floors of superimposed duplexes arranged around the four sides of a garden court, the former formed larger entities independent from the street pattern. Throughout the city, there was a strict separation of traffic flows, with separate lanes for all types of vehicles (trucks, cars, metro, etc.). Between the office towers and the large park (modelled on Central Park) to the North, public edifices were located. On the opposite side, at a certain distance, there were docks, industry, freight stations and depots. Finally, the city was surrounded by a green belt of woods and fields, beyond which lay the garden cities for the remaining 2 million inhabitants.

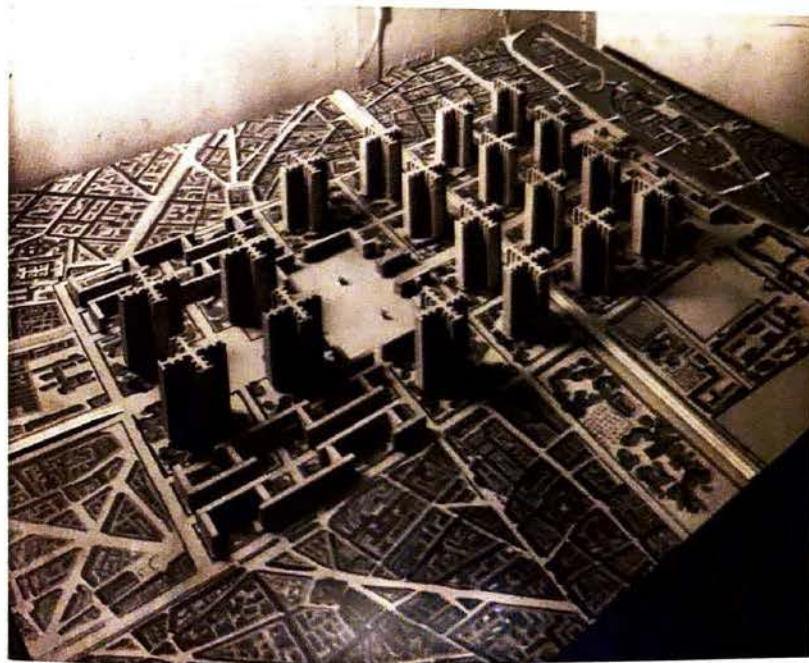
In fact, none of this was really new – although the scale and the synthesis certainly were. To begin with, the two principal arteries clearly recalled the *Cardo* and *Decumanus* of ancient Roman town planning. Closer to home, Jean de La Grive's famous engraving of the palace and gardens of Versailles (1746) – highlighting its monumental order and its almost complete amalgamation of architecture, landscape and town planning – also undoubtedly provided inspiration. Further, from Tony Garnier's *Cité industrielle* (1917), Le Corbusier borrowed the idea that open space was to be public property, and – typically for utopian thought – a very clear vision on the spatial framework within which the new society was to develop. The idea to build the city on a raised, technical platform was derived from Eugène Hénard, a French engineer who had put forward this principle in his *Études sur les transformations de*

Paris (1904). Le Corbusier also took Ebenezer Howard's Garden City principle to the extreme, solving the contradiction between density and decentralization by increasing the height and scale of his buildings. Finally, Le Corbusier also revisited ideas he had laid down himself in earlier manuscripts, such as *La Construction des villes*, a plea for picturesque (!) town planning which he began in 1910 but never completed, and *La ville-pilotis* (1915).<sup>40</sup>

In Le Corbusier's view, the house was a machine for living in. Similarly, he considered the city as "a tool for working".<sup>41</sup> Focusing on rationality and performance, the *Ville Contemporaine* was a straightforward declaration of love to capitalism and large-scale industry: the prestigious skyscrapers were reserved for managers and office workers and the workers were relegated to garden suburbs far away from the center. One's dwelling thus depended on one's job – a striking contrast with the social mix of late 19th century Paris. However, the French capital was not Le Corbusier's reference, the typical skyscraper cities of global capitalism such as New York and Chicago were. As suggested in various photomontages, Manhattan would indeed seem small and chaotic compared to the placid, monumental order of the *Ville Contemporaine*.

In 1925, Le Corbusier was again present at the *Salon d'Automne*, this time showing how the *Ville Contemporaine*'s principles could become applied to Paris. Sponsored by the automobile manufacturer Voisin, his eponymous plan sought to continue the work of Haussmann fifty years earlier (see Figure).<sup>42</sup> Apart from some historical monuments such as the Louvre, the Palais Royal or the Place Vendôme, the old urban tissue on the right bank was to be replaced by a state of the art business center consisting of eighteen

cruciform office towers of 200 meters high, and a high-density residential section to the east. Between both, an underground central station would connect with a central circulation spine of 120 meters wide, allowing car traffic to enter the city at high speed and subsequently be distributed along a network of streets intersecting every 400 meters. Although shocking in its radicality and scale, the *Plan Voisin* fitted



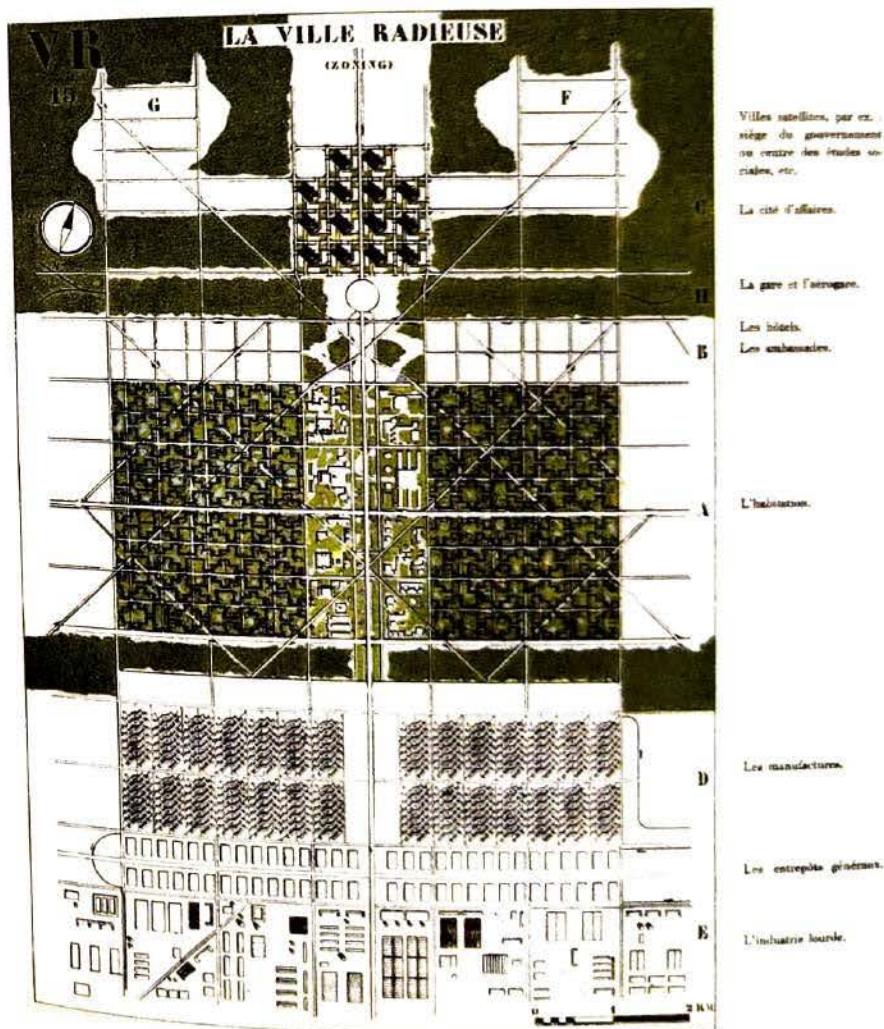
perfectly in France's historical tradition of centralized governance and despotic power. For in Le Corbusier's view, the turbulent times required a strong ruler with a clear vision: his Plan Voisin was to be its urbanistic counterpart – a message he underscored by concluding his book *Urbanisme* (1925) with an engraving of Louis XIV directing the construction of Les Invalides.

### ... TO THE VILLE RADIEUSE

In 1928, Le Corbusier became instrumental in the founding of the CIAM and visited Moscow for the first time. In the Russian capital, the debate raged whether communist cities ought to remain centralized, or systematically decentralized and 'disurbanized' as requested by Marx. Hence the fascination amongst the Russian avant-garde for the linear city model: converted into communist doctrines, it had been theorized about by Nikolay Milyutin in the 1920s. Consisting of a continuous belt of parallel roads and railways with housing, factories and terminals all along its length, it brought country and city in close interaction with one another, avoided power to become too centralized, and was infinitely expandable. Seen from this perspective, the *Ville Contemporaine* appeared as an anachronism to the Soviet planners, who also regarded skyscrapers as typical excesses of American capitalism, and refuted universalist solutions. Moreover, the faltering state did not require another utopia but rather pragmatic solutions. In other words, Le Corbusier's urbanistic ideals seemed totally at odds with the nascent planning culture in the USSR. Nonetheless, he eagerly responded to his colleagues' request for advice on the planning of Moscow with a gigantic urbanistic proposal laid out in seventeen large drawings. Although without any further impact on the debate, this 'Response to Moscow' was highly significant for it contained in germ all the principles that would lead to the *Ville Radieuse*.<sup>43</sup>

Hoping to receive town planning commissions from the USSR, Le Corbusier pragmatically adapted his earlier *Ville Contemporaine*. Although it featured the same constitutive elements (free circulation, greenery, high density through skyscrapers and collective apartment houses), they were now combined in a framework that held the middle between a linear city and a human body. The head, on top, consisted of offices. The arms corresponded with extendable housing areas composed of uniform *immeubles à redent*, oriented now according to a 'heliothermic axis' to provide the best solar orientation. Significantly, the spine of the scheme comprised public amenities such as buildings for government administration, cultural facilities and clubs. The 'feet', to conclude, were formed by separate zones for light industry, workshops, warehouses and heavy industry. All these parts were separated by green buffers, enabling them to expand without encroaching upon one another (see Figure on the right).

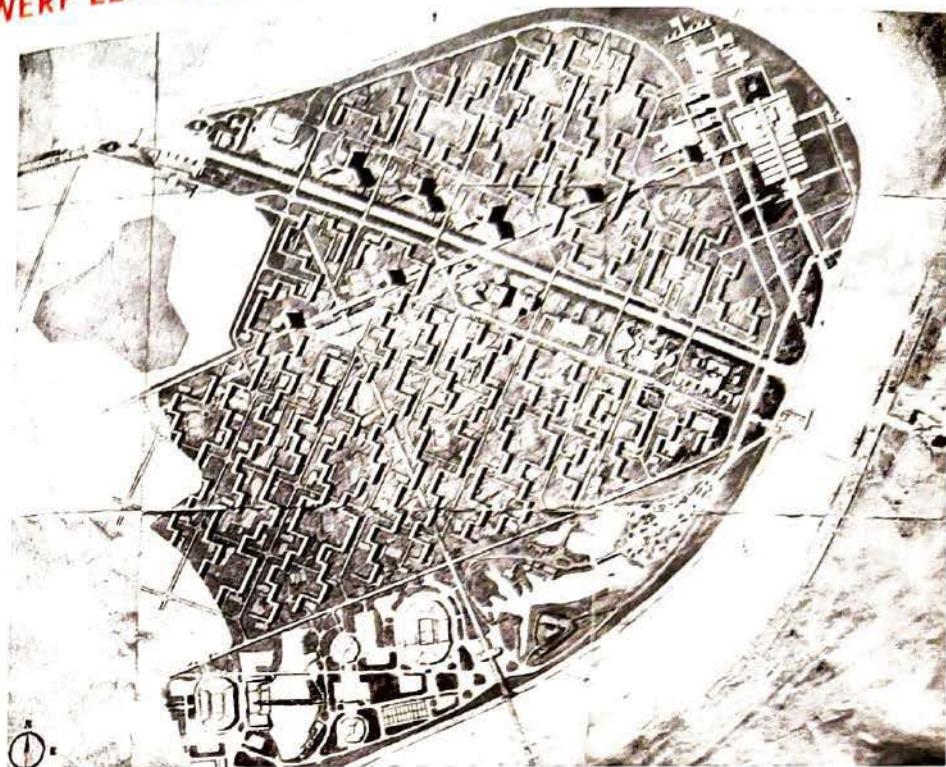
Beneath all these formal differences lay a more fundamental one, namely the evolution from a hierarchical and centralized plan to a classless and infinitely expandable scheme. As Eric Mumford stated, "what mattered to Le Corbusier now was not so much the final project as the methodology of planning, as a means of bringing the world under rational control for the common good."<sup>44</sup> In this respect, the new plan was once more the spatial expression and suggested vehicle of a social reform project. Indeed, "the Ville Radieuse was dedicated to the idea that harmony could be found within industrialism by finding the right balance between individual, family and the public order of the state: between built form and open space, between city and nature."<sup>45</sup> Le Corbusier's elitist view of society thus made way for a more egalitarian one, expressed in the fact that instead of lofty duplexes, all city dwellers were now housed in the same spartan living cells of only 14 m<sup>2</sup> facing south. Likewise, the apartment blocks were now elevated on *pilotis*, disabling the privatization of the urban space, and amenities for childcare, sports, heating, cooking, etc. were organized on a collective basis, taking as example the Soviet workers' clubs Le Corbusier had seen during his travels.



The volte-face of the *Ville Radieuse* was to no avail, however. Having tried his luck (in vain) with the new rulers in Italy, in the hope to get the commission for the new modern town of Pontinia, Le Corbusier increasingly leaned towards the right-wing forces at home.<sup>46</sup> Rapidly losing faith in the political and industrial elite, like many artists and intellectuals in the 1930s, he joined the Syndicalist Movement. A coalition between anarchism and socialism, it opposed centralized capitalism (but not industrialization) and rejected parliamentary democracy as a dysfunctional relict of a bygone liberal era.<sup>47</sup> Instead, it proposed that society be ruled by capable managers on the basis of a clearly established 'plan' laid out by objective experts. In this context, Le Corbusier had a flirt with the right-wing *Redressement français*, a movement close to fascism. Although never a formal member, he definitely felt at home in these circles, publishing extensively in magazines such as *Gand'Route*, *Plans* and *Prélude*. Characteristically, the opening passage of the book he published on the *Ville Radieuse* reads "Cet ouvrage est dédié à l'AUTORITÉ. Paris, mai 1933" ("This work is dedicated to the authorities, Paris, May 1933").<sup>48</sup> In the meantime, Le Corbusier did not forget about the CIAM, and presented the *Ville Radieuse* at the 1930 congress in Brussels. Condemning all forms of traditional urbanism as dark, unsanitary, chaotic, and unsuited to 'modern needs', the conclusions of the conference unambiguously promoted the replacement of the existing urban pattern in favor of widely spaced high-rises – thus testifying to the towering impact of the *Ville Radieuse* upon the CIAM members and the resulting dominance of Le Corbusier on the organization's doctrine (which would last until the mid-1950s).

In the following years, Le Corbusier developed a series of applications of the *Ville Radieuse*, of which his development proposal for the left bank of the river Scheldt, in Antwerp, was one of the most accomplished. Another widely published application was his proposal for the *îlot insalubre n°6* in Paris, an area along the rue du Faubourg St. Antoine.<sup>49</sup> This was one of seventeen quarters with above-average mortality rates from tuberculosis and was therefore to be demolished. With an almost surgical precision, Le Corbusier cut out a fragment of the old tissue and replaced it with a totally opposite urban paradigm: the *rue corridor* and the city block made way for a park city where housing became concentrated in the by now familiar *blocs à redents*: built on *pilotis* and oriented for optimal exposure to the sun, they meandered freely through the plot, leaving the ground surface open for sports and leisure. Having realized that reorganizing society could as well start by reforming it from within, Le Corbusier showed the project in the *Pavillon des Temps nouveaux* in 1937 as a remedy against the social and health issues in the capital. And once more, he pragmatically and opportunistically sought support from those in power, namely Léon Blum (1872–1950), the leader of the Front Populaire.

## LE CORBUSIER AND HUIB HOSTE: URBANIZATION OF THE ANTWERP LEFT BANK, 1933



This project was submitted as part of an international competition in 1933, into which Le Corbusier had been drawn by his old acquaintance Paul Otlet (1868-1944), a Brussels lawyer with whom he had collaborated on a project for a *Cité Mondiale* in Genève (1928-1929). The Belgian CIAM member Huib Hoste (1881-1957) was to act as the local architect. The genesis of the proposal is well documented and allows for a detailed insight into how Le Corbusier went about developing such a scheme. The first concern was the proper organization of the circulation. The closing of the ring around the old city (on the Right Bank) determined the basic grid and structured the further organization of the traffic flows, which were strictly separated according to

speed. Next came zoning. The *immeubles à redents* for 500,000 inhabitants occupied the largest surface; they were placed according to a second grid, superimposed on the former, that followed the helio-thermic axis (East-West). To the south, a large Olympic Sports Park was included, and to the North Otlet's project-in-the-project, namely a Mundaneum (a 'World Museum'). A new element in comparison to the theoretical *Ville Radieuse* scheme was the introduction of a central boulevard of 100 meters wide, flanked by office buildings in its western part, and public buildings to the east. It visually linked the city's main monument (the cathedral) with the new development on the opposite bank of the river. Once the functional zoning was

defined, the visual and aesthetic aspects of the scheme were elaborated. Detailed drawings illustrating the views and the treatment of the public domain, gave a lively, three-dimensional image of the proposed development. The fact that most of these drawings were made after the deadline has to do with the failure of the competition. Although 97 proposals were submitted, the jury (including, among others, Victor Horta (1890-1897) and Henry Van de Velde (1863-1957)) awarded no first prize, deeming most modernist submissions unworthy of attention. Sensing that all was not lost, Hoste convinced Le Corbusier to continue to elaborate their joint proposal. In 1939, they even developed an entirely new version, critically revising the main principles of the official

development plan. Meant to be presented at CIAM 1939 in Liège, it left out the more exotic parts of their original plan and sported a greater variety in housing types as well as a simpler traffic system. Despite this proposal was not given its due consideration and was not published until 1950, Hoste's and Le Corbusier's efforts were not entirely in vain, however; their repeated criticism did indeed lead to a revision of the development plan in the 1950s, while the place and importance of the public infrastructure in their proposal clearly indicated a shift towards a greater emphasis on centrality and civic identity, an aspect that reached its first apogee in the latter's proposal for the reconstruction of Saint-Dié (1945).

## LATIN-AMERICAN PROJECTS AND TRIP TO THE USA

While his contacts with the USSR led to the *Ville Radieuse*, Le Corbusier's travels to Latin America engendered another paradigm. During a lecture tour in 1929 to Rio de Janeiro, São Paulo, Buenos Aires and Montevideo, he had the chance to discover their sites from the air – then a totally novel experience that had a profound impact on his approach.<sup>55</sup> In his plans for these cities, Le Corbusier interlinked their various parts with giant, linear infrastructures, inserted as massive and abstract sculptures in the dramatic topography. For Rio, for example, he designed a megastructure *avant la lettre* consisting of a six kilometers long elevated road with fifteen stories of housing underneath. Once more, this idea had appeared before, namely in Edgar Chambless' Roadtown (1910), a sort of linear palace with a railway in the basement, houses at middle levels and roads on top. Another reference was certainly Mateo Trucco's Fiat factory in Lingotto (Turin) which Le Corbusier had visited not long before, as well as Milyutin's visions of the linear city mentioned earlier. Again, these influences were not merely copied, but developed into abstract typologies, applied to a variety of pre-existing topographies in the hope of winning commissions. This became most clear in his designs for Algiers, the then administrative capital of French North Africa. After he

had been invited there to lecture in 1931. Le Corbusier immediately started to court the city's progressive mayor, Charles Brunel, having announced a major restructuring of the city. Unsolicited, Le Corbusier responded with the so-called *Plan Obus* in 1932, consisting of four major elements (see Figure below): a *cité d'affaires* by the water (in a pair of giant, indented slabs); an enclave of convex and concave apartment buildings on the slopes of the Fort de l'Empereur; an elevated roadway linking both the latter via a north-south axis leaping above the Kasbah; and a long viaduct running for miles along the coast with a motorway on top. Fifty meters high in places, with walkways, shops, and small house cells for the less well-to-do plugged into it. Quickly sensing the limited support for his megalomania, Le Corbusier developed *Obus B*: the viaduct was left out, and the *cité d'affaires* became a monumental skyscraper on a H-shaped plan. *Obus C* quickly followed and kept only the skyscraper with a civic center east of it. It was all to no avail: after Brunel got defeated in 1936, the new rulers showed no further interest in Le Corbusier's proposals.



The only urban element to survive this series of successive eliminations, the skyscraper, stood also central in Le Corbusier's stormy relationship with the USA. Visiting the country for the first time in 1935, he came with a mission, namely to "Preach salvation from the excesses of capitalism through the bible of the Ville Radieuse."<sup>51</sup> He hit the headlines right away with his declaration that the skyscrapers of Manhattan were in fact too small and too close together. Yet, in his eyes, a far greater threat were the sprawling suburbs, for they swallowed up useful land and

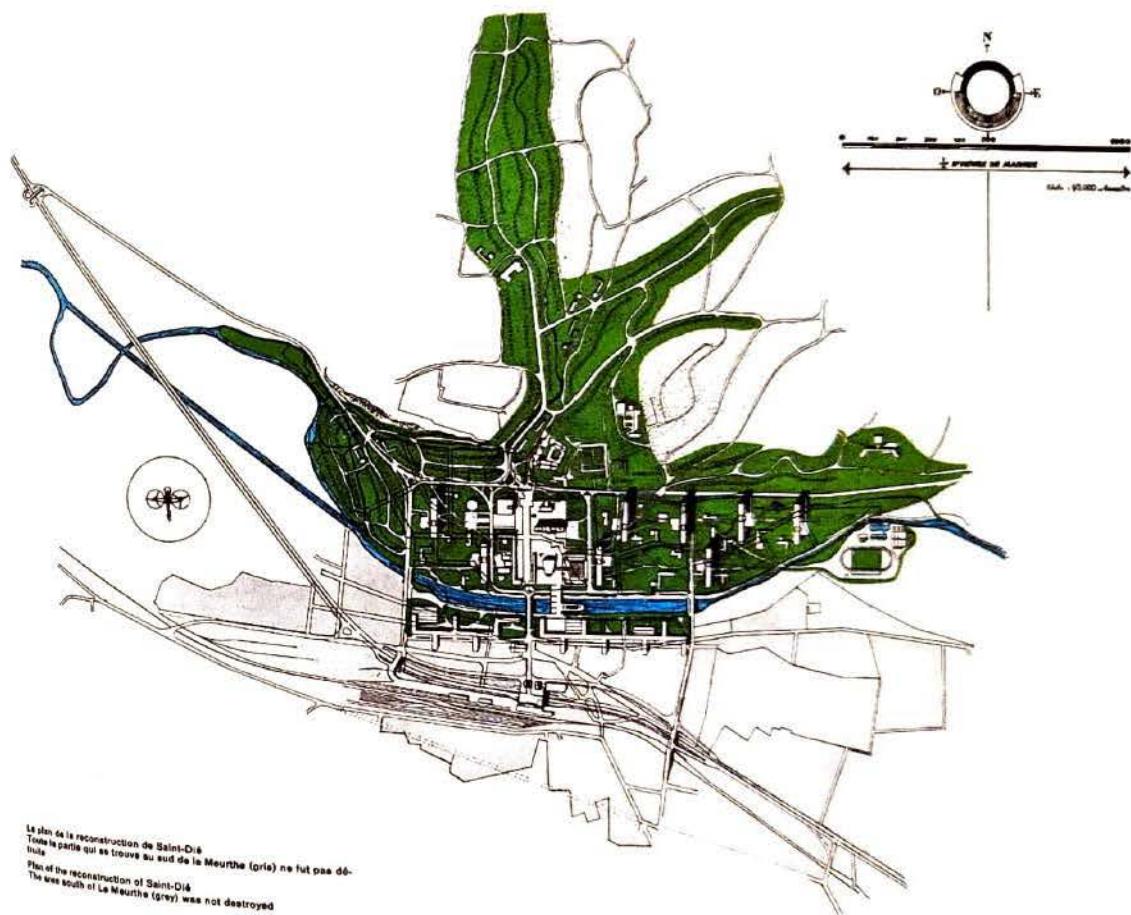
failed to produce the Arcadia they pretended to be. Instead, he preached the value of the centralized, high-density city. Perhaps surprisingly, Le Corbusier did not meet that other architectural giant, Frank Lloyd Wright (1867-1959), who had just recently presented his Broadacre City (1935), a decentralized utopia based on typically American values such as independence, democracy and freedom. Despite his energy and the thousands of miles travelled, Le Corbusier's charm offensive again failed to result in commissions. Desperately, he turned once more to Algiers, proposing *Obus D* – in fact more or less identical as C but with an Y-shaped skyscraper – and, in March 1939, *Obus E*, with a skyscraper on a lozenge-shaped plan and a massive brise-soleil façade.

## WORLD WAR II AND RECONSTRUCTION

When France fell in 1940, Le Corbusier relocated to the Pyrenees, but soon revived contact with his old Syndicalist friends, now engaged in the Vichy regime. Soon, he was on a committee responsible for taking urbanistic and architectural initiatives for what remained of France. (Ab)using his new position to once more press on his plans for Algiers, he soon made himself impossible and was forced to resign in July 1941. Keeping a low profile for the remainder of the War, he published the Athens Charter (1943) and created an umbrella structure, the ASCORAL (*Assemblée des Constructeurs pour la Rénovation Architecturale*) that later became the semi-official French CIAM group.<sup>52</sup> Within this framework, Le Corbusier developed his theory of the 'Three Human Establishments'. Loosely based on Walter Christaller's (1893-1969) theory of urban development, which held that urban settlements (if developed organically) originated on the nodal points of triangles or hexagons, Le Corbusier proposed to connect these points with linear industrial complexes; the open spaces between them were to be cultivated for agriculture. This Le Corbusier formalised in three types of establishments that corresponded to the three economic sectors: the unit of agricultural exploitation; the linear industrial city; and the radio-concentric city for the exchange of goods and services.

Once more, the result of his wartime efforts was disappointing: not Le Corbusier, but his former master Auguste Perret (1874-1954) became the hero of the Reconstruction.<sup>53</sup> Yet, in 1945, Le Corbusier was given the commission to rebuild the city of Saint-Dié.<sup>54</sup> Here, he planned a kind of linear industrial city on one bank of the Meurthe river, and five *Unités d'habitation* for 1600 inhabitants each on the other bank, as well as a 'civic center' with tourist facilities and public buildings (see Figure on the right). Although the plan was quickly rejected, it took on an iconic value: it was both a textbook application of the Athens Charter and a neat demonstration of an emerging concept within CIAM thought, namely that of the 'core' (city center).

Ironically, his only chance to put his ideas into practice would come from a country he had never visited before, namely India. Together with British architects Jane Drew (1911-1996) and Maxwell Fry (1899-1987) and along with his cousin and former associate Pierre Jeanneret (1896-1967), he designed the new capital for Punjab, Chandigarh. While the latter mainly focused on the city's residential tissue, Le Corbusier himself designed the Capitol, the complex of various government buildings. Reiterating ideas developed for Saint-Dié on a massive scale, he created a complex diagram of institutional relations, whereby the relative position of each building expressed its role in the democratic process.



Although Chandigarh remained the only full-scale urban project realised by Le Corbusier himself and most of his visions remained on paper, he had a towering influence on urban planning theory and practice in the second half of the 20th century. Perhaps, as William Curtis has observed, this has to do with the fact that his proposals were not only plans, but visions that embodied the very idea of modernity. Posing very convincingly as real solutions to existing problems, while in fact being utopian, many took them as the inevitable picture of the future.<sup>55</sup> And although in most cases, others translated this picture into built form, it was always Le Corbusier who became blamed

for their failures – for, as some claimed, many of his ideas were intrinsically flawed. The urban theoretician Gaston Bardet (1907-1989), for example, pointed out that during winter, the residential building blocks of the *Ville Radieuse* would create lots of overshadowing zones without any sunlight, and cause intolerable thermal conditions to pedestrians below.<sup>56</sup> Although a supporter of the old master, the American planner Anthony Antoniades noted how Le Corbusier had in fact built in a destructive force by giving such prominence to fast moving traffic in his urban visions. The failure to anticipate its effect indicated how many of his schemes were in fact to be understood first and foremost as rhetoric statements, not as real design solutions. Unfortunately, as Antoniades went on to state, many followers were unable to make that distinction. But couldn't this too be related to an inherent shortcoming? For once the plans for his ideal cities were completed, Le Corbusier did not follow through the economy of their implementation or their social implications; this he left to others to study and solve. Precisely this aspect irritated the British planning historian Peter Hall in his monumental *Cities of Tomorrow*, where he concluded that "The sin of Corbusier and the Corbusians (...) lay not in their designs but in the mindless arrogance whereby they were imposed on people who could not take them and could never, given a modicum of thought, ever have been expected to take them."<sup>57</sup> But, just as Hall rightly makes a distinction between (powerful) ideas and their (flawed) materialization, there also exists a difference between the figure of the artist and his real personality. In this respect, Le Corbusier will probably remain an enigma, for the only conclusion that can be drawn from studying his alleged fascist sympathies and misanthropic worldview, is that it will perhaps forever stay unclear to what extent his pseudonym was a cover to hide his personal opinions, or precisely a strategy to divert attention from it to the benefit of his creative output.<sup>58</sup>

# THE EXTENSION PLAN FOR AMSTERDAM

## PLANNING AMSTERDAM

The need for planned urban development was recognized at an early stage in the Netherlands, and in particular in Amsterdam for reasons of its unfavorable soil and water conditions, and its dramatic housing shortage. Whereas the historic city center had remained basically unchanged for more than two centuries, from 1870 onwards, the economic boom – caused amongst others by the opening of the Suez canal and the growth of German industry – resulted in a steep increase in port activity and the establishment of large businesses in the city.<sup>59</sup> At the same time, the massive import of cheap American grain caused structural poverty amongst the rural population, leading to an exodus to the main cities in the search for jobs. As a result, Amsterdam's population increased from 259,000 in 1860 to 431,000 in 1890.<sup>60</sup> Living conditions in the city deteriorated rapidly: by 1858, almost 10 percent of the population lived in basements where no sunrays ever penetrated. This was possible for until 1900 there was no public control whatsoever on the structural and hygienic aspects of private dwellings.

In 1867, shortly after the fortifications were demolished, a first expansion plan was designed by the city engineer Jacobus Gerhardus van Niftrik (1833-1910) with a view to urbanising the area beyond the Singelgracht (the former city limits). Clearly inspired by Haussmann, the plan was monumental and formalist in concept and featured a typical geometrical street pattern. As it necessitated the reallocation of most of the existing land around the city, it was rapidly dismissed by the city council for reason of its cost and complexity, and instead the municipality requested a new proposal from the Public Works Department.<sup>61</sup> As Thomas Hall has observed, whereas Niftrik's vision had proved to be unrealistic, the plan drawn in 1876 by the department's director Jan Kalff (1831-1913) was the opposite: a pragmatic adjustment to prevailing conditions, it maximized the economic value of the land by allotting it by means of long, narrow streets.<sup>62</sup> It comprised almost no green spaces and no attempt was made to locate different functions in separate parts of the urban area. Thus, a ring of speculative neighborhoods such as the Kinkerbuurt, De Pijp, Osterparkbuurt and Dapperbuurt arose which only reinforced the spiral of speculation and poverty.

It was only after the national government issued the 1901 Woningwet (Housing Act) that minimum quality standards became established. The act also installed a system of subsidies enabling not only local authorities but also non-profit associations to build low-cost housing.<sup>63</sup> As a result, a great number of very active, often progressive (but also ideologically and politically oriented) woningbouwcorporaties (housing cooperatives) arose that had a huge impact on the urban landscape. In Amsterdam, between 1909-1919, 26 different cooperatives built over 15,000 dwellings, while between 1922-1926, 60,000 more were built.<sup>64</sup> The municipality itself (through its Gemeentelijke Woningdienst [Municipal Housing Division]) became the most important builder in the city, completing no less than 11,000 dwellings in the interwar period – a figure that even surpassed that of Frankfurt. A further decision by the national government to grant municipalities control over their own territory on the condition of drafting a development plan, laid the ground for more active municipal planning policies. In Amsterdam, the first extension plan under this new regime was Berlage's *Plan Zuid* (see Module 6), the originality of which lay in the use of the big rental housing block as the leading town planning element of the modern metropolis. Many politicians, however, favored a more decentralised view, resulting in the creation of a *Tuinstadcommissie* (Garden City Committee), whose task it was to examine the construction of garden suburbs at a considerable distance from the city center. One such example was *Het Blauwe Zand* (Buiksloot, 1930-1932) in Amsterdam-North, which became very popular amongst workers' families.

A final element that enabled a more coherent planning policy was the annexation of the municipalities of Sloten and Watergraafsmeer in 1921, with a view to counteracting the spatial and financial imbalance that resulted from the increasing number of commuters benefiting from the amenities and work opportunities provided by the big city, however without contributing to its tax basis. As the annexation allowed to expand Amsterdam in a westerly and southerly direction, an extension plan needed to be drawn up. After some unfruitful attempts due to competition amongst the city services, the director of the National Institute for Housing and Urbanism, Dirk Hudig (1872-1934), took matters in hand.<sup>65</sup> Dwelling upon the discussions held at the 1924 international congress on urbanism in Amsterdam (see before), he criticized the typical 'architectural' take on the city by designers such as Berlage, concerned only with "laying out nice squares, building attractive 'traffic walls' along streets and designating places for important buildings."<sup>66</sup> Instead, Hudig proposed a more integral approach, taking into account the "requirements of the multiple life of the city in its countless expressions" and ensuring that "these can come to healthy and harmonious maturity" without "harming each other, but fulfilling their function in the service of the whole".<sup>67</sup> What he meant became clear in the resulting 1926 Expansion Plan for the Greater Amsterdam area: primarily a 'zoning plan', it sought to provoke a reflection on "the nature of the organism that forms the city of Amsterdam, on its expected growth".

the nature of that growth and the requirements that this imposes on the form of the city.<sup>68</sup> As to the activities that constituted such an organism, he wrote: "What could be more logical than to consider this area as a whole, to see the three elements necessary for urban development - employment, living space, leisure space - united and to work them into one big organism". He thus anticipated the functional division of the city that became institutionalised by CIAM, which originated only two years later.<sup>69</sup> Nevertheless, due to internal political conflicts, the 1926 plan was never officially endorsed.

## VAN EESTEREN, VAN LOHUIZEN AND THE EXTENSION PLAN FOR AMSTERDAM

In 1928, as part of a move to surpass the paralysing ideological skirmishes within the city administration, an autonomous City Planning Division was created within the department of Public Works. Its task was to produce an expansion plan for the entire city based on a profound analysis of its needs and an assessment of its possible future options. The supervision of this research was entrusted to the engineer Theodoor K. van Lohuizen (1890-1956), an early adherent of Geddes' 'survey before plan' concept who had already been involved in developing the aborted 1926 plan. As Eric Mumford points out, Van Lohuizen's approach was part of the general shift towards a more 'scientific' approach to urban planning at the time, as can be derived from the extensive literature then published on the subject, and contemporary examples from practice like the Regional Plan of New York and Environs.<sup>70</sup> Considering the broader economic and demographic trends within a wider geographical framework, these studies were based on the premise that future population growth could best be derived from an in-depth study of the economic development and potential of the planning area. Hence, Van Lohuizen's investigations began by identifying local industrial plants and ascertaining the number of workers employed in them. From these data, the necessary amount of housing and transport infrastructure required could be derived. Whereas the bulk of the work lay in the collection of statistics, the display of the results in analytical plans at uniform scales received the same amount of attention.

The conversion of these data into spatial concepts became the responsibility of Cornelis van Eesteren (1897-1988). A gifted student and recipient of the Prix de Rome in 1921, Van Eesteren had met Theo van Doesburg (1883-1931) at the Bauhaus and became very actively engaged with the European avant-garde. Initially very influenced by Berlage (the principles of which he radicalized in, for example, his winning proposal for the Unter den Linden competition in Berlin, 1925),

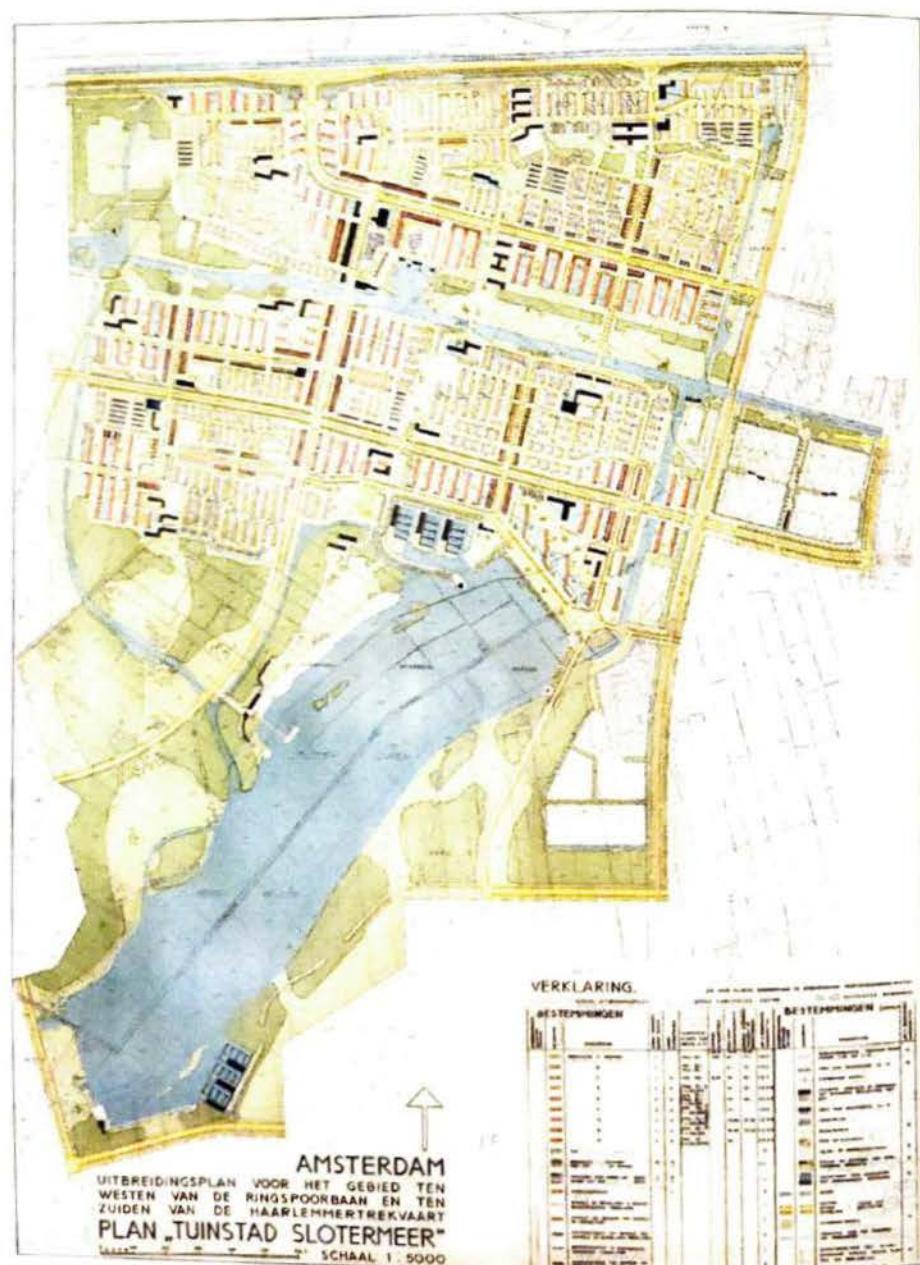
he summarised his viewpoints on urbanism in a lecture in Berlin in 1928, entitled "Eine Stunde Städtebau".<sup>71</sup> Its core tenet was that a modern city was composed of 'town planning elements' such as industrial complexes, traffic routes, stadiums, mass-produced housing and so forth. These building blocks were in conflict with the urban designer's task consisted first and foremost in determining the mutual relation of the aforementioned units. As he provocatively stated, equipped with the necessary statistical information and some rational thinking, the modern urban designer could quickly arrive at the correct urban form, which visually would be a 'counter-image' of the existing city and based on a De Stijl-derived 'plastic equilibrium' of the urban components.<sup>72</sup> Rejecting the 'medieval' practice of city blocks and street alignments, he argued that only the solar exposure of apartment blocks should determine their orientation. Similarly, he stated that industrialized building methods demanded simple and clear property divisions; thus, what was needed were not axial city plans and picturesque perspectives in the spirit of Berlage and Sitte, but new rational design methods that could be extended to the planning of entire cities.<sup>73</sup> Van Eesteren's ideas were quickly picked up amongst modernist architects and earned him the chairmanship of the recently founded CIAM in 1930 at the age of only 33. This marked the start of a beneficial interaction between the Public Works Department and the CIAM during the preparations for its fourth congress on the Functional City, for the survey method developed by Van Eesteren and van Lohuizen became adopted as the template on the basis of which the various national CIAM groups were asked to submit their analyses: one plan on a scale of 1:10,000 showing data regarding the four functions; one plan showing the transport networks and capacities; and a final one on a scale of 1:50,000 representing the city in relation to its region, bearing all sorts of information by means of graphical codes and colour codes, supplemented with written explanations. As an illustration, Van Eesteren convinced his superiors at the Public Works department to fund the production of three prototype maps of Amsterdam.

Similar to the 1926 plan, the new *Algemeen Uitbreidingsplan* (AUP; General Extension Plan) (see Figure on the right) was to oversee the development of the city towards its final form. It was thus not a detailed urban design scheme like Berlage's, but an overall allocation plan meant to determine the location of future industrial areas, housing estates, recreational amenities, etc. This approach was quantified by establishing standard criteria for space claims for these various urban 'functions' and extrapolating the social and demographic evolutions within the existing city - leading to the hypothesis that the city's population would not grow beyond 960,000 people before the year 2000. On this basis, Van Eesteren and van Lohuizen concluded that it was safe to assume that Amsterdam could achieve its growth within the existing city limits. For this reason, they opted for a centralized urban form, allowing for easy and rapid access to work, recreation and the city center. As regards the first urban

function, the expansion of the harbor and related industrial activity were seen as the primary source of employment and were given ample space to develop. The abundant provision in green spaces in the plan not only had to do with recreation but also served as 'buffers' separating the residential areas from the industrial zones. Based on a provision of  $3.5 \text{ m}^2$  per inhabitant (with an additional  $1 \text{ m}^2$  for the buffering effect), it allowed all inhabitants to reach the larger recreational areas through greenery all along the way. On top of this,  $4.86 \text{ m}^2$  and  $6.23 \text{ m}^2$  were reserved per inhabitant for sports grounds and community gardens respectively – not including the larger facilities such as the Sloterplas lake and the Amsterdamse Bos. Thus, no longer the built, but the unbuilt areas became the structuring element of the new urban structure. In reality however, when the AUP was realised after World War II, much of the green buffer zones were used as 'expansion zones' and consumed by educational facilities, churches and road infrastructure. As far as circulation was concerned, a typical characteristic of the plan was the system of rings and radials for car traffic grafted onto the spatial structure of the city center, a system that provided the basis for most of the current traffic structure in the city today – although the projected capacity quickly proved to be insufficient. In terms of public transport, the plan remained vague, stressing its vital importance nonetheless.



Of the four main urban functions, dwelling for the lower-income groups received the most attention. Although no concrete details were provided as regards the layout of the residential areas, the ideas proposed by 'De 8' and 'Opbouw' (the Dutch CIAM groups, based in Rotterdam and Amsterdam respectively) quickly became the dominant paradigm.<sup>74</sup> In reaction to the stripped-down urbanism of Ernst May's later *Siedlungen* (e.g. Westhausen, cf. earlier), the Dutch modernists published a series of 'recommendations' in 1932, proposing a more 'organic' take on the structuring of residential areas. As they stated, dwellings and buildings of a more general importance were to be placed logically in relation to one another, as well as in relation to the leisure areas for young and old. This was to be achieved through linking the resi-



quantities of light and air originally envisioned. This became clear in the so-called *Westelijke Tuinsteden*, the residential areas realised after World War II such as Slotermeer (1951-1954) (see Figure on the left); Geuzenveld (1953-1958); Slotervaart (1954-1960); Oertoomse Veld (1958-1963) and Osdorp (1956-1962). Grouped around an artificially created recreation lake, the Sloterplas, and located at such a distance from the working areas and the city center that they could be reached by bicycle and tram, these areas were equipped with basic amenities such as shops, schools, churches and playgrounds.<sup>75</sup> Separated by green buffers, they functioned as more or less autonomous neighborhood units of approximately 10,000 inhabitants, consisting of a mix of single-family homes and medium-rise apartment blocks. The inclusion of high-rises was considered unnecessary, but was used here and there to create some urban 'accents'.

Upon completion, the AUP was exhibited at the Militiezaal throughout June 1935. Although little publicity had been made (its public display was in fact primarily a step in the bureaucratic procedure of ratification of the plan), the exhibition attracted over 2000 visitors and was prolonged for two weeks. On 12 June 1935, it was visited by a large group of CIAM delegates that had convened in Amsterdam for a 4-day congress at the Stedelijk Museum, where the results of the congress on the Functional City were exhibited.<sup>76</sup> This festive urbanism month culminated on 18 July 1935, when the AUP was approved by a majority vote in the City Council.

## THE SIGNIFICANCE OF THE AUP

The AUP was very significant on at least three levels. In the first place, it provided the blueprint for the urban development of the Southern and Western parts of Amsterdam for the next thirty years and has thus fundamentally determined the current aspect of the city (even if a large part of the housing stock in the Western suburbs has by now been replaced by a denser and more varied supply). Further, as a real-life application of the CIAM's notion of the functional city, it enjoyed unquestioned authority amongst both policy makers and the architectural avant-garde until the 1970s. Finally, the AUP marked a clear break with the past: doing away with urban planning as an artistic discipline primarily interested in the volumetric aspect of city blocks, it proposed a holistic approach instead, based on extensive research and rational principles. Thus, the AUP was also instrumental in emancipating urban planning as an autonomous and modern discipline.

Yet, the technocratic approach of its authors also had its limits. It is significant, for example, that the local authorities were not at all involved in the development of the AUP and never questioned its hypotheses; nor was there any form of public

consultation prior to delivery. At the same time, however objectively they may have been deduced, the many extrapolations the plan was based on proved to be its biggest weakness in the long term. For example, the average housing density in 2000 was 1.98 (and not 3.37 as anticipated, corresponding to an extra deficit of 80,000 dwelling units), while the population never rose above 870,000 (1960), and even dropped to 675,000 by 1984 (mainly due to increasing suburbanization).<sup>77</sup> The 'consumption' of space per inhabitant also grew far beyond the estimates: whereas it was expected to stabilise at 116 m<sup>2</sup> per inhabitant, it increased to 180 m<sup>2</sup>. Also, in the 1930s, the industry provided almost 30 percent of the jobs, a number that was expected to grow. The economic development took a different turn, however, and today, industry accounts for only 6 percent of the jobs in Amsterdam – in contrast with the services sector, that provides 90 percent of the employment offer.<sup>78</sup>

While these discrepancies illustrate that any development plan is historically and culturally determined, and that extrapolating social and economic evolutions from current trends has only limited value, the empirical foundation of the AUP also raises the question as to the epistemological basis of urban planning. In his inaugural address at Delft University of Technology in 1948 (where he had been appointed Professor of Urban Planning after stepping down as director of CIAM), Van Eesteren precisely addressed this question. In his view, urban planning was the result of "social development, technical progress and the achievements of the visual arts".<sup>79</sup> Despite the empirical turn he had himself encouraged, the artistic dimension thus remained important. Or, as Eric Mumford wrote, "Van Eesteren's concept of town planning still seems to have been derived from a certain strategy of visual organisation influenced by De Stijl. He once stated: 'Urban beauty arises from the plastic equilibrium of the components, from which the city or the part of the city in question is constructed'.<sup>80</sup> Indeed, as he explained in his address, Van Eesteren conceived the urban designer as "an artist whose working method approaches that of the discoverer, the inventor". His goal was to create a spatial order allowing to "project the present into the future and the future into the present".<sup>81</sup> The visionary capacity of urban planning thus derived from both its scientific and artistic outlook: whereas the former dealt with functions and goals, the latter had to do with the spatial grouping of objects and elements. It followed that urban design could never be accomplished by one single person; the 'essential components of society' to be addressed were so numerous and complex that they could only be dealt with by teams including administrators, researchers, technicians and designers. This was a clear plea for a collaborative, interdisciplinary approach to urban planning, doing away with the idea of the solitary creative genius that several of his contemporaries – and not in the least Le Corbusier – still eagerly cultivated at the time.<sup>82</sup>

# **R**EBUILDING THE WORLD AFTER WORLD WAR II

## **STUNDE NULL: A NEW WORLD, A NEW WORLD ORDER**

World War II was the biggest catastrophe in history ever caused by men. An estimated 60 million people died, and many more were injured for life or became homeless. The shifting of the borders in Europe after the division of Germany caused the biggest migration of people ever seen, with 12 million 'displaced persons' (people who became stateless) in that country alone. Many cities had been partially or totally destroyed, either by the Germans (e.g. the bombing of Rotterdam in May 1940; see Figure below), the Allied Forces (e.g. Dresden) or the Russian troops (e.g. Berlin). Numerous regions of the continent were on the brink of famine and in many places, there was fear for anarchy and revolution. While the official end of the war on 7 May 1945 was of course a cause for celebration, it was also a general '*Stunde Null*' (zero hour): the beginning of something new, different and unknown.



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From the onset, the ruins of Europe became an ideological battlefield. The reconstruction of the old continent was seized upon by the two principal allied victors, the United States of America (USA) and the Union of Soviet Socialist Republics (USSR), to expand their political and economic power and impose their worldview (capitalism and communism respectively). Beyond its humanitarian dimension, the aid provided by the USA in the framework of the Marshall Plan (also known as the European Recovery Program) must be understood from this pragmatic and ideological perspective. It was enacted in 1948 and provided more than 15 billion dollar to help finance rebuilding efforts in 16 European nations, including Britain, France, Belgium, the Netherlands and West Germany. It was an all-encompassing four-year plan aimed at reconstructing cities, rebuilding the industry and repairing damaged infrastructure. The implementation of the Marshall Plan coincided with (or caused, as some historians claim) the beginning of the Cold War between the USA and the USSR, which had effectively taken control of much of Central and Eastern Europe and established its satellite republics as communist nations. The fact that both the Soviets and the Americans possessed the knowledge and the means to produce an atom bomb, led to a strategy of 'mutual deterrence': the principle that the threat of using strong weapons against the enemy prevents the enemy's use of those same weapons. Part of this strategy was the formation of the North Atlantic Treaty Organization (NATO) in 1949, a military alliance between the USA, Canada and a number of European countries. In 1953, the Soviets formed a similar alliance with the signing of the Warsaw Pact.

Cooperation between European nations was greatly stimulated by the USA as part of its defensive and economic strategy, which led to the foundation of the European Community for Coal and Steel with the Treaty of Rome of 1957. Its mission was to manage the responsible production and distribution of these precious raw materials. Another important supra-national body to arise in the immediate post-war era was the United Nations (UN), which officially came into existence on 24 October 1945. It replaced the defunct League of Nations as the first intergovernmental organization, and adopted the Universal Declaration of Human Rights in 1948. In the meantime, commercial and financial cooperation between the USA and its former allies (and Japan) had already been sealed in the 1944 Bretton Woods agreements. Thus, by 1950, a new world order had emerged, dominated by two 'superpowers'. Their increasing animosity became clearest in the former German capital of Berlin, which was a showcase for both the USA and the USSR. The reciprocal intimidation that followed caused a series of incidents, such as the Berlin Blockade (1948-1949), with the Soviets blocking access to the city, the Korean War (1950-1953), the construction of the Berlin Wall (1961) and the Cuba crisis (1963). Each of these events, it was believed, brought the world at the brink of another World War.

Cold War competition also played outside Europe: with most European countries losing their colonies or granting them independence in the decade after World War II, both the USSR and the USA sought to achieve power in the new states. Both states used aid packages, technical assistance and sometimes even military intervention to encourage the newly independent nations to adopt a regime that aligned with their worldview. The creation of so many new countries, some of which occupied strategic locations, others of which possessed significant natural resources, and most of which were desperately poor, altered the composition of the United Nations and the political complexity of every region of the globe. To show their newly gained independence and illustrate that they were now on a course towards modernization, various ex-colonies invited renowned Western architects to design their seats of government or entirely new capitals. For many of these architects, such commissions gave them the opportunity to realize long-cherished dreams about urban planning and public architecture, attempting a merger between their Western conceptions with forms and ideas derived from the local culture or climate. This was the case, for example, with Le Corbusier (1887-1965) in Chandigarh; Louis Kahn (1901-1974) in Daka; and Constantinos A. Doxiadis (1913-1975) in Islamabad.

## WELFARE STATE OPTIMISM

Despite the destruction and the political tensions, the post-war years were also a period of optimism; there was a genuine belief that a new, better world could indeed be built. The renewal of the industry and the many public works gave the economy a boost, while the advance of scientific knowledge and cutting-edge technology seemed to know no more limits. Both the USA and the USSR developed manned space flight programs which, beyond their (albeit limited) scientific significance, played a primarily ideological role. This culminated in the 1958 World Fair in Brussels – the first of its kind after the War – where the Russians proudly displayed the recently launched Sputnik. Visited by over 40 million visitors, the signature building of the Fair was the Atomium, a giant model of a unit cell of an iron crystal (each sphere representing an atom). It formed the background for what can be accounted for as the climactic, collective celebration of modernity. Indeed, modernism became the single cultural expression of the rejuvenated post-war democracies and the preferred *modus operandi* of the capitalist establishment. But even in socialist countries, there was an unquestioning belief in a state-led modernization, which often expressed itself through the same formal paradigms as in the West.

The confidence in a better future became perhaps best reflected in the so-called 'baby boom': a whole lot of children were born in the years right after the war, creating a new generation that would grow up in a world totally different from that of their parents. The war had greatly affected how people lived their lives, for the government had become deeply involved in the rationing of foodstuffs, clothing and fuel, meals, etc. The fact that most people seemed to want this type of state intervention to continue, prompted the establishment of the Welfare State. One of its principal architects was the British politician William Beveridge (1879-1963), who determined five areas in which the government should take initiative: health, poverty, housing, education and employment. Provisions included creating a (free) national health service paid by a state insurance fund, payments for the unemployed, adequate old age pensions, maternity grants, provision of family allowances, etc. As Beveridge and many other politicians believed, the massive public spending required would be balanced by the fact that welfare provision would increase the competitiveness of the industry, by producing healthier, wealthier and thus more motivated and productive workers, who would in turn serve as a great source of demand for the goods produced.

In most European countries, Welfare State policies resulted, among others, in the construction of planning institutions and a new bureaucracy, facilitating the redistribution of wealth, knowledge and political power, while implementing new building programs such as (social) mass housing, cultural centers, schools and universities, but also new energy infrastructure as well as industries and businesses. Housing and town planning, in particular, became primary instruments in the social engineering politics of the government, but varied greatly according to the political and cultural climate. Although close neighbors, the housing and planning policies in Belgium and The Netherlands could not have been more different, for example. In The Netherlands, the activity of the state in terms of urban and regional planning derived from the fact that much of its territory had been reclaimed from the sea at great cost, and that the political landscape was to a great extent divided along religious lines (the Protestant and Catholic 'pillars', as they were called). In Belgium, the post-war landscape became very rapidly colonized by a massive, uncoordinated sprawl of detached houses built by individual owners - at first sight the consequence of a liberal *laissez-faire* attitude, but in reality the outcome of a deliberate decentralization policy conducted since the late 19th century by successive Catholic and Liberal governments. In France, the state actively stimulated typological innovation and industrialization of the building industry, and played an active role in the reconstruction of the country's cities and the establishment of new towns. Thus, architecture, urbanism and spatial planning became both performant tools and material embodiments of post-war welfare state policies.

## THE NEIGHBORHOOD UNIT

The 'neighborhood unit' was one of the most ubiquitous concepts in urban planning theory throughout the 20th century and derived from late 19th century ideas of the garden suburb, as developed by Raymond Unwin (1863-1940) and Patrick Geddes (1854-1932). It was first formalized by Clarence Perry (1872-1944) in the 1929 Regional Plan of New York as an adequate spatial framework for the formation of 'primary groups' (family, childhood friends, etc.). The underlying assumption, namely that physical proximity equalled social bonding, was spatially translated into small-scale, geographically well-defined and functionally autonomous areas, equipped with all the necessary amenities (schools, shops, etc.) within walking distance. The idea that social life could thus be plotted in space, and vice versa, that physical space could shape social life, was very attractive and explains the theory's almost universal application in post-war planning schemes. Both civic and religious leaders saw in it an ideal vehicle for counterbalancing the decaying social fabric and the loss of civic identity and religious zeal in the urban agglomerations.

One of the most explicit proponents of such a reformist agenda, the French urban planner Gaston Bardet (1907-1989), saw urban planning as a social science that was based on precise knowledge about the interaction between man and his environment. Vehemently opposing the principle of functional zoning developed by the CIAM, Bardet understood the city primarily as a federation of interdependent communities; the planner's task was to uncover this social structure and rely upon it when intervening in the urban fabric. Bardet claimed that there were at least three successive types of social groupings, the most fundamental one being the so-called *échelon paroissial*: totalling 500 to 1500 families, it constituted the fundamental building block of the city, for it possessed a certain autonomy in spiritual and administrative matters, and resembled the community role played by the parishes in the past. In the Netherlands, this entanglement between pastoral units and planning concepts even became officially sanctioned, with the publication in 1946 of the reconstruction plan for Rotterdam under the title '*De Stad der Toekomst, de Toekomst der Stad*' (*The City of the Future, the Future of the City*). Apart from aspiring to the optimal functional organization of the city, its authors explicitly conceived their work as a response to the spiritual uprooting of war. To this effect, the family was reinstated as the cornerstone of future urban society and the churches cast as educators of community spirit. Thus, the neighborhood unit formed the penultimate crystallization – as well as the instrument – of the mutual agency between social engineering, welfare policies, religious beliefs and urban planning that so typically characterized the post-war urban environment.

# FROM CIAM TO TEAM 10

## REORGANIZING CIAM AFTER WORLD WAR II

After World War II, pre-war CIAM-inspired modernism became a world-wide phenomenon. Yet, the results were quickly found to be unsatisfactory. This was partly due to fundamental flaws in the underlying concepts, but it also had to do with their stripped application. As a result, CIAM underwent a significant revision during the 1950s, eventually leading to its dissolution in 1959. Three themes stood central after the war. In the first place, CIAM leaders wondered how they could take the lead in the post-war reconstruction effort, revealing how the organization viewed itself no longer as an avant-garde movement but as an established association of design experts, rivalling for influence with the International Federation for Housing and Town Planning, and the International Union of Architects.<sup>1</sup> To this effect, the formulation of a 'Charter of the Habitat' that would guide future housing policies, became top priority. Further, the (global) scale of the reconstruction effort, the postcolonial context and the increasing number and cultural diversity of the members, led to the question of how CIAM ought to be managed. In the meantime, a generation conflict lumbered, as well as increasing doubts about the organization's universalist aspirations. Finally, the search for a new monumentality and the synthesis of the arts formed a third theme: how could the abstract, modernist vocabulary become infused with symbolism and expression so that it would 'speak' to the user, dweller or citizen?

The first post-war congress at Bridgewater (1946) focused on re-establishing the contacts and preparing the future. CIAM had now become larger and more diverse as ever before, with delegates from countries outside Europe. Also substantially more women were present, some of which occupied key functions, such as Jacqueline Tyrwhitt (1905-1983).<sup>2</sup> One important decision was that adherents should form groups and send delegates to the conferences. As a token of the new momentum, José Luis Sert (1902-1983) now replaced Cornelis Van Eesteren (1897-1988) as President of the CIAM; the veteran Sigfried Giedion (1888-1968) stayed on as Secretary-General to ensure continuity.<sup>3</sup> At the conference, the latter developed his cherished idea that a new, modern monumentality could be achieved through a collaboration between architects, painters and sculptors.<sup>4</sup> Now that industrialization, standardization and town planning were well on track, Giedion believed that the topic of a contemporary aesthetics could be tackled. By contrast, Walter Gropius' (1883-1969) priorities lay elsewhere: he held a plea for the creation of 'civic centers' that would enable the individual to attain a full place in society – a paramount challenge indeed in the scattered post-war societies.<sup>5</sup>

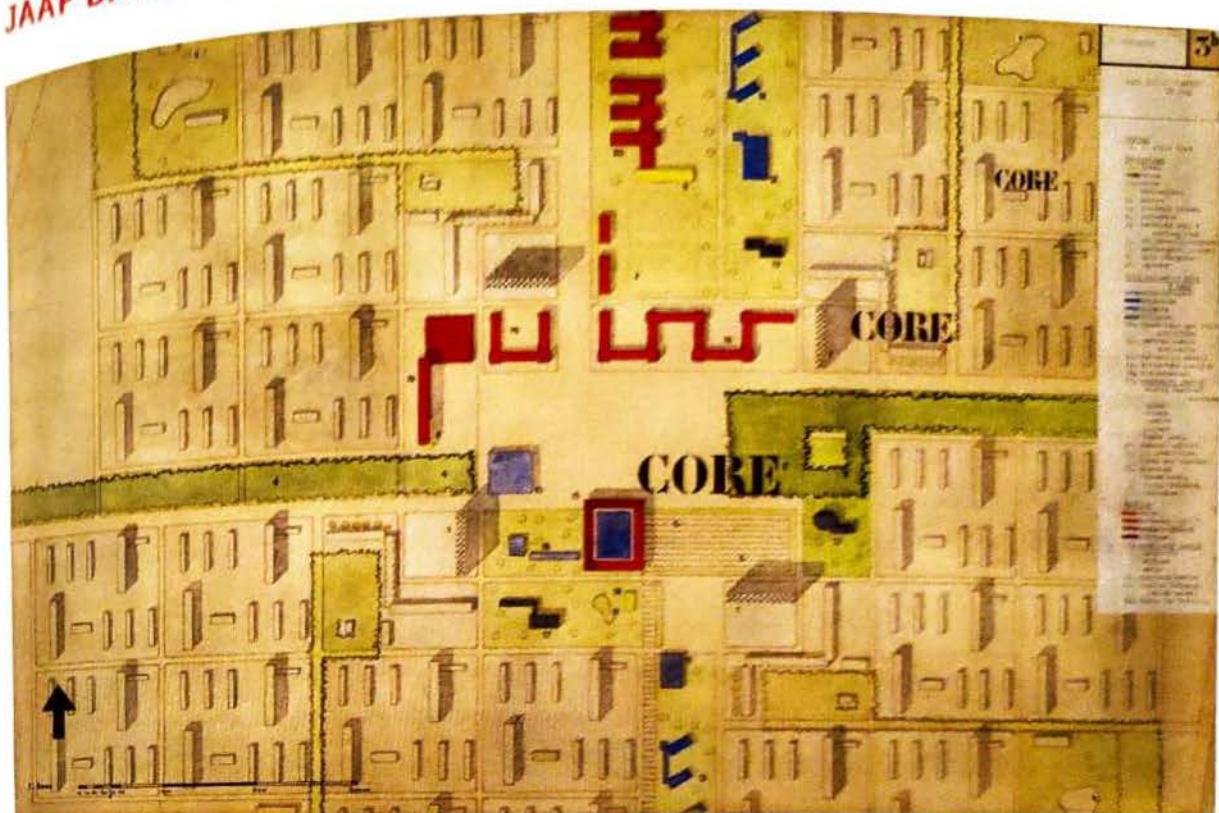
The principal document coming out of Bridgewater was the 'Reaffirmation of the aims of the CIAM'. Building upon the 1928 La Sarraz Declaration and the 1933 Athens Charter, it reaffirmed but nuanced the initial goals. The main goal was now, as it stated, "to work for the creation of a physical environment that will satisfy man's emotional and material needs and stimulate his spiritual growth. To achieve an environment of this quality, we must combine social idealism, scientific planning and the fullest use of available building techniques. In so doing, we must enlarge and enrich the aesthetic language of architecture in order to provide a contemporary means whereby people's emotional needs can find expression in the design of their environment. We believe that thus a more balanced life can be produced for the individual and for the community."<sup>6</sup> The emphasis on emotional needs and spiritual growth (in addition to material needs) was new, as was the focus on 'social idealism' and the enrichment of the aesthetic aspect of the built environment in the service of the 'emotional needs' of the people. Little seemed left of this regained vitality at CIAM 7 in Bergamo, however, with the old guard still firmly in place. Le Corbusier presented his 'CIAM grid', an attempt to rationalize the documentation and interpretation of the ever-increasing number of projects discussed at CIAM meetings.<sup>7</sup> While not officially adopted, the Grid remained important still for it eventually became a preferred target amongst the younger members for criticizing the exaggerated analytical focus of the elder generation. The discussion on the synthesis of the arts, chaired by Giedion, provoked a lively and ideologically charged debate with Helena Syrkus (1900-1982), the only delegate from the recently formed Eastern Block, but failed to come to a coherent conclusion. The last theme, education, was proposed by Gropius, but the congress did not capitalize on the latter's experience with American teaching and the practice of teamwork.<sup>8</sup> In failing to come to an energizing synthesis, CIAM 7 foreshadowed the lack of coherence typical for most of the future congresses.<sup>9</sup>

## THE HEART OF THE CITY

The 1951 congress, at Hoddesdon, focused on one single theme again, namely that of the 'Core'. It arose from the notion that next to the four urban functions of dwelling, circulation, recreation and work, there was also "another element which is quite distinct, (...) the element which makes a community a community, and not merely an aggregate of individuals. An essential feature of any true organism is the physical heart or the nucleus, that we here call the Core."<sup>10</sup>

The idea of the city center as a space of civic representation and social practice was discussed earlier by Sert in *Can Our Cities Survive?* (1942), in the context of the

## JAAP BAKEMA AND THE PLAN FOR PENDRECHT, ROTTERDAM



Throughout the 1950s, Jaap Bakema (1914-1981) developed a series of studies for Pendrecht and Alexanderpolder (extensions of Rotterdam). Gradually abandoning the social uniformity and morphological reduction of the functionalist approach in favor of more integrated solutions focused on community, they reflect the internal debate within post-war CIAM. Designed in cooperation with Lotte Stam-Beese (1903-1988) and discussed at CIAM 7, the initial Pendrecht plan featured a hierarchical composition of small 'residential units' for 400 inhabitants composed of five types of dwelling. This typological variety introduced a spatial and social continuity between the individual dwelling and the city as a col-

lective, and created a gradient between individuality and communal. Referred to as *stempels* ('stamps'), such residential units could be repeated and form homogenous larger entities. To this effect, ten such residential units were grouped around a central open space, forming a neighborhood unit of 4000 inhabitants. In a second version presented at CIAM 8 in Hoddesdon, Bakema expanded the basic unit to 700 people, extending the communal facilities into all of the residential units. He developed this idea further in the proposal for Alexanderpolder (presented at CIAM 10), where the residential unit consisted of 250 dwellings, featuring the full gamut of housing types current in the Netherlands. This principle of the 'visual

group' (referring to Bakema's concern for creating neighborhood units that could be experienced as such), culminated in the regional plan for Kennemerland (presented at CIAM '59) and the monumental Pampusplan (1965).

In the final Pendrecht plan, the central square of 140 by 340 meter was visually defined by four high-rises on its corners, signalling the four neighborhood units that surrounded it. It featured retail and small workshops to the north; cultural and administrative buildings to the south; recreational areas (a formal pond, public gardens, and a long promenade) to the east; and amenities for entertainment in the form of cafés and a bandstand to the west. A pedestrian 'inner ring road'

connected these activities and linked the four neighborhood units. As pendants to this central Core, each neighborhood unit had its own recreation park, linked to the center by long promenades. Thus, as Bakema meant to illustrate, the Core ought not to be one single space or activity but "an idea, expressed now here, now there, now by one activity, now by another", which required a definite but not rigidly bound space.<sup>11</sup> This, however, soon appeared to be the major problem of the central square: too large and too empty, most residents seemed to avoid, rather than appropriate it. Even Stam-Beese acknowledged this, suggesting to rescale it with buildings. This effectively happened, and today, half of the central square is filled in by a large supermarket.

increasingly mobile metropolitan populations. In 'The Need for a New Monumentality' (1944), Giedion had expressed the hope that these new civic centers would become the "site for collective emotional events, where the people play a role as important as the spectacle itself, and where a unity of the architectural background, the people and the symbols conveyed by the spectacles will arise".<sup>12</sup> The theme of the Core (which was preferred above 'civic center' for reasons of the administrative undertone of the latter) worked well: combining elements that had been touched upon in earlier discussions, it was applicable to the reconstruction of European cities, as well as in the English new towns and in the anticipated urbanization of the Third World.<sup>13</sup> It also tied in neatly with the intentions formulated in Bridgewater; it provided indeed an instance of how architecture could meet the emotional needs of the ordinary man and stimulate his spiritual growth – thus contributing, as the subtitle of the proceedings indicated, to the 'Humanization of Urban Life'.

The architectural materialization of this endeavour remained unclear, however, for the various speakers highlighted their own, often contradictory interpretations of the 'Core'. While Sert emphasized its importance in the context of rampant suburbanization and supported the idea that to each level of communal organization (the village, the residential neighborhood, the town, the city, the metropolis),

there should correspond a special physical place devoted to expressing a sense of community. Giedion discussed historical examples such as the forum of Pompei and the agora of Priene as tokens of democracy, civic identity, community formation and group identity in Antiquity. He used Rockefeller Plaza, by contrast, to illustrate both the lack of such spaces in the contemporary metropolis and the need for them. Le Corbusier, in turn, meandered freely about his past achievements, while Gropius spoke about 'The Human Scale'. The projects on display (notably not using the CIAM grid) covered an equally broad range across the five scales mentioned in Sert's address, ranging from a design for a Dutch new town in the newly created North-East Polder by Aldo Van Eyck (1918-1999) and Le Corbusier's master plan for Chandigarh. In between both extremes lay the much-discussed proposal for Pendrecht (Rotterdam) by the Dutch group 'Opbouw'.

#### Attributes of the Core: The Human Scale

It is believed that CIAM can fulfill a useful role by showing modern society how it can equip itself with elements to create its own core; one that must always retain the human scale and simultaneously be uniform in character, accessible to all, and subsequently strengthen the community.

Attention must be paid to the physical, intellectual, and also the sentimental needs of human nature, and places and buildings must be created that are equipped with everything necessary and sufficient for their role. These words necessary and sufficient do not mean that it is sufficient simply to present the material elements of modern technical skill, nor that it is necessary to assemble the most advanced mechanical materials - which are often out of reach or beyond their cost. The words necessary and sufficient imply that common sense must be exercised in the selection of the equipment.

The human scale should provide all the environment desired of the Core. Apart from this, there are no standard dimensions for these elements. As everything, from the smallest scale to the largest, should be able to take place here, the authority should endeavor to put sufficient material means at the disposal of the citizens to enable them to display and to develop their spontaneous reactions & bringing into play their powers of action, participation and iteration.

These places and buildings, equipped with those elements that are necessary and sufficient, should be distributed in town and country wherever a centre of reality occurs.

The expression of the Core must interpret the human activities that take place there: both the interests of individuals with one another, and the relations of individuals with the community. Only full development of both these relationships can engrave the dignity of individual life.



#### Attributes of the Core: Spontaneity

The Core must express a human geographical form, either already as built or having an outlet. Its function is to provide opportunities for movement and for spontaneous manifestations of movement in the meeting place of the people and the cultural stage for their manifestations. It is also the entire value for any conception expressive. Here spontaneous action, whether necessary or expressing a desire, unifying of emotion, again becomes possible.

The people must be given a space in which they can express their feelings or give vent to spontaneous actions. It is these spontaneous expressions that will give a vitality to modern society. It will be had that is spontaneous or spontaneous organizations, but how in the Core where an idea can suddenly gain birth, free, independent, creative, large or small, the weaker and timid, and timid, without a new source which has begun to believe what it is well what it might become.

The plastic and spatial expression of the Core will be simple; its various parts may sometimes be separated or even isolated, but must not be transposed by situations in the sense of gravity.

Reflecting the wide variety of opinions and projects presented, the final statement, entitled 'A Short Outline of the Core' (see Figure above) stated that there should be only one main core in each city; that it was an artefact (a "man-made thing"); that it should prioritize pedestrians and ban cars; that commercial advertising along its borders should be organized and controlled but that varying (mobile) elements could contribute to animating it; and finally, that in planning the Core, architects and sculptors, In order to enable people to meet one another and exchange ideas, it

stated further, "the Core should give both an impression of freedom of movement and also a release from loneliness or boredom; an atmosphere of general relaxation, of participation in a spontaneous and impartial performance, a touch of the warmth of human kindness, a possibility of new encounters and – at the same time – a recovery of civic consciousness [sic]."<sup>14</sup> CIAM thus attributed itself a key role in the development of post-war democracy by "showing modern society how it can equip itself with means to activate its members."<sup>15</sup> Moreover, the concept of the Core gave a social relevance to the idea of the synthesis of the arts, which became a means "to transform the passive individual in society into an active participant of social life."<sup>16</sup> Thus, in a context of changing social circumstances and rapidly decentralizing cities, the Core seemed an ideal vehicle to reconstitute urbanity in late 20th century cities.<sup>17</sup>

## HABITAT AND HUMAN RELATIONS

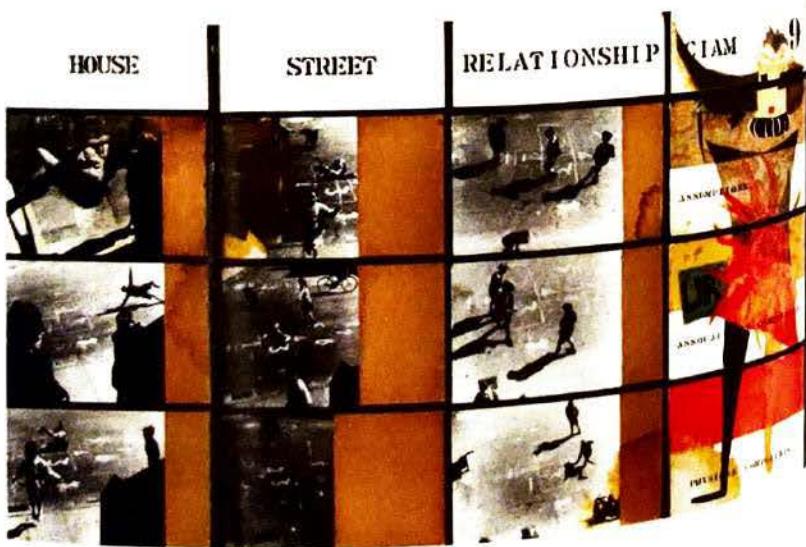
The next meeting, in Aix-en-Provence, was a crucial one, for it featured a new and combatant generation of younger members and finally tackled the theme of 'Habitat'. Although at a preparatory meeting in Sigtuna (Sweden) the year before, it had become clear that there existed no real consensus about its meaning, it was felt that 'habitat' allowed to transgress the materialistic *Existenzminimum* concept by acknowledging local cultural identities, existing landscape or urban qualities, and the need for growth and change.<sup>18</sup> Or, as stated in *Forum*: "Habitat encompasses all aspects of taking possession of the ground and of space in order to organise them with a view to their biological, sociological and spiritual life."<sup>19</sup> Despite the confusion, the humanist undertones of this definition signalled an important change within CIAM and opened up its perspective to examples of dwelling from 'other' (i.e. vernacular, or non-European) cultures.

In particular, the African projects shown at CIAM 9 made a lasting impression, for they showed a path towards modernization with respect for the local climate and dwelling culture. The 'Habitat du Plus Grand Nombre' grid by the *Groupe d'architectes modernes marocains* (GAMMA; group of Moroccan modern architects) and ATBAT Afrique, headed by Michel Ecochard (1905-1985) and Georges Candilis (1913-1995) respectively, especially captured the imagination (see Figure on the right, *cités horizontales* around Casablanca). To structure the process of uncontrolled urbanization in French North Africa (resulting in large *bidonvilles*, where resistance against the colonial power grew), Ecochard developed a 'housing grid' with a basic unit of eight by eight meters. Provided with sewer lines and other utility services, part of it was left to be infilled by residents, while in another part a rationalized version of the typical *medina* (the old center of the North African city) and the

traditional courthouse was built. Although the topic (mass housing) and the mode of presentation (the CIAM grid) seemed conventional at first, GAMMA's approach was novel for its anthropological and ethnological take on the *bidonvilles* revealed that even in such a poverty-stricken context, there was "a wealth of actions, places and symbols that continued the praxis of building and living as found in traditional villages."<sup>20</sup> On the intersection of rural traditions and urban modernity, the *bidonvilles* thus offered relevant cues for 'urbanizing' the newly arrived immigrants. For example, with a view to achieving a certain urban density with respect for the privacy and enclosure typical in the local culture, in their experimental *Nid d'abeilles* (Beehive) building, Candilis and Woods stacked several courtyard dwellings upon one another, shifting the patios one bay in plan as to allow light to penetrate from above. Utterly simple in terms of typology and detailing, the rudimentary building was designed to stimulate appropriation and adaptation amongst its residents. Housing thus became an evolutionary process, beginning with the provision of basic infrastructure and partially self-built housing, and evolving towards more 'advanced' and denser housing solutions.<sup>21</sup>



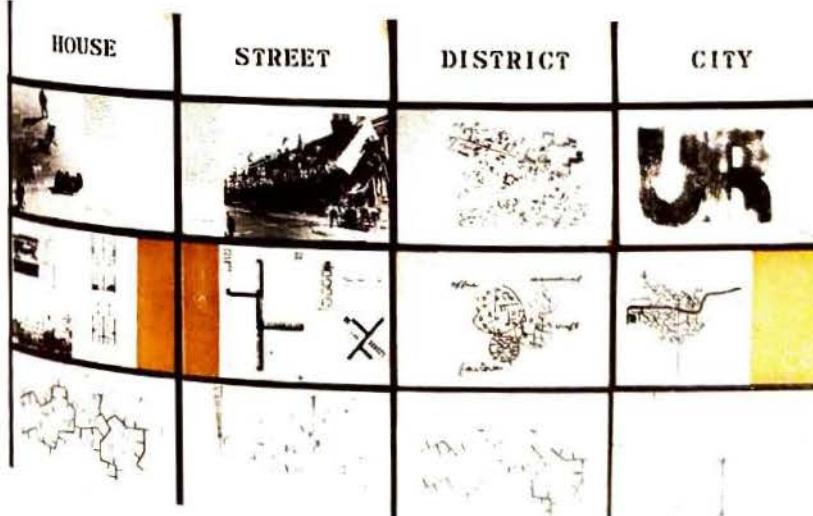
Particularly impressed by this presentation were Alison (1928-1993) and Peter Smithson (1923-2003), a couple of young British architects. Having witnessed its impoverished application in the post-war British new towns, where people were being rehoused with total disregard of their social and emotional bonds, they became the most outspoken opponents of the Athens Charter. Instead, they sought to create transitions between the existing urban fabric and new interventions that were gradual instead of radical. In their unbuilt proposal for Golden Lane in London (1952), for example, they suggested to create 'streets in the air' that would connect with the existing street pattern and give each apartment its own private entrance.<sup>22</sup> The Smithsons' concern with community derived in part from their acquaintance with photographer Nigel Henderson (1917-1985) and his wife, the anthropologist Judith Stephen (1918-1972), who had extensively documented and studied their working-class neighborhood Bethnal Green. Translating the latter's findings into the urban and architectural discourse, the Smithsons stated that "the problem of human relations fell through the net of the Four Functions."<sup>23</sup> As opposed to CIAM's analytical approach, they considered the city as composed of phenomenological categories such as 'House', 'Street', 'District', and 'City' – a 'hierarchy of associations', they stated, that was "woven into a modified continuum representing the true complexity of human association."<sup>24</sup> Thus, for the Smithsons, the key to community in the city did not lie in a separate 'city core' consisting of representative public buildings, but instead "within the realm of dwelling itself, where a more immediate relationship between the nuclear family and the community could be established".<sup>25</sup> Although it was never entirely clear what the Smithsons meant by it, at a polemical level, their concept of '(human) association' had a revitalizing effect on the established CIAM discourse.<sup>26</sup> Specifically, it suggested a way of expanding and reconfiguring the city without losing the vitality of street life. This was also the central message in the Smithsons' 'Urban Re-identification Grid' presented at CIAM 9 (see Figure below, left half of the grid; right half on the right). It purposely subverted the template by taking the spatial categories of house, street,



district and city as its basis instead of the four functions, and by including Henderson's photographs of children playing in the street. Although much magnified in later CIAM historiography, it should be noted that at the congress itself, the Smithsons' provocative contribution passed almost unnoticed.<sup>27</sup>

By contrast, the design of Alexanderpolder, a satellite town near Rotterdam designed by Jaap Bakema (1914-1981) and the Dutch CIAM group 'Opbouw', was amply commented on. Despite its orthogonal outlook, it departed from the 'old' CIAM principles by integrating the various urban functions rather than separating them. Its combining of architecture and infrastructure, as well as its principle of repeatable residential units, greatly influenced town planning in The Netherlands and beyond, and culminated in Bakema's own Pampus Plan for Amsterdam (1964). Chairing the congress' subcommittee on urbanism, Bakema would go on to play a fundamental role in the later Team 10. Calling attention to the rapidly increasing scale of global urbanization, he stated that "the most urgent problem next to food and health is the provision of dwelling. (...) Technically we are being asked to build millions of dwellings. It must be stressed that this is not a numerical problem alone. The multiplication of dwellings is limited by several conditions - sociological, economical, geographical, political, and plastic. Any architectural or town planning proposals which ignore these conditions and do not give MAN HIS IDENTITY fail to meet the requirement of LIFE."<sup>28</sup>

Despite, or due to, the wide variety of perspectives at CIAM 9, no consensus was achieved about how a charter of the Habitat should look like, which left especially the younger members with a profound disappointment. It only corroborated their feeling that under the guidance of the Harvard-centered group ('the professors' as Giedion, Sert, and Tyrwhitt were called), CIAM had become too institutionalized and had lost touch with the (post-)war cultural and urban realities. It was precisely this frustration, coupled with the desire to create a built environment capable of accommodating the



cultural, social and physical needs of people, that incited a group of younger members to meet in Doorn (The Netherlands) a year later, with a view to producing a statement on habitat. Later called the 'Doorn Manifesto' by Alison Smithson, the opening sentence of the statement left no doubt as to the position of its authors: "Urbanism considered and developed in the terms of the Athens Charter tends to produce 'towns' in which vital human associations are inadequately expressed. To comprehend these human associations we must consider every community as a particular total complex. In order to make this comprehension possible, we propose to study urbanism as communities of varying degrees of complexity."<sup>29</sup>

Rejecting an absolutist approach to urban planning that disregarded the sense of place or the unique qualities of a particular (social, cultural or spatial) context, the authors proposed a less simplistic and mechanistic sensibility, replacing the strict separation of functions with terms such as 'association', 'growth' and 'cluster'. These organic analogies, based on patterns of human settlement, sought to accommodate growth and change (and thus user involvement) as opposed to the rigid geometries of the *Ville Radieuse*. Based on sociological notions borrowed from Patrick Geddes (1854-1932), a 'Scale of Associations' diagram was to replace the CIAM grid as a tool to study and compare settlements; instead of the analytical character of the four functions, it featured the 'synthetic' categories of 'cities', 'towns', 'villages' and 'isolated houses', and acknowledged the fact that each of these diverging topographies required different housing patterns. The Doorn Manifesto became the foundational document of Team 10, so called because the group was subsequently entrusted by the CIAM council with the organization of the next, tenth congress.

Building upon the previous gathering, CIAM 10 was held at Dubrovnik in 1956 under the title 'Habitat: Problem of Inter-relationships'.<sup>30</sup> It was clearly a 'transitory' congress: the founding fathers Gropius, Le Corbusier and Van Eesteren did not attend, sending in their resignations instead. Setting the tone for the retrospective character of the congress, Sert first gave a historical account of CIAM's concern with dwelling and read a message sent by Le Corbusier, who stated that the 'First CIAM' had established itself as an actor of international importance. Yet, as he wrote it, was now up to the 'Second CIAM' (the 'generation of 1956') to put into practice the program of the four functions (!) developed by its predecessor.<sup>31</sup> Gropius, writing from the USA, made similar remarks, while Giedion conjured the congress that it had a 'moral obligation' to produce a Charter of the Habitat. With 'only' 250 members present, CIAM 10 was intentionally a much smaller event than the previous congress (with 3000 attendants). Thirty-five grids were presented, almost half of which were from Dutch or British origin. Attesting to the influence of the Smithsons, the latter were almost all based on the notion of 'cluster'. The Dutch CIAM groups ('de 8' and 'Opbouw') contributed six grids, amongst which a reworked version of the

Alexanderpolder plan by Bakema, and two presentations by Van Eyck. The main work of the congress was split into two commissions, which were defined roughly along generational lines: the founding and middle generation members outlined the Charter of the Habitat; the other group (representing Team 10's interests) was given the task to extract material on 'relationships' from the grids to be used in drafting the Charter along four thematic lines: 'cluster', 'mobility', 'growth and change' and 'habitat'. Once it was decided that the CIAM Council would resign on 31 December 1956, a CIAM Reorganization Committee was formed with the task of drawing up a list of thirty architects who would give form to a new, 'global' CIAM.

## TEAM 10 TAKES OVER

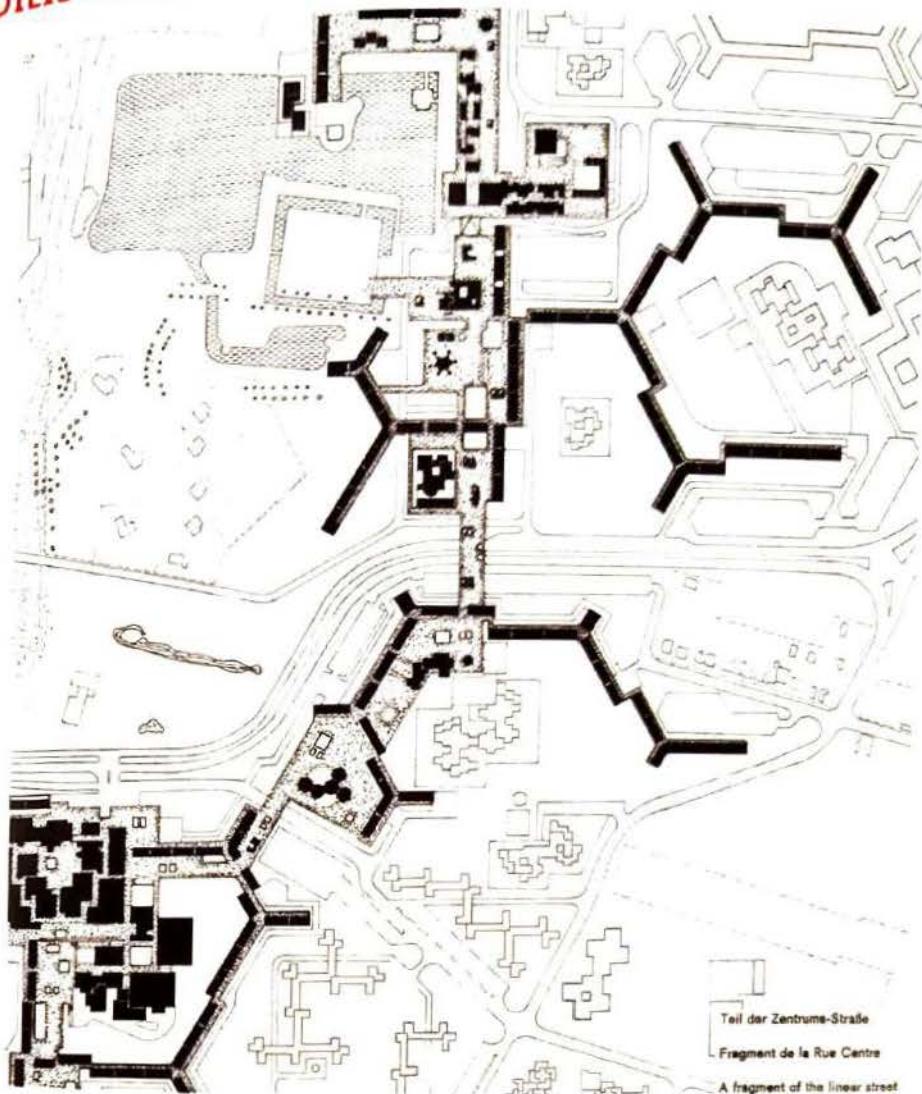
Dragging on for three more years, the debate about the reorganization of CIAM came to an inglorious conclusion at Otterlo in 1959, during the last and also most 'anarchistic' of the meetings: participants were no longer invited as representatives but as individuals; the uniformity of presentations was eliminated; and there was no chairman nor were there separate committee meetings. Forty-three participants from twenty countries presented a wide variety of projects, amongst which a report on a 4000 kilometer road trip in the Algerian desert by Herman Haan (1914-1996), and a theoretical project for a town in the sub-Arctic by Ralph Erskine (1914-2005). One of the most charged debates occurred around Ernesto Rogers' (1909-1967) Torre Velsaca in Milan, which provoked accusations of formalism and historical revivalism by Peter Smithson, who thought it aesthetically and ethically wrong. Kenzo Tange's (1913-2005) proposal for the Tokyo City Hall met with similar censure from Smithson, attacking its formal references to national building traditions. Similarly, he accused Giancarlo De Carlo (1919-2005) of "accepting old forms" instead of inventing a 'genuine' formal vocabulary for a 'new architecture'. Aldo Van Eyck, in turn, emphasized the issue of morality, arguing that the time had come "to gather the old into the new" not along historicist lines, but by appealing to a rediscovery of "the archaic principles of human nature". He then presented four recent projects, amongst which his much-acclaimed Orphanage in Amsterdam. In his talk, De Carlo compared the Modern Movement to a tree with various leaves, branches and parasites, stating that "it is the tree in its harmonious whole that counts."<sup>32</sup> In his view, CIAM had in fact died long ago; he therefore openly wondered whether or not a new kind of international organization needed to be set up to keep alive the debate on architectural culture. CIAM '59 concluded with a key-note by Louis Kahn (1901-1974), who coined his oft-quoted definition of architecture as "the thoughtful making of spaces".

The main event at Otterlo, however, was the decision, taken apparently by a small number of members, to cease using the name 'CIAM' – a fact that, quite understandably, left the founding fathers in dismay. However, it was not before 1961 that they issued an official statement. Accepting that an avant-garde movement could indeed not live on forever, they underscored that its principles were now adapted around the world nonetheless.<sup>33</sup> Also, the statement concluded, as far as Europe was concerned, CIAM had fulfilled its initial task – thus leaving the door open for further initiatives taking its message further across the globe. At least two initiatives effectively emerged directly out of CIAM: the Urban Design program at Harvard, founded by Sert; and Team 10, propelled primarily by the energy of the Smithsons and Bakema.<sup>34</sup> Yet, the (in)direct influence of CIAM beyond 1960 was much wider.<sup>35</sup>



The first formal gathering of Team 10 (see Figure above, at Toulouse-le-Mirail in 1971) was held at Royaumont in 1962, investigating the reciprocal relationship between urbanism and infrastructure – a topic of great concern at the time, for new housing projects and expressway systems were transforming cities all over the planet. Apart from Toulouse-le-Mirail, the competition-winning design by Candilis-Josic-Woods, also Bakema's Pampus Plan and the capsule towers by Kisho Kurokawa<sup>36</sup> (1934-2007) were discussed. The divergence of

## CANDILIS-JOSIC-WOODS, TOULOUSE-LE-MIRAIL



After the massive arrival of *repratriés* (repatriated people) in Toulouse after the independence of Algeria (1952), the city in the South of France came to epitomise the radical urban and social transformation of the country in the post-war period. A national competition for the creation of a new town for 100,000 extra inhabitants was won by Candilis-Josic-Woods, the partners of which occupied a central position in both CIAM and Team 10. While other submissions focused on

orthogonal grids, their proposal used so-called *stems* on the site as the overall structure for the urban development. Similar to the way streets in historical cities developed along the topography of the terrain, they followed the existing green structure of the site. Consisting of commercial, cultural and social activities distributed along a pedestrian path, the *stem* was conceived as a linear organization of different collective functions which generated and served the housing blocks

that were plugged into them. Below this network was a second, independent one, for motorized traffic, while in-between the housing blocs, there were patches of low-rise development with a view to creating a diversified urban texture and a social mix.

Although the proposal was designed to be built in separate phases, as a result of the rapidly declining political and popular support for this type of urbanism in the 1960s, and the continuously changing program (only well after the competition, it was decided that the scheme should also incorporate a new university for 10,000 students), each new phase became a bleaker copy of the intended concept. In 1971, the continuation of the plan even became the stake of the municipal elections, resulting in the defeat of the mayor who had launched it. By consequence, only the first phase, *Bellefontaine*, was realized as planned. It

comprised 3500 dwellings, all identical on the outside in order to not reveal the social status of the inhabitants (in fact, 75 percent of the dwellings were social housing). It also featured a carefully designed array of collective amenities, amongst which a socio-cultural center that, reportedly, soon attracted people beyond the area proper. Finally, only less than half of the planned dwellings were built. Also, the intended social mix never materialized, for the municipality stimulated the private sector to construct middle-class housing closer to the city. As a result, similar to many other such projects, instead of a modern utopia, Le Mirail quickly became a ghetto for the poor, with an unemployment rate reaching 40 percent and a large immigrant population which remained spatially segregated from the rest of the city.

viewpoints, scales and styles presented testified to the group's rejection of dogma, but at the same time, bore the germ of later conflicts. Discussion arose, for example, about 'Noah's Ark', a scheme by Van Eyck's student Piet Blom, linking sixty villages around Amsterdam into one single 'interurban entity'. While most members present approved this radical amalgamation of infrastructure, architecture and urbanism, the Smithsons and John Voelcker (1927-1972) vehemently objected its repetitiveness.<sup>36</sup> Another discussion opposed Bakema's propagating of the superblock as the core of future urban development, an idea the Smithsons had precisely rejected in their Berlin Haupstadt competition project.<sup>37</sup> Whereas the Royaumont meeting embodied Team 10's efforts to continue CIAM-like deliberations in the future (it was originally even planned to be held in Otterlo), it also showed that general agreement was no longer possible.<sup>38</sup> Kenneth Frampton even goes as far as stating that with the publication of Team 10 Primer in 1962, the phase of genuine and fruitful exchange and collaboration was over. Team 10 indeed soon faced a profound identity crisis. Internally, there was disagreement on how large the group should become and who should be invited - an issue that led to a frontal collision between Van Eyck and the Smithsons, the former

opposing a sectarian attitude, the latter anxious to keep the gatherings as work reunions, fearing that in the end the social aspect would dominate the professional exchange. This was effectively the case at the 1966 meeting in Urbino, leading De Carlo (who had convened the meeting) to publicly wonder what reasons other than camaraderie and a shared past existed to go on with Team 10.<sup>39</sup> He also experienced first-hand the external challenges to the group, for contestation and democratization movements by residents and students, an important part of their clientele, publicly put into question Team 10 members' authority at the 1968 Milan Triennal, which was co-curated by De Carlo and showcased work by the Smithsons, Van Eyck and Woods.

By contrast with CIAM, Team 10 did not develop a clear doctrine of its own; its ideas were primarily disseminated through education (for example at the AA School and the ILAUD summer schools) and in several magazines such as *Le Carré Bleu*, *Spazio e Società* and *Forum*; nor was there any form of regular membership. Despite this 'diffuse' existence, Team 10 had a profound impact on the discourse on architecture and urban planning. At the same time, the mythical status the group enjoys in current historiography, should not conceal that, as Eric Mumford has pointed out, despite their often polemical stance, Team 10 members did not always break radically with post-war CIAM.<sup>40</sup> They shared its idea that urbanism was a global practice, where no clear line could be drawn between architecture and city planning. Further, Team 10's focus on 'habitat' was also a direct continuation of post-war CIAM efforts.

And even if it rejected the *tabula rasa* approach and sought a more complex and sympathetic relationship between old urban tissue and new functions, Team 10 did not completely reject the principles of modernist planning. Some architectural historians even go as far as deconstructing the heroism of Team 10's breaking away from CIAM, stating that it were in fact the founding fathers who forced the younger generation to take responsibility.<sup>41</sup> Similar to Giedion's glorifying of CIAM, Alison Smithson produced a highly influential, yet selective account of the group's history and theoretical positions, leaving out what did not fit in its self-image.<sup>42</sup> Just like CIAM, also Team 10 thus produced its own myth, leaving out numerous practices that were equally relevant or innovative. Last but not least, also Team 10 was never officially dissolved; after Bakema's death, an ongoing dispute between the Smithsons and Van Eyck further weakened the group's cohesion. Yet, some members continued to collaborate or exchange on an individual basis, until also this informal collaboration naturally phased out.

# A CHALLENGE TO MODERNISM. THE SMITHSONS AND THE BERLIN HAUPTSTADT COMPETITION

## THE BERLIN HAUPTSTADT COMPETITION

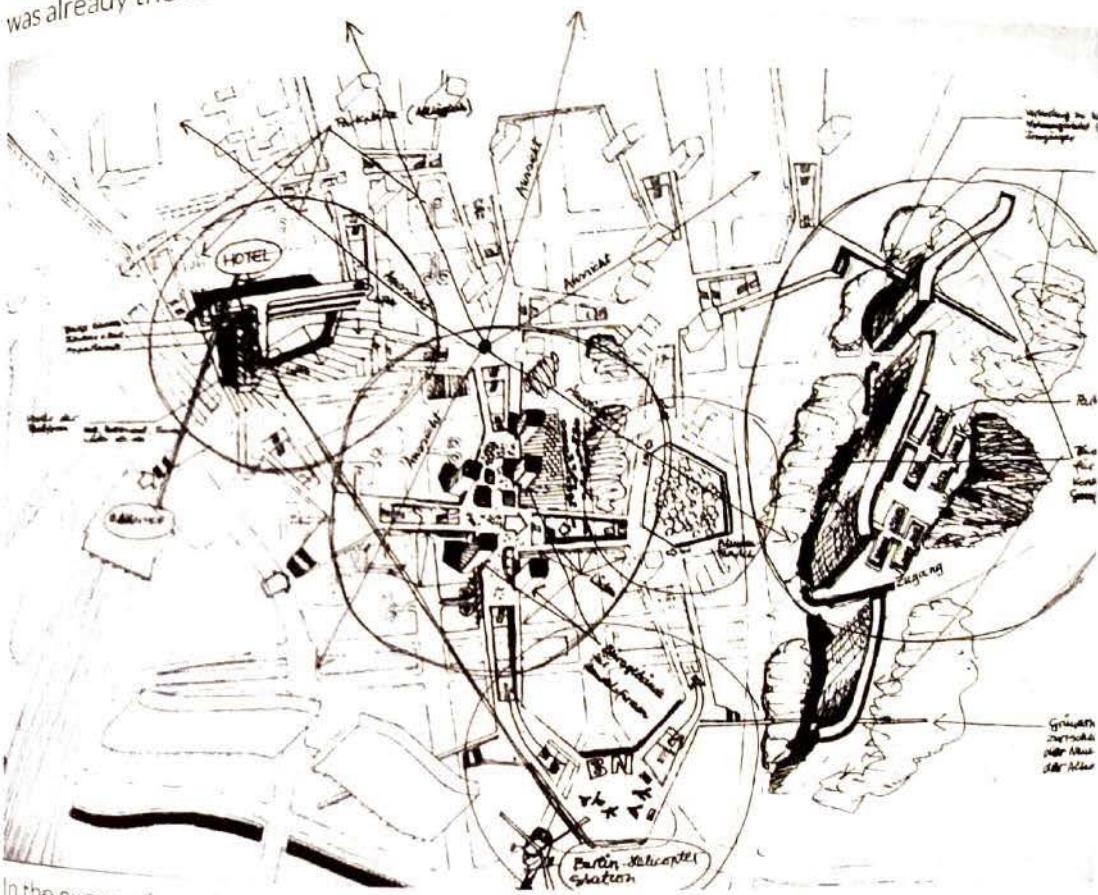
In 1957, a competition to develop a *Hauptstadt* (capital city) area for Berlin provided an opportunity for the Smithsons to apply their evolving ideas on architecture and urbanism to a specific site. Focusing on the center of war-torn Berlin, the Berlin-Hauptstadt competition was quite symbolic, as it contemplated the renewal of an area that, while devastated by war, still included some significant buildings such as the Reichstag, but also an area claimed by both East and West Germany.<sup>43</sup> The program for the competition "included the design of a great political and administrative centre for the future reunited nation's capital, with Government offices, Ministerial headquarters around the Reichstag and a large public area with facilities, stores and offices."<sup>44</sup> Therefore, the competition also referred to "a hypothetical and future reunification of Germany, giving thus a somehow utopic and advancing character to most [151] entries."<sup>45</sup>

The Smithsons' competition entry (prepared in collaboration with the Hungarian architect Peter Sigmund (1932-2015) was one of the first fully developed proposals for the application of a type of network-planning in which the demands of an increasingly motorized society were to be balanced with a new sense of urban identity and community.<sup>46</sup> Thus, the Smithsons considered their plan to be a formalization of ideas on urban planning and architecture that had "developed out of the general theory of modern architecture" and yet had been "modified to accommodate [sic] an entirely new economic and social situation."<sup>47</sup> In Berlin, the Smithsons deployed "a model that would allow the development of social activity through a low-density, polinuclear city capable of growing and incorporating large swaths of green spaces" while also "converting the chaotic and increasingly presence of the automobile into an expressive and ordered structure."<sup>48</sup>

## FOUR MAIN IDEAS

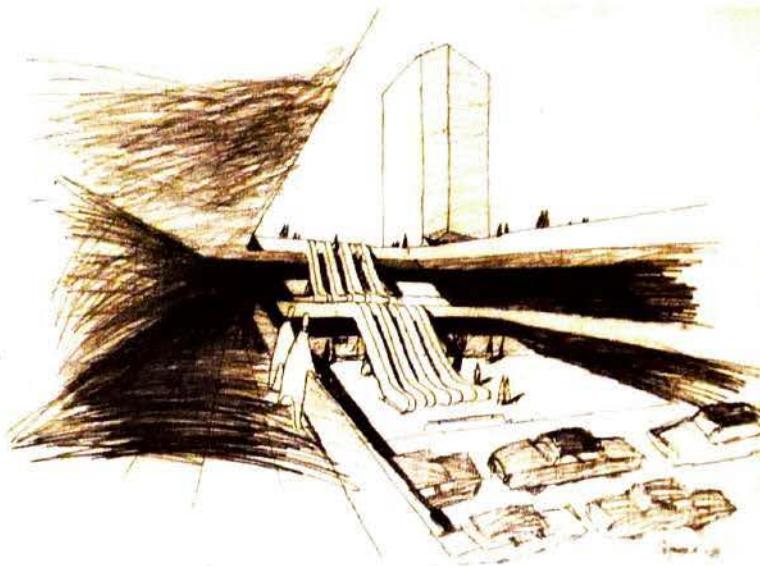
Four main ideas were developed in the Smithsons' Berlin Hauptstadt Plan that clearly echoed their modern predecessors, namely: "the concept of mobility, derived from observation of movement patterns," the model of "the inverted profile" as a way to

counter the conventional pyramidal density pattern for cities (considered to be banal as well as "outdated both by the size of our cities and by the means by which people wish to move about"). Ideas regarding 'growth and change', particularly considering cities were to be occupied and "what kind of places would suit our needs best," and finally "the need for green zones in cities," a problem constantly considered by most urban idealists.<sup>49</sup> In the Berlin Hauptstadt Plan, these four themes were translated into a specific urban form, as the Smithsons attempted to reveal "the scattered urban structure and patchwork urban form" of the contemporary city, in which the cluster was already the essential urban unit (see Figure below).<sup>50</sup>



In the expression of the cluster – and in the organization of the plan – the concept of mobility was particularly crucial, as the proposed structure "constituted in itself a traffic system organised in a grand scale."<sup>51</sup> Therefore, the idea of "absolute maximum mobility" was at the basis of the urban forms developed in the plan, since such an absolute mobility was to be achieved through a "layered movement pattern that separate[d] the various means of movement and [gave] each its own geometry, its own formal expression."<sup>52</sup> While the separation of different types of traffic and means of movement was clearly reminiscent of the Athens Charter, its formal materialization as two interlinked systems based on two different and opposed geometries alluded to something altogether different. On the ground level, what remained of the existing streets was to be preserved, restored, and complemented by new streets, mostly

establishing an orthogonal grid plan dedicated to vehicular traffic. Complementing this almost traditional urban grid, the Smithsons proposed the superimposition of a very distinctive second grid, one which was "neither orthogonal nor concurrent with the existing one, an organic pattern whose geometry recall[ed] a perforated elastic cloth under tension drawing a continuous pedestrian public space floating 10 m [metres] over the actual pattern of streets" (see Figure below).<sup>53</sup>



This upper level 'platform net' for pedestrians was dramatically original, since it was conceived as an adaptive net that could respond to the different conditions of the plan. For example, the net would become wider and denser around the nodes where the vertical connections (with mechanic escalators) between the different levels were located, as the formal independence of both grids

introduced a variety of coincidences, overlaps, and crosses between them. Most, if not all, nodes were signalled by a series of "small squarish towers with knocked-off corners, each about thirty meters high," resting on the ground at street level "but becom[ing] wider above the platform."<sup>54</sup> With egress and access at both ground and platform levels, these towers established clear connections between lower and upper levels. The continuation between both levels was further consolidated by a network of small squares (at approximately five meters high). These *piazzette*, as the Smithsons called them, were intended to further improve spatial continuity and movement simply by connecting the lower and the upper levels with escalators.

With this layering, the Smithsons attempted to demonstrate the impossibility to separate urban forms, or buildings, from their connecting urban structure, since each building was directly supported by a specific combination of pedestrian walkways and automobile roadways. This presented a clear critique of the urban expression favored by modern architects which separated buildings and circulation, that is: separated urban forms and urban structures. In fact, as these combinations attempted to "make the city legible through the order of movement and their concomitant urban forms," the Smithsons' Berlin Hauptstadt Plan was much more reminiscent of Baroque urban principles.<sup>55</sup>

The increased mobility fostered by the plan also implied a levelling of the different spaces and directions within Hauptstadt. Thus, the greater mobility afforded the possibility to establish an 'inverted profile' urban organization, with low density at the center of the plan. In fact, the Smithsons' "recognition of tree height as an experiential limit may well have exerted an influence in the 1960s on the general adoption of 'low rise, high density' as the preferred policy for family residential development."<sup>56</sup> The 'inverted profile' urban concept was to be extended across the entire area through a network of open-textured public spaces that could provide a degree of calmness and emptiness to the urban composition. This network of urban spaces not only emanated from the center, but also, much like the pedestrian net, was developed in direct relation to the different requirements of the various urban forms and structures. Effectively, these spaces organized clusters of dominant themes (ranging from fashion to leisure), not only connecting commercial programs and facilities on the platform level with offices on the ground level, but also defining different densities and organization for the surrounding urban forms. Ultimately, these spaces served to further consolidate the direct relation between buildings and circulation.



The 'inverted profile' organization was most clearly expressed in the plan as the larger and taller buildings of offices were pushed towards the periphery of the plan and low density was found at the center (see Figure above). When combined, these tall peripheral buildings established an almost continuous building wall (only interrupted

at major traffic intersections) that established the boundary condition for the entire area (except the natural northern boundary of the river) and was dubbed by the Smithsons as "the 'Chinese' wall of offices".<sup>57</sup> Only in the north western boundary in Fischerbrücke, offices were replaced by housing as the program of the wall-building, while its scale and dimension remained constant throughout the entire plan. Despite its constant height of 100 meters (or about 30 floors), the Smithsons claimed that the position of the wall-building had been calculated to only project their significant shadow in free areas and traffic roads.

With such substantial dimension and height, the formal expression of the wall-building was quite powerful and with obvious urban consequences. Specifically, the long, sinuous building not only separated inside from outside, but also anchored and marked the start of the plan's pedestrian platform net. Therefore, parking was to be located on the exterior adjacent area to the wall, with pedestrian finger paths of the platform net extending through the wall in order to lead visitors under the wall of offices and to the central area. The application of the 'inverted profile' urban concept was completed with the introduction of a large public Agora as well as a large open amphitheater on the north section of the site (and linked to the old Reichstag). Occupying the platform level, these were surrounded by receding towers "like the fingers of a grasping hand" in "a clear nod to Le Corbusier".<sup>58</sup> The introduction of these boundless open spaces "defined a completely new role to empty urban lots", as they were to be "understood as an end in themselves and not [merely] as spaces waiting to be occupied" by construction.<sup>59</sup>

The emptiness of Hauptstadt's center, the area's open texture resulting from the war's destruction, was also to be instrumentalized in the Smithsons' plan. These voids in the urban grid were occupied with green areas and thus charged with bringing nature into the city. While the Smithsons' rhetoric regarding these green spaces was rather similar to the principles codified in The Athens Charter, their materialization was altogether divergent. Therefore, green areas in the Berlin Hauptstadt Plan did not generically carpet the entire ground level, but were instead localized and manipulated to create different conditions within the plan. Specifically, green areas not only surrounded the plan's enveloping wall building and the governmental ministries complex (providing a horizontal counterpoint, or relieve, to their vertical expression), but were also formalized as a long green wedge that penetrated the plan from the west, a network of pockets on the eastern side, or even as a continuous green walk defining a linear recreation area along the river. Through these different green areas, the Smithsons' Berlin Hauptstadt Plan further shifted the focus of the traditional city from the buildings themselves to the space between them, while also alluding (once again) to the CIAM urban principles and adjusting them to foster human association, and the development of urban communities and identities.

Another primary structuring urban principle of the Berlin Hauptstadt Plan was the integration of growth and change into the original planning. Specifically, the Smithsons claimed that the urban forms that composed the "low-profile city [were] intended to be anticipatory, open-ended, and adaptable according to the rules growing out of their interaction with systems of movement, which aids the consistency of each form."<sup>60</sup> Thus, the plan intended to accommodate the buildings' roads and services necessity to develop freely through time in accordance to their own needs without compromising the development of the plan as a whole.

While pervasive to the entire plan, the idea of allowing growth and change to occur was most clearly expressed in the huge complex dedicated to the ministerial office buildings. All governmental ministries were organized along organic schemes of "antler-like" plans, which effectively provided several opportunities for the individual growth of the different ministries without interfering with the required evolution of the others. The design of these buildings represented an attempt at an escape from the point blocks, isolated buildings, towards a more modulated layout, as "[t]he branching, twig-like forms speak of connection and choice."<sup>61</sup> While seemingly random, this "twig-like distribution" could certainly be considered "as an argument in favor of piecemeal development" as well as "a polemic against wholesale demolition" necessary for the application of the modern tabula rasa approach to the city.<sup>62</sup> The possible future conditions of these ministerial buildings were rendered in the proposal as either an interconnected series of towers or, conversely, as a series of sprawling mid-rise extensions.<sup>63</sup> Such particular concern with accommodating growth and change in architecture and urbanism was a fundamental concern of the (younger) generation of architects that rallied around the Team 10 banner. It was primarily through such accommodation that the Smithsons' plan for Berlin – as well as the work of other Team 10 members – adapted the forms of modern architecture and urban planning to address and maximize the potential of 'human association' and 'urban re-identification'.

## URBAN CLUSTERS OF BUILDINGS AND INFRASTRUCTURE

The support for human association and the development of urban community and identity was at the very core of the Smithsons' general approach to the city and in their particular proposal for Berlin Hauptstadt. For the Smithsons, the inherent cluster of human association was to be both fostered and expressed by the design of the city. In this regard, the role of infrastructure was crucial. The platform-net proposed in the Berlin Hauptstadt plan, for example, was intended not only to "facilitate spontaneous community formation", but was also meant to "give 'coherence' to the urban structure", since, after all, not only "the aim of urbanism

is comprehensibility", but also the senses of identity and community are derived from a clarity of organization and the constitution of particular, non-generic, formal representation. The conciliation of urban comprehensibility and particular architectural images in support of human association and the construction of urban identity was to be resolved "by means of a dualistic planning strategy that developed road and communication systems as the urban infrastructure... [using] the possibilities offered by 'throw-away' technology to create a new sort of environment with different cycles of change for the different functions."<sup>64</sup>

With its platform net, the Berlin Hauptstadt Plan took on the character of "an inhabited infrastructure", complex and multiple, with its buildings, towering over the existing urban fabric with the few "surviving buildings, sparsely scattered here and there, preserved, as witness from the past" as well as the remaining surface, treated as a carpet of green area.<sup>65</sup> The original concept of the layering of different grids and the emphasis on a combination of urban structures (the spaces between the buildings) and urban forms (the buildings themselves) provided a new approach to urban planning. This plan expressed fresh ideas where infrastructural networks generated public space embedded with a sense of community. It also investigated the particular relation between infrastructure and the urban fabric in a way that incorporated density and complexity as central values, thus signaling the emergence and articulation of new ideas on the city and, most importantly, on its planning.

Although the Smithsons' Berlin Hauptstadt Plan only came in third in the competition, it still illustrated a paradigmatic break and expansion of the architectural forms and urban principles associated with modernism.<sup>66</sup> Most significantly, it clearly rejected the typically modern *tabula rasa* model for urbanism, instead replacing it with "a model based on a new geometry, apparently abstract and disconnected from the existing urban fabric" that nevertheless "established a combination of two completely distinct structural forms: the old and the new city."<sup>67</sup> Despite the Smithsons' manifest opposition to Le Corbusier's rationalist urban theory, it was from the old master that they drew an important part of their inspiration in their search for meaningful groupings in architecture and urbanism.<sup>68</sup> Thus, with its focus on the connection between urban forms and urban structures (between buildings and circulation) and the introduction of concepts such as indeterminacy and open-endedness, the Berlin Hauptstadt Plan not only provided a marked critique to modernism, but also indicated a renewed direction for architecture and urbanism at the end of the modern period.

# AUGUSTE PERRET AND THE RECONSTRUCTION OF LE HAVRE

## THE TECTONIC FUNCTION OF THE CONCRETE FRAME

The city of Le Havre, on the estuary of the Seine – which connects the city with Paris – was the second port city of France. The small-scale fabric of alleyways, the large port and the relation with the sea made the city a tourist attraction known as 'Little Paris'. In September 1944 the city was bombed; in one night the center near the port was completely wiped out. In an area of 150 hectares there was hardly anything left standing: 12,500 buildings were destroyed, leaving 5000 people dead and 80,000 homeless. Immediately after the bombing, reconstruction was discussed, and the Ministry of Reconstruction entrusted Auguste Perret (1874-1954) with the task to develop a master plan for Le Havre. Perret was a pioneer in building with (reinforced) concrete. For him, concrete was a special building material: stony, but liquid at first, so that it could very easily adopt different shapes. The application of reinforcement made it possible to build sustainable constructions. However, as Peter Blake states, Perret did much more than develop a new building method: "He took a deformable material at a time when it was fashionable to exploit plasticity to the utmost, but he used it with classically strict self-restraint, because, as he was aware, it could provide the only reasonable solution to the very urgent problem of his time: how to construct tall buildings on a frame that was light and could be adapted to the building plan endlessly."<sup>69</sup>

Perret trained in the École des Beaux-Arts under Julien Guadet (1834-1908), who favored a free form of classicism, in which the integrity of the construction played an important role. Imitative neoclassicism did not appeal to Perret; in his view it was merely decor construction. Taking the continuity of history into account, Perret therefore set out to find a way of building that matched with reinforced concrete. Gothic constructions in brick did not provide a good basis; buttresses and flying buttresses were superfluous. Also, in Perret's view, gothic architecture was a builder's art rather than true architecture. By contrast, the Greek temple provided a model for harmony and stability, both in an architectural sense and in relation to knowledge and culture. Moreover, in line with the classicist tradition, he regarded the Greek temple as an imitation of the 'primitive hut'. Perret used this analogy, connecting the temple to nature, to justify his own decorative use of concrete frames – not the shapeless concrete itself, but the wooden formwork: "It is the use of wooden formwork that gives reinforced concrete its appearance of great carpentry and makes it resemble ancient architecture [...] Hence, this familiar resemblance due above all to the repeated use of the straight line imposed by wood."<sup>70</sup>

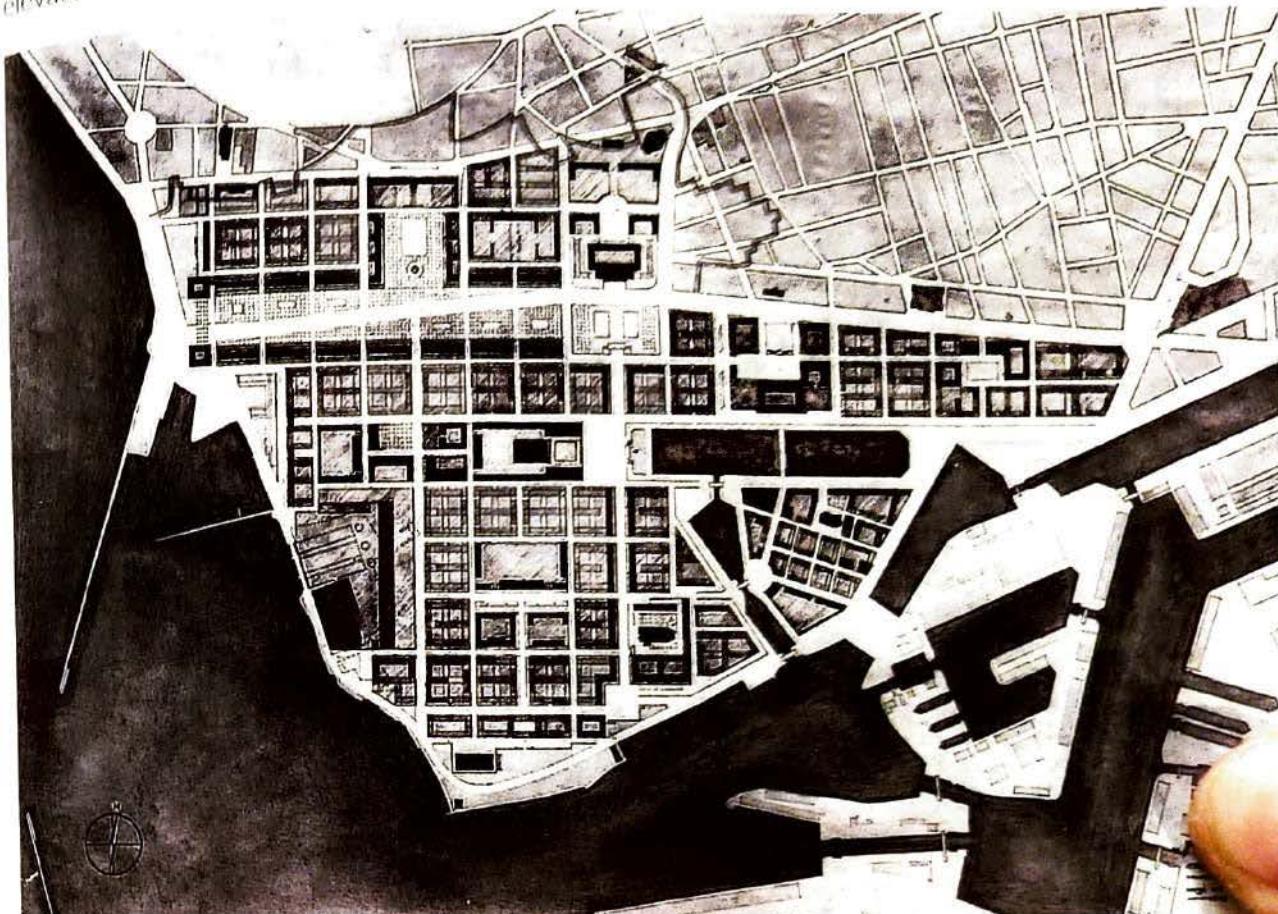
Between 1909 and 1910, Le Corbusier (then still calling himself by his birth name Charles-Edouard Jeanneret) spent fifteen months in Perret's workplace; it was an instructive time, in his own words. The application of concrete as a building material was to play a great role and would even become a style ('Brutalism'). In 1929, Le Corbusier expressed his admiration for Perret as follows: "I wonder whether anybody understands today what heroic part Perret played in those years (...). Perret dared to build in (uncoated) reinforced concrete and he claimed that this new construction method was going to cause a revolution in our architecture."<sup>71</sup> Blake notes that we must not only appreciate Perret for what he did, but also for what he did not do: "In the clay-using countries around the Mediterranean, rich, almost sculpted architecture is a tradition, whether people use bricks, plaster or cement. These deformable materials are an enormous lure to an architect, and only very few people who were not working according to classical examples could withstand the lure when Art Nouveau appeared and made plasticity something very respectable, by relating it to 'natural forms'. (...) Auguste Perret and Tony Garnier were among a very small number of prominent architects in their country and their time who stuck to the tectonic function of the concrete frame and did not surrender to or allow themselves to be taken in by the 'sumptuous plasticity of concrete and the malleability of iron'.<sup>72</sup>

## THE LE HAVRE MASTER PLAN

In the plan for Le Havre, Perret was given the chance to use his knowledge and experience of concrete as a building material. The bombing had created a kind of *tabula rasa*. It was clear that the city could not be restored to its old state; a new concept for the future was needed. To this effect, Perret organized an internal competition among the seventeen young architects in his studio. Draft designs were made to experiment with different approaches for the streets, squares and building blocks. These designs reflected both 19th century classical urbanist ideas and 20th century ideas on hygiene (light, air and space) as well as concerns related to (the steadily increasing) car traffic. On the basis of these designs a collective synthesis plan was drawn up.

The first such synthesis superposed an orthogonal grid pattern upon the former city structure; thus the previous constellation of avenues, boulevards, squares and the Bassin du Commerce was retained. Yet, at the same time, Perret proposed to cover it under a raised concrete platform, as a sort of elevated ground floor. This provided a practical solution for the high groundwater table, but it also facilitated underground functions and would create room for pipes, public transport, car use and parking facilities – in this manner, the city above ground would become the preserve of pedestrians. Perret thus proposed not a horizontal, but a vertical zoning of the city.

However, the plan was rejected by the town council and was not supported by the Ministry of Reconstruction, for the volume of concrete it required was simply not available at that moment. Also, it was feared that maintenance costs would be too elevated in relation to the limited additional value in terms of functionality.<sup>73</sup>



Nonetheless – and unsurprisingly – Perret persisted on using concrete. After all, this project was his once-in-a-lifetime opportunity to apply the full breath of his expertise and experience. In a later version of the plan (approved in January 1946), the idea of the raised ground floor was abandoned, but the overall structure now followed a more intricate grid (see Figure above). It followed a module of 6.24 meters, according to Perret the maximum span of a normal concrete beam. This module had an obvious technical and economic advantage for it enabled the use of prefabricated, standardized building elements, which, in turn, allowed to build quickly and relatively cheaply. In all its rationality and pragmatism, the proposed concept was comparable to Hippodamus' plan for Milet or the layout of the first American cities like Savannah or Philadelphia. However, the fact that Perret derived an entire city plan of 150 hectares from building standards remained unique, for the grid determined both the urban and the architectural structure of the city: it offered the main guiding principle for every

individual architect and connected the various parts of the new town. Thus, in Perret's words, it introduced a "musical harmony" in the urban structure. There indeed originated a certain mystique aspect to the system for the 6.42 module was divisible by 6, 8, 12 – thus enabling a harmonious composition on all levels at the same time.<sup>21</sup>

The built fabric of Le Havre consisted of 100 meters long city blocks, bordered by buildings on four sides (see Figure below). Yet, to avoid the typical gloomy interior court yards that often characterized this type of development, just like the closed facades along the surrounding streets. Perret determined the heights of the buildings and the width of the streets such that a maximum entry of daylight was enabled; more specifically the buildings on the east-west flank consisted of four stories, while the ones on the opposite side were lower. Thus, each apartment had an unobstructed view and was protected from the prevailing south-westerly wind. Along the main streets, these buildings also had a commercial plinth, with a view to achieving an urban, and not a merely residential townscape.



The architectural concept proper of the individual buildings to fill the master plan was to comply to a number of regulations. In the first place, they had to be built in concrete according to the 6.24 meter module mentioned earlier. Further, they all had to be

built according to the so-called *système poteau-dalle*. Similar to Perret's celebrated apartment building in the 25bis, rue Franklin in Paris (where he also had his office), this construction method was characterized by a visually apparent concrete frame with deeper-lying non-bearing infill elements, and window frames stretching from floor to ceiling. Most buildings also featured rooftop terraces and balconies with cornices, that also served to protect the facades. Thus, a certain 'unity in diversity' was achieved; despite (or precisely thanks to?) the rigidity of the grid and the imposed construction principles, all buildings got their own distinct look, which prevented monotony.<sup>75</sup>

The variation described above was too subtle, however, to avoid dullness on the urban scale. Therefore, Perret carved out a monumental, triangular figure in the aforementioned grid, connecting the Place de l'Hôtel de ville with the Porte Océane (a rectangular square which framed the view towards the sea), and – in a metaphorical gesture – the old Port. This triangular figure was made perceptible by articulating its sides as monumental boulevards (the Avenue Foch, the city's main axis; the Boulevard François I; and the Rue de Paris respectively), while its corner points were formed by monumental buildings (of Perret's design) that literally towered above the city: the new town hall (dominated by a tower of 90 meters high); the twin towers flanking the Porte Océane, both 45 meters high; and the new port headquarters (which was designed and realized later by another architect). One other building did not entirely obey to this scheme and dominated the hypotenuse of the triangular figure – and in fact the entire city – for reason of its extremely tall spire of 107 meters high: also designed by Perret, St. Joseph's church (a monumentalised version of his pioneering church in Le Raincy from the 1920) rose high up as a watch tower, keeping alive the memory of the five thousand civilians fallen during the wartime bombings. Yet, despite their monumentality, all these 'landmarks' blended quite naturally with the rest of the built fabric, for their architectural language was within the same paradigm.

To conclude, Perret's design approach in Le Havre must be seen in the context of the rest of his oeuvre and his ideas about architecture. The principles formulated in the plan were meant to contribute to the stability and continuity of urban development. To this effect, the urban fabric and the style of building was first determined, only then the individual buildings. Perret thus took up a position in line with the 19th century French urbanist tradition – yet, at the same time giving it a new twist.<sup>76</sup> Without joining the modernist avant-garde, he succeeded in creating a reconstruction plan for an entire city center, in a modern way, and with precisely the vibrant urban quality that is lacking in so many modernist plans.<sup>77</sup> Perret's work – with the reconstruction plan for Le Havre as its apotheosis – was devoted to finding a new style of classicism, with the possibilities and impossibilities of (reinforced) concrete as a guiding principle. Although he developed a common language that all architects shared and that was

used to set down the working practices of the urbanists, there still seemed to arise "a timeless language without words", applicable on an urban scale. Thus, as architectural historians Francesco dal Co and Manfredo Tafuri state, for reason of the fact that it feels so 'natural' and it appears like a 'coherent unity', Perret's plan for Le Havre was "a monument to his own dream of a new classicism" – a dream that, in 2005, was recognized by UNESCO as world heritage.<sup>78</sup>



# RECONSTRUCTION AND POST-WAR MODERNISM IN ROTTERDAM<sup>79</sup>

## FOUR MODELS OF RECONSTRUCTION

Essentially, there were four models for the reconstruction of destroyed cities in Europe during and after World War II: the creation of historical enclaves, traditionalist urban repair, modernistic urban repair and the *tabula rasa* model.<sup>80</sup> In the first model, the past was preserved, like in the Polish city of Poznan, where the old city was preserved as a tourist and cultural center, separated by a green belt from the surrounding areas – designated to accommodate the large-scale city functions. Elements that had been spared were restored, while the 19th and 20th century expansions were removed. The second model, traditionalist urban repair, was generally applied in the reconstruction plans in the Netherlands during the war. The old city was taken as the starting point and city plans were at best only changed for the sake of traffic policy. The acts of war had largely taken place in the old city centers, that had a small-scale structure, with a mix of buildings, such as shops, businesses, and upper houses and annexes; mostly single properties, owned by different proprietors.<sup>81</sup> As long as the necessary urban developmental corrections could be made, for instance with a view to traffic handling, there was little or no reason not to restore the old situation.<sup>82</sup> People in favor of this approach shied away from major interventions. According to architect Cees Pouderoyen (1912-1993), who was involved in the reconstruction of several Dutch cities, radical changes were very often refrained from, due to excessive caution. Pouderoyen stated that it was "better to change and renew our cities, so that they could satisfy present-day requirements, rather than painstakingly separate those elements that we want to preserve, out of exaggerated deference, and reduce them to museum pieces."<sup>83</sup>

Abroad, the traditionalist city reconstruction was carried out in Münster, in Germany, and in the Italian cities of Livorno and Terni. From an urban planning perspective, this approach was very similar to its modernist counterpart, which is not surprising, because modernism and traditionalism share the same origins: they were opposed to building in an historicizing style and purported to make advances in architectural history. To both movements, the developments in the 19th century were a terrifying specter.<sup>84</sup> What distinguished the modern variant from the traditionalist one, was not the greater willingness to carry out bold interventions, nor the need to wipe out existing urban structures, but rather the willingness to make the buildings determine the urban design. Compared to pre-war city building – in which the modernist movement hardly played a role, apart from the relatively few experiments

in city expansion and public housing – this led to a reversal in the relation between architecture and city planning. This development would give rise to passionate conflicts in the forties and fifties. In France, modernist city reconstruction was carried out from 1940, for example in the reconstruction plan for Maubeuge, near Paris, by André Lurçat (1894-1970). The latter kept the system of fortifications and made the road net subsidiary to that. Within the fortifications, he introduced housing units. In order to optimize the position of the building blocks, he often changed the position of the secondary streets. The main roads were widened. In the Netherlands, this approach was hardly used, at first, because of the desire to reduce the number of people living in the inner cities. Later, it superseded all other models, as a result of the extremely slow pace of the reconstruction. As a consequence, many shopkeepers gave up their businesses. They were robbed of their income and did not want to play a pioneering role by building new premises in the middle of city districts that lay in ruins. They experienced great difficulties in bridging the gap between the value of the destroyed (very often worn out) old buildings and the new buildings that had to be constructed, because the value of the new buildings was much higher than that of the old ones.<sup>85</sup> The role of the small and medium-sized businesses was very often taken over by developers who wanted larger premises that could be operated more easily, which led to the introduction of large scale operations in quite a few inner cities that needed reconstructing. This was only one of the reasons why the relation between architecture and urbanism shifted in the direction that was regarded as 'modern' after the war.

The fourth method, the *tabula rasa* approach, abandoned the historical city layout altogether. Using this approach, the architect and planner Donald Gibson (1908-1991) designed for example a reconstruction plan for the English city of Coventry, consisting of a system of functional zones – residential housing in 'neighborhood units', a 'civic center', a traffic-free shopping promenade, separate clusters for religious buildings, department stores, educational buildings and premises for light industry.<sup>86</sup> It is this concept that was used in Rotterdam after World War II.

## RECONSTRUCTION DURING THE WAR: THE WITTEVEEN PLAN

On 14 May 1940, as a result of a German air raid, Rotterdam's city center burned down completely, causing massive destruction in the old city triangle. Four days later, on 18 May, Willem Gerrit Witteveen (1891-1979), the leading figure in Rotterdam's urban planning, was commissioned to draw up a reconstruction plan.<sup>87</sup> When the rubble had been removed, all that was left of historical Rotterdam were the spire

and the walls of the Laurenskerk, the contours of the Schielandshuis and single buildings dotted here and there, including the most monumental part of the Bijenkorf department store at Van Hogendorpsplein, where Dudok's HBU building had also survived almost unscathed. In addition, the three monumental buildings that marked the beginning of Rotterdam's great metropolitan dream, had been spared: the town hall, the post office and the Stock Exchange on Coolsingel. Across the road, the Atlanta Hotel had withstood the bombing and the ensuing fire.



Minister of Public Works Johannes Aleidis Ringers (1885-1965) created the necessary conditions for the expropriation. All owners lost their land with one stroke of the pen, including what remained of the buildings. As a result, the network of streets and building plots also disintegrated. After the city had been cleaned up, an empty space emerged, where a whole new city center could be built. In no other Dutch city had the removal of the rubble been handled so rigorously as in Rotterdam: not only the rubble above ground, but all foundations and pipes were removed as well. What remained was a *tabula rasa*, an empty plot of land from which all 'layers' of history had been erased and where only a few buildings that had been spared

reminded of the past. A radical renewal of the infrastructure was the starting point. At last a main railway station was built, as well as a dike that protected the Maas in case of extreme high tides and flood locks to protect the old inland harbors.

Traffic on the right riverbank could now use a ring road that replaced the belt railway, that had become superfluous. The development plan was almost just as radical. It took the process of 'city formation', that had been creeping along for decades, to its endpoint in one go: a city center where hardly anybody lived and where there was much more open space. Witteveen thus created an entirely new center. Still, he did not take advantage of the possibilities that resulted from the destruction of all the physical, economic and financial frameworks of the past. Although the term 'mental image' did not exist at the time, it seems the best characterization of the reconstruction plan of which the main lines were drawn by Witteveen within a few weeks. As he reported, he and his team did not design a whole new pattern of streets that bore no relation to the city center that had grown historically: "The more we thought about these questions, the more we realised our hands were tied. On the face of it, we seemed to have a great deal of latitude, in reality, we were surprisingly constrained. After all, if the new city centre was to show some resemblance to the one that had historically developed, then the typically Rotterdam spirit – which the people from Rotterdam were so attached to – would have to be restored."<sup>88</sup> Witteveen brought back the most important features of the old city: its center kept its triangular shape and the distinction between land city and water city remained. For the rest, Witteveen's city was completely new.

To safeguard the quality of the reconstruction plan, the design of the buildings was specified to a considerable extent, as was perfectly normal in urbanism in those days. A system was set up to coordinate the individual designs at the level of streets and squares. This became the responsibility of the so-called supervisors, who each had their own sector to supervise. They made detailed building schemes, within which the architects of the individual buildings had to make their designs. The whole city was drawn in detail in this way, resulting in the so-called 'paper city'. The architectural nature was determined by the large number of businesses that had to be accommodated in a city center with a much larger area of open space than the historical city had ever had. Compared to the ultimate result, the scale of the buildings on the drawings was relatively modest. The style of building was diverse – there were hardly any distinctly modern designs, and even though historicizing ('Dutch') architecture was represented, it never dominated the cityscape. Rotterdam's city center was primarily the business center that complemented the harbor.

## RECONSTRUCTION AFTER THE WAR: THE 1946 BASISPLAN

Fearing that the aesthetical total concept for the new Rotterdam would prove impossible to implement, Rotterdam's economic elite instigated a seizure of power in 1944. Witteveen was dismissed and was succeeded by his secretary Cornelis van Traa (1899-1970). Van Traa reworked the existing plan, taking instructions from a group of architects who called themselves *Opbouw Rotterdam* (Opro) and who heeded the demands of the corporate world. Van Traa's changes only concerned two aspects, but they were still radical: he rejected the irregular, triangular plan that in Witteveen's view was the core of Rotterdam's 'mental image' and he binned the 'paper city', the enormous amount of perspective drawings that had been the outcome of the supervision. In doing so, using the image of the city as the leading principle for the reconstruction was abandoned in one stroke. The architectural process was not left completely unsupervised, a committee evaluated the facades, but great care was taken to prevent a new paper city from emerging. The new Rotterdam became a carefully created collage of loose architectural fragments that, contrary to Lurçat's proposal for Maubeuge, consisted mainly of shops and offices. Residential housing played a subordinate role, in line with the ideal of creating the ultimate 'city' all at once (see Figure below, *Basisplan*).



One of the most spectacular parts of this so-called Basisplan was a new shopping district, called Lijnbaan, that was built outside the historical city center (see Figure below). It consisted of two seemingly independent components: apartment buildings, clusters of the relatively small number of dwellings that had no direct connection to the retail business, and a shopping promenade with shops designed by Van den Broek & Bakema, built in two layers (sometimes with a basement level or split-level floors). With its porches, its flower beds and the high-end standard of the shops (at first), Lijnbaan became the showpiece of Rotterdam's reconstruction. This status was underlined by high praise from Lewis Mumford, one of the most influential urban theoreticians of the time. Van Traa's 1946 'Basisplan' became the vehicle for much reconstruction rhetoric. Wilhelm Franz Lichtenauer (1900-1987), secretary of the Rotterdam Chamber of Commerce, stated: "We are going to renew and modernise the city, while we would otherwise have muddled on for a long time with outdated spaces, mostly from a time that was not particularly famous for its architectural achievements."<sup>89</sup> The writer and literary critic Reinder Blijstra (1901-1975) spoke highly of the new center's connection with the existing one, the increase in scale of the streets and building blocks and the urban layout with its large lines, clear intersections, wide boulevards and the established relationship between the city and the river.<sup>90</sup>



Although the city image of the new Rotterdam was not at first dominated by typical modernist architecture at all, disconnecting architecture and urbanism was celebrated as an innovation that was related to modern urbanist principles. An explanation for this might be that the disconnection made it practically impossible to continue regarding the aesthetics of the city image as an autonomous urbanist task. From now on, it was going to be the result of architecture, which in its turn shaped the program (the functional content) of the city. This is what architect J.H. van den Broek (Bakema's partner), for example, concluded: "Seeing the new Rotterdam like this means more than reconstructing the familiar city image. (...) May the new centre be a true urban heart, where great organisation shows in overpasses and bridges, in harbor basins with majestic warehouses instead of picturesque ones, where the buildings are not only 'architecturally' and 'harmonically' neat facades, but distinct parts of the whole centre, where the roads are wide traffic arteries or avenues, or narrow, well-thought out shopping streets, where the tall office buildings are situated according to efficiency and tranquillity rather than according to an interesting city image, where scarce residential housing is concentrated in high rise buildings typical of urban living, where the communal buildings are clear monuments of the conscious community life of the occupants. That is the vision of a city of our own times. (...) because our architecture will have to be social and our technology will have to meet the demands of our time, or this city will not exist."<sup>91</sup>

This is how the old Rotterdam disappeared – not only the city itself had been wiped out, but ideally, Witteveen's 'mental image' was dismantled as well. One of the public servants closely involved in drawing up the plans, emphasized that nobody needed to lament this: "Do you realise, inhabitants of Rotterdam, that many of the fondest memories of what was lost in those days in May are related precisely to what, in all sobriety, were merely shortcomings of our old city? The chaos of the Coolsingel, the impossible traffic conditions, the lack of structure of the Hofplein area, the provisional Doelen building, the bizarre entertainment 'op den Dijk', the periodic high water levels (...). Together with all this, the great fire also erased the tension we spoke of, forcibly and in one fell swoop. It has cleared away all those things that earlier, we, the people of Rotterdam, have not been able to or have not wanted to push aside, even though they barely met today's material requirements. When we have rebuilt our new city, however, it will have to be like an entirely new outfit. At first, it will take some getting used to, but it would be really very foolish to start mending imperfections, simply because in the past those imperfections were what we grew attached to, initially and easily. We owe it to ourselves and to the future, to find the most perfect, most effective, most characteristic shape for everything that we create. In order to allow our life today – now that is has been liberated from the shackles of the past by force and against our will – to take full advantage of the benefits of that liberation."<sup>92</sup>

In conclusion, it can be said that the dismantling of the Witteveen plan illustrates a seizure of power by the corporate world and thereby the introduction of a management approach that had already been commonly used there for some time – and which was consciously being encouraged in America during these years. That is also what Ed Taverne and Kees Schuyt conclude: entrepreneurs proved to have a quite different view of a modern city than architects and urbanists. Entrepreneurs thought in terms of macro-economic planning and programs rather than in terms of shape. The organizational structures and business economic models in the fields of industry, maritime shipping, service provision and culture had to delineate the global network in which the future international port was going to operate. This strategy involved detaching the new Rotterdam in its entirety from the existing, historical city layout. Besides, immediately after the bombing, that layout had been completely obliterated, because not only streets, but foundations, cellars, tubes and pipes had been rigorously removed as well.<sup>93</sup>

# THE RIGHT TO THE CITY AND THE MYTH OF 'MAY 1968'

## THE LONG SIXTIES: 1958-1973

In the cultural sense, the 'Golden Sixties' cover the wider period 1958-1973, when economic growth after World War II reached its climax. US President Kennedy's promise that by the end of the decade, an American would walk on the Moon, perfectly embodied the prevailing worldview: technological progress and unlimited financial resources brought even the most utopian of ideas within reach. The 1973 oil crisis put a sudden end to this optimism, though, by reminding that man remained dependent on nature; and that political superpowers, too, remained subordinate to geopolitics. Just like anywhere else in the West, in Europe, this was a period of unprecedented economic growth: the GNP grew with 4.8 percent on average per year and the Treaty of Rome (1957) paved the way for the economic and political unification of the continent, installing common policies with regards to agriculture and industry along the way. While the dominance of both sectors became superseded by services and trade by 1965, in Belgium and Germany, foreign workforce (first from Italy, then Turkey and Morocco) had to be attracted for work in the coal mines. Welfare state policies were also greatly extended through massive public investments in health care, infrastructure and social security, while access to higher education became democratized. As a result, universities exploded: in Belgium, for example, the number of students tripled between 1958 and 1968. Further, the spending power per family almost doubled, and savings were typically spent on acquiring a house, a car and a television set. An enormous amount of dwellings was built, partially to compensate for war damage, but first and foremost as a result of a fundamental demographic change: people moved out of the cities and started to live in smaller households. Car ownership quadrupled; while it became a powerful symbol for individuality, progress and freedom, its impact on the built environment was devastating: trees, historic buildings and tramways all alike had to make way for road infrastructure, with a view to transforming the city center into a business district. Finally, the advent of television gave people a "window on the world" as Marshall McLuhan once stated: images of war, hunger and diplomatic conflicts happening anywhere in the 'global village' were now brought right into the living room and constantly competed for compassion and attention.

## ALIENATION VS. LIBERATION

The emphasis on material values soon provoked opposition, especially amongst the adherents of Western Marxism, a philosophical current that was less concerned with economic analysis than with the critical study of cultural and social trends within capitalist society. An important center was the so-called Frankfurter Schule (Frankfurt School), the members of which (Herbert Marcuse (1898-1979), Theodor Adorno (1903-1963) and Jürgen Habermas (\*1929), amongst others) believed that social problems derived from societal structures and cultural assumptions; they therefore sought to reveal and challenge power structures as manifested in culture and society. For example, Marcuse's *One Dimensional Man* (1964) developed a wide-ranging critique of both American capitalism and Soviet communism by pointing at parallel forms of repression in both ideologies. Capitalism, Marcuse stated, reduced man to a perfect consumer by making believe that the only path towards happiness consisted in acquiring ever more goods and commodities. Therefore, in a typically Marxist fashion, Marcuse called upon the students (as a potentially revolutionary class) to ally with those excluded from the consumer's paradise in fighting capitalism, for the freedom it offered was not to be confused with true liberation. While very influential amongst the students in the USA and Germany, Marcuse remained relatively unknown in Paris. There, the leading mentor was Jean-Paul Sartre (1905-1980). His existentialist philosophy sought to deal with the sense of disorientation and anxiety inherent to modern, secular society. As Sartre believed, meaning in life derived from lived experience, and not from pre-established categories or premeditated concepts; humans only existed by their actions, and were responsible for their own accomplishments. For the dissatisfied students, Sartre's thinking was very appealing, not in the least through his non-conformist behaviour (for example, he refused the 1964 Nobel Prize for literature) and his political commitment – for as a true Marxist, Sartre viewed political action as the end goal of all philosophical thought.

Thus, what initially seemed only a generation conflict, increasingly became an ideological struggle. Free right movements of all sorts arose, standing up for peace, disarmament, women, gay and lesbian rights, environmental protection, etc. 'Liberation' became the keyword, and more and more (young) people no longer accepted being told what to do. This crisis of authority became clearest in the domains of religion, politics and sexuality. Adherence to the Christian churches downright plummeted when the progressive expectations aroused by the Second Vatican Council (1963-1965) were crushed by the conservative turn of Paul VI's encyclical *Humanae Vitae* (1968), taking a firm stance against contraception. And although education, health care and trade unions remained firm bastions of traditional worldviews, the growing electoral success of ecologists, anarchists but also far-left or far-right parties reflected an increasing pluralism in society. Feminism received

a boost with the introduction of anticonception, and sex before marriage became a major societal issue; soon, however, questions of family planning were no longer discussed with the local pastor but with the general practitioner. The growing frustration with the established order reached its climax in the (often violent) student uprisings that sprung up everywhere across the USA and Europe, and became platforms that gave the dissatisfaction with the current political priorities momentum. In the USA, for example, the student protests became amalgamated with the peace movement, while in Paris an almost pre-revolutionary climate arose in May 1968 when the students united with the workers, paralyzing the country by a series of national strikes (see Figure below).

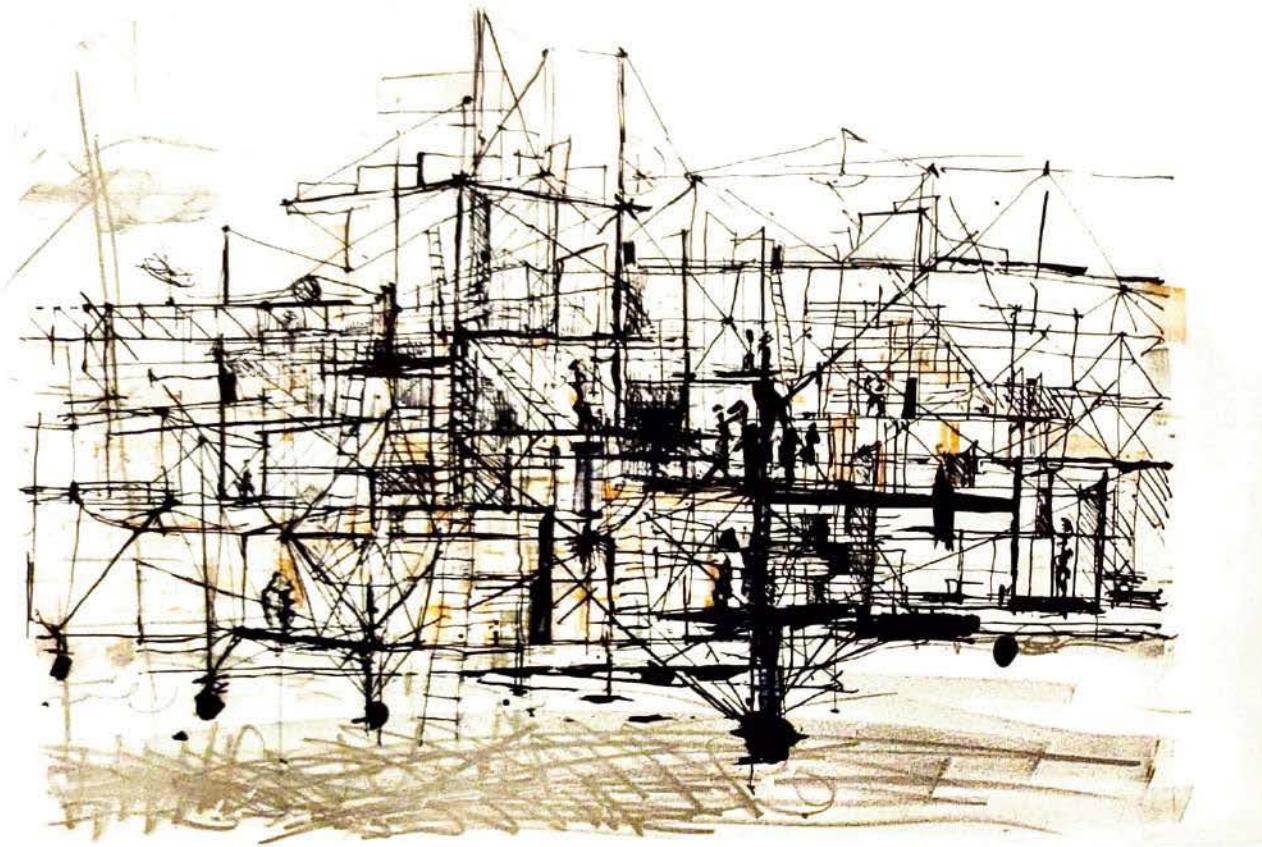


## FROM HOMO LUDENS TO LUTTES URBAINES

The barricades that were erected everywhere in May 1968 illustrated that the city formed more than a simple backdrop in this conflict. Indeed, it gained symbolic value as both the ultimate repressive instrument of the established order, and as a space of resistance and liberation. This ambiguity became thematised by the *Internationale Situationiste* (Situationist International, or SI), an international collective of artists and theorists led by Guy Debord (1931-1994). Its central thesis was that traditional art was played out and, at the same time, that mechanization and automation would soon eliminate the need for almost all traditional forms of labour – thus giving free reign to the *Homo Ludens* (coined by the historian Johan Huizinga (1872-1945), the term emphasized the importance of play in the cultural evolution of man). This perspective of unprecedented leisure, the SI stated, allowed for a new type of creativity: imagination was no longer to produce 'art' but to transform reality itself; moreover, this experience should no longer be the privilege of a small group of 'artists' but be accessible for everyone. Echoing the Dadaist idea that art and life were one, the Situationists thus asked how passion, drama and emotion could be found in everyday life, rather than in a separate art world. To this effect, they started roaming the streets at night in an attempt to experience the city without practical considerations, guided solely by one's subconscious and subjective reactions to the built environment. These *dérives* led to so-called 'psycho-geographic maps' that provided a subjective reading of the city as a sequence of concrete, authentic experiences based on free association.

The SI's idea of a 'unitary urbanism', whereby all forms of art, science and technique combined would create a single, unified 'environment', became best illustrated in the endless stream of sketches, drawings, texts, films and architectural models produced by Constant Nieuwenhuis (1920-2005), Debord's principal ally in founding the SI in 1958, between 1956 and 1974 as part of his 'New Babylon'. It forecast a futuristic, decentralized and dematerialized living environment for the nomadic *Homo Ludens* that fused art, architecture and urbanism. More than just a techno-romantic utopia, Constant's project embodied the Situationists' critique that modern urban planning was in fact a political instrument that had turned the contemporary city into a segregated and sterilized environment. The underlying idea, namely that (urban) space was not an abstract entity but a socially constructed reality, made and renewed by people on a daily basis, was borrowed from Henri Lefebvre (1901-1991). A prolific and militant Marxist academic, Lefebvre stated that consumerism had in fact brought about a new form of poverty, namely a shortage of 'everyday life': in a situation where everything became rationalized or commodified, there was no room left for authentic experiences. As Lefebvre explained in *Le Droit à la Ville* (1968), this applied in particular to the technocratic turn of French urban politics, for it led to the alienation and exclusion of the working classes. Hence his famous claim for the 'right to the city':

the possibility, for all, to occupy a place in the networks of communication, information and circulation. Published just before the May '68 uprisings, Lefebvre's book became a manifesto for the 'urban struggles' analysed by Manuel Castells (°1942) in *Luttes urbaines* (1975) and, once translated into English (only in 1996), its title became a slogan claimed by social movements worldwide.



## RUDE AWAKENINGS: ECOLOGY AND HERITAGE

In many ways, the mythical year 1968 was an anti-climax: the elections after the students' uprisings in Paris only reinforced De Gaulle's position; the Prague uprisings were bloodily beaten down by the Soviets; and the assassinations of Martin Luther King and Bobby Kennedy made clear that there were still powerful forces within society opposed to liberation and renewal. Still, one message could not be ignored, for it pertained to all, namely that there were limitations to 'growth'. The steep increase of the world population had worried policy makers and planners since the 1950s but became a societal concern with Paul & Anne Ehrlich's apocalyptic bestseller *The Population Bomb* (1968) that warned for worldwide famines and the total depletion of natural resources. The limits of economic growth were discussed by Ezra J. Mishan in *Growth: The Price We Pay* (1969), where he unmasked the 'no-choice' myth invoked by

the technocrats, and stated that the blind obsession with progress would eventually harm society in the long run. While his opinions were largely ignored, mentalities started to change nonetheless, as made evident by the unexpected success of the first Earth Day, drawing 20 million to the streets in the USA on 22 April 1970. However, it was only after the publication of the Club of Rome's 1972 report, entitled *The Limits to Growth*, that political action was undertaken: it led to the first UN climate conference in Stockholm under the slogan 'Only One Earth'. Yet, it took a political and economic crisis (known as 'The Oil Crisis') before real action was undertaken on energy efficiency: after the OPEC (the Association of Petroleum Exporting Countries) proclaimed an embargo against Israel's allies in the Yom Kippur War in 1973, oil prices increased with 300 percent worldwide. The event confronted the Western World with its dependence on energy, a notion that became embodied by the 'car-free Sundays', when brand-new highways transformed into a pedestrian paradise.



At the same time, the awareness grew that not only the natural but also the built environment needed protection: it constituted a valuable and vulnerable resource with a rich social and cultural significance. In France, the ground-breaking Malraux Act (1962) introduced legal tools to conserve urban ensembles (and not just buildings) in the framework of urban regeneration campaigns. The underlying principle,

namely that built heritage could best be preserved by 'reanimating' it by (giving it an appropriate new role in contemporary society), also formed the conceptual core of the Venice Charter (1964), that sealed the transition from passive 'conservation' to a more active integration of built heritage in urban development. The European Council quickly followed suit: at a conference in Brussels in late 1969, it adopted a number of resolutions instructing its member states to compile inventories of their cultural heritage and integrating them in a general policy for town planning. With a view to raise public awareness, a European Year of the Architectural Heritage was organized in 1975, while the aforementioned resolutions were ratified in a European Charter of Architectural Heritage. For architectural culture and urban planning, this increasing attention for the built heritage obviously had far-reaching consequences: no longer function, but 'context' (in the historical, spatial and cultural sense) became the new dogma, culminating in the 1980 Venice Architecture Biennale under the banner 'The Presence of the Past'.

# THE SEARCH FOR ALTERNATIVES: TECHNOLOGY, PARTICIPATION, HISTORY

In the critical climate of the 1960s, urban planners were increasingly seen as agents of the political and financial establishment. The avant-garde itself was in crisis: the disbanding of the CIAM in 1959 left a vacuum that its successor, Team 10, was unwilling to fill. Its pluralist composition illustrated that a unified, dogmatic position was no longer aspired, while it considered the urban realm no longer as a static and monolithic entity. The question of how to take into account, let alone enable its growth and change was another question, however. Thus, a recalibration was in place. Broadly speaking, three different attitudes developed. The first centered around the liberating power (as well as the alienating effect) of technology, for its rapid evolution seemed to bring even the most utopian (or dystopian) visions within reach. A second group of architects sought to achieve such liberation through direct social action, by engaging directly with the user. A third group turned to history as a source of renewal, seeking for continuity instead of a clean break with the past. However different, these attitudes shared some common concerns. In the first place, a social dimension: the individual (be it a dweller, user or client) and his/her (evolving) desires came to the fore. Second, a temporal dimension, embodied by the central buzzword 'flexibility' (in the sense of adaptability). Third, a spatial dimension, as the city became increasingly seen as a three-dimensional, layered construct. And finally, a cultural dimension: many designers engaged with the wider societal debates from which architecture seemed to have become separated.

## TECHNOLOGY AND THE MEGASTRUCTURE

The encounter between architecture and technology found its apogee in the concept of the 'megastructure'. Close to science-fiction and inspired by the space race, megastructures stretched the scale of the building to that of a city, mostly consisting of a large structural framework into which prefabricated, modular units could be plugged. Despite their optimistic belief in open-endedness and user involvement, many megastructures seemed to be designed for survival in a post-human world, revealing a looming fear for the population boom or ecological disaster. This ambiguity transpires in the accounts of the megastructure's two main biographers: Michel Ragon (1924-2020) and Reyner Banham (1922-1988). While the first did not hide his fascination for these futurist visions in *Les Visionnaires de l'architecture* (1965) or *La Cité de l'an 2000* (1968), the critical undertone in Banham's *Megastructure: Urban*

*Futures of the Recent Past* (1976) illustrated how by the mid-1970s, the totalizing and overtly technological solutions of the megastructure were already seen as anachronisms.

The French-Hungarian architect Yona Friedman (1923-2020) is often seen as the conceptual father of the megastructure. Dissatisfied with the discussion about growth and change at CIAM X in Dubrovnik, Friedman published *L'Architecture mobile* in 1958, where he stated that in a society changing at such a fast pace, becoming ever so mobile and where labour and production became automated, fixed structures such as buildings (just as social institutions like marriage) formed a hindrance. Moreover, the urban environment continued to be conceived as one coherent, static whole by a limited number of 'experts'. In such a context, man could not free himself. True liberation, Friedman argued, required the radical democratization of planning, enabling occupants to adapt their environment to their wishes. This radical stance, considering user appropriation as the final stage of the design process, required a redefinition of the architect as a technical facilitator of self-planning; the user was to conceive the project with the designer's participation, and not vice versa.

The study of the technical and spatial prerequisites of such indeterminacy led Friedman to the concept of the *Ville Spatiale* (spatial city): an infinitely extendable, multideck spaceframe (or 'superstructure') hovering above existing urban areas and containing inhabitable units that could be added, changed or moved at will. The earliest iteration of this idea was *Paris Spatial* (1959): supported by columns spaced 40 to 60 meters apart, it contained all vertical connections and mechanical systems, thus leaving the space underneath entirely free. This frame could be filled in at will with non-loadbearing elements such as walls, floors, partitions, etc., ensuring a maximum flexibility and individuality. Throughout the 1960s, Friedman developed these ideas on an ever larger scale. In 1963 for example, he developed an inhabitable bridge over the English Channel which was to constitute the first part of a Seven-bridge network linking all continents (except Australia). Speculating that in the future, European society would be urbanized for 85 percent, he also drew plans for a single 'Continent City', concentrating its population in about 120 cities.

An important aspect of participatory design, Friedman argued, was to stimulate people to become architecturally literate. To this end, he devised manuals as a way of teaching the principles of self-planning to children and laypersons. In 1967, he even proposed the *Flatwriter*, a (principle of a) software program, allowing an individual to design his own dwelling, locate it within the support structure and calculate its cost. Although Friedman never really put his ideas to the test, he was widely influential; whether taken literally as architectural proposals or viewed rather as evocative illustrations of a certain design, his drawings marked the post-war architectural imagination.

Another main source of inspiration came from Japan, where Metabolism rose to prominence in 1960 with the manifesto 'Metabolism 1960'. Its authors were former students of Kenzo Tange (1913-2005), namely Kiyonori Kikutake (1928-2011), Kisho Kurokawa (1934-2007), Fumihiko Maki (\*1928), and Noboru Kawazoe (1926-2015). Metabolism sought to rethink society using architecture as a tool for potential change, by speculating how buildings could change, grow, and evolve. Rejecting the notion of the city as a static or mechanical object, the Metabolists saw it as a living organism in ceaseless transformation.

It was Tange's baffling plan for Tokyo Bay (1961) that drew the world's attention to the young Japanese avant-garde. Having established itself as an international center of design and industry, Tokyo's population had tripled to 10,000,000 people by 1960, leading the authorities to plan a series of satellite towns around the center. Tange, instead, proposed to expand it by connecting both shores of the bay via an immense inhabitable bridge that would both serve as an infrastructural spine and a 'civic axis'. Although never really seriously considered, Tange's project had a hypnotizing effect on the architectural avant-garde across the world – not in the least through his teaching at MIT and his membership of the late CIAM. At its last meeting, Tange also discussed 'Marine City' (1958) by Kikutake, where housing would become concentrated in six enormous cylindrical towers, consisting of a structural concrete core that would supply all basic needs and where prefabricated residential 'capsules' could be plugged onto. These tiny and disposable living pods, too, instantly galvanized the imagination and became a typical ingredient of almost all later megastructures. As Kisho Kurokawa stated in his 1969 'Capsule Declaration', this had to do with its liberating potential, opening up the possibility of radically transforming society. Despite these high hopes, its only real-world application remained his iconic Nagakin Capsule Tower in Tokyo (1972).

Changing social configurations also occupied central stage in the architectural debate in the UK: loosening class structures, politics of social welfare, and expanding consumerism seemed to suggest that soon, leisure would become affordable



for all. Cedric Price and Joan Littlewood's 'Fun Palace' (1961) anticipated this: seeking to integrate indeterminacy through cybernetical control, its ever-changing configurations would originate from spontaneous interaction with and amongst the users. To this effect, the structure featured gantry cranes, allowing it to be constantly modified or re-assembled. Similar to Constant's New Babylon, Fun Palace turned leisure time into a socially productive and educational activity.

The issues it raised (building or a machine? Infrastructure or architecture? And in the absence of a proper façade, how could one distinguish the exterior from the interior?) were cleverly thematized by a loose collaborative of six architects, including Peter Cook (°1936), Michael Webb (°1937), Dennis Crompton (°1935), Ron Herron (1930-1994), Warren Chalk (1927-1988) and David Greene (°1937). As they stated, in a context of electronic communication, ever faster cycles of production and consumption, and increasing nomadism of urban populations, architecture became increasingly irrelevant. Soon, for example, the Moon would become inhabited without the involvement of a single architect! Designers therefore quickly needed to come to terms with today's technological and media culture. Hence, the group's first output was not a lengthy manifesto or a design statement, but a magazine. Borrowing from advertisement, comics and fashion, its content was an amalgam of analysis, phantasy and opinion, and its style exuberant, direct and accessible. Featuring screaming collages and typecasting, it first and foremost sought to fascinate the reader. Its title, *Archigram*, was a program declaration: a contraction of 'architecture' and 'telegram', it connected architecture with instant communication and technology.

Over time, the magazine also featured the group's own architectural conjectures such as *Walking Cities* (1964), hoovering around on spindly legs in a seemingly post-atomic world; or *Plug-in City* (1964), featuring massive concrete pillars into which standardized cells could be slotted – a colorful appropriation of Kikutake's capsular dwellings. Although convincingly presented as buildable (showing, for example, the structure, wiring, ductwork, etc. in great detail), it projected first and foremost an image of how an architecture could look like that fully adhered to contemporary culture. In later projects, the focus shifted: *Instant City* (1968), for example, offered a plausible scenario for a contemporary form of urbanity. Carried by a fleet of dirigibles, an ephemeral infrastructure was to be dispatched to provincial towns around Britain, where it would generate activities (parties, classes, concerts, films, etc.) and infiltrate the city's social, cultural and education networks. Once this new 'vibe' was firmly installed, the dirigibles would continue their course, on to the next town. Urbanism thus became an ephemeral intervention in time and space, geared at intensifying activity, enhancing creativity and stimulating encounter.

By the end of the 1960s, Archigram reached its zenith by winning the competition for a prestigious Entertainments Center in Monaco. The 1973 oil crisis prevented it from materializing, just like the increasingly critical climate of the 1970s as Archigram's untroubled celebration of the future increasingly clashed with the political, social and ecological concerns. After the project was shelved in 1975, Archigram too was disbanded.

## CRITICAL UTOPIAS: SUPERSTUDIO AND ARCHIZOOM

The most critical voices could be found in Italy, where the students just coming out of (the still very academic) architecture schools were frustrated by the lack of work opportunities and the general stagnation of their profession. Moreover, post-war modernization was causing havoc on Italian society and brought about a dramatic sprawl of low-quality buildings. Florence, in particular, became the cradle of the so-called 'Italian radicals' such as Gruppo UFO, Gruppo 9999, Archizoom Associati and Superstudio. Combining architecture, Marxist theory and techniques borrowed from Dada and Surrealism, these groups considered the contemporary city as the ultimate embodiment of the capitalist power structure, and architecture as one of its principal instruments of disempowerment. Critiquing Archigram and the Metabolists for (still) considering architecture as an allegory of society (as if the architecture of a technological civilization needed to be technological itself), the Radicals fundamentally questioned architecture's modes of production and representation. Or, as Superstudio declared: "If design is merely an inducement to consume, then we must reject design; if architecture is merely the codifying of the bourgeois models of ownership and society, we must reject architecture; if town planning is merely the formalization of present unjust social divisions, then we must reject town planning and its cities... until all design activities are aimed towards meeting primary needs. Until then, design must disappear. We can live without architecture."<sup>1</sup> Thus, rather than adapting architecture to an increasingly technological and globalized world, they set out to examine how it could offer critical resistance. At the *Superarchitettura* exhibition in Florence in 1966, for example, they sought to unmask the 'false needs' induced by capitalism (see Marcuse) with kitschy interpretations of luxury design.

Founded by Adolfo Natalini (1941-2020) and Cristiano Toraldo di Francia (°1941), later joined by Roberto (1935-2003) and Alessandro (1941-2010) Magris, Alessandro Poli (°1941) and Piero Frassinelli (°1939), Superstudio believed that architecture reached its maximal critical potential by becoming abstract, invisible and useless. This hypothesis was first examined in the series of 'Histograms of

architecture' (1969-1971), a catalogue of thirty three-dimensional diagrams, extruded from a single isotropic gridded surface, and destined to be used in the design of furniture, architecture or environments. This purist, reductive approach had a political undertone: only such objectivity could lead to new forms uncontaminated by the logic of the past. Superstudio applied it subsequently to a variety of scales, ranging from objects of furniture, such as the Misura series (a series of elements for self-assembly composed of silkscreened laminated plastic) to the entire planet. In 'Supersurface', the Earth's surface became an energy matrix, where people could plug themselves into to satisfy their primal needs. Freed of architecture and other repressive structures, it enabled one to live as a perpetual nomad freed of consumerist desire. In between both extremes lay the Continuous Monument (1969), a gigantic abstract sculpture that crossed various landscapes and cities. It provided the most radical interpretation of Superstudio's strategy of *reductio ad absurdum*: as an antidote against the growing disorder caused by sprawling urbanism and increasing globalization, it was a paradoxically totalitarian gesture that reinstated a neat distinction between architecture and nature.

Constituted of Andrea Branzi (°1938), Massimo Morozzi (°1941), Gilberto Corretti (°1941), and Paolo Deganello (°1940), later joined by Dario (°1943) and Lucia (°1944) Bartolini, Archizoom Associati produced kitschy, Pop Art-inspired furnishings with the aim to disrupt the 'good taste' of the middle-class home. As their 'Mies Chair' (1969) showed (combining Mies's minimalism with the trademark cowhide pillows from Le Corbusier's *chaise longue*), Archizoom did not seek to invent a new, 'uncontaminated language like (Superstudio) but examined, through design, what it meant to take consumerism to its logical extremes. The central premise of No-stop City (1970), for example, was that citizenship (in the sense of belonging to/living in a town) had become obsolete, for its opposite (a non-citizen) no longer existed. Indeed, in a context of sprawl and globalization, there were no longer any territories not organized by the capitalist system. The city was thus no longer a physical 'place' but had become a mental 'condition' dictated by consumerism. No-Stop City therefore proposed a model of global urbanization mimicking the quintessential places of capitalist production and consumption: organized like a factory or supermarket, it proposed an iterative pattern of multiple centers spaced equally on a neutral, endless surface, that - similar to the Jefferson Grid in the USA - subordinated even natural and topographical elements to its all-pervasive logic. It thus offered a vision of urban space no longer structured by qualitative differences (e.g., public vs; private; center vs. periphery) but of quantitative sameness. This idea was expressed, for example, in the image of a generic parking lot fitted out with inhabitable furniture, the use of which could be adapted to the

## SUPERSTUDIO – THE CONTINUOUS MONUMENT



The Continuous Monument was first shown in 1969 at the Trigon Biennal in Graz, and developed in response to its theme of 'Architecture and Freedom'. Superstudio submitted a three-dimensional grid running over the earth's surface, negotiating cities, mountains and rivers. Developed further until 1971 in the form of drawings, photomontages and a storyboard, it built upon the earlier Histograms, where Superstudio had sought to develop a formal language reducing architecture to the state of almost absolute neutrality. The Continuous Monument was a sublime application of this idea: by extending a single piece of architecture over the entire world, it put, as its authors claimed, 'Cosmic order on Earth'. Indeed, by absorbing everything it passed, and by tran-

scending any notion of scale and location, it reduced the earth's surface to a unitary and infrastructural landscape.

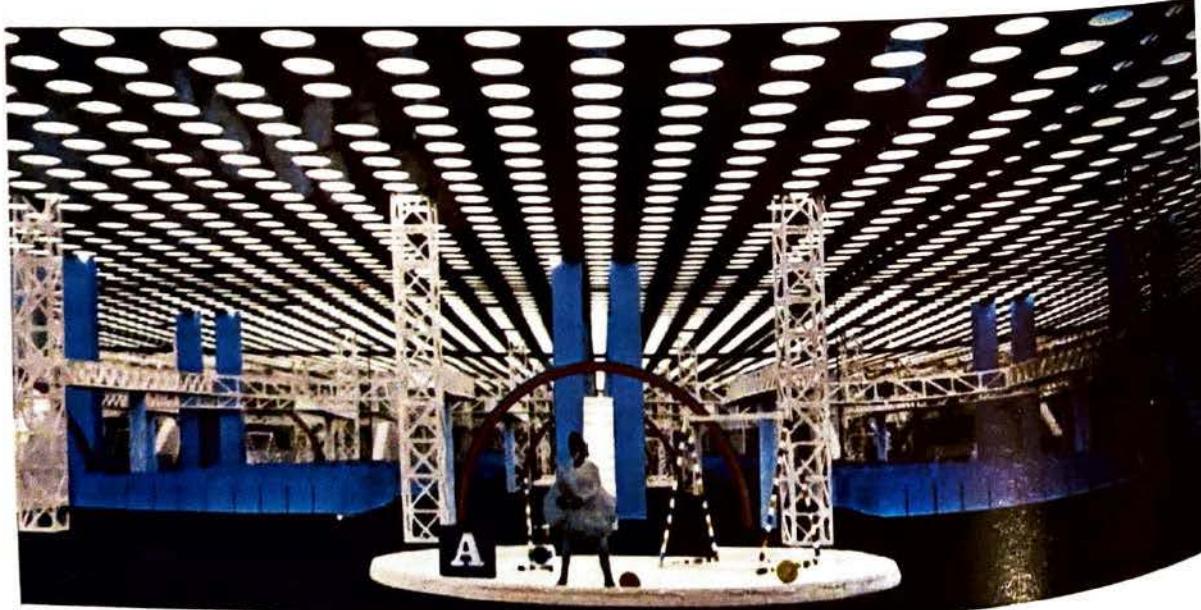
Contrary to No-Stop City, Archizoom's vision of the future urban landscape as an endless interior space without clear limits, the Continuous Monument's smooth, white surface, variously covered with a grid pattern and sometimes opaquely reflective, emphasized its monumental quality but kept its interior undisclosed. In this respect, it was an anti-megastructure: while it seemed to serve as a refuge for humanity, its volume acting as an optimal living space and leaving the rest of the earth uninhabited, no plans or sections of it were ever produced. Thus, the viewer remained without any clue as to what to expect from

it in terms of function or internal structure. As Kenneth Frampton commented, it thus remained 'a metaphysical image, as fleeting and as cryptic as the supremacist monuments of Malevich or the wrapped buildings of Christo.' Indeed, The Continuous Monument was first and foremost about the effect it produced on the viewer, and the associations it provoked. In this respect, it can be seen as a comment on globalization and its by-product, namely worldwide urban sprawl. But it

could as well be interpreted as a critique on the blandness of post-war architecture, having colonized the built environment all over the world. Further still, it could be understood as an evocation of the disruptive effect of road infrastructure, dams, and other large-scale infrastructures on the natural landscape. Thus, beyond the question whether it was buildable or not, and how it exactly looked like inside, the Continuous Monument's meaning lies in its function as a catalyst for thought.

circumstances. The infinite reflection of these set-ups through a play of parallel mirrors symbolized how, soon, such air-conditioned and artificially lit spaces would cover the earth, allowing man to revert to his original nomadic condition.

Quite fittingly for a project based on infinity and a refusal of boundaries, No-Stop City (see Figure below) remained an unfinished project itself, developed further in response to internal research, journal publications or competitions – like the one for the new seat of the university of Florence in 1971, for which Archizoom submitted a model consisting of an electronic transistor on a green circuit board, infinitesimally reflected by a set of mirrors. Yet, after the 1972 exhibition 'Italy: The New Domestic Landscape' at the MoMA (Museum of Modern Art) in New York had propelled Superstudio and Archizoom to rock star status, internal disputes and the desire to pursue individual projects soon led to their dissolution.



## PARTICIPATION: THE ARCHITECT AS MEDIATOR

While many architects sought to find a way out of the consumerist impasse via all sorts of utopian schemes, others proposed a return to first principles by looking at 'primitive' (non-Western) cultures. For example, as Bernard Rudofsky stated in his book and eponymous exhibition 'Architecture Without Architects', also at the MoMA (1964), the built fabric consisted to a very large degree of 'vernacular' buildings, produced by its users. Although ignored by the architectural profession, the often remarkable quality of this production showed how ordinary people, too, possessed expertise with regards to dwelling. The English architect John Turner (°1927) came to a similar conclusion after having worked for several years in the squatter settlements of Peru: what in the Western eye appeared to be slums, often perfectly suited the needs of the local population.<sup>2</sup> While this empathic position was being attacked by Marxist colleagues for failing to address, or even reinforcing, the structural causes of poverty, Turner's position espoused that of American planner Paul Davidoff (1930-1984), who, in a very widely circulated paper, launched the concept of 'advocacy planning' in 1965, pleading for the inclusion of 'stakeholders' who were not part of the power structure.<sup>3</sup>

The issue of participation and empowerment was also a central concern for the Italian architect Giancarlo De Carlo (1919-2005), one of the driving forces behind Team 10. Stylistically eclectic, De Carlo's conceptual framework was very consistent nevertheless, evolving around three themes: the sense of place (*genius loci*), the principle of reuse and the involvement of the user. The latter aspect he developed at length in 'An architecture of Participation' (1973).<sup>4</sup> As he stated, the typical depiction of modern buildings without human beings, revealed how, contrary to the avant-garde's rhetoric, its promotion of functionalism was little more than a mould for reinforcing conventional behaviour - which explained why large housing projects consistently failed. The only alternative, De Carlo stated, was "taking architecture away from the architects and giving it back to the people who use it."<sup>5</sup> To justify this point, he conceived the design process as three separate, causally linked phases: the definition of the problem; the elaboration of the solution; and the evaluation of the results. In current practice, the second phase produced a single, finished object, while the first phase generally only served to justify it; the third phase was mostly non-existent. Real participation, De Carlo went on to state, required the presence of the user in all three stages of the operation: his presence in the first stage could reveal issues that would otherwise remain unknown; in the second phase, his critical insights could lead to equally valuable alternatives (rather than one fixed solution); and in the last phase, users could provide feedback as to adaptation and appropriation of the preferred option. All these actions, De Carlo stated, ought to become naturally part of architectural design for only then, it would become a truly collaborative process.

De Carlo managed to convince at least two patrons to support his views: a steel factory in Terni, for the workers of which he designed the Matteotti workers village, and the mayor of the small town of Urbino, for whom he designed a master plan (1959). Here, the participatory approach was reinforced by his sensitivity for the town's rich, but dilapidated built heritage. Attempting to revive its 'urban memory', he undertook detailed social and physical surveys, the results of which he shared with the inhabitants. On the premise that an old form could retain its significance also after its (functional, social) context had changed (an idea also put forward by Aldo Rossi); and that modern architecture could successfully be woven into older fabric, he carefully altered, transformed and added buildings for the city's administration and the university. De Carlo continued to constantly evaluate the effect of his interventions and shortly after his 70th birthday in 1989, the city commissioned a new development plan, this time no longer to save the historic center, but to secure its ties with its rapidly evolving territory.

The idea(l) of sustained user participation was also the single main idea in the career of Dutch architect John Habraken (\*1928), who rose to prominence in 1961 upon publication of *De dragers en de mensen. Het einde van de massawoningbouw* (published in English as *Supports: An Alternative to Mass Housing* in 1972). Its central premise was that current mass housing policies disrupted the natural relation between human beings and their built environment for, rather than a collective and cultural activity, it transformed dwelling into a commodity, the alienating effect of which, he believed, was maintained by powerful forces in the building industry. He therefore set out to find a way to reconcile this lobby's interest with the need for user involvement.

One of Habraken's central findings was that in most buildings, different elements tend to change at different rates, an idea also dear to Friedman. For example, the load bearing structural shell tended to be modified less frequently than the partitioning within it. As he stated, these hierarchical levels corresponded to two levels of decision-making and responsibility: 'support' and 'infill'. Supports were durable, autonomous structures, providing dwellings with all the necessary facilities and ensuring that they could be built and altered independently of the others. While supports were to be designed by (technical) experts on behalf of the community (the state), the infills were the province of the occupants. As Habraken pointed out, this was similar to the way how transportation was organized: while the infrastructure

## MATTEOTTI WORKERS VILLAGE: TERNI (1969-1975)



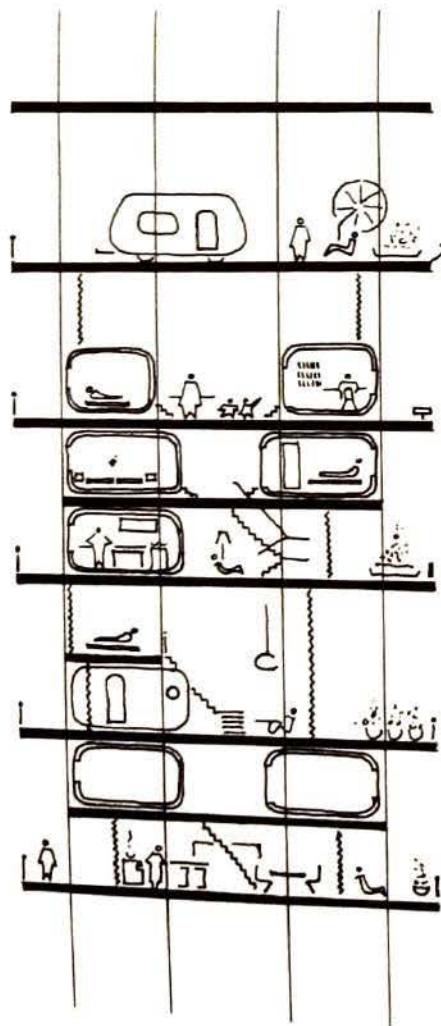
Terni is a small town, home to a large, state-owned steel works with its own factory village (dating from the 1930s), which the company management had decided to sell. The workers, by contrast, wanted them replaced by better-quality housing (at the expense of their employer, that is). Initially hired to evaluate the state of the existing structure, De Carlo turned the problem into an experiment in user participation supported by the steel works, who agreed with a higher allocation of resources than usual; adequate provision for collective amenities and open space; and that employees would be able to assist to meetings within working hours. Despite De Carlo's belief that the residents were not to be treated as a 'mass' but as a group of individuals, and that this community was capable of action, the first

meetings were not successful: they did not produce any clear, let alone innovative ideas – proving, as De Carlo stated, how far people had become alienated from their own dwelling culture. As a remedy, a small exhibit was mounted showcasing recent examples of innovative housing schemes such as the Siedlung Halen (Bern) or Roehampton Estate (London), and a sample of about a hundred potential residents were interviewed. This led to a number of design principles: the structure was to be no higher than three storeys; each apartment should be entered directly off the street and possess its own outdoor space; and there was to be provision for communal amenities, a number of shops, and undercover parking.

The resulting structure was quite straight-

forward, with pedestrian routes between terraces running parallel to the road on their outsides, and parking under the buildings. This simple linearity was broken up by the great variety of the building forms and the lush vegetation. From the shops and communal spaces in the center, elevated walkways connected through all the terraces to the surrounding parkland. The housing consisted of five basic types, each with three dwellings available in three alternative layouts (thus, in total 45 permutations), a fragmentation that was held in check by the consistent formal language, the material uniformity and the

clarity of the overall structure. The result has been called a "humane hierarchy of domains, from roof garden to the city; a varied landscape which invites exploration" for it was indeed not an overpowering megastructure, nor simply an aggregation of repetitive units. Yet, despite (or thanks to) its success, the project came under political attack both from the left (opposing the demolition of the former village) and the right (fearing a communist ghetto). As a result, the operation was halted after only one third of it was realized; the amenities and collective infrastructure remained unrealized.



(roads, bridges, etc.) was provided by the state (thus a public affair), the individual had the choice between a wide array of cars, that – although mass-produced – could easily become personalized by picking from a list of options. Why couldn't housing be conceived along the same lines? The building industry could as well provide an endless variation of well-designed, affordable and easy to handle components! The role of the architect would need to change accordingly and become more all-encompassing: he was to design the support structures (see Figure); advise manufactures on the design of components to accompany such housing; and advise occupants on the layout of their dwellings. Beyond architecture, he would thus have to acquire additional competences in industrial design and interior architecture.

To develop these ideas into workable concepts, Habraken founded the SAR (Stichting Architectuur Research/Foundation for Architecture Research) in 1964, with the support of a number of important architects such as Hugh Maaskant and Jaap Bakema (1914-1981), who shared his unease

with the dominance of the building industry for it would, ultimately, outrule the architect. Finally, not unlike Friedman, Habraken also invested much energy into developing a pictorial language to support non-professionals in discussing their dwelling preferences. While he himself did not build anything, several SAR staff did. Frans van der Werf, for example, designed Molenvliet, a large housing project with active input from the future tenants. Habraken himself went on to become dean of the architecture faculty at MIT, and developed an extensive body of theoretical work on the built environment of the 'everyday', together with Christopher Alexander and Kevin Lynch.

## THE RETURN OF HISTORY: ALDO ROSSI

The relation between the permanent and the ephemeral in the built environment also preoccupied Aldo Rossi (1931-1997) in his seminal *L'architettura della città* (1966, published in English as *The Architecture of the City* in 1982). It was inspired by Saverio Muratori, who had investigated the differential rates of change of the built environment of cities like Rome and Venice in a series of 'typo-morphological' studies. Rather than rejecting historical building types as symbols of outmoded ways of life like the modernists, Muratori and his followers appreciated them as a synthesis of use and form that logically connected urban fabric, streets and topography. This was also the central thesis of Rossi's study, the title of which had a double meaning: it referred both to the morphological structure of the city, and the idea that buildings constituted its basic components.

Rossi particularly stressed the importance of history for the city, which, in reference to the French sociologist Maurice Halbwachs (1877-1945), he regarded as a site of 'collective memory'. It formed the crystallization of the institutional processes that had shaped the local community, and which had become embedded in the fortresses, palaces, churches, and other institutions that structured its tissue up to the present day. Moreover, as Rossi observed, these historical artefacts often possessed formal properties unrelated to their original functions and lived on as powerful symbols even after they had become redundant. This turned the modernist dogma upside down: function could just as well follow form, or even be 'shaped' by it. Here, Rossi recalled the old Roman concept of the *genius loci*, the local divinity that governed a site and presided over all that was to unfold in it. As he believed, part of the failure of modernist urban planning resided precisely in its typical *tabula rasa* approach, whereby the unique relation between place, building and activities was systematically erased and replaced by something 'alien', at odds with the spirit of the place.

Together with Robert Venturi's *Complexity and Contradiction in Architecture* (also published in 1966), *The Architecture of the City* had an enormous impact on architectural thinking, for it provided an intellectual basis for a renewed interest in history. Yet, both works also opened the door for the unbridled eclecticism and formalism that would become the hallmarks of the post-modernism as codified by Charles Jencks in 1977. This also became apparent in Rossi's own work: whereas in his housing scheme in Gallaratese (in the outskirts of Milan, 1967-1973), he postulated an abstracted version of the typical 19th century Milanese tenement blocks (with shops on the ground floor under arcades, and private apartments on the upper floors), his rebuilding of an entire city block along the Schützenstrasse in Berlin (1994-1997) was much more playful and formalistic. Reinterpreting the city's typical 19th century blocks (a densely built-up rectangle, the interior of which was made accessible by a series of courtyards), he freely articulated its original property structure by articulating the former plots in the street façades, as if they had been constructed independently over time. This was a deliberate dissociation of form and function, for the block was in fact one large structure belonging to a single developer. Typical for the eclectic turn of late Post-Modernism, several of the façades were modeled on his own previous buildings, as well as on some historical ones (e.g., Sangallo's Palazzo Farnese). Thus, with Rossi's design in the Schützenstrasse, urban planning in the 20th century somehow closed a circle: after it had radically broken away from the traditional city block, its structuring capacity was now rediscovered and restored in all its glory.

## MOLENVLIET



The Molenvliet neighborhood in Papendrecht constituted the most genuine application of the SAR's principles in its day. Fully within the Dutch tradition with steep tiled roofs, courtyards for gardens, and access galleries, its innovative aspect lay in the interlocking hierarchy between the urban, architectural and interior dimension (or, in SAR terminology: 'tissue', 'support' and 'infill'); and the way the future tenants were engaged in the process. Molenvliet consisted of four square building blocks (separated by a public street) each containing two courtyards connected by an alley. On the support level, the three to four storey structure consisted of concrete floor slabs of  $4.8 \times 5.2$  m - a module that could accommodate a living room, but also parents, and children's bedrooms next to one an-

other. The loadbearing walls were strung in two directions: either perpendicular to the façades or parallel to them. In the wall slabs separating the dwellings, door-size areas were left without reinforcement to allow their easy demolition if a connection between them became desired. Pipes and ducts for water, energy and sewage were grouped in one shaft per unit, and accessible from all four sides. All units also possessed their own outdoor space: a little garden on the ground floor, a loggia on the first floor, and a roof terrace for the units on upper floors.

To determine their flat's lay-out, future occupants were entitled to two consultations of one hour with the architect and a sociologist, who followed them up for three more years. 60 percent of the origi-

nal tenants thus participated in the design of their own dwellings; the others (having arrived later) were offered an apartment with a unique layout. On a total of 123, there were no less than 67 different units: from a bachelor's unit of 35 m<sup>2</sup> to a 158 m<sup>2</sup> apartment for a family of ten. This remained, however, a small number in comparison to the original, competition-winning scheme of 2800 units. The intended flexibility also had its limits for

the units were on the small side; a survey conducted in 2014 revealed for example that four original families still living there had in fact not modified their dwellings beyond moving a partition wall. And because two adjoining units were seldom vacant simultaneously, no units had been merged. Although residents' satisfaction has always been high, this does not seem to structurally derive from the (potential) adaptability of their dwellings.

# BRUSSELS AND THE TRAUMA OF MODERNISM

## THE DESTRUCTION OF THE MEDIEVAL TISSUE

Brussels is a traumatized city. From the mid-19th century onwards, its medieval footprint was systematically erased. Two train stations, built just north and south of the Pentagon (as the city center is commonly referred to) around 1840, created a field of forces between them, resulting in various attempts to connect them. Under mayor Jules Anspach (1829-1879) and King Leopold II (1835-1909), for example, this led to a restructuring of the medieval tissue à la Haussmann: the picturesque meanders of the Senne river were aligned, and the (polluted) river was covered with a residential boulevard, connecting both train stations in one straight line. Just like in Paris, this hygienist action was supposed to be self-financing, but this failed, just as the operation did not stop the exodus of the bourgeoisie to the periphery and the newly laid out Leopold Quarter. By the turn of the century, construction began of a connecting train tunnel in the flank of the mountain between the upper and lower part. Requiring the clearing of all urban fabric on its way, the project was repeatedly interrupted and only completed in 1952. The operation left a gigantic scar in the southern part of the Pentagon, ill-resolved still today. Above the railway tunnel, an array of monumental public buildings arose such as the seat of the National Bank, various Ministries, and an underground train station with a direct connection to the new airport. The city's hosting of the 1958 World Fair caused a real modernization fever, resulting – amongst many other interventions – in replacing the tree-lined boulevards on the former city ramparts by urban motorways.

With a view to further enhancing the accessibility of the center, the 1962 Tekhnè Plan proposed the construction of an inner ring road around its medieval core, with massive parking facilities all around. Soon after, the planned highway interchange just north of the Pentagon provided the alibi for the construction of a brand-new business center, replacing an entire working-class district. The ambition of this so-called 'Manhattan Plan' (1967) was beyond measure: it proposed 680,000 m<sup>2</sup> of offices, 550,000 m<sup>2</sup> of parking, 400,000 m<sup>2</sup> of living space for 12,000 residents and 370,000 m<sup>2</sup> of commercial functions. Its flywheel was the World Trade Center, a hub of global trade in a complex of eight office towers, similar to New York and Tokyo. After the planned road intersection was cancelled and the 1973 oil crisis struck, the project came to a premature halt. Yet, thousands of former residents had already been expropriated, causing the total social disruption of the area. Meanwhile, in the center,

the city council enthusiastically embarked on a massive public housing program, with the aim of replacing no less than one third of the old fabric. Although it was genuinely believed that such *tabula rasa* politics best served the democratic distribution of welfare, it only worsened the social and economic disintegration of the city center: its population dropped from 155.000 in 1900 to 84.000 in 1947, and 54.000 in 1970. This phenomenon of seemingly wilful degeneration of the urban fabric, at the detriment of its population, became known as *Bruxellisation*. By the late 1960s, this phenomenon had taken such proportions that a reaction from the citizens became inevitable.

## THE CITY OF THE ONE-HUNDRED ACTION COMMITTEES



As in many other European cities, May '68 was a turning point in Brussels. Inspired by the writings of Lefebvre and Castells, the city became both the place and the symbol of a political struggle. This became clearest in the opposition against the government's plans to demolish three blocks of houses in the working-class district of the Marolles for the extension of the nearby Palace of Justice – a titanic building that, hundred years earlier, had already caused the demolition of a large part of the area. When in June 1969 the inhabitants received a letter informing them of their imminent expropriation, the local vicar, Jacques van der Biest (1929-2016) – a charismatic figure imbued with Marxist ideas – set up an action committee with a view to empowering the inhabitants and making their cause known to a wider audience. His actions had effect: looked down on in earlier times, the press and the public opinion now sympathized with the *Maroliens*, sensing that in the increasingly

depersonalized city that Brussels was becoming, this was a place where identity and solidarity still had a meaning. Throughout the summer, van der Biest kept up the pressure (see Figure above, protest march in the Marolle) until finally, in September, the expropriations were reversed and a rehabilitation plan for the area was proposed instead. The *Bataille de la Marolle* (The fight for the Marolle), as the episode came to be known, was a double triumph: not only had a popular neighborhood been saved from demolition, it had also unmasked the omnipotence of the private developers and the

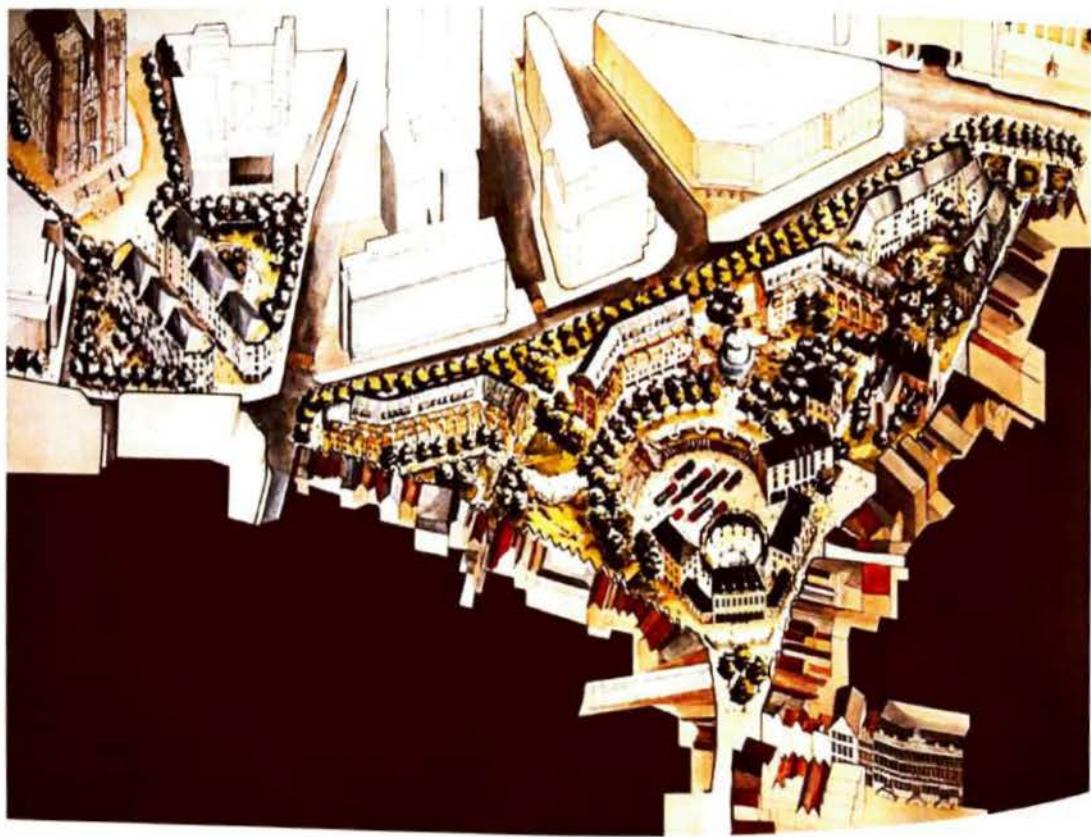
bureaucratic machinery – a fact that was symbolically celebrated by a ludic funeral march in the night of 13 September, 1969. The subsequent renewal of the area led to another problem, however, namely that of gentrification: the phenomenon whereby popular neighborhoods, once renovated, become colonized by higher incomes.

In the wake of the events, action committees shot up like mushrooms all over the city. Of these, the ARAU (*Atelier d'Action et de Recherches Urbaines*) became the most influential. Founded by van der Biest together with sociologist René Schoonbrodt (°1935) and architect Maurice Culot (°1939), it pursued an openly political agenda under the motto 'the struggle for the city is the struggle for power' (*Charte urbaine*, 1970). Clearly influenced by Lefebvre's *Le Droit à la Ville*, the ARAU particularly targeted the authorities' strategy of the *fait accompli*, whereby plans were being implemented without any form of prior public consultation, let alone any concern for their social implications. Instead, ARAU advocated for direct citizen participation, skilfully playing on the public opinion through carefully directed actions, press conferences, debates, and – above all, so-called 'counterprojects'. These alternatives for disputed developments acted as a critique of existing proposals and were developed in close collaboration with the architecture school of La Cambre. The counter-projects aimed at challenging the illusion typically created by developers and authorities that the proposed solution was 'unavoidable', by simply showing alternative solutions in seductive and realistic drawings. Considered fatally contaminated by capitalist excesses, the modernist architectural vocabulary was explicitly dismissed, and the local vernacular put forward as a symbol of a more democratic and a humane urban politics; this pragmatic option for a historicizing, 'familiar' style illustrates that ARAU's central concern was politics; aesthetics was only a way to put through an agenda.

## THE SAGA OF THE CARREFOUR DE L'EUROPE

The consequences of ARAU's pragmatic stance became clearest in the saga of the Carrefour de l'Europe (Europe Crossing). This pompous name designates a left-over space midway between the North and South stations that originated from the construction of their interconnection. Despite both stations only being 2 kilometers apart, a third stop was built in between, the Central Station, necessitating the clearing of a large triangular area, the largest part of which remained vacant after the completion of the new, underground train station. Unable to develop a clear vision for the future of this site (only 150 meters away from the Grand Place), the city finally let it for 99 years to a private company that turned it into a private car park. Ironically thus, the massive investment for the railway junction resulted in an easier access to the city center by car.

As the contract stipulated that the site needed to be built up by 1985, various proposals were drafted over time. Typically for the indecisiveness of both the authorities and the existential doubt within the architectural profession at that time, no first prize was awarded after a competition for the site had been held in 1970. The second prize went to a proposal that suggested putting trees on one half of the site, and an underground car park with buildings on the other half. With a view to softening the rupture between the upper and lower city, it proposed a pedestrian promenade linking the Grand Place with the Central Station. Several years of stand-still followed, until ARAU came up with a 'counter-project' in 1976 (see Figure below). This project became a key image in the planning history of Brussels: representative of the political, populist and provocative position of ARAU in the mid-1970s, it consisted of small-scale housing blocks glued together with trees and 19th century street furniture. The design was openly historicist, featuring colonnades, columns, gabled roofs and small windows. Signaling the upcoming Movement for the Reconstruction of the European City, it received international attention – and was reproduced, for example, in *Architectural Design* in 1977.



ARAU's proposal cast a long shadow over the future development of the site. In 1983, the site became once more the subject of a competition. Unsurprisingly, many entrants, amongst which also the laureate Georges Baines (1925-2013), suggested restoring the contours of the urban block and monumentalizing the passage between

(the Central Station and the Grand Place). One entry stood out, namely the one submitted by 'Team Hoogpoort': Stéphane Beel ('1955), Xaveer and Arjan Karsenberg ('1955). Considering the triangle as an independent 'objet trouvé', they refused to fill it up with architecture. In a very Koolhaasian way (not surprising for three of the team members had worked at OMA), they suggested keeping it as a void where the contrasts between the medieval and 20th century parts of the city would clash, rather than be smoothed out. To this effect, the square was to give access to the various public buildings around the site and become equipped with small service units such as ticket stores, tobacco shops, etc. Placed in a grid-like formation, they openly referred to the Koolhaas' Parc de la Villette competition proposal, then just submitted. The metropolitan freshness of this scheme was ridiculed, however, since by then, the 18th century conception of urbanity as proposed by ARAU had firmly taken root at the political level in Brussels. Despite twenty years of urban struggle, the site today features three international hotels disguised as neo-Flemish town houses, that testify to an almost cynical disdain for contemporary design culture.

## THE REDISCOVERY OF THE PAST: BUILT HERITAGE AND URBAN PLANNING

While ARAU focused on the reconstruction of the city by adding new-old architecture, other groups asked themselves how its remaining original fabric could be conserved and maintained. In this respect, the Tekhnè plan was only concerned about the so-called 'Îlot Sacré' (the area around the Grand Place) and preserving the perspectives over the city from the upper town. Conscious of its increasing touristic importance, from 1959 on, the city authorities imposed restrictions on future modifications in this area with a view to safeguard its aesthetic 'harmony' and visual uniformity. Typically, this pseudo-historical *mise-en-scène* only pertained to the façades, not to what lay behind them. Further, apart from a number of monuments (churches in particular), most of the existing residential tissue was dismissed as ready for demolition. Ironically, however, this conservative approach had the same effect as its *tabula rasa* counterpart: both approaches only measured the vernacular tissue against its commercial or touristic value, ignoring its residential potential.

Under the impulse of Belgian Professor Raymond M. Lemaire (1921-1997), one of the driving forces behind the 1964 Venice Charter, an alternative approach was tested. Based on the principle of 'reanimating' (rather than merely restoring) the historic fabric, it involved adapting the existing tissue to contemporary needs with due respect for its intrinsic architectural and cultural values. The Sablon neighborhood (the area between the Palace of Justice and the Royal Palace, in the upper town) acted as a pilot study in this regard. Under pressure by the planned construction of a road tunnel and

the increasing demand for office space, the action committee *Quartier des Arts* was founded in 1967 with a view to safeguarding the future of this area. Its composition, as well as the context within which it operated, was fundamentally different from ARAU's struggle in the Marolle area, however (although only a couple of hundred meters away). Instigated by members of the capital's industrial, financial and political elite, it focused less on social inequality than on the preservation of the cultural prestige of the area. Its *modus operandi* was also entirely different: closely connected with the city authorities, it opted for discussion, discretion and cooperation rather than confrontation and open conflict. It was equally effective, nonetheless: having managed to overrule the official area plan, it commissioned Lemaire with developing a vision for the entire area, and study one city block in particular as a case study. Yet, the time was not yet ripe for such a radical new take, and Lemaire failed to convince the city council. As a result, only a tiny fragment of the plan became realized, in a much altered form.

The genie was out of the bottle, however: after the Council of Europe openly endorsed such an integrative approach towards conservation, heritage inventories were established as a basis for further policy. In Brussels, the first such inventory was executed by the *Sint-Lukasarchief*. An association operating within the architecture school of the same name, it was initially primarily concerned with Art Nouveau and the neo-styles of the 19th century (then generally disliked, resulting for example in the demolition of Horta's *Maison du Peuple* in 1966). Having taken four years to complete and consisting of over 40,000 pictures, the inventory constituted not only the core of today's official Built Heritage Inventory of the Brussels Region, but also provided the source material for two exhibitions that significantly enhanced the public engagement with the capital's heritage: 'Brussels: Breaking and Building. Architecture and Urban beautification 1780-1914' (1979); and 'Streets and Stones: the Urban Growth of Brussels, 1780-1980' (1982).

The growing public interest for the built heritage also trickled down on the policy level, especially after the formation of the Brussels Agglomeration, a political entity that represented the 19 communes of Brussels. Under its impulse, the Beguinage neighborhood became restored, while the old Saint-Géry market was transformed into a cultural venue; the old fire station in the Marolle area was converted into a residential and shopping complex for local artisans. The figure of former Alderman (and, intermittently also Prime Minister) Paul Vanden Boeynants (1919-2001) perhaps best embodied this change in attitudes: having backed some of the most radical car-oriented urban renewal projects in the 1960s, he became an ardent defender of the pedestrianizing of the city center in the mid-1970s. The renewed attention for the historic city also had a downside, however, for the authorities now almost systematically imposed an obligation on building developers to preserve old façades. Dozens of examples of such empty façadism can be found in Brussels, such

as the Continental Hotel at the Place Brouckère and the Park Atrium behind the Central Station. The faith in contemporary architecture reached a literal low in these days: the extension of the Museum of Fine Arts on the Mont des Arts, necessitating the demolition of a number of older (yet historically not really significant) buildings met with so much resistance that eventually the entire addition was built underground.

## TOWARDS MORE DEMOCRATIC PLANNING PROCEDURES

The evolution from the post-war culture of functionalist, bureaucratic planning towards a more participatory approach in the early 1970s can be derived from the various regional plans that were drawn up for the Brussels agglomeration in the period between 1945 and 1975. The so-called 'Satellite Plan' for the Brussels region (1955) suggested channeling the future growth of the capital by decentralizing it in thirteen satellite cities, separated by green belts. Taking the modernist separation of urban functions (work, leisure, dwelling, recreation) to the extreme, the city center was to become exclusively destined for shopping and leisure; all other functions were delegated to the periphery. As it became incompatible with the new national planning framework defined by the 1962 Urbanism Act, the same authors presented a second zoning plan in 1965, speculating this time on the transformation of the city center into an office district, capable of hosting the enormous demand for office space that came with Brussels' new status as an international capital. Guessing that the majority of inner-city fabric buildings would have to be rebuilt in the next twenty years, it proposed to restructure the area by means of no less than 188 km of urban motorways. A second draft of this plan (1970), despite being less focused on demolition, was even more drastic: planning 225 kilometers of urban motorways, it capitalized on the local authorities' obsession with (car) accessibility as a lever for making Brussels future-proof.

In the meantime, such *tabula rasa* politics had lost all public support, however. Moreover, when after a major state reform in the early 1970s the Brussels Agglomeration was put into place as an independent political body (with full powers over the spatial planning of its territory), a new planning strategy was put into place, based on stakeholder participation and a more adaptive approach towards the existing fabric. The extreme caution now shown by the authorities resulted in a microscopic analysis of the existing situation (distilling no less than 64 different types of land occupation) without any clear vision on the desired development. Yet, the initiative was well received and after a lengthy public enquiry that took almost three years, the Brussels District Plan came into effect in 1979. Focusing on the protection of the existing fabric, halting the proliferation of office space and car infrastructure, and fixing special procedures for derogation, it buried the authoritarian, car-centered and functionalist spirit of Expo '58 once and for all.

# AMSTERDAM: THE JANUS FACE OF URBAN RENEWAL

## THE EXPANSION OF AMSTERDAM: BEYOND THE AUP

Despite the original ambition of Cornelis Van Eesteren and his team to settle the growth of Amsterdam once and for all with the 1935 *Uitbreidingsplan (AUP)*, it soon appeared that its scope was still not broad enough. The shortage of space per inhabitant worsened steadily, and still more land was required for housing construction.



Therefore, in 1958, large tracts of the adjacent municipalities Oostzaan and Landsmeer (on the opposite side of the IJ) were annexed, and a regional expansion plan was drafted. A more radical solution was proposed shortly after by Jaap Bakema (1914-1981). Accommodating 350,000 people, his so-called Pampus plan consisted of four (partly) artificial islands interconnected with a central spine integrating traffic ways and infrastructure for work, culture, leisure, and housing. At one end, the spine bent around the old existing Pampus island and thus created a new city core around an inner lake with harbors, boulevards, and quays. Clearly indebted to the 1961 Plan for Tokyo Bay by Kenzo Tange (1913-2005), the Pampus plan monumentalized the idea that the Dutch had always had to create their habitable land themselves.

Although the proposal was exhibited in the *Stedelijk Museum* (just like the AUP thirty years earlier) and received a lot of critical attention, the Pampus plan had little impact in its day – for in the meantime, the city of Amsterdam had acquired sufficient land to the South to continue its expansion. Yet, its main principles (namely to construct a dense urban extension to the East on a series of artificial islands) resurfaced in the

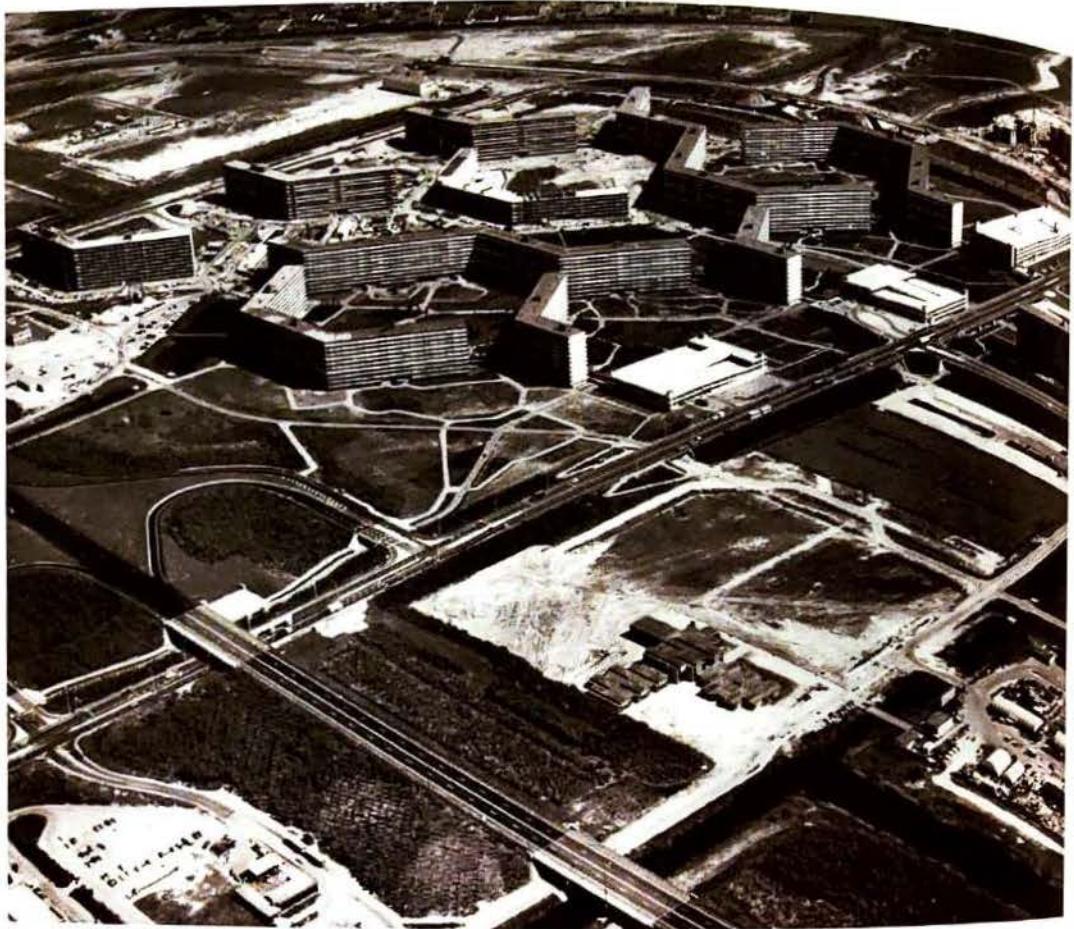
1990s when the authorities launched the construction of IJburg, a new part of the city for approximately 45,000 inhabitants and employment opportunities for 12,000 people. Originally planned to be completed by 2012, it is still under construction at this moment.

## FAILURE ON THE BIG SCALE: THE BIJLMERMEER

The master plan for Bijlmermeer, a satellite town with 40,000 dwellings to the South (see Figure on next page), was drawn by the city administration under supervision of chief city planner Siegfried Nassuth (1922-2005), and became a textbook application of CIAM planning. Based on a strict separation of functions and traffic flows, 90 percent of the area consisted of nine-story, honeycomb shaped high-rises, conceived according to industrialized building methods. Its aim was not only to compensate for the expected housing loss resulting from the (enforced) transformation of the center but also to create a totally new type of residential environment. Tailored to the values of the nascent welfare society, it would be characterized by comfort, leisure and safety; thus, the operation was marketed as 'future for rent'. However, by the time the last blocks were completed in 1975, the area had already a dystopian allure: plagued by social problems of all sorts, it confirmed critics in their belief that high-rise buildings provoked crime and delinquency.

The Bijlmermeer master plan indeed sported some major flaws: the dogmatic separation of functions and traffic modes prevented spontaneous encounters and social control, while the scale and monotony of the buildings provoked an alienating effect. Yet, the fundamental reason why it failed was perhaps because it never fulfilled its aim, namely to provide a residential alternative for the middle classes in Amsterdam. The latter preferred the single-family houses that were being built en masse in the nearby towns of Hoorn, Purmerend and Almere as part of the State's 'overspill' policy: in order to prevent the coming about of a small number of 'megacities', municipalities around them were designated to absorb the population growth. Those coming to Bijlmermeer were everything but middle-class, in fact, but generally young, single, and very often from foreign origin and poorly paid. This phenomenon was only reinforced when in the 1970s, urban renewal policies shifted from large-scale demolition to preservation. This gave the old neighborhoods a new appeal and caused many residents to stay – especially since rents in Bijlmermeer were in fact comparatively higher than elsewhere (to compensate for the high construction costs). Further, the average housing occupancy per dwelling dropped nationwide during the 1960s, with many people (both young and elderly) living alone or in smaller families. This made most dwellings at Bijlmermeer inadequate for they had been designed with the classical (large) family in mind. Finally, the fact that the various blocks belonged

to a myriad of housing corporations did not help, just as much as the absence of amenities: it took until 1975 before three small shopping centers opened and the first metro line did not operate until 1977.



Soon, the toxic combination of unemployment, crime and drug abuse, lack of social control and a systematic stigmatization by the press, led to a downward spiral: by 1985, 25 percent of the flats stood empty. In a desperate move to turn the tide, advice was sought from Rem Koolhaas (\*1944). In his view, not the built, but the unbuilt was the problem. While he considered the Bijlmermeer to offer "boredom on a heroic scale" he also saw it as an unfinished project. Hence his proposal for a "programmatic plurality", infusing the ground level with a variety of programs and activities. Central was the introduction of a 'Bijlmer strip', a new center area with high density buildings accommodating all sorts of 'guilty' activities and public-oriented functions such as furniture halls, petrol stations, shopping centers, etc. After the proposal was shelved, it would take until 1992, after a cargo plane crashed on one of the apartment blocks and the authorities were unable to state the exact number, often unregistered, victims, before the seriousness of the situation dawned on the public opinion. In the aftermath of the crash, a large part of the high-rises were demolished.

and replaced by more varied forms of dwellings; and in an attempt to erase this massive failure from the collective memory, the area was also officially rebranded as 'Amsterdam Zuid-Oost'.

## MEANWHILE, IN THE CITY CENTER

Entirely taken away by their extension plans, the city authorities paid only marginal attention to the city center in the first half of the 20th century. Yet, already prior to World War II, the 19th century areas nearby the port had been rapidly declining, while in the historic core (roughly the area bounded by Singelgracht to the south, and the IJ to the north), banks, insurance companies and seats of large companies had increasingly been displacing the residential function. Two documents illustrated the growing consensus that, in order to alleviate the impending traffic congestion and increase the economic attractiveness of the center, it urgently needed to be modernized: the *Wederopbouwplan* (1953) and the *Nota Binnenstad* (1955). The proposed policy limped on two legs, however: on the one hand, the protection of the historical and monumental character of the old city center; on the other hand, the need to develop its commercial and economic dimension. Various areas, such as the Nieuwmarkt and the Weesperstraat, as well as the Oostelijke and Westelijke Eilanden in the old port, were earmarked for redevelopment as office locations or to make way to large thoroughfares. The creation of a subway network was also envisaged, for it would free space for cars above ground. Accessibility (for cars, that is) indeed became almost an obsession, as can be derived from two proposals that, fortunately, remained on paper: in 1954, H. Kaasjager, the chief of police suggested to create extra roads by filling in a large part of the canals; and in 1967, the American planner David A. Jokinen proposed to replace the Singelgracht by a six-lane highway.

Although the number of inhabitants and jobs in the historic core rose to an all-time high (120,000 and 160,000 respectively) and commuter traffic exploded, little real action was undertaken. This caused further degradation in certain areas: with proprietors no longer investing in their buildings, the living conditions grew grimmer by the day. The historic core became also increasingly affected by the construction of large office complexes, often grouping all the parcels along an entire street. Slowly, public opinion turned against such operations, especially after plans had been made public for the proposed, massive ABN bank headquarters along the Vijzelstraat. Under the slogan 'Ban the Bank', a wide range of actors expressed their fear that the city would soon become hollowed out by such large-scale office developments and contested the fact that its future was *de facto* decided upon by a small circle of powerful civil servants, well-networked investors and local politicians. United by the

idea that all opportunities to safeguard the economic prosperity of the city should be embraced, this coalition indeed showed little concern for its historic built and social fabric. The protest was to no avail, however: after a rowdy public hearing, the building permit was granted and the building eventually realized.

Despite this defeat, the episode became a watershed moment in the planning history of Amsterdam for in its wake, the association Amsterdaad '75 (referring to the city's 700th birthday in 1975) launched a petition against the ongoing transformation of the Weesperstraat (in the old Jewish quarter) into an urban highway, while requesting a clear, long-term vision on urban renewal from the city authorities. Publicly endorsed by a large and very diverse group of prominent citizens (including writers, TV personalities and Provos alike) the campaign could simply not be ignored: 100,000 people signed the petition in only one week's time, underscoring how deep and widespread the discontent had become. This time, the action had effect: further demolition was temporarily put on hold and a new policy document prepared.

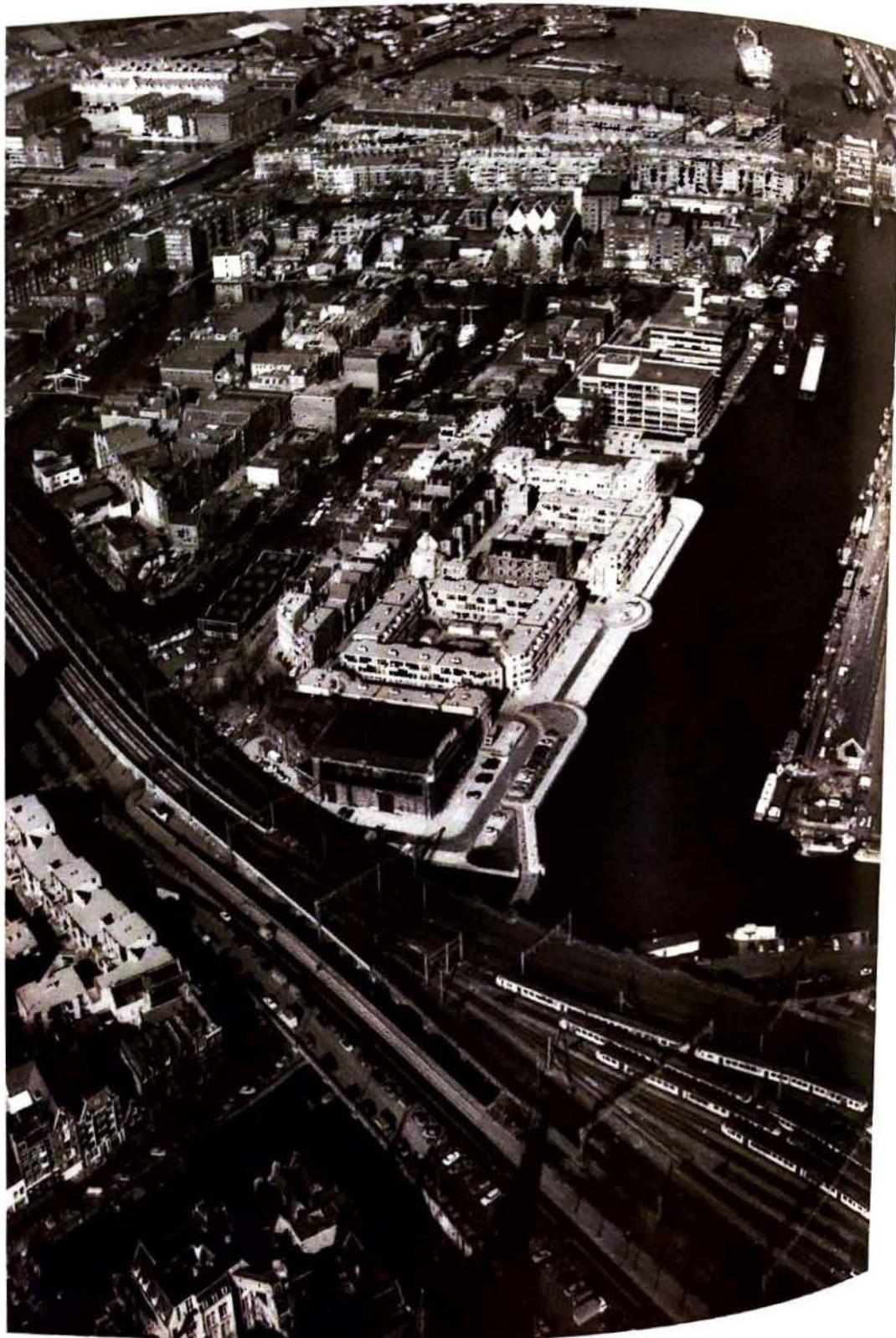
The Tweede nota over de Amsterdamse Binnenstad presented in 1968 illustrated that the times were changing indeed. Contrary to the 1955 memorandum, it was no longer an authoritarian statement but a 'discussion draft', totally different both in style and content. Although the focus remained largely on stimulating job creation and investment opportunities in the city center, it was now considered in relation to the larger agglomeration; also, the idea of urban renewal became extended to the 19th century belt around the center. With a view to improving the quality of its housing stock, a two-fold strategy was proposed. The 19th century extensions were to be reconstructed by clearing the existing fabric and replacing it with new and better housing. Other areas, by contrast – and in particular in the historic center – would be rehabilitated by conserving them as much as possible. Although, in the meantime, the 1970 elections had brought to power various protest parties such as the *Kabouterpartij* (an emanation of the Provo movement), the city authorities clung to the idea of large-scale renewal: the 1971 Nota Stadsvernieuwing selected the Oostelijke Eilanden, Dapperbuurt and Kinkerbuurt for total reconstruction, while the Nieuwmarkt, Jordaan en Westelijke Eilanden were to be rehabilitated; five other areas, such as the Spaarndammerbuurt and the Indische Buurt, would be 'ameliorated' in the short term.

## THE STRUGGLE OF THE ACTION COMMITTEES

In all the designated areas, the city invested massively in public housing. The concern to cater for a greater variety of households and stop the exodus from middle-class families, had a socially disruptive effect, however: it led to a halving of the housing

stock, that also became unaffordable for the original inhabitants (often singles or small families). Furthermore, the (economically inspired) strategy to first demolish and then construct everything at once, obliged many residents to seek refuge elsewhere. The increasing opposition to this procedure explains why only two out of eleven planned operations were completed. On the harbor island of Kattenburg, the plans from 1953 were put through nonetheless: all the fabric was replaced by strip subdivisions combined with large parking garages and collective inner courtyards. A major thoroughfare was also built across the island, connecting with the city through the Kattenburgerplein. There, a row of original façades was reconstructed, as if to mask the operation from the city center. Also the Roomtuintjes area (the northern part of the Dapperbuurt) was entirely reconstructed as a kind of mini-Bijlmer; meant to serve as a prototype for the entire area, it was visited by Queen Juliana in 1975. That was beyond the residents, however: fearing substantial rent increases after its completion, and rejecting the (by then) outdated urban concept, they formed an action committee, 'De Sterke Arm', and successfully managed to have their say in the further development of the area. Taking into account the original urban footprint of closed city blocks and its typical street life, a phased renovation of the housing stock was now proposed with a view to maintaining as much as possible of the original fabric. Ironically, most houses were demolished in the end, for it was found that the bad soil conditions in the area had structurally affected their foundations.

Also, the proposed reconstruction of the Bickerseiland, an old port island in the western part of the city, met with much resistance. Here, the 1953 *Wederopbouwplan* proposed to erase the area and connect it to the city by means of a four-lane traffic artery – a process that was quietly set in motion by a private developer with the realization of a large, modernist office building. Considered as the first step toward a 'Manhattan on the IJ', it was initially positively received in the press in 1965. For the neighbors, by contrast, it was a wake-up call: alarmed by the imminent launching of the project's second phase, they formed the *Aktiekomité Westelijke Eilanden*, which also included a sociologist and two young architecture students. While the press increasingly supported the committee's griefs, the municipal council remained divided: although elected in 1970 on the basis of a more democratic course, it had to balance between the legal value of the *Wederopbouwplan*, the need to keep the developer on board (as *par pro toto* for the private sector in general), the economic interests of the city and the griefs of the local population. As a compromise, it was proposed to grant the permit, albeit for a building of only half the original size. This was not what the activists had hoped for, and their interruption of the council's meeting of 3 March 1971 resulted in a violent fight amongst the audience. Triggering fundamental questions about the meaning of citizenship, local identity, democracy and fair access to decent housing, this outburst of frustration was amply commented on in the press. The developer pressed on, regardless, but the bitter pill was softened by



a rehabilitation plan for the area. Based on the principle of mixed use, and developed in cooperation with local residents as well as the two young architecture students mentioned earlier, it included, for example, an ensemble of eighteen compact dwellings designed by them.

Yet, this was only a minor victory: the city officials persisted in their focus on economy and infrastructure. The boiling point was reached during the Nieuwmarkt Riots in March and April 1975, when demonstrations against demolitions required for the construction of an underground metro and a four-lane road turned into a battle between protestors and an enormous police force. Broadcast on national television, the images did not miss their effect: the Metro Plan was aborted (only the East Line would be completed), and the position of both the Alderman for public works and the mayor became so weakened that they had to step down in the aftermath of the affair. Nonetheless, the ghost was still not out of the bottle: despite its attractive title – 'De buurt: woonplaats, geen doorgangshuis' ('The neighborhood: a place for living, not for transit') – a new memorandum presented in 1977 by the new alderman once more pictured the ideal of middle-class families in a garden city-like environment. This time, however, these ideas were promptly disavowed by both the municipal council and the action committees. Its author was quickly dispensed of, and with him, the principles of large-scale urban renewal and social engineering. From the 1978 elections onwards, a new concept made its entry, namely that of the 'compact city': apart from increasing the population density and the employment opportunities in a mixed-use context, it focused on the existing population rather than on the desired type of residents.

# **T**HE LATE 20TH CENTURY CITY

## **NEOLIBERALISM AND THE CITY**

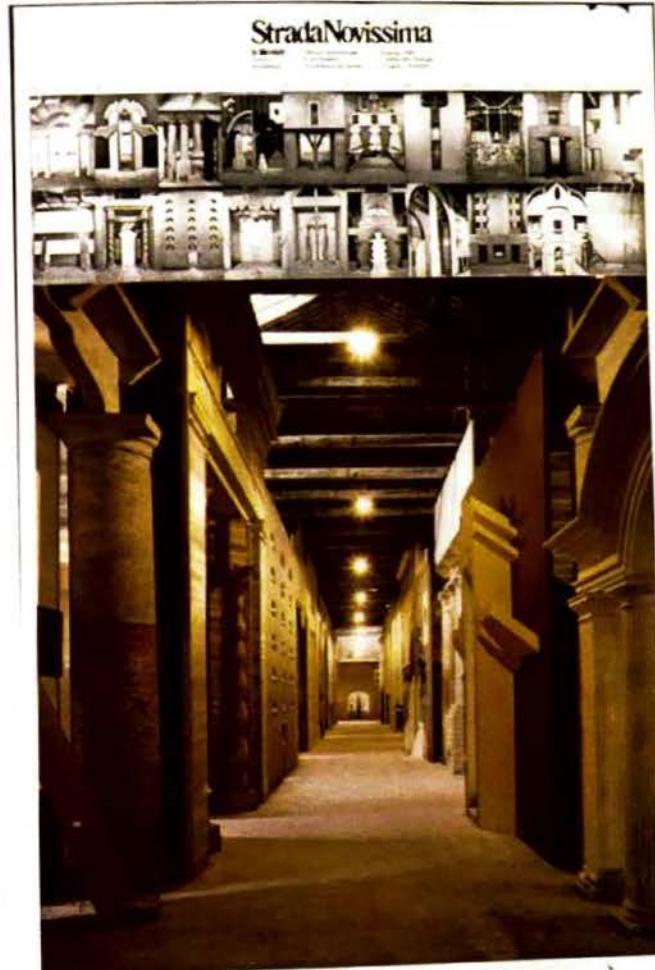
In the context of the industrial decline of the late 1970s, the Keynesian welfare state model (based on social protection, full employment, and state intervention) came increasingly under attack as being too expensive, too inefficient and too bureaucratic. 'Neoliberalism' became the new trend. Considering politics, economy and social relations from the viewpoint of (competitive) market relations, it favored a diminished role of the state, emphasized individual responsibility, and believed that market dynamics outperformed government-led planning. Its theoretical and ideological underpinnings derived from economists such as Friedrich Hayek (1899-1992) and Milton Friedman (1912-2006), who argued that the government should primarily act as the protector of free exchange and personal freedom.

Perhaps unsurprisingly, neoliberalism first appeared in the country that was hit the hardest by the downfall of industrial production, namely Great Britain. As it was believed, the economic stagnation would induce a crisis of the whole social and constitutional framework. It was against this background of a 'crisis of the nation' that Margaret Thatcher (1925-2013) became Prime Minister in 1979 (until 1990). Supported by newly elected US President Ronald Reagan (1911-2004; in office 1981-1989) - himself the embodiment of the conservative turn in American politics in the early 1980s - Thatcher massively deregulated, privatized and outsourced public services. By contrast, in France, President François Mitterrand (1916-1996; President 1981-1994) pursued a radical left-wing economic agenda, including the nationalization of key firms. Yet, with his economy also in crisis by 1983, he proclaimed an austerity turn and called for private investment in various key domains. Large scale infrastructural and urban operations became now entrusted to *Sociétés d'économie mixte* (SEM), often very sophisticated multi-partnerships between state, regions and cities as well as private investors. Their performance varied, but complex operations such as Euralille or the new town of Val d'Europe (Disneyland Paris) could not have been conducted without them. Cities indeed constituted primary sites of neoliberal experimentation and were increasingly seen as profit making machines. In this context, urban planning was perceived as an unwanted, bureaucratic obstacle that distorted land values and increased costs; its only relevance, the neoliberalist tenet went, consisted in providing juridical certainty to the market and facilitating economic growth.

## THE RISE OF POSTMODERNISM

The built environment of the 1980s and 1990s was characterized by a great stylistic, typological and formal diversity, which became conveniently categorized under the catch-all term 'postmodernism'. It was first used by architectural critic Charles Jencks (1939–2019) in *The Language of Post-modern Architecture* (1977) to denote a 'radical eclecticism' that relied on a hybrid, modern and historicist syntax, and appealed both to educated taste and popular sensibility. Postmodernism rose to prominence at the 1980 Venice Architecture Biennale, where Paulo Portoghesi curated the *Strada Novissima*: a hypothetical postmodern 'street' made up of twenty façades designed by upcoming stars such as Frank Gehry (°1929), Rem Koolhaas (°1944) and Ricardo Bofill (°1939) (see Figure). The installation was hugely successful, and helped postmodernism to assert itself as the leading architectural paradigm for the rest of the decade.

For reason of their sheer presence in the public realm and their symbolic power as cultural, economic and political tokens, architecture and urbanism were also amply discussed in the two seminal works that sought to uncover the essence of postmodern culture, namely *The Condition of Postmodernity* (1989) by David Harvey (°1935) and *Postmodernism or the Cultural Logic of Late Capitalism* (1991) by Frederic Jameson (°1934). As Harvey stated, the fragmentation, collage and ephemerality that dominated the architectural discourse had much in common with the thinking in other domains such as literature, social theory and philosophy.<sup>1</sup> The scattering of modern architecture's relative coherence into an array of very different and competing stylistic positions, can indeed be seen as a metaphor for the scepticism, subjectivism and relativism typical for postmodern thinking. For indeed, it was *locally* a reaction against typically modern assumptions, such as the idea that there existed an objective natural reality that could be objectively known. Instead, 'reality' became seen as a conceptual construct. Postmodernists also rejected the faith in science



and technology as instruments of human progress, underscoring their destructive potential as illustrated during World War II. Just as much, general theories of the natural or social world were banned as symptomatic of the latent totalitarian tendency within modernism; such 'metanarratives', as the French philosopher Jean-François Lyotard (1924–1998) called them in *La Condition Postmoderne* (1979), imposed conformity on other perspectives or discourses, thereby oppressing, marginalizing, or silencing them. Lyotard therefore preferred the contemporary proliferation of 'micro' stories, competing with each other in their claims on veracity.

Although the built environment of the 1980s and 1990s constituted the material embodiment of the dynamics sketched above, the relationship between postmodernist culture, neoliberal politics and late capitalist economy was never simply straightforward. As architectural historians Kenny Cupers and Helena Matteson have recently argued, there were indeed cases where neoliberal critiques of the welfare state resulted in a resistance against postmodernism. The most salient example in this respect is Euralille: while unmistakably borne out of neoliberal strategies, the neo-modernist expression of its architecture is very different from postmodern schemes commonly associated with late capitalism such as Canary Wharf.<sup>2</sup>

## SHRINKING GEOGRAPHIES, GLOBAL CITIES

Apart from a prime example of neoliberal intervention in the urban realm, Euralille also symbolized the progressive 'shrinking' of the European continent. After the adhesion of Greece (1981), Spain and Portugal (1986) to the European Union, the Single European Act (1986) liberalized the movement of people, goods and services and paved the way to a more political union as laid out in the Treaty of Maastricht (1992). This process was greatly enhanced by the fall of the Iron Curtain in 1989, enabling the reunification of Germany in 1990. On the regional scale, cross-border intercommunal cooperation became common like in the *Eurométropole* around Lille (uniting 150 municipalities and 2.1 million inhabitants) and the *Euregio* in the Rhine-Meuse area, comprising no less than 4 million inhabitants. By the time the 50 km long Channel Tunnel between France and the UK became operational in 1994, the geography of Europe had been redrawn: a high-speed train network now connected the most important cities of Great-Britain, France, Belgium and the Netherlands, and made smaller, peripheral cities all of a sudden very attractive. The most extreme case was Lille, now accessible for 50 million people in less than 1.5 hours.

As a result of increased travel (both for leisure and work), the ever growing scale of the retail sector, and the increasingly ubiquitous information technology (Internet

became publicly available in Europe around 1992), an ever-growing proportion of people's lives were spent in supermarkets, airports and hotels, on motorways, or in front of TVs, computers and cash machines. As the French anthropologist Marc Augé (<sup>°</sup>1935) stated, these were typical 'non-places': spaces that could no longer be defined as relational, historical, or concerned with identity. Looking the same all over the planet, they created the paradoxical situation whereby one could feel at home anywhere in the anonymity of motorways, service stations, big stores or hotel chains. These non-places were also symptomatic for the much less visible flows of capital. After Thatcher had deregulated the British financial markets with the so-called 'Big Bang' (1986), electronic, screen-based trading made its entry, allowing for a much faster and decentralized organization of financial operations. The effect was instantaneous: by 1987, 450 foreign banks were active in the British capital (compared to 100 in 1961) and demand for high end office space exploded. Canary Wharf, in particular, came to embody the values (or the lack thereof) of this new entrepreneurial culture). Apart from London, financial operations now concentrated in New York and Tokyo, in a continuous 24 hour trading operation. As the sociologist Saskia Sassen (<sup>°</sup>1947) postulated in 1991, these 'global cities' became detached from their own locality and functioned as one trans-territorial marketplace. Yet, at the same time, they were giants with feet of clay: after a five-year long uninterrupted and steep increase in stock market values, the markets unexpectedly plummeted and lost on average 25% in value on Black Monday, 19 October 1987.

Nevertheless, the myth of urbanism as a generator of prosperity and wealth remained intact, not in the least in Asia where new cities sprung up like mushrooms. Shenzhen, for example, evolved from a fishing village of 25,000 in 1980 into a global hub with 20 million inhabitants in less than 25 years. Seen from a European perspective, such cities seemed like a distant reality. Yet, as Rem Koolhaas (<sup>°</sup>1944) argued in 'The Generic City' (1994), they may well provide the clue for future urbanism in Europe too. At first, the combination of 'generic' and 'city' seemed paradoxical in the European understanding of cities, which were primarily understood as cultural entities conditioned by unique historical and topographical facts. The new Asian cities turned this upside down for they seemed to lack three distinguishing characteristics of historical cities: a proper identity, a history of their own and a clear center. As Koolhaas argued, precisely this 'lack' constituted their 'liberating' potential. Identity, for example, was in fact "a mousetrap in which more and more mice have to share the original bait, and which, on closer inspection, may have been empty for centuries."<sup>3</sup> The same for the insistent focus on the center, which Koolhaas damned as doubly destructive: "not only is the ever-increasing volume of dependencies an ultimately intolerable strain, it also means that the center has to be constantly maintained, i.e., modernized."<sup>4</sup> The concentric character of most European cities indeed induced a spatial hierarchy with often problematic social consequences. Such mechanisms of

exclusion were absent in the generic city: due to its isotropic manner, everything was equally expensive, easy, and far. Finally, Koolhaas pointed at the instrumental use of history in the generic city, stating that it constituted perhaps one of its major preoccupations. Indeed, in many cases, it became a form of "myth-making, or a celebration of the past as only the recently conceived can".<sup>5</sup>

## CITY MARKETING AND THE EXPERIENCE ECONOMY

The economic use of history and culture indeed became a defining trait of urban policies in the 1980s and 1990s. Although inter-city competition existed already in the Middle Ages and culminated in the World Fairs of the 19th century, globalization brought about the phenomenon of 'city marketing'. The hosting of prestigious sports events such as the Olympics provided a pretext for massive public expenditure, but its outcome remained unpredictable: whereas the 1992 games transformed Barcelona into one of the most successful examples of urban regeneration in modern times, the 2004 edition almost ruined Athens. Cultural strategies such as the rotating Cultural Capital of Europe (established in 1985) produced the myth of the so-called 'Bilbao-effect'. Yet, city marketing and mass tourism also often provoked conflict. An extreme example was the little town of Béziers, near the Franco-Spanish border, that marketed its annual August *corrida* festival so successfully that in 2005, it became flooded with over a million visitors. Venice came to epitomize mass tourism at an almost industrial scale to such an extent that ultimately, it engendered an increasingly hostile attitude of its residents, raising questions about whose community the city in fact represented.

Growing mass tourism and cultural entrepreneurship constituted in fact two sides of the same coin, namely the ever expanding experience economy, capitalizing on people's search for (seemingly) unique, personal experiences that leave a memorable impression.<sup>6</sup> More and more, such experiences became integrated in trivial activities or products: flagship stores no longer just sold products but became little branded theme parks; tourists increasingly preferred AirBnb, hoping to experience a neighborhood as locals did in their search for authenticity and uniqueness. Cities too became progressively subject to experience-based value creation. A typical instance of this was the popularity of the festival; generally an ephemeral event clearly delimited in time and space, it provided a flexible opportunity for rebranding the city and created a framework within which a wide range of stakeholders (visitors, inhabitants, entrepreneurs and the public sector) could be brought together.<sup>7</sup> As Archigram's 'Instant City' poignantly forecasted, the festival thus possessed a transformative capacity, which helps to understand why today, large-scale ephemeral events have become a key ingredient of urban marketing strategies.

## THE 'BILBAO EFFECT'



The 'Bilbao effect' – the phenomenon whereby eye-catching museums, concert halls or opera houses are supposed to economically uplift cities in crisis – is a myth: its promise of economic development, urban regeneration, signature architecture and local-global partnerships has led to overly-ambitious projects such as the Sheffield National Museum of Popular Music, the KIASMA Museum in Helsinki, or the Experience Music Project in Seattle, but the Bilbao miracle has not replicated itself in any of these cases. The question thus arises what made the Guggenheim so unique. In fact, the project was an almost coincidental coalescence of two separate dynamics within the cultural economy: on the one hand the Basque government's ambitious tourism development plan, capitalizing on the region's cultural potential and its proximity to France and Italy; and, on the other hand, Guggenheim director Thomas Krens's (°1946) frustrated attempts to generate more revenue by

building new branches of his museum in Vienna and Venice (apart from the Peggy Guggenheim Collection). The Basque government made Krens an offer he could not refuse: a 100 million dollar investment, a top site in the old harbor, and full autonomy in architectural and artistic matters. After a limited ideas competition between Coop Himmelb(l)au (Wolf Prix (°1942), Helmut Swiczinsky (°1944), Arata Isozaki (°1931) and Frank O. Gehry (°1929), the latter was entrusted with designing the 36,000 m<sup>2</sup> museum (later reduced to 24,000 m<sup>2</sup>). More a sculpture than a traditional building, it provided a wide variety of exhibition spaces, wrapped in a sweeping facade clad with titanium (!) panels. Its scale and complexity were such that no less than 565 working drawings were required, produced with aircraft design software. Yet, construction finished in time and within the budget – another quality most later copies failed to achieve.

Referred to as Mc Guggenheim by some, for fear of its cultural imperialism, the Bilbao Guggenheim was an Instagram sensation long before that term existed. Estimated at receiving 400,000 annual visitors, it has attracted more than 3 million tourists per year since 1999 (Bilbao counting only 350,000 inhabitants). With the total investment of 195 million euro paid back in less than ten years, the museum now adds many millions to the Basque Treasury. Yet,

many experts agree that such numbers would never had been reached without the project having been firmly embedded in a strategic redevelopment plan for the entire region. Thus, perhaps Bilbao's true lesson is first and foremost that urban regeneration depends on a comprehensive overall vision, and that the power of architecture alone – no matter how spectacular – won't do the trick.

# FORM VS. FORMLESS: DIVERGENT VISIONS ON THE CITY

## FORM VS. FORMLESS

It is telling for the pluralist climate at the AA School in London in the 1970s (and architectural culture in general at that time), that two characters as diverse as Léon Krier (°1946) and Rem Koolhaas (°1944) could be teaching alongside one another. Both would soon come to embody two totally divergent views on architecture and urbanism. Krier became the principal spokesman of the resistance against modernist urban design from the mid-1970s onwards, propagating a return to the organically grown historical city and laying the basis of the current known today as 'New Urbanism'. Koolhaas, by contrast, accepted the contemporary condition – sprawl, late capitalism, the failed authority of the planner – as a given, and pragmatically sought to carve out a space for maneuver within these confines. His office OMA - the name of which was a program declaration in itself: Office for Metropolitan Architecture - rose to prominence during the early 1980s and became extremely influential both on the theoretical and practical level. This chapter sketches the contextual and conceptual background of both visions, and discusses how they influenced the planning of two new towns around Paris: Melun-Sénart, where Koolhaas proposed to build a 'formless' new city, and Val d'Europe, where the Disney Corporation demonstrated the principles of New Urbanism on a grand scale.

## LÉON KRIER: ESTABLISHMENT REBEL

Having worked at the office of James Stirling (1926-1992) from 1968 to 1974, Léon Krier became involved in the Rational Architecture movement through his participation in the 1973 Triennial Exhibition in Milan.<sup>8</sup> This exhibition gave international resonance to the emerging attention, in Italian academic and architectural circles, to the historic city as part of a strong critique on functionalist planning. In 1975, Krier brought the exhibition to London, and three years later also to Brussels. A charismatic personality, he used these moments to broaden his international network and scaffold his personal anti-modernist, utopian crusade. His main point was that the contemporary city, and Western civilization at large, were near the point of death. Considering urban sprawl and inner city degradation as causal

features in the decline of modern communities, Krier took the pre-industrial city as *pars pro toto* for a wider combat against the anti-democratic, authoritarian nature of modernist planning. Or, as he wrote in *Oppositions* in 1981 under the title 'Forward, Comrades, we have to go back!': "the real conflict lies between a democratic model of the city and an authoritarian one. (...) Democracy today is a utopia and a project to combat the destruction of human society. For it is a model of society which is at stake in the choice of a model of the city."<sup>9</sup> As Krier explained, his preference for the pre-industrial city had less to do with nostalgia or romantic sentiment than with a concern for the built environment as instrument and expression of communal and civic values. Inspired by Camillo Sitte, Krier believed that not buildings made a town, but its (civic) spaces: they contained a certain cultural memory that became preserved and activated in the construction of the city (an idea that was also dear to Rossi). The past was therefore to constitute the planner's guide.

In Brussels, where similar ideas had taken root at the La Cambre architecture school under the instigation of Maurice Culot (°1939), an international colloquium was held in 1978 that resulted in a manifesto entitled 'The Brussels Declaration: Reconstruction of the European City'. It stated that architectural modernism had produced the 'anti-city': by segregating urban activities in mono-functional groupings, it forced people to become highly mobile even in carrying out simple daily activities. By contrast, organic urban growth, based on the duplication of well-defined, semi-autonomous urban quarters could provide the features and qualities of the whole (facilities for education, shopping, commerce, leisure, administration, culture, etc.) within walking distance. Thus, the polycentric model became the preferred planning concept. The manifesto also had a political component, and took a firm stance against "the annihilation of difference under capitalist urban development, as well as the profession's alliance with capitalist development in se, which in many European cities had resulted in the displacement of large swathes of – often socioeconomically vulnerable – inner-city residents."<sup>10</sup> Referring to the legendary Bataille de la Marolle in Brussels of a decade earlier, the manifesto called upon architects to take up their responsibility. After World War II, Krier wrote, architects had become "the ruthless executors of the building industry" and, consequently, "have lost their credibility as creators of a better tomorrow. Building, once a promise, constitutes now a threat for the collectivity [sic]."<sup>11</sup>

Cleverly combining his reactionary stance with contemporary efforts towards sustainability (focusing, for example, on reuse rather than renewal), and at the same time controversially pushing the modernist versus traditionalist dialectic to its extreme (e.g. by publishing a hagiographic book on the classicism of Albert Speer's architecture in 1985), Krier became very influential amongst the conservative establishment. Charles Windsor (°1948), the Prince of Wales, on a self-imposed

## POUNDBURY



Poundbury is the western extension of Dorchester (Dorset), developed in the late 1980s according to a master plan by Léon Krier. In accordance to the design principles laid out by the Prince of Wales (the actual client) in his book *A Vision of Britain*, the master plan is based on four new neighborhoods, each no bigger than Dorchester's historic town center and connected with it through monumental avenues. In Krier's view, Poundbury will enable Dorchester to change from a monocentric to a polycentric, 'walkable' town; to this effect, the four quarters are to develop into self-sufficient units in terms of education, employment, shopping and leisure. A textbook example of New Urbanism, Poundbury's built fabric follows a strict, traditionalist set of principles regarding forms, materials and typologies, including some purely symbolic ones such as

the requirement that all houses have at least one chimney as a token of 'hearth and home'. The townscape is hierarchically structured, emphasizing grand public buildings in contrast to the simplicity of the dwellings. Determined by these civic focal points, the irregular street pattern is said to be easily navigable and encourage walking and cycling. Construction work on the first phase commenced in 1993, with the final section anticipated to be completed by 2025; by then, Poundbury's population will reach approximately 6000 people.

Although Poundbury has been mocked by many architectural critics as a built manifesto of nostalgic traditionalism, resident satisfaction has found to be very high, demonstrating – in the words of its promotor – "that there is a genuine al-

ternative to the way in which we build new communities in this country.”<sup>12</sup> There is, in other words, a utopian dimension to the project, for its principles are believed to make the world a better place. Yet, amenities for small children (e.g., playgrounds) were notably absent in the master plan, while from the onset, there have been complaints about ‘noisy’ ball games in the courtyards. This anecdotic evidence suggests that Poundbury attracts people from a certain age and class, with par-

ticular expectations regarding their living environment. The fact that, to this effect, aesthetic standards seem to be prioritized over individual freedom undoubtedly influences, and restricts, the social diversity in Poundbury. By consequence, its utopian values pertain only to the people prepared to live there. This, in turn, raises the question to what extent this small-scale development can truly be considered as a valid alternative for urbanism in the 21st century.

mission to revive his country’s vernacular building culture, eventually asked him to draw the master plan of Poundbury in 1988. Moving ever further from its revolutionary ideals, the neo-traditionalist current became the preferred paradigm amongst property developers and ambitious mayors, and found fertile soil around the continent, not in the least through the prolific practice of Rob Krier (°1938), Léon’s elder brother. A typical instance was Brandevoort, a new town established in 1996 for about 18,000 inhabitants near Eindhoven. Based on the principles of a traditional Brabant city, its relatively dense center was surrounded by several outer quarters, each with its own identity and character.

In the USA, neo-traditionalism took firm root thanks to the active lobbying of the Congress for the New Urbanism (CNU). This coalition of urban designers, architects, planners, developers was formed by Andres Duany (°1949), the designer of Seaside (FL), the first New Urbanism project in the USA, for which Krier acted as a consultant (and which allegedly provided the inspiration for Prince Charles to commission Poundbury).<sup>13</sup> Published exactly fifty years after the CIAM’s Athens Charter, the Charter of the New Urbanism (1993) outlined twenty-seven guiding principles, centered around the concepts of walkability, community, sustainability, connectivity, mixed-use and density. Its central reference was the traditional neighborhood and the local vernacular. Propagating values the real estate sector and policy makers became gladly associated with, such as environmental and social sustainability, and counting many members familiar with the nature of the development and housing industry. New Urbanism became the leading paradigm amongst property developers and public planning bodies in the USA and beyond. By contrast, it was heavily criticized in academic circles for reason of its prescriptive formalism and its physical determinism, as well as for its sustainability claims which clashed with its elitist character – reinforcing rather than alleviating the social inequalities brought about by the mass urbanization it pretended to provide an alternative for.

## VAL D'EUROPE: DISNEY URBANISM

Somewhat ironically, it was only through the mediation of one of the icons of American cultural and financial imperialism, namely the Disney Corporation, that Krier's idyll of the pre-industrial city could become applied at a large scale in Europe, namely in the new town of Val d'Europe, near Paris. Its history dates back to 1965, when the development plan for the wider Paris region proposed to release the demographic and economic pressure on the capital by creating five new towns (Cergy-Pontoise, Marne-la-Vallée, Saint-Quentin-en-Yvelines, Evry and Sénart). The French State acquired the land and put it under the authority of a so-called *Etablissement Public d'Aménagement* (EPA) composed of representatives of both the state and the local communes. The operation took a wholly different turn, however, when the 1983 deregulation measures forced the various EPAs to secure funding on their own.

Situated to the east of Paris, Marne-la-Vallée was to counterbalance the economic dominance of the western part of the Paris region and consisted of four autonomous urban sub-centers: Noisy-le-Grand, Le Val Maubée, Le Val de Bussy, and Val d'Europe. As construction of the latter had not commenced by 1983, private funding needed to be sought. After lengthy negotiations, a single partner was found in the Disney Corporation, then searching for a site to build its first European theme park. An agreement was signed in 1987 that gave Disney the priority right to develop 2000 hectares of land (more than half of the total area of Val d'Europe) within a period of thirty years. Whereas the French Government committed itself to building a TGV station as well as an interchange to the A4 highway, the Disney Corporation agreed to develop two theme parks and up to 18,000 hotel rooms, 700,000 m<sup>2</sup> of commercial space, an equal amount of office space and 7800 housing units. The sheer scale of the investment was unseen in France, but the most peculiar aspect of the deal was Disney's claim to control the form of the urbanization it was to finance, and have a say in the building code real estate developers would have to adhere to.

Part of its diversification strategy, in the 1980s, the Disney Corporation had created a real estate division with a view to capitalize on the economic dynamism brought about by its theme parks. Its first project was Celebration (Florida) nearby Disney World, where a romanticized version of a 1950s American rural town - complete with picket fences and front porches - was planned for 20,000 inhabitants by Cooper Robertson Architects (in collaboration with Robert A.M. Stern). Inaugurated in 1996, it was a real-life application of New Urbanism principles and its anti-(sub)urban ethics, illustrating that many people were just happy adhering to a code that outlined every single detail of their living environment. Designed by the same architects in 2002, the master plan for Val d'Europe consisted of a framework of boulevards, streets and squares that defined four distinct neighborhoods (see Figure on the next page). The

commercial underpinning of the scheme became clearest in its center, which consisted in fact of a huge, Janus-faced shopping center, mimicking the old Parisian passages with their architecture of steel, glass and wrought iron: entered from the town center through traditional squares and wrapped by three-story buildings, its back entrance gave direct access to a multi-level car park and a highway interchange.



Further, the built fabric of Val d'Europe featured various techniques also applied in the Disney theme parks. The buildings in the center, for example, were designed to evoke pre-Haussmannian 19th century Paris – it is to say: not a historically correct *mise-en-scène* of pre-industrial Paris, but an image that was compliant with, and reinforced that of an imaginary Paris as forged by Disney in its own cartoons and movies.<sup>14</sup> Also copied from theme park design was the principle of various thematised environments co-existing next to one another – a strategy applied to satisfy as large part of the public as possible, and evoke a sense of choice and control over one's own experience. Similarly, in the new town, a variety of classicist architectural styles was enforced upon the developers, as part of a maximum diversification of the

real estate offer. A final similarity with theme park design was the overall coherence of the whole, whereby each part repeated, enhanced and reinforced the whole through a clear hierarchy of successive and inclusive scales. Whereas the various sub-worlds in the theme park were held together by the Disneyland Railroad (which also formed a clear boundary between phantasy and reality), the park proper and the other components of Val d'Europe (Walt Disney Studio, Disney Festival, the shopping center and the office and industrial park) were held together by a giant circular boulevard.

of 3 km diameter, neatly distinguishing Val d'Europe from the neighboring town of Noisy-le-Grand and serving at the same time as a border, an organizational device and a giant bypass enabling easy access to all parts of the Euro Disney Resort.

Admired by many and despised by others, Val d'Europe has become one of the most successful urban operations in late 20th century France. The quality of design and construction is of a standard unequalled in most other new towns, and the commercial and demographic boost it generated is impressive: the population grew from 5000 in 1989 to 30,000 in 2016, and Disneyland alone is esteemed to have generated as many as 10,000 jobs in the first years of its existence; moreover, the shopping center received 19 million visitors in 2019 and has become a primary pole of attraction in the region. Although public investment was very considerable (an estimated 500 million euros), the Disney Corporation is believed to have spent ten times that amount.

### THE STRATEGY OF THE VOID: OMA AT MELUN-SÉNART

Melun-Sénart has always been the poor cousin of the *villes nouvelles*: its economic growth was slowed down due to political discord between its ten constituting communes and the lack of good connecting infrastructure. Yet, by the 1980s, the new town's low-density residential fabric and leisurely character (reinforced by the presence of forests, open land and many small lakes on its territory) became increasingly appreciated. Melun-Sénart, it seemed, was en route to become "an accessible and affordable utopia" for residents of Paris.<sup>15</sup> The deregulation laws of 1983 upset this balance, however, composed essentially of young families, the town's demographical composition provided only a feeble tax basis, prompting the local administrators to look for alternative sources of income. In the mid-1980s, two opportunities arose: the expiry of the (state-imposed) 1975 development plan (itself a revision of the initial 1965 plan), and the announcement of the planned crossing of two new highways on the territory of the new town (the 'Francilienne', a new ring road connecting the various new towns around Paris, and the A5 towards the south). Thus, the as yet empty area between the various villages would soon host a crossroads of national importance.

With a view to collecting ideas about how to anticipate the transformation of this vast area (600 hectares) into an economic and symbolic 'heart' of regional importance, an international ideas competition was launched in 1987. Contestants were to produce an innovative 'image' (both in the sense of form and content) of urbanity in a context characterized by open spaces and (future) fluxes. Or, in other words: how could the old notions of 'centrality' and 'urbanity' be redefined in the specific suburban context of Melun-Sénart? Out of 25 participants, the first prize was awarded *ex aequo* to Alain

Sarfati (°1937) and Coop Himmelb(l)au. While the former proposed to structure the area with three intersecting, programmatic axes that thematised typical suburban values (education, industry and nature), the latter's proposal thematized the chaotic coming about of the urban realm under the pressures of economic development, high-speed transportation and real estate speculation. The awarding of an *ex aequo* first prize to such diverging visions reflected the jury's indecision, an impasse that was only reinforced by its request that the laureates put together their ideas – an awkward move that, in the eyes of some critics, revealed that the competition had been in the first place a massive public relations campaign of ten communes without a common project.<sup>16</sup> Nonetheless, from a historiographical viewpoint, the competition was of great importance for it signalled a departure from the historicizing discourse on urbanism sketched above, a trend that became embodied in the proposal submitted by Rem Koolhaas and OMA.



Faithful to his firm's goals ("to visualize, spread and realize ideas about contemporary life in an international culture"<sup>17</sup>), Koolhaas took a hard stance against Krier and his acolytes: "Their activity threatened to completely deny, ignore – and ultimately repress – crucial aspects of the modern world such as scale, numbers, technology, programs, needs, that were at complete variance with their ideal of a 'rediscovered'

history. This created a colossal reservoir of denial, which sought an outlet in the periphery of the cities, or which was pathetically masked to conform to the new dogmas and led to a mounting confusion between 'real' and fabricated history."<sup>18</sup> OMA's early works were therefore to be understood as 'polemical demonstrations' that aspects of modernism could be made to coexist with the historical core, and that beyond harmony and coherence, the future potential of the historical city lay precisely in the tensions and contradictions engrained in its built fabric. It was therefore high time "to celebrate the end of sentimentality."<sup>19</sup> Urban planning in particular, Koolhaas believed, had become paralyzed by its formalist fixation. Therefore, with his entry for the Melun-Sénart competition, he proposed a radically different approach, namely an urbanism 'without architecture', based on the programming of voids rather than the building of urban mass.

As Koolhaas polemically stated, "Where there is nothing, everything is possible. Where there is architecture, nothing (else) is possible."<sup>20</sup> At the end of the 20th century, urbanism thus had become the art of 'imaging nothingness'. Melun-Sénart, where an empty heart needed to become transformed into a meaningful urban center, provided Koolhaas with an ideal laboratory setting to test out his thesis of a 'post-architectural urban modernity'. This was not only a theoretical stance but also a pragmatic response to the brief for, as he stated, having to urbanize the beautiful landscape of Melun Sénart was almost 'obscene'.<sup>21</sup> Realizing that not the planner, but the market forces would determine its future outlook, he felt totally incapable of preserving its qualities. Moreover, the growing ecological consciousness demonized planners for building up the last stretches of nature. In this context, 'doing nothing', and deciding where *not* to build, seemed the most sensible strategy. Taking urbanism's position of weakness as its premise, OMA's proposal thus became "more a discourse on what should not happen at Melun-Sénart than on what should".<sup>22</sup>

Rather than projecting preconceived intentions onto the landscape, OMA proceeded by determining the qualities and development potential of the existing elements on the site. This led to seven linear voids or 'bands', determined by, or connecting various topographical features, infrastructures (e.g. the proposed highways or the existing train line), or natural elements (e.g. the two existing forests on the site) (see Figures on the left and right). The band along the planned Francilienne highway, for example, allowed for the creation of a linear industrial park, while a corridor along the north-south highway seemed ideal to accommodate the seat of international companies on one side, and a forested leisure landscape on the side oriented towards the new town. Perpendicular to it, a strip was to connect two existing communes and accommodate 'big' programs such as a commercial center, a university campus, etc. Together, these bands formed a 'Chinese figure' of void spaces almost the size of Paris, that was to be protected from 'contamination' by uncontrolled urbanization; the rest, by contrast, would be surrendered to the chaos of the market forces.<sup>23</sup> Thus, the development of Melun-Sénart was effectively guided no longer by built mass but by empty space. The counterform of the Chinese figure created a series of islands: autonomous residues of varying size, together they formed a "polycentric archipelago of residual islands" where "each island's maximum autonomy ultimately reinforces the coherence of the whole".<sup>24</sup>

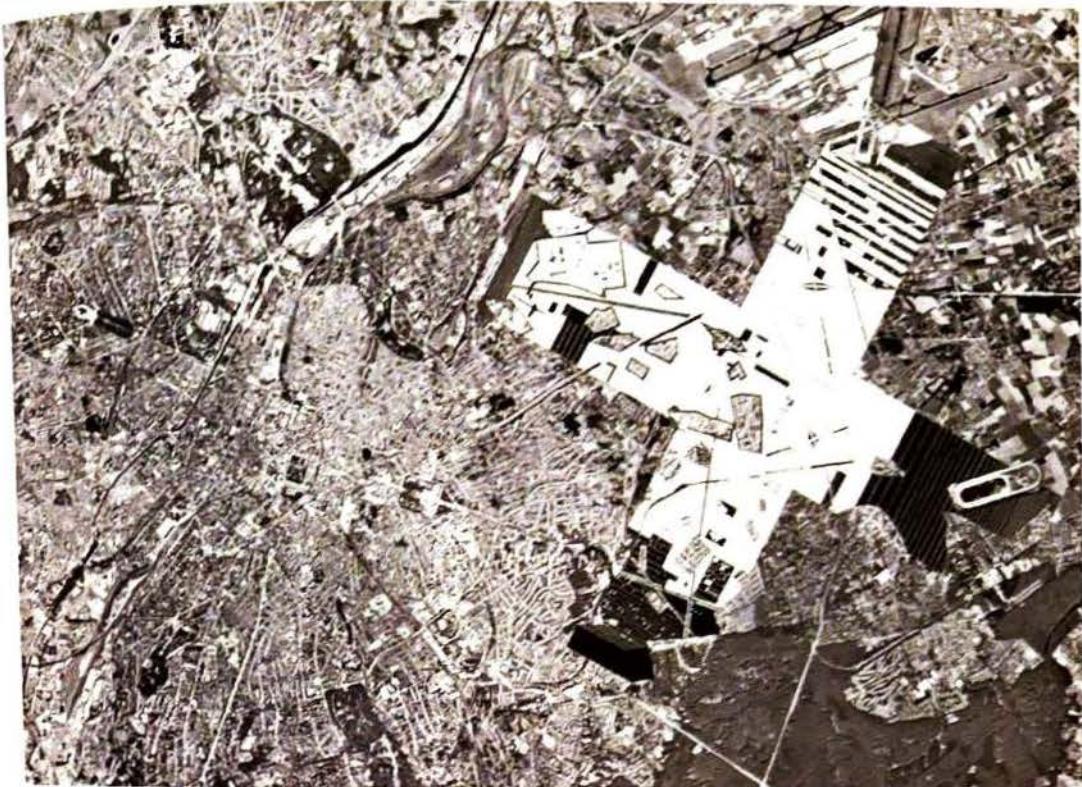


Despite – or perhaps precisely due to – the firm conceptual basis of this ‘non-planning’ method (for which Koolhaas later even filed a patent), the proposal failed to convince the jury. As it seems, it was left with the impression that only half of the problem had been resolved. Moreover, the proposal was not easy to interpret and the imprecision of the visual renderings did not help either. The shape of the bands and the islands, for example, were incongruent and therefore seemed rather haphazard. Moreover, the diagrams specifying the future development steps comprised many elements that were either poorly specified or just unidentifiable. Although undeniably expressive and thought-provoking, the presentation drawings remained for the most part at the largest possible scale, and left many aspects unaddressed – allegedly preventing the jury from clearly distinguishing between what had been left undetermined, remained undecided, or had simply been overlooked.<sup>25</sup>

In any case, the programmatic density envisaged by OMA never materialized, and it was only after the new ring road was finally opened in 1991 and a regional train station had been built, that the area – now very strategically located at only 20 minutes from central Paris – started attracting interest from private investors and the French State, the latter even organizing a competition for a new football stadium in Melun as the crown jewel of its bid to host the 1998 soccer World Cup. The winning proposal by Dominique Perrault (°1953) and HOK incorporated the stadium itself, a recreational area as well as the highway interchange that served them in a giant square bordered with trees. Bringing together natural and urban elements in one single gesture, this was an almost foundational act that built upon the old French landscaping tradition of the 17th century. Yet, once more, this competition led to nothing: after a fierce political combat, the new stadium was built in the north of Paris.

At last, in the best French centralist tradition, the French State took matters firmly in hand. Building upon Perrault’s idea, it commissioned landscape architect François Tirot to lay out a giant square with sides of 1.4 km, materialized by double rows of trees and trenches. Despite – or precisely thanks to – its formal rigidity, this gesture was rapidly appropriated by both local and regional, and private as well as public stakeholders, as a flexible matrix within which they could realize their agendas in controlled agreement.<sup>26</sup> Yet, just like in Val d’Europe, development did not kick off before the completion of a massive shopping center. Drawing nearly ten million visitors per year, the Carré Sénart (as it is called today) succeeded where the 1987 competition had failed: rather than attempting a physical unification of the ten

## AFTER-SPRAWL



**A**fter-Sprawl is a theoretical study carried out by Xaveer De Geyter Architects in 2002, addressing the phenomenon of sprawl in Western Europe. Its central question is whether in such a context, the old antagonism between rural and urban still makes sense. As its authors state, 'sprawl' is generally perceived as the antagonism of rational planning, and synonymous with chaos, lack of structure and vision. This assumption is challenged in *After-Sprawl*: what if we conceive of chaos as a more complex form of order, or as a complex mechanism that we haven't understood yet? Hence the idea to consider the so-called Blue Banana (the chain of densely urbanized areas spanning roughly between Greater London and the Veneto in Northern Italy) "as an experimental field

full of new potentials, because they are directly shaped by the political, economic and demographic developments themselves, and not by an unreal, deforming planning apparatus?"<sup>27</sup> Accepting sprawl as an independent entity where town and country are present simultaneously, the question thus no longer consists in reacting against it, but in seeking "how a new spatial quality can be introduced in the after-sprawl condition, starting from the existing condition."<sup>28</sup>

On the basis of a mapping of the built and unbuilt spaces, as well as the underlying infrastructure of different sprawl regions in Europe, *After-Sprawl* develops spatial strategies for the large quantities of unbuilt space that still remain, with a view

to strengthening it through introducing new uses, development strategies as well as strong images. Thus, what is generally considered 'negative' space is seized upon here as a useful instrument for introducing spatial qualities and collective meaning in the prevalent sprawl condition. One conceptual strategy to achieve this aim is 'Found', whereby a grid of trees, in the form a giant cross, is superimposed on the area between Brussels and the National Airport (one of the country's densest in terms of infrastructure). Arranged ac-

cording to the Fibonacci series and planted in private gardens, enterprise zones or public spaces alike, the trees create a forested allotment, rather than the other way around. The existing open areas are kept as enclaves within this new structure; contrasting with the new grid, their quality is enhanced, just as their interrelation. Thus, the perception of the area changes both at the local and regional level; the new forest becomes a fourth structuring element next to the historic city center, the airport and the Soignies forest.

communes, it inserted a new element in the (sub)urban network, different but not antithetical to the others. It provided a local variant of 'going to town': dedicated to shopping but thematized around the idea of nature (e.g. with real trees in the central atrium), the shopping mall constituted a heterotopian environment that transcended the dialectic between city and nature.

The story of Melun-Sénart illustrates how towards the 1990s, metropolitan areas like the Paris region could no longer be regarded as just a collection of enlarged cities and villages, but were to be understood as a completely new, and more complex form of city on a much larger scale. The often contradictory nature of this new territorial condition was reflected in the literature, where metaphors or figures of speech to describe this new situation abounded: 'rurbanization', 'diffuse city', 'horizontal metropolis', 'metropolitan archipelago', 'Zwischenstadt', etc. Thus, the contours of a new take on urban planning were laid out, as can be derived, for example, from the theoretical work of the 'Superdutch' generation of the 1990s such as *The Patchwork Metropolis* (1991) by Willem-Jan Neutelings (°1959), *FARMAX* (1998) and *Metacity/Datatown* (1999) by MVRDV (Winy Maas (°1959), Jacob van Rijs (°1964), Nathalie de Vries (°1965)), or *After-Sprawl* (2002) by Xaveer De Geyter (°1957). In these studies by former OMA collaborators, the peripheral condition became accepted as a situation that was there to stay, and to which an answer (rather than an alternative) had to be found. A typical aspect was the inclusion of time: beyond thinking in purely spatial terms, plans became scenarios aiming at intensifying and ordering flows of activity over time, rather than simply fixing programs and usages in space. Accepting

uncertainty, such scenarios sought to steer, rather than fix, a desired development in time and space. A third characteristic was the increasing complementarity of architecture, urban planning, landscape and infrastructure: no longer separate disciplines, they became amalgamated in an all-encompassing 'research by design' approach. Finally, as seen in the discussion about Melun-Sénart, attention was no longer only geared towards the built (the existing) but also, to an ever larger degree, to the unbuilt. Thus, with the planning discourse increasingly moving away from the classical dichotomies between city and nature; urban and rural; and center and periphery, the early 1990s marked a threshold into a new territory. Or, as Nan Ellin (1959) observed in the introduction to her classic study *Postmodern Urbanism*, "instead of responding reactively to rapid change through escapist and distilling strategies", the studies mentioned above signalled an effort "to embrace, steward, or partner (rather than control or manage) it".<sup>29</sup>



# NEW GEOGRAPHIES OF TIME: NEURALILLE

## LILLE: THE NEW CENTER OF EUROPE?

From the end of the 1960s, the Nord Pas-de-Calais Region became badly affected by the structural crisis of traditional industries such as coal mining, steel, metal transformation and textiles. Tens of thousands of jobs were lost, and only half of them were compensated by the creation of service jobs. Although Lille had been designated as a *Métropole d'Equilibre* (a city of regional importance) in the 1960s as part of the French government's decentralization policy, and the *Communauté urbaine de Lille* (CUDL) had been created as an alliance of both the bigger towns and smaller communes in the conurbation, the negative trends persisted. Yet, in the 1980s, an entirely new context arose, when French cities were granted greater autonomy in setting their development goals, allowing its administrators to approve urban planning and economic development proposals. Also, the Single European Act of 1986 liberalized the movement of people, goods and services and gave a boost to the development of a high-speed railway network.

Pierre Mauroy (1928-2013), the long-time mayor of Lille (1973-2001), sensed that this opportunity could not be missed. Backed by a powerful coalition of corporate and political forces, he convinced the national railways SNCF to relocate the planned TGV station to the center, rather than the far periphery of his city and imposed himself at the head of the CUDL. Next, he entrusted Jean-Paul Bajetto (1940-1998), a private consultant who had played a major role in the construction of Val d'Europe, with studying the potential of a business center around the new TGV station as the launching pad for the economic renaissance of the greater Lille area. Although principally service-oriented, the future center was to also encompass shops, congress facilities, and housing. The stakes were high: geared at major office tenants and investors from all over Europe, the project was to generate jobs and tax revenue for the city and boost its prestige. To this end, a core group of stakeholders was set up (mainly national and local banks, later also the SNCF and the Regional Chamber of Commerce), as well as an extensive public relations policy. Sensing that building local support for the project was imperative, Bajetto spent no less than one third of his budget on information and publicity during the first two years of operation.

By mid-1988, the contours of the scheme were in place: the various components would be spatially joined along a north-south axis, parallel to the future railway tracks. The urban services center would occupy the triangular site between the new

and the old train stations, and constitute the public core of the project. Particular emphasis was put on the new train station's architecture, which was to express the spirit of the age, characterized by flows of movement and advanced technologies. Then, on 7-8 November 1988, eight designers were invited for an interview: Claude Vasconi (1940-2009), Jean-Paul Viguier (°1946), Yves Lion (°1945), Michel Macary (°1936), Norman Foster (°1935), Vittorio Gregotti (1927-2020), Oswald Mathias Ungers (1926-2007) and Rem Koolhaas (°1944). Without seductive images (it was not allowed to bring models, drawings or other documents), Koolhaas emerged as the unanimous victor. Dealing with the city in the large sense of the term, he focused in particular on the almost 'obsessive' presence of infrastructures on the site, the existence and potential of which he planned to base his project on. Although Koolhaas had not built anything even remotely close to the scale of this project, his commitment and pragmatism stuck, and he was awarded the job.

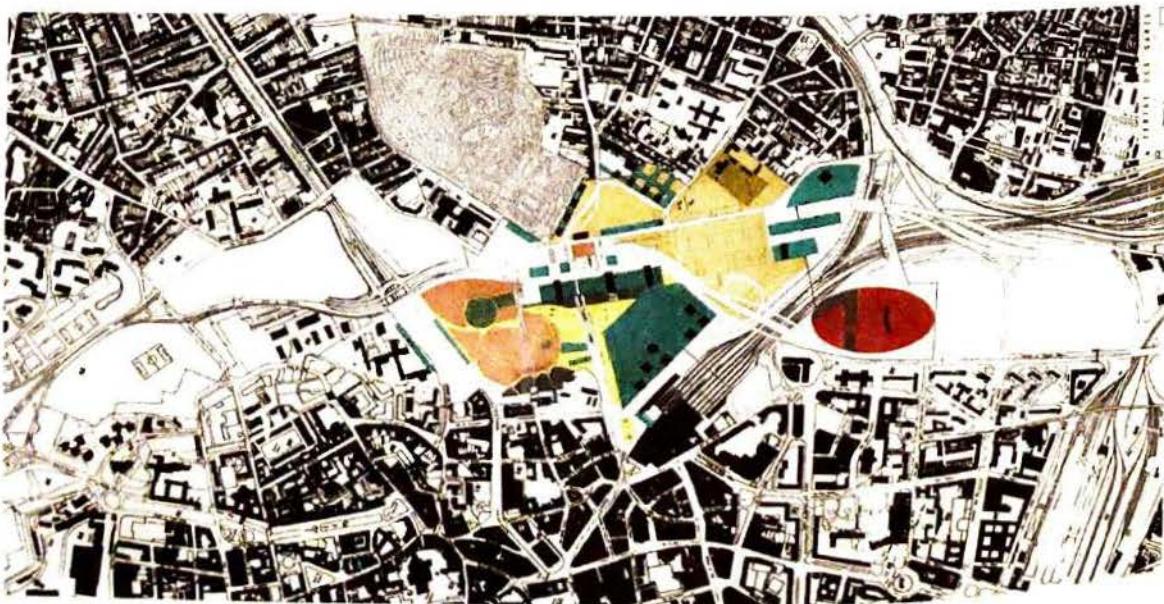
Back home, Koolhaas put up two ten-day seminars with a three-month interval, bringing together a wide variety of collaborators and experts, infusing the project with as many relevant input as possible – thus creating, as he called it, a context of 'speculative bombarding'. This was a very different approach than urban planning practice in the late 1980s, when traditionalist visions dominated, placing great importance on alignments, formal symbolism and civic identity. Rejecting this fixation on composition, context and cohesiveness, and accepting the uncertainties brought about by the site's complexity, Koolhaas did not propose a real master plan. Instead, his office produced an endless stream of sketches, diagrams, and sections that addressed issues raised by Baïetto and his investors. In other words, the process determined the outcome, and not the other way around. As architectural historian Valéry Didelon has pointed out, Koolhaas's way of working showed affinities with the montage technique in cinema: associating situations that are unrelated in time and space, it established continuity within a discontinuous context. Just as much, the countless sketches produced during Euralille's design phase functioned as a storyboard, leading to a montage of independent programmatic components and creating a whole that would constitute – so it was hoped – more than the sum of its parts. Or, as Didelon stated, "The expected effect of the juxtaposition of these programs was their hybridization, and thus the intensification and diversification of uses. Ultimately, the aim was to enhance the vitality and attractiveness of Euralille."<sup>30</sup>

For the realization of this (very) ambitious scheme, a public-private company was founded. Presided, once more, by Mauroy, its public partners (amongst which the city of Lille, the CUDL, the department, the region, and four neighboring cities) had a 53 percent share, the private partners being principally French and foreign banks. Its task was to refine the development plan, attract investors, to coordinate the works and appoint architects for the various parts of the project (upon Koolhaas's approval).

The company also acted as the developer of *Lille Grand Palais* (as the congress center became known) and the massive underground car parking of 6000 places. Yet, formal planning approval rested with the CUDL and its members (the communes). Working on such a scale, with so many (very) diverse partners turned the project into a real-life experiment in coordination and management.

## THE EURALILLE MASTER PLAN

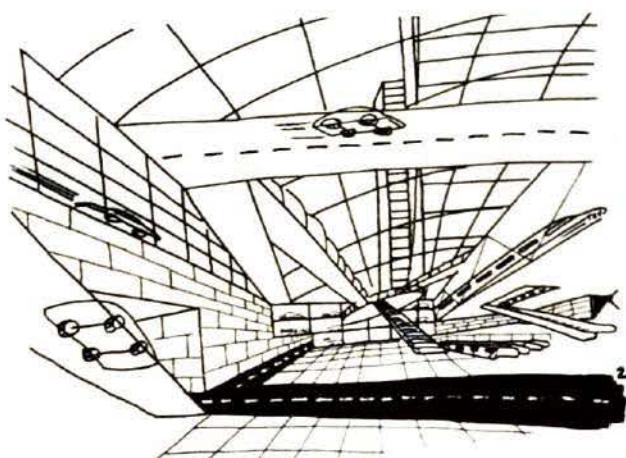
Apart from its procedural aspects, the project constituted also a major technical challenge for the site constituted a true Gordian Knot of infrastructure: located on the site of the former fortifications, a *périmétrique* (ring road) had been built in the 1970s, competing for space with an array of busy railway tracks, a metro line and the (already) planned TGV trajectory. Inserting an entirely new part of the city here was a daunting task indeed. Yet, rather than attempting to simplify this situation, Koolhaas chose to exploit its complexity: "if one reasons to the logic of anticipating failure, then the only way to reach the magic point where problems are transformed into pure potential is to exacerbate the complexity."<sup>31</sup> The central idea was to multiply the connections: thus, the ring road and the railway station were connected by a covered parking, constituting the 'central nervous system' of the scheme. Short-circuiting the awareness of place and experience of distances, it expressed the contraction of space and time brought about by the new TGV network. This idea revealed how for Koolhaas and his team, not formal but programmatic coherence was the goal: hence his reluctance to work on the architectural scale. For fear it would freeze the project into a fixed image, the various components were presented indeed as purely theoretical spaces and volumes, not buildings. This relative neutrality offered future project architects a maximum degree of freedom.



The train station itself was designed by SNCF head architect Jean-Marie Dutilheul (°1952). With a view to giving the high-speed train a tangible presence in the city, the tracks were left visible from the side of the city. The station itself was conceived as a socle, upon which seven towers were to be erected. 'Architectural signs' on an urban scale, they formed a monumental expression of the idea of placelessness – for their only *raison d'être* consisted in their nearness to other places. With a view to obtain a maximum variety, a very diverse group of architects was invited to design them. While Claude Vasconi's tower architecturally expressed that structurally, it was indeed a bridge over the station, the particular boot-like shape of Christian de Portzamparc's (°1944) Credit Lyonnais Tower derived from the fact there was only budget for half a tower. In fact, it replaced a much more ambitious (and expensive) scheme designed by Richard Rogers (°1933). Budget cuts also killed Kazuo Shinohara's (1925-2006) sculptural Hotel Tower; its replacement a 'horizontal' building designed by Marie and François Delhay, remained on paper too.

The design of the vast triangular site between the old and new railway stations was entrusted to Jean Nouvel (°1945), then the *enfant terrible* of the French architectural scene. The latter's appointment was exemplary for Koolhaas's and Baejetto's strategy of seeking productive confrontations between the traditional views of most developers, and the strong minds of certain designers, hoping that this would result in a reversal, or at least a renewal of the existing paradigms. In this case, Nouvel's sophisticated and expensive take on architecture clashed indeed with the banality of the program, for shopping centers, then, were all about cutting costs. The result was a gigantic, tilted roof bordered by a residential block on one side and, along the façade facing the old train station, by five small towers that, although almost identical, each housed a different program (hotel, residences, offices, etc.). In total, the complex contained 66,000 m<sup>2</sup> of retail space (120 shops); 52,000 m<sup>2</sup> offices; a school for higher education, 300 dwellings and a hotel. The biggest building of all was designed by OMA itself. Initially conceived as a giant 'bridge building', literally connecting the business center with the area to the south of the development, the 'Congrexpo' (today referred to as Lille Grand Palais) united three functions under one roof: a convention center, a concert hall, and exhibition spaces. After six rounds of revision, the principle of the bridge was abandoned; in came the egg-shaped building that we know today. Thanks to its clever internal set-up and an (unrealized) giant, movable door between the theater and the convention center, the building could in principle be transformed into one giant arena.

## RECEPTION: RHETORIC VS. REALITY



The completion of Euralille in 1994 was a genuine media event, with over fifty articles published in the specialized architectural press alone. Yet, in France, reception was outright negative, with some critics claiming to be 'shocked', others simply calling it 'monstrous'. In the view of the prominent architectural historian Jean-Louis Cohen, Euralille revealed a clash between rhetoric and reality. As he stated, hyped long before anything of it had been built, the real purpose of the project seemed to

have been "more the communication of images than the realization of a program of commercial offices and public facilities."<sup>32</sup> Cohen was especially disappointed that so little had become of Koolhaas's promise to transform this infrastructural node into a 'place' with contemporary urban qualities. This became clearest when comparing the much-publicized drawings of the so-called 'Piranesian space' (an area 'cut out' of the central parking garage supposed to simultaneously offer a view of the motorway, the train station and the subway, thus revealing the multitude of movements; see Figure above) with the bleakness of what was really there now, namely a windy and noisy void. For Cohen, it symbolized how much of the ideas behind Euralille had been purely theoretical or rhetorical, and that Koolhaas had almost cynically renounced to work on the 'raw material' of the city: "At Euralille the energy seems to have been expended not on the structural elements, but on the surface of the ground or on crossings of it that were abandoned in the end."<sup>33</sup> Also the Swiss historian of urbanism Vittorio Lampugnani remained sceptical, pointing in particular at the poor quality of public space at Euralille: "Pedestrians feel lost (...). The Grand Palais and the Center Euralille [the shopping center] offer its only refuge, but require you to be a spectator, audience member, conference delegate or shopper. Failing that, it seems more prudent to seek refuge in the old town, a short stroll away."<sup>34</sup> In this respect, he stated, Euralille was the most extreme exponent of a type of urbanism that, Lampugnani hoped, had now reached both its peak and its end: "It is here that the designs of Antonio Sant'Elia, Le Corbusier and the Smithsons find their extension and fulfilment. In the inhospitable nature of the best of the cities designed by OMA, they also demonstrate their tragic and immanent failure."<sup>35</sup>

However, as the Dutch architect Mark Graafland observed, this was precisely the point of Euralille. Its open spaces may well constitute an 'urban residue' seldom traversed by the people of Lille, but hadn't the scheme precisely created a new type of (interior) public domain?<sup>36</sup> This view was corroborated by Koolhaas, stating that "in the interior,

we created genuine public spaces that are not usually found in commercial facilities, but fit into the continuity of outdoor city spaces".<sup>37</sup> By suggesting that in the future, also in Europe, collective life would exist primarily in vast private and enclosed spaces, Koolhaas turned the ancient association between city life and outdoor 'public' space on its head. Precisely this idea – interpreted by some as a cynical giving in to the market forces – explained the violent reactions against Euralille: it became interpreted as a neo-liberal betrayal of the European city. Yet, such accusations must be nuanced: perhaps the term 'cynical' applied better to SOM's privatized pastiches at the London Docklands; and rather than a neoliberal experiment, Euralille remained firmly rooted in the French tradition of the all-powerful planner state, embodied by figures such as Mauroy and Baïetto. As Didelon has pointed out, a comparison with Canary Wharf reveals that Euralille constituted in fact the built manifesto of a 'new urbanism' diametrically opposed to that of its British counterpart.<sup>38</sup> As he stated, with a nod to the epoch-making 'Deconstructivist Architecture' exhibit held at the MoMA in New York in 1988 (which also included Koolhaas), rather than aiming at 'reconstructing' the European city, Euralille was more about the *deconstruction* of the city: a shake-up of the discipline of urbanism, that had come to a dead end by taking the pre-industrial city as its guiding image.

## EURALILLE BEYOND KOOLHAAS

Upon completion, Euralille suffered not only from the mid-1990s property crisis but also from the departure of its central actors: Koolhaas's contract was not renewed upon expiry in 1996; Baïetto died unexpectedly in 1998, and Mauroy was defeated as mayor of Lille in 2001 after 28 years in office. It was not before the end of the decennium that the operation resumed: after the ring road was finally realigned (one of the master plan's principal missing pieces), the development of what became called 'Euralille 2' took off (see Figure on next page): south to the Grand Palais, two large administrative complexes were planned (and recently completed), together with the *Bois Habité*, a housing development with 600 dwellings in an artificial forest-like environment, bordered by low-rise office blocks and public amenities such as schools, kindergarten and sports facilities. Opposite the train station, a mixed-use development was realized following a master plan by Xaveer de Geyter (°1959), a member of Koolhaas's design team ten years earlier. Totalling 17,000 m<sup>2</sup> of offices and 450 dwellings, it made the transition between the vast scale of Euralille's office towers and the early 20th century housing of the suburban St. Maurice neighborhood to the West. The underground parking buried between the railway track and the ring road also gradually became built up, fulfilling its intended destiny as a plinth for urban development. Finally, the southern tip of the triangle between both train stations (the area called *Chaudre rivière*) was studied by yet another former OMA associate, Floris Alkemade (°1961).



The quality and relative success of most of these developments could not hide that in the meantime, Euralille's Achilles heel, namely the quality of the public spaces, remained unaddressed. Therefore, in 2016 the operation 'Euralille 3000' was launched, with the goal of condensing the original master plan (especially filling in the spaces north of the train station) and redesigning the public spaces in cooperation with the private sector – an ideal that became jeopardized right away, however, by the refurbishing of Nouvel's shopping center which aimed precisely at keeping people away from the (outdoor) public space. So far, Euralille 3000 has resulted in the construction of the SWAM, a building combining office space, a hotel, a restaurant and shops in front of the old train station, and the ShAKe, a 12-story, 30,000 m<sup>2</sup> spiral shaped building that features a mixed program of offices space, shared workspaces, and a wide range of amenities.

Despite the initial scepticism and backlash, Euralille continues to develop and has now become the third business center of France. More than 500,000 m<sup>2</sup> of office space has been created since its inception and the shopping center attracts 14 million visitors per year (many coming from Belgium). The Grand Palais is hugely successful with over a million visitors per year, and the number of passengers in both train stations has risen to 20 million annually. Beyond these numbers, the project has also had an important symbolic value, contributing much to the self-image and confidence of Lille as a modern center for business, shopping and tourism, reinvigorating its historical center along the process. Nonetheless, Euralille has not become the metropolitan 'hypercenter' Koolhaas had preconized at the onset; so far, in Lille, the dynamics of globalization have resulted in a principally regional effect.

# URBAN DEVELOPMENT AND DEREGULATION: THE ICARUS FLIGHT OF CANARY WHARF

**"THE GREATEST DEVELOPMENT OPPORTUNITY SINCE THE GREAT FIRE OF 1666"**

Despite London's glittering image in the 1960s, its employment decreased with over a million between 1961 and 1985; as a result, (official) unemployment exploded, while new (and entirely different) jobs were created only in the tertiary sector.<sup>39</sup> After various successive governments (both Labour and Conservative) had remained indecisive, new Prime Minister Margaret Thatcher (1925-2013) brought this process to its logical conclusion: as she decreed, through a creative combination of public spending and private enterprise, London was to become the capital of the new informational economy and adapt itself to its needs. The former Docklands, located in inner East and Southeast London offered the perfect test bed for this experiment.

In the mid 18th century, the Docklands had been the world's greatest center of international trade. Extending over the boroughs of Southwark, Tower Hamlets, Lewisham, Newham, and Greenwich, goods and raw material poured in from every corner of the world, while a stream of British manufactured goods flowed out in the opposite direction. The digging out of (ever larger) dock basins was vital in securing London's position as the world's busiest port both in terms of volume and value. Behind and around the ever increasing complex of docks grew industrial plants: shipbuilding and marine engineering alone employed 27,000 at their peak. The result was a concentration of heavy manual work and the development of working-class communities all-around. After a brief resurgence of prosperity following World War II, the activity promptly declined after the shipping industry adopted the newly invented container system of cargo transportation. After the East India Dock closed in 1967, the others followed in a very rapid succession, causing a 90 percent reduction in the labour force in the Docklands by the early 1980s.

Ironically, beyond the economic and social disaster, an urbanistic opportunity arose as never seen before: the 20 km<sup>2</sup> Docklands site emerged as "the greatest development opportunity London had had since the Great Fire of 1666".<sup>40</sup> This was corroborated by the swift and successful reconversion of the Saint Katharine Docks into a marina, only two years after its closure in 1968. The transformation of the central warehouse into luxury apartments and shops, and the repurposing of the

two docks as a marina became an early textbook example of urban reconversion and was copied all over the world. While it demonstrated the virtues of competition and a private-sector approach, it also exposed the risk of it: various components of the awarded scheme (council housing and public amenities) were not realized, or only much later. Nonetheless, the genie was out of the bottle and not much later, the government commissioned Travers Morgan Consultants to develop a 'total approach' to the London Docklands. In its 1973 report, five possible options were sketched out, ranging from a major water park to a comprehensive industrial and office redevelopment. Very negatively received for reason of its technical nature and top-down methodology (ignoring the fact that by the mid-1970s, public expectation was that planning procedures include participation by local stakeholders), the plan was withdrawn and the Docklands Joint Committee (DJC) was created instead – gathering local authorities, the Port Authority, representatives from the Trade Unions, and a 'Docklands Forum' to represent the views of the public. This body in turn summarized its views in the London Docklands Strategic Plan (1976). Unimaginative and highly preservative of the existing status quo (assuming that there was one to preserve), it seemed to totally ignore the private sector (relying on hypothetical extra funding from the State) and challenged the current economic trend away from manufacturing: arguing that most administrative and professional jobs were filled by non-locals (and should thus not be encouraged), it proposed investment in light industry, distribution and storage facilities rather than offices. The plan was clearly politically biased: requiring an 80 percent share of public housing, it aimed at maintaining the working-class aspect of the area (not surprisingly given dominance, then, of Labour in the area). However, having obtained only two thirds of the expected state funding and without real powers, the DJC could only present a meagre record by the end of the 1970s: merely a quarter of the planned dwellings had been completed, and no more than 800 jobs had been created (against a targeted creation of 10,000 jobs by 1982). Logically, bodies as the DJC formed the preferred target of the incoming Thatcher government of 1979, for whom its poor record proved the flaws of participatory planning. An alternative was found across the Atlantic, where a new concept of urban generation had made its entry: authorities promoted new business investment in inner cities, principally through tax concessions, while the operation itself was administered by a quasi-public development body working with considerable freedom.

The Local Government, Planning and Land Act (1980), passed in the first year of the Thatcher administration, provided the legal basis for the creation of such bodies also in the UK: the Urban Development Corporations (UDCs). They were to replace the local authorities in their areas as development control authorities, and to decide on planning applications. UDCs were accountable only to Parliament and run by boards appointed by the Secretary of State, not by elected representatives. The UDCs thus subsumed all planning powers in certain areas, or as Peter Hall noted, it was "the

most extraordinary incursion into local authority powers ever authorized by a British government.<sup>41</sup> Indeed their centralist concept was perhaps more to be expected from a socialist regime than from a neo-liberal Tory administration. Yet, their *raison d'être* was truly neoliberal and consisted in creating 'leverage': as it was hoped, (limited) public investment together with substantial powers would create the right conditions to trigger a much bigger volume of private funds. Summarizing, the UDCs' main goals consisted in cutting through the red tape of planning procedures, speeding up the development process, working across the borough boundaries, and attracting private-sector investment in redevelopment work.

Such was also the mission of the London Docklands Development Corporation (LDDC), established in 1980. Reversing earlier planning methods, it adopted a model dubbed 'trend-planning': a form of market-led planning that gave free reign to real-estate developers and relegated the role of urban planning to oiling the machinery of public investment. Urban planning, it was believed, ought to be responsive to development pressure, not try to curb or direct it; thus, a 'flexible' planning framework was required that could be adapted if an opportunity arose. The flip side of the coin was that everyone expected the LDDC to quickly obtain results: it therefore engaged in heavy promotion even before planning guidelines had been prepared, for buildings were visible emblems of change, not plans or development frameworks. In this endeavour, it was greatly helped by the fact that a large part of the Docklands area had obtained the status of 'Enterprise Zone', in which prospective developers were free of the normal planning restrictions and corporation tax for a period of ten years. Despite its piecemeal and *ad hoc* approach, LDDC was able to produce some results by the mid-1980s: the construction of 4000 dwellings had started; 150 new firms had moved in; new roads had been built; a revised plan for a light railway system had been agreed upon (opened 1987) and the London City Airport was approved (and opened in 1987). Moreover, the LDDC benefited from the mind-blowing increase in land values brought about by its own activities; land values at some locations rose with a factor 50 (!) between 1981 and 1988. While a baffling one billion pounds of public money had been invested, according to the LDDC, every pound of public money had been matched by 10 pounds from private investors.<sup>42</sup>

## CANARY WHARF

The development frenzy culminated in 1987 when Texan developer G. Ware Travelstead (°1938) put his eyes on Canary Wharf. Anticipating the deregulation of the London Stock Exchange (which was expected to attract dozens of foreign banks to the British capital) and the advent of new communication technology (allowing a far greater decentralization of businesses), Travelstead understood that this particular

site offered a unique opportunity to realize an entirely new district for global finance. Originally a range of warehouses for bananas, sugar cane and fruit, Canary Wharf transformed into one of the largest development schemes in Europe almost overnight, put under tremendous pressure by the developers, the LDDC approved Travelstead's proposal in less than 28 days (without any public consultation whatsoever) and sold off the land at only 8 to 13 percent of its market value.<sup>43</sup> After Travelstead failed to close a deal, he sold the project to Canadian developers Olympia & York (O&Y). Having just completed the World Financial Center at New York's Battery Park (designed by Cesar Pelli (1926-2016)), Canary Wharf seemed only a logical next step for the then biggest property developer in the world, especially after Margaret Thatcher's personal promise that she would help the project, most importantly by extending the London Underground to reach it.



The master plan for the development, including ten buildings and totalling 440,000 m<sup>2</sup>, was designed by Chicago-based Skidmore, Owings & Merrill (SOM) in the typical blend of Beaux Arts urbanism then popular amongst investors. The massing replicated the American downtown model: a cluster of three tall buildings at the center, accompanied by a gradual decrease in height and

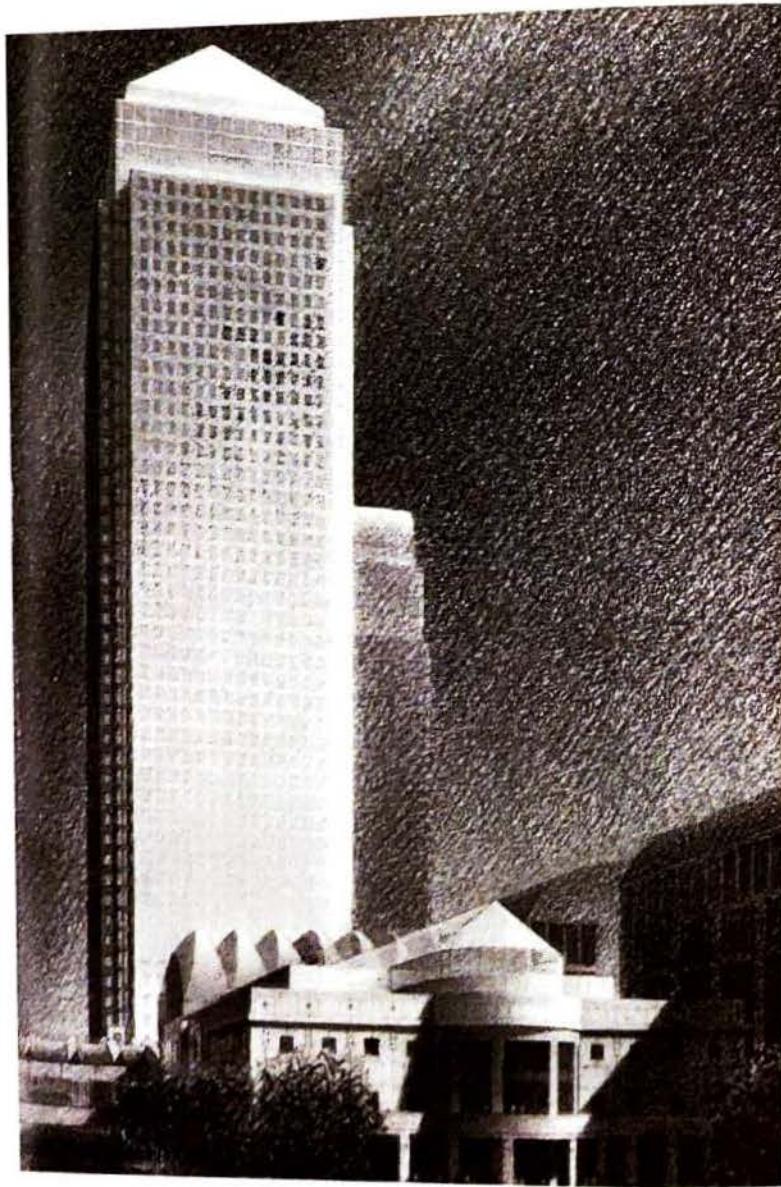
density towards the periphery. All spatial components and aesthetics were strictly regulated: detailed design guidelines prescribed colonnades, arcades, courtyards, materials and street wall articulation, while the plan was structured by an avenue of Haussmannian proportions linking together a sequence of squares in the form of a circle, a square, or a double square. It was an almost baroque composition, with framed views of the water at right angles, but it could as well have been said to refer to early 20th century Chicago. Despite its attention to detail, the plan felt unbalanced, and suffered from its internal contradictions. In the first place, with a view to maximizing office space, the scheme encroached the water areas, making the original asset of the area only accessory to the built mass. Second, the design unsuccessfully sought to marry two different urban conceptions: the sequence of streets and squares was very much in the European classical tradition but most of the architecture was American in spirit – both in aesthetic and technical terms. Further, despite the

diversity of materials used, the scheme suffered from a too rigid uniformity in its architectural vocabulary: round corners, pediments, window grid framing, attic story setbacks were applied throughout, without much variation. Uniformity was also established on the interior by the spatial needs for flexible office space: all buildings featured the same column-free floor plans with high ceilings and suspended floors, and were equipped with optic fibre cabling. As a result, whatever qualities the master plan may have held (although rather sterile, the public realm was designed with great care, for example), they evaporated in the 'corporateness' of its architectural materialization.<sup>44</sup> In a later stage, attempts were made to counter this by appointing also other architects – amongst which Aldo Rossi – but most of these projects remained on paper.

In British architectural circles, SOM's vision met with much, often violent criticism. The scheme was called 'vulgar', 'indifferent', 'insensitive' or 'selfish' – a bitterness in tone that shows how Canary Wharf was understood by many architects as a neoliberal, post-modern manifesto associated with the Thatcher ideology (who assisted at the ground breaking ceremony on May 11, 1988), and an expression of cultural domination by the USA.<sup>45</sup> Beyond these ideological connotations, the downright historicizing aspect of the architecture clashed with the technological advance and the telecommunications revolution at the origin of the project. Even Charles Jencks, otherwise never afraid of defending bad taste, wrote disapprovingly that it was "urban wallpaper applied to big, ten-story slabs."<sup>46</sup> In any case, it was agreed, Canary Wharf undermined the assumption that design freedom produced monuments of distinction. Cesar Pelli's 244 meter high, 48-story skyscraper (England's first and tallest, then), in particular, took the brunt of the blame. Consisting of a tall square prism with indented corners culminating in a square pyramid (concealing the building's ventilation outlets), it was



four times the size by floor area of the iconic Nat West tower in the City and six times the size of Seifert's Center Point in the West End. Entirely clad in stainless steel, it was widely criticized for its awkward proportions (a fact that even Pelli himself admitted) and its sheer blandness.<sup>47</sup> Nonetheless, the tower obtained iconic value: visible from afar as an isolated sign (it would take almost a decade before other towers were added), it became a token of success: construction was completed on time and (only) one percent over budget in 1992.



Canary Wharf quickly ran in trouble, however, for the developers found themselves unable to lease enough of the first phase to recover their costs. While there had been a constant expansion in demand for office space throughout the 1980s, supply had also dramatically increased all over London. The City of London in particular, anxious to maintain its position as the capital's prime financial center, had actively encouraged development on its territory and swiftly adapted its regulations to that effect. Added to this was the rebound of Black Monday (the 1987 stock market crash), resulting in an average vacancy rate for offices in central London of 18 percent by 1992 (over 3 million m<sup>2</sup>) – hitting the London Docklands particularly hard.

at 50 percent. Whereas repeating the same trick as in New York had seemed easy at the onset, it only dawned too late on the developers that in London the situation was critically different: the project was twice the size; the market was plunging; the partner was a government that refused any additional financial aid; and providing access to the site requested huge additional investment (e.g. obliging CAY to co-

finance part of the Docklands Light Railway).<sup>48</sup> The effect was immediate: Canary Wharf went into administration in May 1992, pulling O&Y into bankruptcy in Canada only a few weeks later.

After this false start, Canary Wharf found a new breath in the mid-1990s, after it was acquired from the administrators by a consortium headed by Paul Reichmann (O&Y's owner, who lost almost his entire fortune in the affair). This led to a second wave of construction between 1998-2001, when, amongst others, both towers flanking Pelli's were completed, including the HSBC tower designed by Norman Foster (\*1935), and the Citigroup Center designed by Pelli (who also designed another building in the immediate vicinity, namely 40 Bond Street). After another takeover (this time by Qatari and Chinese investors), planning permission was granted in 2014 for a major eastward expansion of Canary Wharf, including over thirty buildings and totalling 450,000 m<sup>2</sup> surface area. There are as yet no signs that this pace will slow down anytime soon: while various megalomaniac projects such as the Spire London (a 237 meters high residential building) or the twin Riverside South Blvd (a 214 meters high office building) have been halted or shelved, in 2020, the 58 story residential tower One Park Drive opened, and a proposal recently submitted for Canary Wharf's North Quay comprises a collection of no less than six towers of up to 66 storeys, aimed at squeezing every last penny out of this once derelict site.

## THE URBANISM OF DEREGULATION

The fact that even the world's richest development company was unable to keep Canary Wharf afloat, indicated that here, the limits on turning to the private sector for achieving public ends had been reached.<sup>49</sup> Some lessons were thus to be learned, in particular about the role and responsibilities of private sector partnerships in such urban regeneration projects. The question whether the London Docklands – at least in its initial phase – should be considered a success or a failure, depends on one's perspective. In terms of job creation, the record was positive at first: there was a net gain of almost 21,000 jobs by the end of the 1980s but they were very different jobs, and almost exclusively related to services, banking and finances.<sup>50</sup> The spatial and economic conversion of the area also provoked a social transformation: the original, local population benefited little from the operation: estimates vary, but re-employment estimates were never above 10 percent. As far as urban planning was concerned, there were undeniably considerable shortcomings: urban space appeared largely as a by-product of architecture, in the form of car parks or enclosed private squares. This absence of a truly public domain indicated how, in a context of deregulation, the civic dimension in city making was entirely ignored, (literally) leaving no space for environmental or social concerns. Further, (public) transportation

remained the operation's Achilles heel from the onset: underperforming and inadequate (especially in the light of Canary Wharf's ambitions), it damaged the area's reputation and turned it into "an inaccessible island of overdevelopment".<sup>51</sup>

In many ways, the London Docklands development challenged two typical foundation stones of orthodox urban design: the establishment of a public realm, and the harnessing of private development for wider civic purposes.<sup>52</sup> However, as Peter Hall has stated, it was only the most spectacular example of a process that was occurring right across the capitalist urban world, and resulted from two simultaneous revolutions: deindustrialization, leaving huge tracts of potentially very valuable urban land next door to central business districts; and the rapid development of computing and communications technology, enabling financial innovations and the globalization of the financial markets. Although separate, both processes reinforced one another, and provided a context that was only waiting to be exploited – relegating architecture to its most instrumental dimension: "The land was waiting, the activities were expanding to fill them; all that was necessary was a device to relate the two."<sup>53</sup>

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