

Jan Gympel

THE STORY OF ARCHITECTURE
FROM ANTIQUITY TO THE PRESENT

*h.f.*fullmann

Laying the foundations

ANTIQUITY AND EARLY CHRISTIANITY

2900 B.C.–540 A.D.

ARCHITECTURE IN ANCIENT EGYPT 2900–700 B.C.

Building – a basic need and social act

In ancient Greece the architect was known as the “master builder” (“archi-tekton”). Architecture was considered the “mother” of the visual arts, as painting and sculpture often developed in the context of a building project; for example, in the form of murals or friezes. Even magical cave paintings served as decorations for dwellings. Unlike all other forms of art, the primary aim of architecture was to fulfil the basic human need for security. Buildings provided protection from the weather and wild animals. Thus, it is almost impossible to escape the evidence of building activity wherever people lived.

However, spiritual and intellectual needs also have a role to play when it comes to building. “The four walls” and “roof over his/her head” separate a human being from the surrounding environment and in doing so create something of individual human proportions. Buildings also change the external environment in which they stand: the yard, the village and the town are artificial environments wrested from nature. Thus, much can be surmised about the person responsible for a building from the way the relationship between the interior and exterior is presented. Does the building have thick opaque or transparent glass walls? Do the entrances, exterior steps, outer courts or fences create a sense of openness or distance?

Several other questions always arise: Who commissioned buildings? Who built them? For whom and for what purpose were they built? What form do they take and which materials were used? Not all buildings are prestigious affairs aiming to impress with their size, volume, style and decorative detail. However, all buildings reflect the spirit of their time, or at least that of the people who commissioned them and the architects who designed them. More than any other human creation, a building represents the social context: building is a social act which nearly always takes place in the social arena. It is an expensive activity and therefore dependent on power and wealth. Hence, elaborate buildings tell a lot about the people and activities important to the ruling group in a given society.

It is no accident that religious buildings have an important role to play in the history of architecture. As history has shown, religion fulfils what is possibly man’s most important spiritual need, i.e. the need to bestow (a higher) meaning on existence, to explain the incomprehensible and insufferable, to provide prospects of a higher justice for unatoned wrongs and to offer the comfort of continued life, rebirth or resurrection after death. Thus, as well as providing shelter for people, since ancient times dwellings have also been built for the gods. In keeping with the elevated position of the latter, these buildings tend to be more durable and impressive than those erected for mere mortals.

EGYPT:

The Old Kingdom (2850–2052 B.C.): The pharaoh is the absolute hereditary king, initially the incarnation of Horus, the falcon god, after the 4th dynasty son of the sun god Re. Famous pyramids built 3rd–6th Dynasty. Sun worship official religion. Hieroglyphics and calendars.

The Middle Kingdom (2052–ca. 1570 B.C.): Unification of Egypt by Mentuhotep II of Thebes. Construction of vast temple complexes in Karnak, the seat of Amon, principal deity of the land.

The New Kingdom (1570–715 B.C.): Egypt becomes a leading power, expeditions to Asia and Nubia, greatest display of power under Queen Hatshepsut, greatest extension of the kingdom under Tutmosis III. Temple complexes in Karnak, Luxor, Abu Simbel.

The Late Period (715–332 B.C.): Alexander the Great conquers Egypt (332 B.C.).

GREECE:

Ca. 560 B.C.: Peisistratos establishes the great Dionysia festivals in Athens with musical competitions and theatrical productions.

490 B.C.: Battle near Marathon, victory of Athens over previously undefeated Persians, rise of Athens to major political power.

477 B.C.: Foundation of the Attic maritime alliance as a protective force against the Persians.

443–429 B.C.: The age of Pericles: Athens is “democracy by name; in reality, however, the monarchy of the first man”.

431–404 B.C.: Peloponnesian War ends the hegemony of Sparta; the Persian Empire emerges as ultimate victor from the international power struggles.

336–323 B.C.: Alexander the Great moves to India: idea of world supremacy, spreading of Greek culture.



Sensuous delight in the use of marble: the Venus de Milo.

ROME:

Ca. 750 B.C.: Foundation of Rome.

218 B.C.: Hannibal progresses across the Alps towards Rome.

45 B.C.: Julius Caesar sole ruler of the Roman Empire.

27 B.C.: Emperor Augustus assumes power as Senate-approved “princeps”.

54 A.D.: Nero becomes emperor.

70 A.D.: Conquest and destruction of Jerusalem by Titus.

79 A.D.: Vesuvius erupts in Pompeii.

161–80 A.D.: Marcus Aurelius Roman emperor.

313 A.D.: Edict of Milan ensures religious freedom for Christians.

330 A.D.: Byzantium is renamed Constantinople and becomes the Christian capital of the empire.

391 A.D.: Christianity becomes official religion of the Roman Empire; all pagan cults are outlawed.



TAJ MAHAL

The Taj Mahal is a majestic mausoleum, which the Shah Jahan (ruled 1628–58) commissioned in commemoration of his wife Mumtaz Mahal, who died in childbirth. The shining white marble building stands outside the garden of Shahar Bag, as Shah Jahan wanted to be buried in a similar black marble mausoleum which he planned to have built on the opposite bank of the Yamuna river. In 1658, he was supplanted by his son Aurangzeb who destroyed his father's plans and buried him beside his beloved wife in the Taj Mahal.

The complex is accessed through a red sandstone gateway which provides a conscious contrast to the white marble of the mausoleum. Having entered the complex, the observer faces the powerful mausoleum from a distance. The building is reflected in a long pool of water in the foreground.

The Taj Mahal has a square plan with slanting corners. A high tambour supports the enormous onion dome, which is 28 metres in diameter and 65 metres in height. Each side of the tambour is flanked by a 20-metre-high longitudinal hall (iwan), the frame of which exceeds the ceiling height. Pavilions on both sides of

the main dome form a pyramid-like link which gives the central building an upward thrust. This is reinforced by the four corner minarets which do not detract from the dominance of the central mausoleum. The Taj Mahal is strictly symmetrical on all sides and its transparency gives many nuances of colour with the movement of the sun during the day.

The interior of the mausoleum is defined by the planned procession of pilgrims and the central tomb chamber, which also links the four ancillary rooms on the diagonal axes of the building. The burial chamber is covered by a semi-dome, above which the second enormous onion dome rises. The latter is, however, only visible from the outside. A large unused blind space lies between the two domes.

The architect of the Taj Mahal is not known by name, a fact which has given rise to speculation. There is also much debate as to the extent to which the Taj Mahal can be seen as a fully independent building of the Indian Moghul tradition, and to what extent it was influenced by the Timuridic mausoleums and the Persian-Safavidic onion domes.

is decorated with mosaics, geometric or floral planar ornamentation or with decorative scripts. These are abstract forms developed because of the ban on figurative representation, which are important in terms of their contribution to the overall impression of mosques. All this has proved sufficient to inspire Western observers to use the terms "fairy tale majesty and beauty" in describing the most famous and typical works of Islamic art. These terms are revealing. Texts, illustrations and films, which located the stories from "A Thousand and One Nights" in medieval-Islamic architecture, have led to most members of Western civilisation

being reminded of the imaginary world of fairy tales when they see such buildings. The architecture of the East is ultimately alien to them. This association is so deeply rooted that the European and even Early Christian architecture which was adopted, further developed and propagated by Islam seems alien. Most Westerners would probably identify the Hagia Sophia, once the greatest Christian church, as a mosque – even without the minaret which was later added. Islam left its architectural traces in Europe. However, its influence on European architecture is reflected almost exclusively in ornamentation.

CLASSICAL CATHEDRAL GOTHIC IN FRANCE 1130–1300

Focusing on this world

GOTHIC

1130–1500

From solid to skeletal structures

It is extremely difficult to put an exact date on the transition from Romanesque to the Gothic style. Art historians fondly engage in disputes as to whether Durham cathedral should be classified as late Romanesque or early Gothic, or perhaps should belong to a transitional style. Terms such as “Romanesque Early Gothic” have also been suggested. The term “Gothic” itself originally had rather dubious connotations: it was used derogatorily in the 16th century by the Italian painter, architect and art critic Vasari: the (West) Goths had brought about the ultimate demise of the Roman Empire and, in Vasari’s opinion, were absolute Barbarians. In some places, the term Gothic expressed the epitome of contradiction and lack of taste as late as 1800.

The fact that the Gothic style originated in the Île de France, the area around Paris, is undisputed. This area was the power base of the Capetians, who had replaced the Carolingians as rulers of the Western Frankish Empire in 987 with the election of Hugo Capet as King. When they succeeded in re-uniting the country under their rule in the 11th century, this area became the centre of French cultural and scientific development.

Of all building types, the cathedral is seen to epitomise Gothic architecture to the present day. It was the symbol of the new power of the French

kings and spread throughout France along with the influence of the crown. With its King’s Gallery on the façade, and as the site of royal coronation and entombment, it lends visual legitimacy to the royal claim to power (like the imperial Romanesque cathedral). However, it also embodies the philosophy of society and is an expression of the political and theological world view of all the members of the society in question. These people no longer were involved in the construction of cathedrals as the fulfilment of a mandatory task, but in the conviction that they were working together to erect a symbol of their faith, their town and themselves. The pride of the guilds was on display for all to see. The anonymity of the Middle Ages was abandoned; portraits of patrons and inscriptions provide numerous reminders of the architects, artists and citizens involved in the project. The design of the cathedrals speaks the language of all social classes – their symbolism, above all the figures and window images, can be understood by everyone from intellectuals to simple people. Even if different sectors of society interpret them in different ways, they still fulfil the same purpose.

Of the many Romanesque schools of architecture in France, some continued to work in the traditional style up to the mid-13th century. The school in the Île de France developed the style which eventually replaced the Romanesque style in France and ultimately the entire Western world. The abbey of St. Denis near Paris is acknowledged as the building which launched the Gothic style. Between 1140 and 1144, Suger, the abbot of St. Denis, replaced the old narrow choir with a new one. The new choir

Ca. 1250: Medieval division of the “liberal arts” into “trivium” (grammar, rhetoric, dialectics) and “quadrivium” (music, astronomy, arithmetic, geometry).

1254: Royal Chaplain Robert de Sorbon establishes the school of theology in Paris (known as the Sorbonne from the 14th century).

Ca. 1260: According to the theory of alchemy, metals consist of mercury, sulphur and salt and can be transformed into each other (with the help of the “stone of wisdom”).

1275: Marco Polo reaches Peking.

Ca. 1300: Pharmacy is recognised as a profession in Germany, spectacles are produced in Italy, glass windows gradually spread, the foot-operated loom is invented, the mechanical clock with stop wheel is invented in Italy; masses in Bruges, Antwerp, Lyons and Geneva become very important events.

1302: Pope Boniface VIII issues the Papal Bull “Unam sanctam”

(formulation of the Papal claim to world rule).

1309: Pope Clemens V transfers the Papal see to Avignon (“Babylonian imprisonment of the church”).

1311: Dante starts work on the *Divine Comedy*.

1318: Development of a new system of payment. A law on the transfer of money (giro bank) is passed in Venice.

1339–1453: “Hundred Years War” between England and France; Joan of Arc liberates Orleans and succeeds in setting up the coronation of Charles VII as King of France (1429); she is imprisoned by the English and burned as a witch (1431).

1347: Outbreak of the plague in Europe.

Ca. 1350: Division of the English parliament into the upper house (House of Lords) and lower house (House of Commons) which is given right of petition.



King Charles V (the Wise, 1364–80) moves to Paris; miniature from the French chronicle by Jehan Foucquet, 1472.

1353: Boccaccio completes his collection of stories, the *Decameron*.

1356: Emperor Charles IV confirms the sole right of the seven German

Princes to elect a king in the “Golden Bull”.

1378–1417: The Great Schism with opposition Popes in Avignon and Rome marks a nadir in papal power.

1415: Czech reformer Johann Hus is burned as a heretic.

1445: First book printed by Johann Gutenberg in Mainz, Germany.

1447: Foundation of the Vatican library.

1481: Beginning of the inquisition in Spain. The secular ruler must implement death penalty as the church “does not thirst for blood”.

1492: Discovery of America by Christopher Columbus; Martin Behaim designs the first globe.

ANDREA PALLADIO

With Andrea Palladio, Renaissance architecture reached a mature and happy synthesis in the Republic of Venice, its town of Vicenza and the Veneto countryside during the 16th century. Palladio succeeded in linking ancient tradition with the humanism of his time in a particularly harmonious way, and designed Classical buildings against the background of his writings. "Palladianism" was so popular that it strongly influenced the architecture of subsequent periods, for example, English Classicism.

Andrea di Pietro dalla Gondola was born on November 30th 1508 in Padua. At the age of thirteen he started work as a stone mason in the workshop of Bartolomeo Cavazza. Two years later



Villa Rotonda, Vicenza, 1566–69

he continued his education by studying architectural sculpture under Porlezza in Vicenza. He met his most important teacher in 1537 while working on the Villa Trissino in Cricoli. It was Trissino who inspired him to develop his own identity as a humanist architect from the roots of ancient tradition. It was presumably Trissino who gave him the name Palladio which is as elegant as his later work. As a humanist familiar with Neo-Platanism, Trissino also referred Palladio to ancient architectural theory, Vitruvius's Ten Books. Following Aristotle's dictum that knowledge must emerge from individual observation and experience, Palladio undertook not only theoretical studies but viewed and surveyed numerous ancient buildings, for example on his trips to Rome between 1545 and 1547. In 1570 he published his own four books on architecture which continue the great tradition of Vitruvius and Alberti. In these books, he discusses the contemporary views of proportion and

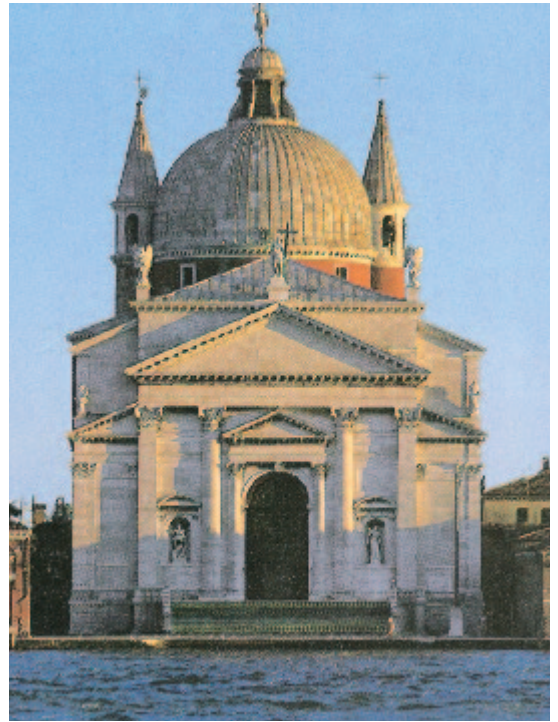


Teatro Olimpico, Vicenza, 1580–85

architectural beauty, explains what architects like Serlio and Vignola had made of the Classical column orders and, most importantly, presents his own work and its typology.

Palladio was already an expert in the field when he made his late breakthrough as an architect in his early forties. The focal urban building of Vicenza, the basilica, was converted in 1549. This marked the beginning of a new self-awareness for Palladio and an economic upturn in the town's fortunes. As the basilica was already an ancient style building, Palladio had a perfect opportunity to realise his ambitions while giving the Medieval façade a new urban face. He opened it onto the Piazza dei Signori with two-floored loggias behind arcades which, together with the column motif adopted from Serlio, gave the building a completely new rhythm. This marked the beginning of a long mutually beneficial relationship between Palladio and Vicenza which continued with the construction of some urban palaces. An example of these palaces is Palazzo Chiericati (1550–1609) where he succeeded in creating great urban charm by opening the façade and accentuating the central tract, an impression which contrasts strongly with the fortress-like rusticated and uniform façades of earlier Renaissance palaces.

However, the building in which Palladio's art can be seen at its most daring and original is the country house. He re-interpreted this genre for the discerning, educated affluent nobility in his area who wanted to combine agricultural activities on their estates with their social lives. Thus he adapted the Roman "villa rusticana" to that of a "villa suburbana", as can be seen in the villa Badoer in Frata Polesine, villa Emo in Fanzolo and the villa Barbaro in Maser, all of which were completed around 1560. The farming buildings and storerooms are located in wings behind the loggias, which are symmetrically aligned to a raised central structure. This provides a representative entrance to a banquet hall with a tympanum on a Classical column order. This linking of the main building and garden with shady zones behind the columns and arcades is the



Il Renditore, Venice, 1577–92

equivalent of his achievement in opening the basilica and palazzos of Vicenza to the square. The high point in Palladio's work is, however, the ideal architecture of the Villa Almerico-Capra in Vicenza. It is known as "La Rotonda" and is an exemplary centrally-planned building, having a circular domed room in the middle and identical sides with extended temple façades. Like the Pantheon and Bramante's Tempietto, it symbolises complete harmony between man and the cosmos. It was ideally suited to the humanists as a refined setting for the exchange of their ideas.

Palladio had reached the height of his career by 1571. Prominent and much in demand, he became Sansovino's successor as the leading architect in Venice, where he mainly designed churches. However, he was unable to recreate his ideal of the centrally-planned building in the rhythm of the Classical order without some element of compromise. The traditional plan of the religious building with its nave and side aisles, which were dictated by the hierarchy of religious ritual, made it impossible for him to use the preferred central plan. With the façade of San Francesco della Vigna (from 1562 onwards) and San Giorgio Maggiore (1565–75, façade after 1600), Palladio developed intermediary solutions to this problem, paving the way for the construction of his final church, Il Renditore. The façade powerfully clamps the nave and side chapels with the help of interlocking columns and framed stacked tympana. The refined openness of former buildings is replaced here by a closed sculptural quality, an impression which is repeated in the later Palazzo Valmarana (1566–81) and the façade of the Loggia del Capitaniato (1566–71) in Vicenza, and which points towards the approaching Baroque.

In 1580, the year of his death, Palladio returned to Classical architecture once more with the Teatro Olimpico in Venice. He built a semi-circular arena for the audience for revivals of Classical theatre and an illusionistic *Gassenim* stage.

VERSAILLES

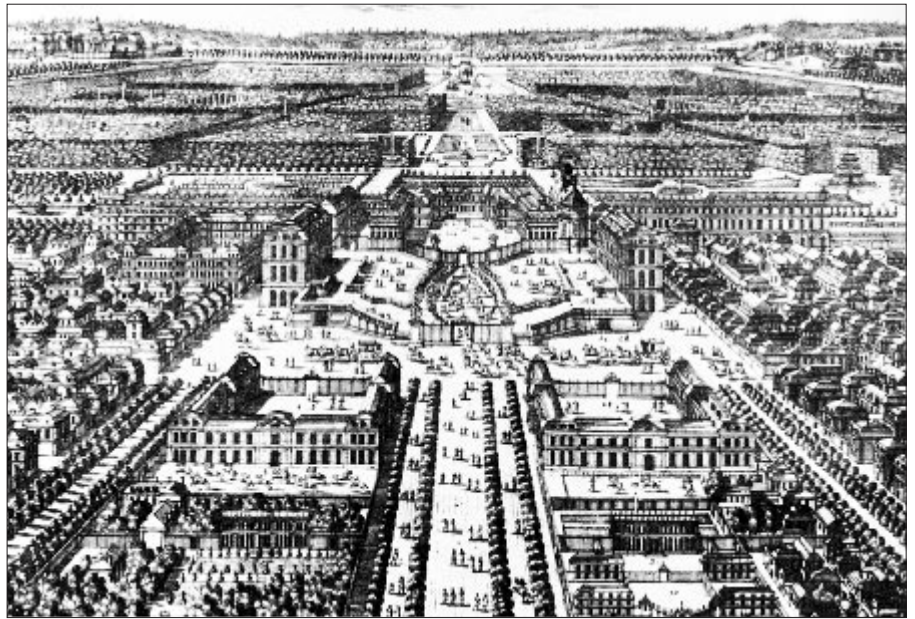
No other palace, town and garden complex was as exemplary in character during the Baroque as that of Versailles, a suburb located south-west of Paris. In 1623, King Louis XIII commissioned the construction of a small moated castle. This was still firmly rooted in the Renaissance tradition and took the form of a four-winged complex surrounding a square courtyard. The fourth wing was replaced by a low arcade, later demolished when work on the extension of the castle commenced in 1661.

This was also the year that Louis XIV, later known as the "Sun King", assumed power; he remained in office until 1715. This long period of rule represents the pinnacle of royal power in Europe – with Paris as its political and social centre – and also the beginning of the Enlightenment, which eventually replaced absolutism at the end of the 18th century.

Vaux-le-Vicomte castle had been built near Paris by Nicolas Fouquet, the Minister of Finance, and was completed the year the new king came to power. It provided him with a source of inspiration for his own palace. The architect Louis LeVau, the interior designer Le Brun and the landscape architect André Le Nôtre, all of whom had worked on Vaux-le-Vicomte, were commissioned to work in Versailles, where Louis XIV had chosen to locate his new residence. This project was not merely of immense spatial proportions. Above all, the brief was to create a symbol of national unity – a matter of extreme political delicacy – which would convey the greatness of the royal power far beyond France.

Encasing of the old castle was started on the basis of LeVau's plans in 1661. The cour d'honneur was extended between 1668 and 1671 by the addition of two outwardly gradating wings, the ends of which were given large temple façades. The extensive garden elevation was created at the same time, its width emerging from the connection with the courtyard wings, which LeVau tried to articulate with two corner pavilions (containing the war and peace salons). These were linked by a terrace above the ground floor, giving even greater emphasis to the first floor as the main floor of the palace and which housed the King's suite.

Jules Hardouin-Mansart, who in 1678 replaced LeVau, converted the first-floor terrace into the famous Hall of Mirrors ("Galerie des Glaces"). The



Bird's eye view of the town, palace and garden complexes, a copper engraving from 1700

lining of the walls with mirrors created both an extraordinary abundance of light and also, as a result of the constantly changing reflections, an optical confusion and apparent extension of the space into eternity, which was typical of Baroque illusionism. This room must be imagined as the backdrop for magnificent Baroque parties lit by hundreds of candles. It later assumed historical importance: the Paris Peace Conference, which ended with the signing of the Treaty of Versailles, started here on January 18th 1919 and ended on June 18th of the same year.

The conversion of the terrace to the Hall of Mirrors resulted in the transformation of the façade from a protruding and retracting structure to a uniform surface, which was barely enlivened by the light central projection. Including the two wings, the garden façade was extended even further to a total length of 576 metres. Thus for the most part the typical dynamism of Baroque buildings yielded to an unrelenting, intimidating splendour. In keeping with Louis XIV's self-conception as the embodiment of the state and unrestricted ruler, the design focused exclusively on the desire for representation and relinquished any concessions

to human dimensions. This attitude is also evident in the enormous courtyard in front of the palace and the large cour d'honneur, later extended by the addition of two further wings (one designed by Ange-Jacques Gabriel and the other an exact copy built in the 19th century). The entire palace complex reached a depth of 407 metres, the aim being that it could not be outclassed anywhere else in Europe.

Le Nôtre started on the design of the gardens in 1667. Between the Neptune Basin in the north and the Orangerie in the south, to which two twenty-metre-wide "Great Staircases of 100 Steps" descend, there was a wide surface with regular low hedges. These were clipped in patterns known as the "broderieparterre" (from the French "broder" = to embroider – nature was formed into a decoration in the form of embroidery patterns). The Latona Basin and Tapis Vert (64 x 335 metres) are located along the main axis which leads away from the palace at a right angle, as is the Apollo Basin (82 x 116 metres) further down the axis. Lined with topiary and clipped hedges, the Apollo Basin surrounds the statue of the Sun God, with whom the King identified, in his chariot pulled by horses and Tritons (sea gods). This basin is the centre of the radial, axial and star system which pervades the entire garden. It is difficult to appreciate this system fully today as the trees are now much thicker and higher than originally planned.

The powerful dimensions of the open complex are highlighted by the 1560-metre-long canal which also lies along the main axis. It is intersected by a short transverse canal to the north of which two pleasure palaces were constructed – the Grand Trianon built by Hardouin-Mansart and Robert de Cotte in 1687–88, and the Petit Trianon built in 1764–68 by J.-A. Gabriel. After the death of Louis XIV, the court favoured these palaces as residences over the enormous main palace.



The Hall of Mirrors in the Royal Palace

ENLIGHTENMENT AND REVOLUTION ARCHITECTURE

The architecture of
reason

CLASSICISM

1750–1840

Democracy replaces absolutism

The intellectual movement of the Enlightenment developed within the rigid system of rule known as Absolutism. The new movement aimed to liberate not just philosophy but every aspect of life from its traditional shackles, and provide a new strictly reasonable, "ratio"-based orientation (Rationalism). For the philosopher Immanuel Kant, the aim of the Enlightenment was "the exit (= liberation) of man from self-induced nonage". "Reason, and the critical spirit arising from it, should form the basis on which the correctness of every insight is decided, and also provide the basis for all decisions concerning the norms of ethical, political, and social behaviour" (Friedrich Schiller "Have faith only in your own reason!").

The Enlightenment, which attracted increasing numbers of followers during the 18th century, also demanded political change, especially as it was mainly supported by the middle classes. As a result of their activities as intellectuals and traders in money or goods, rational thought and action played an important role in the daily lives of the middle classes. In economic terms, they were growing increasingly important. However, when it came to participation in political rule, they were totally excluded in countries like Germany and France.

Even monarchs like Friedrich II of Prussia and Joseph II of Austria, who practised "enlightened absolutism", were unable to solve social problems through the introduction of reforms such as relative freedom of religion, abolition of torture and the establishment of a regulated system of justice. On the contrary, continued survival of the existing feudal order and the imperative need for fundamental change became even more widespread.

The alternative model was devised by philosophers like John Locke, Jean-Jacques Rousseau and the state theorist Montesquieu, with their ideas of the people's state and the separation of powers. The people themselves and not the king should represent the nation. State power should therefore emanate directly or indirectly from them (through elected representatives), although control and limitation of the power of monarchy by parliament and constitution were initially given some consideration. In order to prevent abuse and decisions based on the aims of self-glorification, power previously held by the absolute ruling monarch was to be divided among three "powers" (legislative, executive, judicial). Moreover, all state activity should be based on known defined rules (constitution, laws) and after a specific period, rulers should be given a renewed mandate by the sovereign, i.e. the people. It should also be subject to control by the other powers and, above all, to public criticism, in terms of which, according to the Enlightenment, all action and thought had to prove itself. Behind this was the conviction that a conflict



"Boston Tea Party" as protest against English import taxes and tea monopoly on December 16th 1773, coloured lithographic print from 1846.

1750: Johann Sebastian Bach, the composer, dies.

1759: The British Museum in London is opened (exhibits from private collections).

1762: Jean-Jacques Rousseau's theory of state "*Du contrat social*" (*The Social Contract*) provides an ideal image of democracy.

1764: Johann Joachim Winckelmann's book "*Geschichte der Kunst des Altertums*" (*History of the Art of Antiquity*) is published.

1765: James Watt invents the steam engine (patented in 1769). The potato is used for human consumption in Europe.

1768: James Cook explores

Australia, New Zealand, the South Seas and Alaska during three expeditions.

1773: Middle-class citizens disguised as Indians destroy a cargo of tea from the East India Company in Boston Harbour, intensifying the conflict with the English mother country.

1776: The American Congress declares the independence of the 13 colonies of the British Crown. Declaration of Human Rights.

1781: Immanuel Kant publishes his philosophical treatise "*Kritik der reinen Vernunft*" (*Critique of Pure Reason*). Johann Heinrich Voss translates Homer's *Odyssey*.

1789: Beginning of the French Revolution with the storming of the Bastille.

1796: English doctor Edward Jenner administers the first vaccine against small pox.

1797: Senefelder develops lithography (offset printing).

1804: Napoleon Bonaparte crowns

himself French Emperor in Paris. Formulation of the Napoleonic Code.

1808: Goethe's *Faust (Part 1)* is published. Collection of folk songs *Des Knaben Wunderhorn (The Boy's Magic Horn)* is published by Achim von Arnim and Clemens von Brentano.

1813: Massacre near Leipzig; victory of Prussia, Austria and Russia over Napoleon I.

1814: Napoleon abdicates and is exiled to Elba. Allied Congress of Vienna is called to remake Europe after the downfall of Napoleon I.

1824: Ludwig van Beethoven completes his 9th symphony.

1832: Hambach Festival of German Democrats.

1838: Samuel Morse develops a code for the transmission of messages by telegraph.

Ca. 1840: Frédéric François Chopin composes his most important piano works (nocturnes).

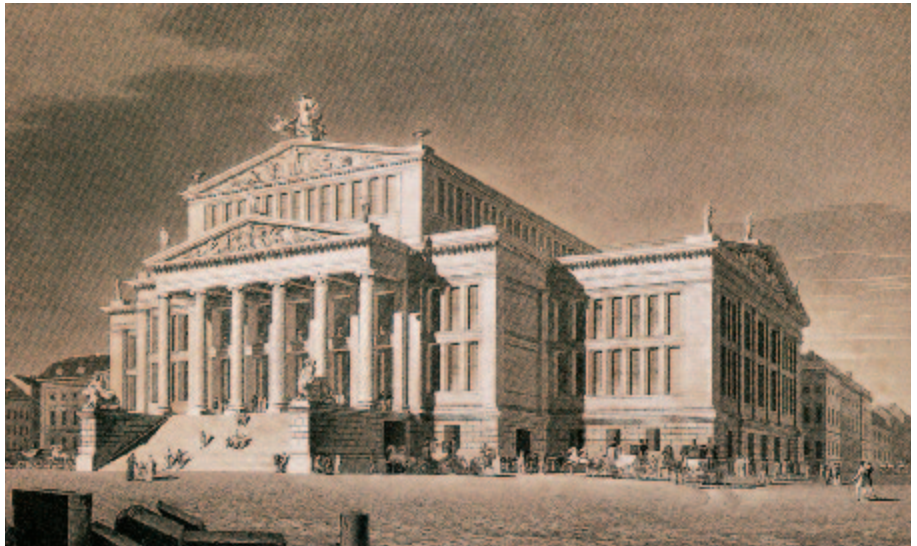
KARL FRIEDRICH SCHINKEL

The small town of Neuruppin north of Berlin was the birthplace of two great men of the Prussian Kingdom: the writer Theodor Fontane (1819–98) and the architect Karl Friedrich Schinkel (1781–1841). Schinkel learned about Classical architecture, which had been in fashion since the end of the 18th century, at the Berlin Academy of Architecture, where he studied mainly under David Gilly (1748–1808).

The Greek temple and its character had been (re)discovered as an architectural model just a few years earlier. For example, the Doric temple in Paestum was hitherto unknown and its baseless columns attracted considerable attention. By acknowledging the way in which ancient Greek architecture had elevated consummate beauty to an ideal, while at the same time embodying absolute truth in its functionality, the architecture of the 18th century radically rejected the preceding Renaissance and Baroque eras and began to incorporate these new ideals into teaching. The aim was to replace the organic and corporeal approach to building with the clear cubic forms of classical antiquity. Schinkel was a student at the precise moment when this revolution was taking place in architectural history, which for the first time was actually honouring its entire tradition. Another famous contemporary of Schinkel's at the Berlin Academy was Leo von Klenze (1784–1864), whose importance in Bavaria is comparable to that of Schinkel in Prussia.

On completing his studies, Schinkel travelled in Italy from 1803 to 1805. In addition to designing buildings, not only in the Classical but also in the Gothic style, he also painted Romantic pictures. He designed stage sets for operas like the *Magic Flute* and a range of functional structures including memorials, bridges and weirs. Like most architects of his time, Schinkel's talents were multi-disciplinary.

Schinkel's great period began after the wars of liberation when building recommenced in Prussia, whose territory had been considerably extended following the Congress of Vienna. Schinkel was soon appointed court architect, a member of the influential architectural division of the Prussian Public Works Department, and was finally appointed head of the department. His seminal influence on Prussian architecture led to the establishment of a kind of "Schinkel school", the followers of which included Persius, Stüler and Strack.



The Schauspielhaus theatre on the Gendarmenplatz square in Berlin, 1818–24

Schinkel worked in at least three styles simultaneously – the Classical, neo-Gothic and Romantic. It was, however, his Classical buildings – among the most beautiful built in this style in Germany – which brought him most fame. They combine optimum serviceable functionality with harmonic clarity, and are consequently viewed as the purest expression of classical antiquity. Of Schinkel's churches, the Nicolai Church in Potsdam, which was originally next to the Palace, is still the most impressive. Its powerful dome evokes the former beauty of Potsdam. The impressive Berlin Cathedral, which was renovated by Schinkel, was replaced in 1890 by Raschdorff's ostentatious edifice. The Friedrichswerder church in Berlin is still extant and today houses the Schinkel Museum. Other churches, such as the church in the Moabit neighbourhood of Berlin, are built in the Florentine-Romantic style.

A large number of Schinkel's palace designs have survived. The project for the Acropolis in Athens, which also involved Klenze and other reputable Classicists, is particularly worthy of mention. To be able to build a palace at the original site of the Classical tradition was an enormous challenge for individual disciples of the tradition. The small Charlottenhof Palace in the grounds of Sanssouci in Potsdam is particularly attractive, as is the small

Liegnitz Palace beside the Charlottenburg Palace in Berlin. Schinkel's neo-Gothic Kamenz Palace in Silesia is rather sombre by contrast.

The most distinctive features of Schinkel's Altes Museum (Old Museum) beside the Berlin Lustgarten (Pleasure Garden) (begun in 1822) are the open staircase, from which the former City Palace could be viewed, and the central rotunda – an excellent example of classical use of space.

The Neue Wache (New Guard House) on the Forum Fridicianum (1817), which was originally built for the stay of a company of guards and is now a memorial to the victims of the Second World War and the genocide of that period, is also one of Schinkel's masterpieces.

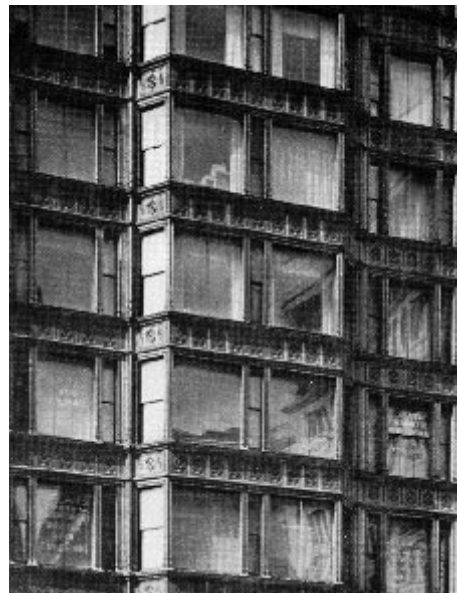
The Academy of Architecture (begun in 1825), which has unfortunately been demolished, was a prototype of brick architecture. This building reflects the processing by Schinkel of impressions gathered during a trip to England where he saw factory buildings and weaving shops. In Schinkel's opinion, these were nothing more than monstrous masses, which had nothing to do with architecture which strove to reach the level of art. With his designs for the Berlin goods depot of 1829–32, which included offices for customs and administration and warehouses built along the Kupfergraben quay in central Berlin, Schinkel showed just how functional buildings should be designed. This row of buildings had a sombre cubic aesthetic, similar to that of the Academy of Architecture.

The Schauspielhaus theatre situated on the Gendarmenmarkt square in Berlin, one of Schinkel's most important buildings, is framed by the steep domes of the German and French Cathedrals. The Greek temple façade, which like all the columns, entablature, and gables is taken directly from the antique box of tricks, conceals a building designed on the basis of strictly functionalistic criteria, the individual stereometric units of which consist of several independent parts.

Mozart's *Magic Flute*, with sets designed by the architect, was staged to mark the opening of the theatre. It is indeed fortunate for Berlin that this valuable building survived the War unscathed.



Academy of Architecture, begun in 1825



D. Adler and L. H. Sullivan: *Guaranty Building*, Buffalo, New York, 1894–95 (left); D. H. Burnham and J. W. Root: *Reliance Building* with so-called “Chicago windows” in bay form, Chicago, 1890–95 (centre); L. H. Sullivan: *Carson Pirie Scott*, Chicago 1899–1906 (right)

SKYSCRAPERS

When the old “village” of Chicago was destroyed by fire in 1871, it took several years to overcome the fear of further catastrophe and start on the construction of a modern business centre with office blocks, department stores and hotels, aided by extensive funding from the urban authorities. The first designs were by engineers and very similar, mainly because several technical inventions created the necessary framework conditions: i.e. the steel skeleton structure and new systems for stone foundations. The new Chicago grew up in regular blocks – buildings with eight or nine floors were described as skyscrapers – which always complied with the crucial condition of fire resistance. To this were added the pioneering inventions of the electric lift, the telephone and tubular post. For the first time it seemed possible to build to an unlimited height – the upper floors which were previously cheaper and less desirable now became sought-after and expensive addresses.

The Chicago architectural partnership of Adler and Sullivan represented an optimum combination of talents; Adler was an expert on finance and technology whereas Sullivan was more the visionary. Sullivan would ultimately make a key contribution to the renewal of international architecture in the 1890s. He gave his buildings a radical modern appearance, with their reticent decoration and large glazed surfaces. In theoretical treatises, he divided the building into the base, shaft and capital, using the Classical column as his model. The base or socle was reserved for rows of shops, the business or residential floors were accommodated in the shaft, and the capital, which was given particular emphasis, contained the building technology. Theorist Emilio Cecchi describes the cool undecorated façade articulation as follows: “The skyscraper is no symphony of lines and mass, surfaces and openings, power and resistance, it is much more an arithmetical operation, a multiplication.” The architecture of the Chicago School was the harbinger of the “new world”.

masonry bands at intervals of four windows were vaguely reminiscent of pilasters. Fire resistance was guaranteed by encasing its metal frame with cavity blocks. Bessemer steel, later to play an important role in the development of construction technology, was used for the first time in this metal frame.

By inserting a projecting perpendicular strip of masonry between the windows on the Wainright building in St. Louis, 1890–91, and the even more famous Guaranty building in Buffalo, 1894–95, Dankmar Adler and Louis H. Sullivan emphasised the vertical thrust of rectangular buildings. Sullivan had the following comment to make on the design of a skyscraper: “It must be proud and impressive to the last inch, rise up in joy so that it forms a unit from the ground to the roof without a single deviating line.” He repeated his motto “form follows function” until it became the guiding principle of all of modern architecture. Thus the functions of different floors can be distinguished on the basis of the differentiation of the façade design into socle, shaft and capital. The ground and first floors are fitted with large windows and hence are suitable for retail trade. Above these lies the regular grid of the main floors which are used as offices. Finally, beneath the

projecting flat roof, there is an almost sealed surface with bulls’-eye windows which contains the technical equipment. There is some Art Nouveau decoration but this contributes little to the overall impression of the building’s exterior. Sullivan’s department store Carson Pirie Scott in Chicago is similar. Here, however, he emphasised only the rounded corners of the building with perpendicular masonry strips. The main floors, which were for retail use, are fitted with wide “Chicago windows”. If one ignores the decoration added in the socle zone, this building already looks like something built in the 1920’s or 50’s. Such buildings, whose consistently simple design was derived from constructive conditions and functional requirements, gave Chicago the most modern architecture in the world at the turn of the century. This was most evident in the “Loop”, the business quarter of the city. This approach to the construction of skyscrapers became known as the “Chicago School”. However, it did not set a trend. On the contrary, one of its main representatives – Daniel H. Burnham – “betrayed” its aggressive modernity by turning back to a more communicable neo-Classicism, as can be seen in his historical façade design for the Flatiron building in New York.

GLOSSARY

Abbey A monastery which is run by an Abbot or Abbess. The Abbot's house which is linked to the monastery often has its own chapel which sometimes has its own cloister.

Agora Open space in a Greek town used as a market-place or general meeting place.

Alternating system of supports Alternation of pillars and columns in the nave of a Romanesque basilica, technically defined in the crossing square plan.

Abutment Solid masonry structure which counteracts the lateral thrust of an arch or vault.

Altar A structure on which offerings to a deity are placed or sacrificed. The altar in Christian churches is a table or slab on supports, consecrated for the celebration of the sacraments.

Apse In ancient Roman architecture: semicircular space built onto or above an elevated main space. In Christian architecture: usually semicircular termination of a rectangular longitudinal structure; important component of church buildings.

Aqueduct Ancient Roman water conduit whereby the town's water supply was carried through an open or concealed water channel consisting of an elevated masonry or brick structure supported on several storeys of arches.

Arcade The arrangement of several arches in a row is called an arcade. Arcades can be built alongside each other or on top of each other along several floors of a building (arcade floor). The triangular area on the point above the supports is called the arcade spandrel.

Arcaded walk (loggia) Open, vaulted arcaded hall or passage in or in front of a building. A common feature of Italian Renaissance palazzos and public buildings.

Arch Vaulted structure in a wall opening or hall. The arch offers the only way in which to span large spaces in stone structures as it absorbs the load and distributes it among the

supports. The first stone in an arch is called the springer; the keystone is the wedge-shaped stone at the highest point or crown of the arch. The inner curve or surface of an arch forming the concave underside is called the intrados. Most arch forms are developed from a circle or several segments of a circle: the round arch is semi-circular, the pointed arch is produced from two curves, each with a radius equal to the span and meeting in a point at the top.

Architrave In ancient architecture and the styles which developed from it, the horizontal lintel of a temple which lies on the columns and is supported by them. The architrave itself supports the upper structure.

Atrium Central courtyard in the Roman residential building. In Early Christian and Medieval architecture a courtyard in front of a church (paradisus).

Ashlar Natural stone which is cut into regular rectangular blocks.

Axial plan/view/orientation (longitudinal plan) Plan based on the axes in a building. An axis is an imaginary straight line which can be drawn longitudinally or horizontally through a building or part of a building. Opposite of centrally-planned building.

Balustrade A parapet consisting of rows of small columns (balusters).

Baptistry Independent religious building where Christian baptisms are held. The water font in which the person to be baptised was fully emerged stood in the centre of the room.

Basilica Hall of commerce and justice in the Roman empire. Building type adopted by the Christians. In Christian church-building tradition it is a multiple-aisle building with a longitudinal axis and a nave which is higher than the side aisles and lit by clerestory windows.

Base The bottom of a column or pillar.

Bauhütte German name for associations of church builders

and artisans in the Middle Ages.

Bay Area of a vault which is divided from the adjacent bay by a band. The bays of a building are counted along the longitudinal axis.

Bifora Window divided by a column to form two separate arched openings.

Blind arcade, blind arch, blind window The elements of an arch or window applied to a wall without any aperture for decorative and articulation purposes. Several blind arches form a blind arcade.

Bracket A stone protruding from a wall which serves as a base for balconies, figures and arches and is often decorated.

Buttressing/ flying buttress/ pier buttress Skeleton structure which is a particularly common feature in Gothic churches. Pier buttresses are used in the reinforcement of high walls and to counteract lateral thrust. They are found either on the exterior or along the side aisles and are linked across the roof through the flying buttresses. The buttressing functions by dispersing the lateral thrust from the roof and the vaults.

Campanile Free-standing bell tower in Italian church complexes.

Camposanto Italian name for a cemetery.

Capital Head of column or pillar with ornamental, plant or figurative decoration.

Caryatid Sculptured female figure used as a column to support an entablature or similar member.

Cathedral Bishop's church in a town or city, sometimes called a minster.

Cell One of the four compartments of the groin vault (cf. vault).

Cella Windowless main chamber of the ancient temple which contains the cult image.

Centrally-planned building Plan in which all parts relate to a central point and which is based on a geometrical figure (circle, ellipse, square). The Roman Pantheon was seen as the highest achievement in terms of centrally-planned ancient buildings. The centrally planned rotunda with dome embodied

the ideal in Renaissance architecture.

Central perspective Optical impression whereby parallel lines converge as they recede towards a single point on the horizon level with the viewer's eye (vanishing point). The central perspective and its theoretical foundation was developed during the Early Renaissance period.

Chapel Small independent space for religious worship or ceremonies which is added on to a church (e.g. baptistry, palatine chapel, etc.).

Choir Originally the term for the elevated area in Christian churches where the divine service is sung. The area beyond the nave has been known as the choir since the 8th/9th century.

Choir ambulatory A passage surrounding the choir which is created through the continuation of the side aisles and is usually separated from the choir by arcades.

Clerestory (windows) Upper area of the walls of the nave in a basilica which is pierced by windows.

Cloister A passage surrounding a square open courtyard in a monastery where the Stations of the Cross are held.

Cloverleaf cf. trichora

Column figures cf. jamb (figures).

Column orders Ancient system of form and proportion whereby the column, capital, architrave and cornice relate in such a way that they have a defined "order". The Doric column has no base and a fluted shaft and a slab as capital. The Ionic column is more slender than the Doric column and it has a base, fluted shaft and capital which curves in a snail-like scroll or volute at each end. The Corinthian column differs from the Ionic column in that it has a richly decorated capital of acanthus leaves and volutes at the corners.

Colonnade Row of columns with vertical entablature (architrave) as distinct from an arcade. The colonnades in St. Peter's Square in Rome are a well known example.

Colossal order Column order whereby the columns rise from

the ground through several – usually two – floors, sometimes also called a giant order. The colossal order was developed by Michelangelo and Palladio.

Composite capital A capital consisting of combinations of the Classical orders.

Corinthian The youngest of the Classical Greek styles (cf. column orders).

Cornice Horizontal strip projecting from a wall which differentiates the horizontal sections of a building (e.g. socle, floors, roof) from each other and encloses the perpendicular architectural elements (e.g. column, pilaster).

Crenellation (battlement) Parapet with alternating indentations or embrasures and raised portions or merlons.

Crepidoma Foundations and usually three-stepped base of a Greek temple.

Crocket Projecting ornament, usually in the form of curved foliage, used in Gothic architecture to decorate the outer angles of pinnacles, spires and gables (pinnacle, triangular gable).

Crossing Square or rectangular space which is created by the intersection of the nave and transept in a church.

Crossing tower A tower which sits on the crossing of a church.

Crossing-square plan Common plan in Romanesque basilicas which is based on the crossing square. One square in the nave corresponds to two squares half its length in the side aisles.

Crypt In Early Christian times the tomb of a martyr in the catacombs. In the Middle Ages half underground space beneath the East choir of the church used for the storage of relics and as a burial place for saints and dignitaries.

Donjon Central tower in French castles containing living quarters (cf. keep).

Doric The oldest of the Classical Greek styles (cf. orders).

Double-ended church plan Church plan with an East and West choir.

Drum cf. tambour.

Dwarf gallery A wall passage with small arcading and delicate columns on the outside of a building. A popular decorative

form found in Romanesque buildings, it has no structural function.

Early Christian basilica Church with a longitudinal plan and several aisles with a nave which is higher than the side aisles and clerestory windows above the nave.

Enfilade French system of aligning internal doors in a sequence so that a vista is obtained through a series of rooms when all the doors are open.

Entablature 1. The upper part of an ancient order consisting of the architrave, frieze and cornice. 2. All of the beams which combine to form a ceiling structure.

Entasis Slight convex curve on Greek and later columns to correct the optical illusion of concavity which would result if the sides were straight.

Fan vault A vault composed of a number of concave conoidal sections springing from the corners of the vaulting compartment, often decorated with ribs which radiate like the framework of a fan.

Finial A foliated ornament which terminates the peak of a spire or pinnacle.

Flamboyant style Late Gothic style in France. In Flamboyant tracery the bars of stonework form long wavy divisions.

Floor, storey A vertical section of a building which is separated by floors and ceilings.

Flutes/fluting The ridges along the shaft of ancient columns.

Flora/forum Roman market place and assembly place.

Fresco Painting technique whereby water-based paint is applied to lime plaster. Already known in ancient times. Frescos by Raphael, Michelangelo and Tiepolo are acknowledged as the highest achievements in this technique.

Frieze Horizontal band for the articulation and decoration of a wall. A distinction is made between an ornamental frieze and a figurative frieze.

Gable 1. Triangle which terminates the narrow side of a saddleback roof (cf. tympanum). 2. Triangular area at the top of windows and portals in Renaissance and Baroque architecture.

Gallery 1. In church architecture, an upper storey over an aisle, opening on to the nave, which is used to accommodate specific groups in the congregation (e.g. women, royalty) and, more importantly in design terms, an important feature in the articulation of the wall surface (cf. wall structure). 2. In secular architecture, a platform or mezzanine supported on columns or brackets and overlooking the main interior space of a building, e.g. a theatre. In Renaissance and Baroque palaces, a long room, often on an upper floor, for recreation or entertainment, e.g. Galerie des Glaces in Versailles.

Girder Large beam of wood, iron, steel or concrete.

Groin vault A compound vault formed by the perpendicular intersection of two vaults forming arched diagonal arrises called groins. Also known as a cross vault.

Hall church Church with a longitudinal plan with aisles of (almost) the same height as the nave and which often has a single roof covering both the nave and the aisles.

Hall choir Choir consisting of several aisles of the same height.

Haram Columned prayer hall in a Mosque, the columns of which initially consisted of palm trunks.

Hipped roof A form of roof which is created when the gables of a saddleback roof are substituted by sloped roof surfaces.

Illusionism The use of pictorial techniques to create an illusion of three-dimensional space and form on a two-dimensional surface.

Inlay Alternation of layers of coloured and plain stone; for example, light and dark marble.

Ionic Second oldest of the Classical Greek styles (cf. orders).

Jamb (sculpture) Surface created by the oblique insertion of a window or portal into a wall. In Gothic and Romanesque architecture, portal and window jambs are often richly decorated with sculptures (jamb sculptures).

Keep Defence tower and living quarters in English-Norman

architecture (cf. donjon).

Keystone Central stone of an arch or rib vault, sometimes carved.

King's Gallery cf. royal portal. Lacunar Panelled or coffered ceiling, the sunken panels of which can be filled in with ornaments, colours or paintings.

Lantern Circular or polygonal turret with windows all around it which crowns a ceiling or vault opening, usually on top of a dome.

Leaded glazing System of glazing whereby the individual panes which combine to form large windows are enclosed with metal strips – a technique used by the Romans.

Lean-to roof Roof form with only one slanting surface.

Longitudinal plan cf. axial plan.

Lucarne A dormer window.

Madrassa Islamic school in a Mosque, combined school and prayer room grouped around a courtyard.

Masonry Structure built using natural or artificial stone joined using either mortar or without binding (dry masonry).

Masonry spur A short piece of masonry which projects from a wall.

Mastaba Ancient Egyptian tomb in the form of a massive brick or stone mound with battered walls on a rectangular base. The sarcophagal chamber was deep under the ground below the structure. Developed into a Pyramid after the Old Kingdom (2850–2052 B.C.).

Mausoleum Name used to describe a monumental tomb.

Megaron Main hall of the Greek residence with stove and anteroom. The Greek temple was developed out of the megaron.

Merlon Raised portions on a battlement or crenellation.

Mihrab Focus for prayer in a mosque, usually a niche in the centre of the qibla wall.

Minaret Tall, slender tower connected with a mosque from which the muezzin calls the people to prayer. Originally a separate structure, it was later integrated into the general mosque complex and some mosques were surrounded by several minarets.



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