UNIT 14 MAIN ARCHITECTURAL STYLES

Structure

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14.0 OBJECTIVES

After reading this Unit you will be able to:

- familiarise yourself with important architectural trends in India from ancient to the British period.
- learn about the techniques and styles adopted in the field of architecture, and
- learn about the relationship between society and the architecture produced by that society.

14.1 INTRODUCTION

Art and architecture are true manifestations of the culture of a period as they reflect the mind and approach of that society. It is here that the ideas and techniques of a society find visual expression. In some of the earlier units, we have seen how artistic forms had started emerging and to what extent they reflected the culture of a period. Works of art which were related to work-processes of daily life and were not exclusively produced for a privileged group of society were many. They are found in the forms of rock paintings, terracotta figurines, toys etc. Gradually specialization of works took place. This specialization is related to the ready availability of an affordable surplus which could channelize the labour into more aesthetic pursuits.

The availability of architectural edifices depends to a great extent on the material used in it. If construction is of perishable material like wood then the chances of long term survival are very thin but if material used is non-perishable, like stone, then it can last for longer period.

In India, the earliest architectural remains are available from the civilisational settlements of Harappa. Here baked bricks were used in most cases as medium of construction. We have very limited architectural remains for Vedic and Mauryan period. Later periods however provide a great number of architectural remains and styles.

Thanks to the unprecedented number of excavations since independence, a great deal is known about the material advancement of ancient Indian societies and their links with ancient cultures in Iran and Turkmenistan. The one major component so far discovered comprises the cities and settlements of the Indus or Harappan Civilization (c.2500-1500 B.C) now known to have extended over an area of at least 2000 by 1100 kms. from west of the Indus to the longitude of Bombay, and so far north as the sub-Himalayan Punjab and the environs of New Delhi.

It was during the Mauryan period that architecture reached a developed stage. The Asokan pillars, the animals and carving on the pillars all represent mature art forms. In the period
between 200 B.C. and 600 A.D., the art activities were mostly related to religions practiced in this period and symbols and units associated with it. Initially, the construction of stupas, chaityas, viharas, and later on temples became popular. Because of regular interactions with other cultures in this period, we also find elements of non-Indian art in the artistic creations of this period.

The major shift in architectural styles came with the advent of Islam which introduced a totally new technique for architectural creations.

The architecture of the period can be broadly divided in three main categories:

1) Residential structures,
2) Religious architecture, and
3) Public works.

Under the first category, we have very few surviving monuments since during the initial phase they were built of perishable materials like wood. However, a number of monuments have survived and have been unearthed through excavations which come under the second category. Some of the works of the third category are still in use. We shall, therefore, take an account of this architectural activity in a historical context.

14.2 HARAPPAN CIVILIZATION

The civilization of the Indus valley is known to the archaeologists as the Harappan culture, from the modern name of the site of one of its two great cities, both of which are now in Pakistan (the other being Mohenjodaro). Recently excavations have been carried out at various sites in India and Pakistan. Each Harappan city had a well fortified citadel. The largely regular planning of the streets and a certain uniformity throughout the area of Harappan culture in such features as weights and measures, the size of bricks and even the layout of the great cities are noticeable characteristics.

Probably the most striking feature of this culture was its intense conservatism. At Mohenjodaro nine strata of building have been revealed. As the level of the earth rose from the periodic flooding of the Indus, new houses were built almost exactly on the sites of the old, with only minor variations in ground plan; for nearly a millennium at least, the street plans of the cities remained the same. In neither of the cities has any stone building been found; standardized burnt bricks of good quality were the usual building material. The houses, often double storeyed, were all based on the same plan—a square courtyard, round which were a number of rooms. The entrances were usually inside alleys, and no windows were found on the side of the streets.

The cities possessed unique sewage systems where bathrooms were provided with drains, which flowed into sewers under the main streets, leading to soak-pits. The sewers were covered throughout their lengths by large slabs. The other important public utility buildings were the Great Bath and Granary. We have discussed them in detail in Block 6, Unit 18.

14.3 ANCIENT INDIA

The architecture of Ancient India can be broadly divided into two categories:

1) Residential
2) Religious monuments

14.3.1 Residential Architecture

Residential architecture in this period is basically associated with urban centres because only in cities non-perishable materials were used. We have literary and archaeological sources to support this claim. For example, the Milind Panha describes a city with moats, ramparts, gate houses, towers, well laid out streets, markets, parks, lakes, and temples. There are references to building of several storeys with wagon-vaulted roofs and verandahs mostly constructed of wood. This description to an extent is corroborated by other literary sources.
such as Megasthenese’s *Indica* etc. and archaeological sources. However, in the countryside not much change was noticed in architectural styles or types of hutments.

### 14.3.2 Religious Monuments

**Stupas**

The practice of preserving the remains of an important personality under a heap of accumulated earth had been in existence for long. Buddhists adopted this practice and the structure built over such a site was known as stupa. According to Buddhist sources the remains of Buddha’s body were divided into eight parts and placed under the stupas. These, during the time of Ashoka, were dug out and redistributed which led to the construction of other stupas, the sacred places of Buddhism. The worship of stupas led to their ornamentation and a specific type of architecture developed for their construction.

The stupas had the shape of a bowl turned upside down. At the top, which was a bit flat, used to be its harmika i.e., the abode of the Gods. It was here that the urns containing the remains of Buddha or a great personality connected with the religion was placed in a gold or silver casket. A wooden rod was placed in its middle and the bottom of the rod was fixed on the top of the stupa. On the top of this rod were placed three small umbrella-type discs symbolizing respect, veneration and magnanimity. The main stupas in India are located at Bodhgaya, Sanchi, Bharhut, Amravati, and Nagarjunkonda.

**Rock cut Architecture**

Both the Buddhists and the Jains built chaityas and viharas as places of worship. A chaitya is a shrine cell with a votive stupa placed in the centre. The general characteristics of the chaityas are as follows:

- They have a long rectangular hall ending in a semi-circle at the rear end.
- This long hall is internally divided into a nave, an apse and two side aisles.
- The aisles are separated from the nave by two rows of pillars.
- The pillars come round the votive stupa placed in the centre of the apsidal part of the nave.
- The hall has a barrel-vaulted ceiling.
- The doorway is usually placed facing the votive stupa.
- The facade has a horse-shoe shaped window called the chaitya window.
Viharas were primarily cut out of rocks for the residence of monks. The general features of viharas are:

- They have a square or oblong hall in the centre.
- This is preceded in front by a pillared veranda.
- They have a number of small square cells.
- The cells and halls are usually provided with raised benches for the use of monks.

The earliest of the viharas of western India are located at such sites as Bhaja, Bedsa, Ajanta, Pitalkhora, Nasik and Karle.

Temple

The earliest free standing religious building of which traces remain is a small round hall, probably containing a Buddhist Stupa, at Bairat near Jaipur. There are no remains of free-standing Hindu temples erected before the Gupta period, though by this time they must long have been built in wood, clay and brick. All the Gupta temples were small, and most had flat roofs. Their masonry was held together without mortar, and was far larger and thicker than was necessary for the comparatively small buildings. The portal veranda was continued all round the building, making a covered walk.

The standard type of Hindu temple, which has persisted from the 6th century to the present day, was not fundamentally different from that of the ancient Greeks. The heart of the temple was a small dark shrine-room (garbha griha), containing the chief icon. This opened into a hall for the worshippers (mandapa), originally a separate building, but usually joined to the shrine-room by a vestibule. The hall was approached by a porch. The shrine room was generally surmounted by a tower while smaller towers rose from other parts of the building. The whole was set in a rectangular courtyard (which might contain lesser shrines) and was often placed on a raised platform.

Check Your Progress- 1

1) Explain the salient features of ancient Indian architecture?

2) What is the significance of non-perishable material in architecture?
14.4 MEDIEVAL INDIA

The advent of the Turkish rule in India is significant not only politically but it also marked the beginning of a new expression in the building art. The style of architecture that evolved during this time is called Indo-Islamic.

14.4.1 Indo-Islamic

On a careful reading of the reports prepared by General Alexander Cunningham on archaeological sites and remains (Reports of the Archaeological Survey of India, vols. I-XXIII, Simla, Calcutta, 1865-77) in North India we observe that the incidence of masonry buildings including civilian housing in towns increases significantly after the 13th century. This was primarily possible due to the use of lime mortar as the basic cementing material. The building of true arch required stones or bricks to be laid as voussoirs in the shape of a curve and bound together firmly by a good binding material. This material was lime-mortar.

The result of the introduction of the new technique was that the pre-Turkish forms, lintel and beam and corbelling, were replaced by true arches and vaults and the spired roofs (shikhar) by domes (Gumbad). Arches are made in a variety of shapes but in India the pointed form of the Islamic world was directly inherited. The four-centred arch was introduced by the Tughluqs in their buildings.

The pointed arch was adopted in the Islamic world quite early due to its durability and ease of construction. The usual method of raising a pointed arch was to erect a light centering and place one layer of bricks over it. This layer supported another thin layer of flat bricks over which radiating voussoirs of the arch were fixed in mortar. It may be noted here that the employment of bricks instead of an all-wood centering was a typical feature of regions deficient in reserves of wood such as West Asia.

The construction of dome demanded special techniques. The problem was to find a suitable method for connecting the square or rectangular top of the walls of the room into a circular base for raising a spherical dome. The best way to overcome this problem was to convert the square plan into a polygon by the use of squinches across the corners.

It is a curious fact that there are very few instances of early Turkish buildings in India where newly quarried material has been employed by the architects. The fashion was to use richly carved capitals, columns, shafts and lintels from pre-Turkish buildings. It is only towards the beginning of the 14th century that buildings were raised by using originally quarried or manufactured material.

In the masonry work, stone has been used abundantly. The foundations are mostly of rough and small rubble or wherever it is possible of river boulders, while the superstructure is of dressed stone or roughly shaped coarsed stonework. However, in either case, the buildings were plastered all over.

The material commonly used for plastering building was gypsum. Apparently lime-plaster was reserved for places that needed to be secured against the leakage of water, such as roofs, indigo-vats, canals, drains etc. Later on gypsum mortar was preferred for plaster work on the walls and the ceiling.

Decorative art in the Islamic buildings served the purpose of concealing the structure behind motifs rather than revealing it. Since the depiction of living beings was generally frowned upon, the elements of decoration were in most cases limited to:

a) Calligraphy
b) Geometry and
c) Foliation

Calligraphy was an important element of the decorative art in the buildings of this period. The Quranic sayings are inscribed on buildings in an angular, sober and monumental script known as Kufi. They may be found in any part of the building-frames of the doors, ceilings, wall panels, niches etc., and in variety of materials-stone stucco and painting.
Geometric shapes in abstract form are used in these buildings in a bewildering variety of combinations. The motifs indicate incorporation of visual principles: repetition, symmetry, and generation of continuous patterns.
Of the foliations, the dominant form of decoration employed in buildings, is the *arabesque*. It is characterized by a continuous stem which splits regularly, producing a series of leafy secondary stems, which can in turn split again or reintegrate into the main stem. The repetition of this pattern produces a beautifully balanced design with a three dimensional effect.

**Check Your Progress-2**

1) What are the main architectural features introduced by Islamic Culture in India?

2) Explain the difference between ancient Indian and Islamic styles of architecture.

**14.4.2 Mughal**

The Mughal rulers were men of acute aesthetic awareness and, as patron of art and culture, they built beautiful cities and buildings in India. The foundation of a new style of architecture in India had already been laid in 13th century with the introduction of the arcuate technique, where spaces were covered with domes and entrances were made with the help of arches. The Mughals carried this tradition and created a synthesis of the pre-Turkish technique, viz., trabeate with the arcuate. The final result, however, of all thisblending was the emergence of a distinct style of their own.

Babar did not have enough time to devote to big architectural projects. He, nevertheless, laid out several gardens in India on the pattern of his culture-area. In his memoirs (*Babar Nama*) he claims credit for some pavilions also. Unfortunately very few of his buildings survive today. The buildings during the period of Humayun do not show any distinctiveness. However, the impact of a long contact with the Persian culture can be seen in the designing and execution of his mausoleum under the supervision of his wife Hamida Banu Begum.

The Mughal rule in India was interrupted by Shershah Sur in 1540. For the next 15 years the Empire came under the sway of the Surs who worked on profound architectural projects. Their buildings, in fact, laid the groundwork on which the Mughals built subsequently. The major representative of this group is the tomb of Sher Shah (in Sasaram), an architectural masterpiece. Here the architect considerably enlarged the normal proportions of the earlier buildings and set it in a beautiful tank approached by a causeway. In addition to this he increased the number of storeys thus producing a beautiful pyramidal structure in five distinct stages.

Sher Shah's tomb stands on a stepped square plinth on a terrace approached through a gateway via a bridge placed across the tank. There is an error in orienting the lower platform.
of the tomb on the main axis. But it is corrected by skewing the axis of the super structure built over the lower platform. The main building comprises of an octagonal chamber surrounded by an arcade. There are domed canopies in each corner of the platform. The proportion of diminishing stages and the harmonious transition from square to octagon and to sphere are elements which speak rightly of the capabilities of the Indian architects.

One notable feature of Sur architecture was the shape of the arches. There is a slight drop or flatness in the curve towards the crown. It is indicative of the last stage before the development of the four-centred Tudor arch of the Mughals.

The flowering of the Mughal architecture in reality took place under Akbar. He encouraged a hybrid style containing foreign as well as indigenous elements. It represents the fine examples of the fusion of Indo-Islamic architecture with pre-Turkish architectural elements.

The chief elements of the style are listed thus:

- use of red sandstone as the principal building material,
- a widespread use of the trabeated construction,
- use of arches mainly in decorative form rather than in structural form,
- 'Lodhi' type domes, sometimes built hollow but never technically of the true double order,
- multifaceted shafts of the pillars and the capitals of these pillars in the form of bracket supports, and
- a decoration of boldly carved or inlaid patterns complemented by brightly coloured patterns on the interiors.

It was while designing the new ceremonial capital at Sikri, nearly forty kilometers west of Agra, that we witness Akbar's architectural ideals at their maximum. It is one of the most remarkable monuments in India. In its design and layout Fatehpur Sikri is a city where the public areas like the courtyards, Diwan-i-Am and Jami Masjid form a coherent group around the private palace apartments.

The buildings in Fatehpur Sikri may be divided into two categories; religious and secular. The religious buildings comprise (a) the Jami Masjid; (b) Buland Darwaza; and (c) The tomb of Shaikh Salim Chisti. The secular buildings are basically palaces and administrative buildings.

The tomb of Salim Chisti stands in the courtyard of the Jami Masjid in the north-western quarter. It is an architectural masterpiece as it exhibits one of the finest specimens of marble work in India. The structure was completed in 1581 and was originally faced only partly in marble. Two serpentine brackets supporting the eaves and the carved lattice screens are remarkable features of this structure.

A unique building of the palace complex is the Panch Mahal - five storeyed structure, located south-east of the Diwan-i-khas. The size of the five storeys successively diminishes as one goes upwards. At the top is a small domed kiosk. Some of the sides in this building were originally enclosed by screens of red sandstone. But none remain intact now. An interesting feature is that the columns on which the five storeys have been raised are all dissimilar in design.

In the sphere of building art, Jahangir's and Shah Jahan's reigns were an age of marble. The place of red stones was soon taken over by marble in its most refined form. This dictated significant stylistic changes which have been listed below:

- The arch adopted a distinctive form with foliated curves, usually with nine cusps,
- Marble arcades of engrailed arches became a common feature,
- The dome developed a bulbous form with stifled neck. Double domes became very common,
- Inlaid pattern in coloured stones became the dominant decorative form, and
- In the buildings a new device of inlaid decoration called pietra-dura was adopted. In this method, semi-precious stones such as lapis-lazuli, onyx, jasper, topaz and cornelian were embedded in the marble in graceful foliations.
The tomb of Itimadud Daula, built in 1622-28 by Nur Jahan on the grave of her father Mirza Ghiyas Beg, marks a change in architectural style from Akbar to Jahangir and Shah Jahan. It was a transition from the robustness of Akbar's buildings to a more sensuous architecture of the later period. The tomb is a square structure raised on a low platform. There are four octagonal minarets, at each corner, with domed roofs. The central chamber is surrounded by a veranda enclosed with beautiful marble tracery. The main tomb is built in white marble and is embellished with mosaics and *pietra dura*. The central chamber contains the yellow marble tomb of Itimadud — Daula and his wife. The side rooms are decorated with painted floral motifs. Four red sandstone gateways enclosing a square garden provide a splendid foil for the white marble tomb at its centre.

Shahjahan's reign was marked by extensive architectural works in his favorite building material, the marble. The Taj Mahal is undoubtedly Shahjahan's grandest and most well known project. The plan of the complex is rectangle with high enclosure wall and a lofty entrance gateway in the middle of the southern side. There are octagonal pavilions, six in all, at the corners and one each in the eastern and western sides. The main building of the Taj stands on a high marble platform at the northern end of the enclosure. To the west of this structure is a mosque with a replica on the east side retaining the effect of symmetry.

The Taj Mahal is a square building with deep alcoved recesses in each side and its four corners bevelled to form an octagon. Above this structure rises a beautiful bulbous dome topped with an inverted lotus finial and a metallic pinnacle. At the four corners of the platform rise four circular minarets capped with pillard cupolas. The interior resolves itself into a central hall with subsidiary chambers in the angles, all connected by radiating passages. The ceiling of the main hall is a semi-circular vault forming the inner shell of the double dome. The decorative feature consists of calligraphy and inlay work in the exterior and *pietra dura* in the interior. The garden in front of the main structure is divided into four quadrants with two canals running across forming the quadrants.

During the post-Mughal period Safdarjung's tomb at Delhi is very important. It is located amidst a large garden and copies the plan of the Taj Mahal. One major change in the design, however, is that the minarets are not independent structures. The main building stands on an arcaded platform. It is double storied and is covered by a large and almost spherical dome. The minarets rise as turrets and are topped by domed kiosks. The building is in red sandstone with marble panelling. The cusps of the arches are less carved but synchronise well with the overall dimensions of the building.

### 14.5 COLONIAL PERIOD

The building activity in British India was dominated by the churches and the public works. The intervention of the first wave of design reformers established the moral and aesthetic values of Gothic as pre-eminent for the architecture of a Christian power. The second wave of reforms primarily vernacular in inspiration, promoted renewed interest in India's heritage.

Few match in grandeur the great religious and secular works of Goa, the extensive and prosperous seat of the Portuguese in India from 1530 to 1835. Among the surviving churches, Church of the Holy spirit is most important. The Portuguese introduced Gothic and Baroque architecture in India. In some cases, however, purely Indian style was also adopted. It is interesting to see no one style superseding the rest. The Indian churches, therefore, exhibit a great variety in the stylization of their buildings. The last great Goan work to follow a metropolitan prototype, is the church of our Lady of Divine Providence. It has a sumptuous, free standing salomonic high altar. It has a Baroque sense of scale, inside and outside.

The early Indian churches were built in Kerala. A popular belief among the christians of Kerala is that the Apostle Thomas had built seven churches in different parts of Kerala. The survival of buildings is not to be expected — the stock building material in Kerala was wood and thatlts. The Syrians brought with them Western Asian conventions in church architecture. Churches with regular chancel and nave began to be built, the region liturgy and ritual were adopted, and soon Kerala evolved a distinctive style of church architecture. The peculiar feature of this style was the ornamented gable facade at the nave, whitened with lime, and surmounted by a cross. A porch or hall, called shala in front was another common feature of kerala churches of the time; the shala was generally meant for the accommodation of additional worshippers during festivals when pilgrims or the faithful from other parishes attended the church. (P. Thomas, Churches in India.)
The earliest surviving specimen of a European style church in India is located in Cochin. It was built in 1510 along with the establishment of a factory by Albuguerque. This church was used in inter the body of Vasco Da Gama in 1524. Later under the British it became an Anglican church.

From the last decades of the 18th century the company's principal seat, Calcutta, was stamped with the hall-mark of authority. The metropolitan power found the picturesque, flexible, medieval English styles to be practical, as well as appropriate, for the celebration of its achievements in the ever widening diversity of building types in the industrial age.

In the prevailing eclecticism of the age, English design reformers, disgusted with the prevalent situation of the classical and medieval styles of Europe's past thought it fit to produce the so called - Free style hybrid architecture. On the other hand the hybrid evolved for Bombay, though still essentially foreign was away from a narrow cultural chauvinism towards Indian traditions. To that extent it was reformatory. However the synthesis that the Anglo-Indians were to evolve added a resounding new dimension to British architecture in India.

**Check Your Progress-3**

1) Examine the contribution of Akbar to the evolution of Indo- Islamic style of architecture
2) How is the architecture of Shahjahin's reign different from that of Akbar's?

3) Summarise the architectural styles of the colonial era.

14.6 LET US SUM UP

The above pages make you aware of the rich tradition of architectural art as practiced from ancient times up to the colonial period. The above survey makes it clear that Indian architecture is peculiar in nature as it has incorporated various architectural styles of the world. Main among them are Islamic style of arch and dome. The assimilation provided the famous Indo-Islamic styles of architecture. Later on during the Colonial period the features of Gothic and medieval English architecture were freely used. The assimilation of those styles is presented in the creation of New Delhi.

We have also discussed a few buildings especially to make you more comfortable while explaining the sources to the tourists.

14.7 KEYWORDS

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Alcove</td>
<td>a vast arched recess</td>
</tr>
<tr>
<td>Arcade</td>
<td>a range of roofed arches</td>
</tr>
<tr>
<td>Arch</td>
<td>a self-supporting structure made of bricks or of stone blocks and capable of carrying a superimposed load over an opening</td>
</tr>
<tr>
<td>Bay</td>
<td>depressions</td>
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<tr>
<td>Bevel</td>
<td>a sloping surface</td>
</tr>
<tr>
<td>Bracket</td>
<td>a support projecting from a wall</td>
</tr>
<tr>
<td>Cenotaph</td>
<td>commemorative building</td>
</tr>
<tr>
<td>Convoluted arch</td>
<td>an arch that is cusped inside</td>
</tr>
<tr>
<td>Colonnade</td>
<td>a row of columns</td>
</tr>
<tr>
<td>Causeways</td>
<td>passage across a water body</td>
</tr>
<tr>
<td>Cupola</td>
<td>a domical roof over a polygonal space</td>
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### Architecture

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Dome</td>
<td>A convex roof built over a square octagonal or circular space</td>
</tr>
<tr>
<td>Eaves</td>
<td>Slight projection of roof</td>
</tr>
<tr>
<td>Engrailed arches</td>
<td>Foliated arch</td>
</tr>
<tr>
<td>Facade</td>
<td>A course of bricks or stones projecting from a wall as a continuous structure</td>
</tr>
<tr>
<td>Finial</td>
<td>The top of a domical roof</td>
</tr>
<tr>
<td>Kiosk</td>
<td>An open pavilion having roof supported by pillars.</td>
</tr>
<tr>
<td>Pier</td>
<td>A mass of stone or brick which supports a vertical load</td>
</tr>
<tr>
<td>Pietra Dura</td>
<td>An ornamental mosaic of <em>Lapis lazuli</em> marble etc.</td>
</tr>
<tr>
<td>Post</td>
<td>Long timber supporting vertical thrust of some part of a building</td>
</tr>
<tr>
<td>Portal</td>
<td>Frontage</td>
</tr>
<tr>
<td>Stucco</td>
<td>Ornamentation done by carving lime plaster</td>
</tr>
<tr>
<td>Trabeate</td>
<td>An architectural form in which the main openings are made by beams supported on pillars</td>
</tr>
<tr>
<td>Turrets</td>
<td>Sleek minarets attached with the building</td>
</tr>
</tbody>
</table>

### 14.8 ANSWERS TO CHECK YOUR PROGRESS EXERCISES

**Check Your Progress-1**

1) See Sec. 14.3.


**Check Your Progress-2**

1) See Sub-sec. 14.4.1.


**Check Your Progress-3**

1) See Sub-sec. 14.4.2.

2) The main difference lies in the use of building material. Akbar used red sand stone while Shahjahan's buildings have mostly marble as the building material. See Sub-sec. 14.4.2.

3) See Sec. 14.5.
15.0 OBJECTIVES

The present Unit oversteps the political boundaries of the North Indian cultures and attempts a study of the development of architecture in regions outside these areas. Its purpose is to:

- emphasize the character and development of architectural styles in the buildings in regional states,
- highlight the influences which were exerted by these regions over central area and vice-versa, and
- account for some of the major developments in the architecture during the colonial period.

15.1 INTRODUCTION

The development of art and architecture in the regional states follows diverse course. The evolution of any architectural style greatly depends upon the nature of available building material. It determines the evolution of a particular type of technology and its application. The regions where wood is available in plenty, for instance, abounds in buildings constructed of wood using lintel and beam technology. Areas where big rocks are available in plenty, we find very fine kind of rock cut architecture. It must be understood that this multiplicity of form does not conform to any set geographical pattern. Rather, at times, it takes a cross-regional course.

The different sections of this Unit take into account the developments in architecture in Eastern, Western and Central India, the Deccan and the Vijaynagar kingdom, as also in the colonial period.

15.2 ANCIENT PERIOD

The architecture of this period can be broadly divided into two categories:

i) Residential structures
ii) Religious monuments
Under the first category we have very few surviving monuments since they were built of perishable material like wood. However, a number of monuments have survived or been unearthed through excavations which come under the second category. It included stupas, followed by rock-cut temples and free standing temples.

15.2.1 Stupas

In the preceding Unit we have already discussed the concept behind the construction of the stupas and their architectural design. Here we will discuss some of the prominent structures of this category.

1) Sanchi Stupa (Madhya Pradesh)

It is one of the most famous stupa sites in India. It has three stupas all with gateways around them. But the most famous is the Great stupa which was originally made of bricks in Ashoka’s time (250 B.C.). During the Shunga period this was nearly doubled in circumference (in 150 B.C.). The bricks of Ashokan time were replaced by stones, and a vedika was also constructed around it. Four gates, one in each direction were added to beautify it. From the southern gate we get an inscription which tells us that it was donated by King Satkarni and the incision was done by those craftsmen who worked in ivory.
The northern gate and the panels depict stories from the Jatakas. The relief of Sandhi quite prominently display the following:

1) The four great events of the Buddha's life i.e. birth, attainment of knowledge, dharma-chakra - pravartana and maha parinirvana.

2) Representations of animals like lion, elephant, camel, ox, etc. are abundant. Some of the animals are shown with riders in heavy coats and boots.

3) Lotus has been prominently and beautifully carved out as ornamentation, and

4) A unique representation of forest animals, in a manner which looks as if the whole animal world turned out to worship the Buddha.

2) Nagarjunakonda stupa

The Nagarjunakonda stupa was built in a style different from that of North India. Here two circular walls, one at the hub and the other at the outer end, were joined by spoke like walls and the intervening space was filled with mud or small stones or pieces of bricks. The diameter of this stupa was 30 meters and the height was 18 meters. The outer casing of the drum consisted of richly carved marble slabs. The hemispherical top of the drum was decorated with lime and mortar work. The four rectangular projections, one at each cardinal point, supported a row of five free standing pillars.

The importance of this stupa is due to the beautiful panels which illustrate episodes from the life of the Buddha. The most important scenes are:

1) Gods praying to Buddha-satva to take birth on the earth.

2) Buddha's entry into womb in the form of a white elephant.

3) Birth of the Buddha under a flowering tree.

A number of other stupas have been found in many parts of the country. For example, two stupas were found in Mathura. In fact, this was a period when stupa architecture developed into particular style and the presence of similar features in stupas of various regions suggests the mobility of and interaction between artisans who built the stupas and beautiful works of art associated with the stupas.

15.2.2 Rock Cut Architecture:

Of the centuries before the Gupta period the chief architectural remains, other than stupas and their surrounding gateways and railings, are artificial caves, excavated for religious purposes. Early specimens show a slavish imitation of carpentry. The two caves of Barabar Hills near Bihar, dedicated by Ashoka to Aivika monks, are in the form of a plain rectangular outer hall, at one end of which is an inner chamber with a carved wall and overhanging caves. Similar dependence on wooden models is evident in many other features of design until the Gupta period.

Later cave temples and monastries are to be found in many parts of India, but it was in the western Deccan under the Satavahana empire and its successors, that the largest and most famous artificial caves were excavated. The oldest Deccan cave is at Bhaja near Poona which is very simple. The finest single example is the great caitya hall at Karli, probably made around the beginning of the Christian era. This is cut 12 feet deep into the rock and is of the same general pattern as that at Bhaja and many other caves of the western Deccan, but much developed in size and splendor. The columns are no longer plain and austere but by a process which can be traced through earlier stages, they have become heavy and ornate. Each is set on a square stepped plinth, and rises from a bulbous base, which is carved to represent a large pot with base end view. Each pillar carries a complicated group of horses and elephants with riders to support the roof, which is carved in imitation of the timber rafter of barrel vaulting. The caitya or shrine at the end of the hall is much enlarged in comparison with those of other caves.

The simple facades of the earlier caves were developed into elaborately carved verandas, each usually with a large window; the full size of the gable-end, which let light into the hall.
The Karli cave has three entrances, and splendid relief panels of daimpati (ouples), with small carved gable-end above.

Perhaps even more impressive are the later cave temples of Ellora, near Aurangabad. There are no less than thirty-four caves constructed from 5th to 8th centuries A.D., most of them Hindu but some Buddhist and Jaina. The crowning achievement of Ellora is the great Kailasanatha Temple, made out of a monolithic rock on the instructions of the Rashtrakuta Emperor Krishna (C.756-775 A.D.)

The entire rock face was cut away and a splendid temple was carved like a statue from the hill side, complete with shrine-room, hall, gateway, votive pillars, lesser shrines and cloisters, the whole adorned with divine figures and scenes large and small of a grace and strength rarely seen again in Indian art. The ground plan of Kailasanath is of about the same size as the Parthenon, and it is half as high. The labour necessary to construct it, however, was less than that which was required to build a comparable temple of masonry.

Kailasanatha is not the earliest temple hewn from solid rock. Others are to be found at Mallapuram, on the sea-coast where seventeen temples, none very large in size, were carved from outcropping hillocks of granite under the patronage of 7th century Pallava kings. They still show the influence of wood construction, and are of a distinctive style, possibly looking back to Dravidian prototypes.

The latest cave-temples of importance are those of Elephanta, a beautiful little island off Bombay. It is famous for the sculpture, especially for the great Trimurti figure of Siva.

15.2.3 Temples The first major landmark in temple architecture is the temple generally known, from the modern name of the site, as that of Jandial, Taxila. It contained a square inner sanctuary, a meeting hall and a courtyard, and its outer and inner entrances were each flanked by two large pillars of orthodox pattern. The Jandial temple was probably a Zoroastrian religious place.

From the Gupta period several examples survived, chiefly in western India, all showing the same general pattern. Pillars were usually ornate, with heavy bell shaped capitals surmounted by animal motifs, and the entrances were often carved with mythological scenes and figures. All the Gupta temples were small and most had flat roofs. The finest Gupta temple, that of Deogarh near Jhansi, probably of the 6th century marks a great advance. Here iron dowels were used to hold the masonry together, and a small tower rose above the sanctuary. The portal veranda was continued all round the building making a covered walk.
The temples were ornately decorated, often even in the dark shrine rooms lighted only by flickering oil-lamps. Despite this ornateness, the apprenticeship of this tradition in rock architecture gave the architect a strong sense of mass. Heavy cornices, strong pillars, wide in proportion to their height and the broad base of the sikharā or tower, give to Indian temple architecture a feeling of strength and solidity, only in part counteracted by the delicately ornate friezes.

Considering the size of the land, Indian temple architecture is remarkably uniform, but authorities distinguish two chief styles and numerous schools. The Northern or Indo-Aryan style prefers a tower with rounded top and curvilinear outline, while the tower of the Southern or Dravidian style is usually in the shape of a rectangular truncated pyramid.

The temple building gained much from the patronage of the Pallava and Chalukya kings in the 6th.-8th. centuries. These are situated in Mamallapuram, Kanchi & Badami. These styles show the gradual emancipation of the architect from the techniques of carpentry and cave architecture. The apogee of the Pallava style was reached in the shore temple of Kanchi which has a pyramidal tower formed of two courses of small barrel vaults, surrounded by a solid cupola suggesting a Buddhist stupa.

The style of the Pallavas was developed further under the Chola dynasty (10 - 12th centuries); their finest products are the temple of Shiva at Tanjavur built by Rajaraja the Great (985 - 1014 A.D.) and a temple built by Rajendra I at Kondacholapuram. The former was probably the largest temple built in India up to that time, a great tower in the shape of a pyramid, rising from a tall upright base and crowned with a domed finial, the whole being nearly 60 metres high.

In the next phase of Dravidian architecture the emphasis shifted from the tower above the chief shrine to the entrance gateway of the surrounding wall. From the 12th century onwards it became usual to fortify the temple often with three square concentric walls, with gates on the four sides. The gates were surrounded by watch-towers or gatehouses, and these developed into soaring towers (gopuram), generally much taller than the modest sikharā over the central shrine. The entrance tower was usually in the form of an oblong pyramid, with its broadest side parallel to the wall.
The new style is often called Pandyan. The great temple of Madurai is the most famous and beautiful of Pandyan temples.

Check Your Progress-1

1) What are the characteristics of Stupa Architecture?

2) What are the features of rock cut architecture?

15.3 MEDIEVAL PERIOD

The regional styles of architecture came into vogue usually after the provinces had thrown off the allegiance to Delhi Sultanate and proceeded to develop a form suiting their individual requirements. These were distinct from the Indo-Islamic style practiced at Delhi (discussed in Unit-14) and often displayed definitely original qualities. In the areas which had a strong indigenous tradition of workmanship in masonry, regional styles of Islamic architecture produced the most elegant structures. On the other hand where these traditions are not so pronounced, the buildings constructed for the regional states were less distinctive. In some cases totally novel tendencies, independent of both the indigenous and the imperial Sultanate traditions, are also visible.

It is interesting that the development of the earliest regional style in architecture should have taken place at the other end of the subcontinent, in eastern India. In fact there did emerge two major strands of architectural style in this region viz., in Bengal and in Jaunpur, both of which witnessed the rise of regional states.

15.3.1 Eastern India

Bengal: The establishment of an independent Muslim power in Bengal took place within a gap of five years since the capture of Delhi by the Turks. But an independent building style, distinct from the one prevalent at Delhi, developed at the beginning of the 14th century and lasted for nearly 250 years.

Bengal style spread in all parts of the region, but most of the prominent buildings were located within the boundary of the Malda district which had been the strategic centre of the region due to the confluence of the two rivers, the Ganga and the Mahananda. Here lie the remains of the two principal cities - Gaur & Pandua - which, in turn, enjoyed the status of the capital seat of the regional ruling power. In our effort to understand the distinctive features of the
architectural style of this region we have to depend mostly on the buildings extant in these two cities and a few important examples elsewhere.

The building art of Bengal is generally divided into the following three phases of which the first two are considered preliminary stages and the third its ultimate development into a specific style.

- The first phase is from A.D. 1200 - 1340 (During most of this time Gaur was the capital seat. Only in later years it was shifted to Pandua).
- The second extended from A.D. 1340 to 1430.
- The third phase from A.D. 1442 to 1576 when the Mughals captured the province. During this phase the capital was shifted back to Gaur.

The data in the form of extant buildings for the first phase is scanty. Even where two or three structures survive they are in a badly ruined state. It is, nonetheless, evident that the buildings raised during the period were wholesale conversion of the existing non-Islamic structures. Similarly, the second phase is also deficient in data as it is represented by a solitary example. But this building - Adina Masjid at Pandua (built 1364) - surpasses all other Islamic structures in Bengal in size. It introduces two new features in the architectural style:

- the 'drop' arch, having a span greater than its radii, and centres at the impost level, and
- the method of raising the roof in a system of arched bays where small domes supported by brick-pendentives in over-sailing courses were raised over each bay. The bricks in these pendentives were set diagonally in each alternate course in such a manner that their corners project and help in the transition from a square to a circular base.

The third phase is the most remarkable as it depicts the emergence of a semi-indigenous style in tune with the peculiar environment and local conditions in Bengal. This result was to translate the native bamboo structures into brick. In the course of time this special form of
Curved roof became a fixed convention. In most of these buildings, moreover, an indigenous form of decoration—i.e., terracotta tiles, was adopted.

It thus becomes clear that nowhere in Indid did climate and local conditions as well as indigenous building styles affect the development of architecture as profoundly as in Bengal. Its merit lies in its dynamic ability to transform itself by adoption and adaptation.

Jaunpur: The Sharqi Kingdom at Jaunpur was founded by Malik Sarwar, a noble of Ferozshah Tughluq, in 1394. In the wake of Timur's invasion and sack of Delhi, Jaunpur took over from the capital as a centre of scholars and writers. The surviving architecture of Jaunpur consists exclusively of mosques. Moreover, all the surviving buildings produced under the Sharqis are located in the capital city Jaunpur.

The Sharqi architecture of Jaunpur carries a distinct impact of the Tughluq style, the battering effect of its bastions and the use of arch and beam combination in the openings being the two most prominent features. However, the most striking feature of the Jaunpur style is the designs of the facade of the mosques. It is composed of lofty propylons with sloping sides raised in the centre of the sanctuary screen. The propylons consist of a huge recessed arch framed by tapering square minars of exceptional bulk and solidity, divided into registers.
The best examples can be seen in the Atala Masjid (built in 1408) and the Jami Masjid. Evidently the propylon was the keynote at Jampur style and occurs in no other manifestation of Indo-Islamic architecture.

15.3.2 Western India

The regional style of architecture that came into being in western India towards the beginning of the 14th century is almost exclusively confined to Gujarat.

Gujarat: The regional style flourished for a period of some 250 years beginning early in the 14th century. The founders of Gujarat style of Indo-Islamic architecture were indeed the governors of the Khalji Sultans of Delhi.

There were three different phases of the Gujarat style.

1) The first phase lasting for the first half of the 14th century was marked by the demolition of the temples, and their reconversion into Muslim buildings.

2) The second phase prevailing mostly during the first half of the 15th century and showing signs of hesitant maturity of a distinctive style.

3) Finally the phase beginning in the latter half of the 15th century when Gujarat style emerges in its own magnificent form. Most of the typical examples relate to this period of Gujarat style.

Here it is important to remember that the Gujarat style of architecture is the most indigenous in character. In some of the finer examples of this style considerable portions of the buildings are in fact adaptations from either Hindu or Jain temples. The essence of Gujarat style will be easily understood if you envisage a scheme of construction where the structure of a temple is fitted into the sanctuary of the mosque in the form of a central compartment. Almost all the mosques from the second and third phase are composed in this manner.

15.3.3 Central India

In Central India the development of Indo-Islamic architecture remained confined within Malwa region which became an independent kingdom at the turn of the 15th century. But, unlike other regions, the Muslim rulers of Malwa did not inherit any strong tradition of visual art. The result was that to carry out their building projects skilled and experienced artisans were brought from as distant a place as Delhi who incorporated various styles prevalent at the time.
It was only in the later period that original elements of architecture were developed and decorative motifs on their own were adopted in the buildings of the Malwa rulers which gave them a distinctive appearance.

Malwa – Dhar & Mandu: The regional manifestations of Indo-Islamic architecture in Malwa are located essentially within the confines of two cities, Dhar and Mandu though some buildings may also be seen at Chanderi. The buildings at Dhar and Mandu derive many features from the Tughluq architecture such as the battered walls, fringed arch and the arch-beam combination. Most prominent features are:

- The two separate structural systems of the arch and the lintel have been combined and a new artistic style developed.
- The construction of stately flights of steps of considerable length leading to their entrances. It became necessary due to the use of unusually high plinths on which most of the buildings were raised.
- The element of colour assumes a significant role. We notice the use of two separate methods for obtaining this colour effect. The first is the use of various coloured stones and marble, and the second is by means of encaustic tiles. Jahaz Mahal at Mandu is a representative building.
15.3.4 Deccan

The architecture in Deccan seems to have ignored to a large extent the pre-Islamic traditions of the region. It consisted basically of the fusion of:

- The architectural systems in vogue at Delhi under the Sultans, particularly the Tughlaq form, and
- An entirely extraneous source, that is, the architecture of Persia.

The architecture of Deccan can be divided into three phases, Gulbarga — (1347 - 1425), Bidar (1425-1512), and Golconda (1512-1687).

Gulbarga: The early structures did not represent a distinctive style of Deccan Islamic architecture. For the most part they followed the contemporary Tughlaq architecture. The Jami Masjid (1367) inside the Gulbarga fort was, however, different and unique. The central designing idea lay in reversing all the architectural principles of mosques with a courtyard. Thus, in the Jami Masjid of Gulbarga the conventional design of the courtyard was filled with small cupolas supported by arches placed close together. But this design was never repeated. Possibly the unorthodox plan of this mosque did not find favour with the traditionalists.

Bidar: The city of Bidar is full of palaces with large audience halls and hammams, mosques, a madarsa and royal tombs. The buildings show a strong contemporary Iranian influence. The Indo-Islamic style of Delhi was also assimilated in the new style.

- Since colour was the characteristic feature of Iranian architecture, palaces at Bidar show a brilliant scheme of the use of coloured tiles and the mural painting. The glazed tiles which covered the exteriors were imported by sea from Iran.
- There is a distinctive change in the shape of some of the domes in the buildings at Bidar. They are slightly constricted in the lower contour and thus become the fore runners of the famous bulbous domes of the Mughals. The drums of those domes are made tall so as to project the domes in full view.

The madarsa of Mahmud Gausan is a fine specimen of this style.
15.3.5 Vijayanagar

Vijayanagar, founded in about 1336, is now deserted. It is one of the most important historical and architectural sites as it is the only Hindu city from the pre-modern period of which extensive remains still exist above ground. The city, in fact, had a great advantage as a site for large-scale building activity in that it abounds in granite and a dark green chlorite stone, both used extensively as building material. The use of monolithic multiple piers in the temples at Vijayanagar testify this fact.

The expanse of the city of Vijayanagar at the height of its glory measured some 26 sq.Km., and it was enclosed with a stonewall. Besides palaces and temples, the city had extensive water works and many secular buildings such as elephant stables and the Lotus Mahal. The basic elements of Vijayanagar style are:

- The use of pillars for architectural as well as decorative purpose is on an unprecedented scale.
- Numerous compositions are used in raising the pillars, but the most striking and also the most frequent is one in which the shaft becomes a central core with which is attached an upraised animal of a supernatural kind resembling a horse or a hippocryph.
- Another distinguishing feature is the use of huge reverse curve eaves at the cornice. This feature has been borrowed into the style from the Deccan and gives the pavilions a dignified appearance.
- Pillars have ornamental brackets as capitals. Usually this bracket is a pendant known as bodegal in local parlance. This pendant, in Vijayanagar style, is elaborated into the volute terminating in an inverted lotus band.

The glory of Vijayanagar empire ended in A.D. 1565 at the battle of Talikota and with that ended the architectural activity.
1) How many major architectural styles developed after the decline of the Delhi Sultanate?

2) In which region foreign architectural influence is evident on the buildings, and what was this influence.

15.4 COLONIAL PERIOD

The state of confusion created by the contending forces, after the decline of Mughal Empires, within the subcontinent, left India vulnerable to an external power. The British after many battles, gained supremacy in India in the last quarter of 18th century.

15.4.1 Princely Buildings

During the period of Mughal domination client princes, enlarged their seats in a manner befitting the new dignity bestowed upon them by the Emperor. During the period of Mughal decline, especially, the independent Muslim rulers like the Nizam of Hyderabad, the Sultan of Mysore, the Nawabs of Bhopal and Oudh endowed their capitals and dynasties with lavish mosques and palaces.

Hindu princes, who had learnt from the Muslims to erect monuments to the dead, constructed increasingly elaborate cenotaphs - chattris, and even imitation temples.

Most spectacular by far are the palaces of the Rajputs. Atleast three zones, varied in their differentiation but invariably still knit together by a network of easily defensible companion corridors and galleries are the hallmark of these palaces. An outer service court led to the principal court of public audience with a grand darbar hall. The ruler's personal apartments, with a hall for private audience, treasury, and sumptuous pavilions of retreat, preceded the last zone.

The trend of imitation/assimilation of different architectural styles continued. On a still larger and often even coarser scale native rulers adopted western palace types in whole or in part with state rooms incorporating ante-chambers, salons, and halls designed to cater for westernized manners and European guests. Notable examples are Falaknuma of Hyderabad, Jai-vilas commissioned by the Maharaja of Gwalior, and 'La-Martinere' at Lucknow.
15.4.2 British Architecture

You have already read (in Unit-14) the about process of British architectural development in India and must be aware of its basic features. Here we shall try to analyse the styles evolved at Bombay, Madras and Calcutta, as they represent the longer course of interaction between British authority and Indian people.

There were two main axes of architecture in Calcutta. The first was military buildings and the second civil buildings like the Council House, and Town Hall. There were other major buildings too. Most distinguished, was the "English Palladian" Town Hall. In general the colonial expression of the English Georgian styles was adopted to lend the appropriate decorum to the accommodation of the company's principals in India.

The Madras Government house was adopted for Lord Clive in 1790s from an earlier one, after the pattern set at Pondicherry by the residence built for Duplex, some fifty years ago. Quite different is the Bombay Town Hall of Colonel Thomas Lower of Bombay Engineers. It is hardly inferior to many of the works of the masters of French Neo-classicism.

From the 1840s it was the norm for the architect to follow the precedent with greater assimilation of indigenous styles. It was a reformatory approach towards architecture. These developments may be traced primarily in the great public building campaign in Bombay. The campaign opened with the decorated Gothic Scheme for the rebuilding of St. Thomas Cathedral.

Following the lead, an Anglo-Indian synthesis for the Pince of Wales Museum was achieved in 1905 and for the Gateway of India. The Museum, classic in plan and purpose, prefers a full blooded Adil-Shahi revival. The Gateway recalls the Roman form of triumphal arches as much as Ahmedabad's Tin Darwaza.

Check Your Progress-2

1) Describe the features of princely state's architecture.

2) Describe the characteristics of British Indian architecture.
15.5 LET US SUM UP

A notable fact about the regional architectural style is that their most interesting structures are to be found in areas previously known for a thriving building activity, and where indigenous masonry traditions were strongest. In brief the following may be noted:

- Different kinds of building material generally introduced technical differences in architectural styles in different regions.
- The unusual climatic conditions in certain parts of the country necessitated special treatment for the corresponding regional styles.
- It also represented the process of gradual assimilating of foreign architectural styles with the indigenous styles with regional variations.

15.6 ANSWERS TO CHECK YOUR PROGRESS EXERCISES

**Check Your Progress-1**

1) See Sub-sec.15.2.1
2) See Sub-sec.15.2.2

**Check Your Progress-2**

1) We may list them as:
   - Bengal
   - Jaunpur
   - Gujarat
   - Malwa
   - Bidar and
   - Gulbarga

2) See Sub-sec. 15.3.4.

**Check Your Progress-3**

1) See Sub-sec.15.4.1.
2) See Sub-sec.15.4.3.
Jabalpur is an important historical and cultural city of Madhya Pradesh, literally the central provinces of the country. A visit to this city is fascinating. Its diversity, history, history, divinity, serendipity, wild life, art and architecture have combined together to make a rich experience for the visitors.

Jabalpur envelops you, giving you a sense of great past, stories of empires and kingdoms, of warriors, of builders, of poets and musicians, of saints and philosophers. The city resounds with various memories of the city-state of Tripuri, Emperor Ashoka, the Satavahanas, the Guptas, the Kalchuris, the Gonds, and the memory of the famous and valiant queen Durgavati who took on the might of the great moghul Emperor Akbar. This was followed by the Maratha domination under the Bhonsles of Nagpur and later in the British period, the notorious ‘Thugs’ and the phenomenon of ‘thugee’ and the brave Col. Sleeman who vanquished them. The city also played a prominent role in the freedom movement of the country. The city has had a deep association with Rajarshi Pandit Dwarika Prasad Mishra, the indomitable fighter for the cause of the national language Seth Govind Das and the grand old man of Madhya Pradesh and its Chief Minister Pt. Ravi Shankar Shukla. The people of Jabalpur have always been very proud of their association with Netaji Subhash Chandra Bose.

Jabalpur is steeped in divinity and has been an eminent centre of learning. Through the ages, there has been a mingling of diverse religions. Vedic sages have blessed the soil and Hindu, Jain, Boudha and Moslem sants and their teachings have give a spiritual aura to the place. In more recent times, this city has been associated with the activities of the great Osho on one hand and Maharishi Mahesh Yogi on the other. All these traditions have added a distinct colour to the vibrant art and architectural forms in this area.

Jabalpur is also a city of natural grandeur. Its vast plateau is broken up by the mighty Vindhya and Satpura ranges and is streaked by the meandering Narmada, Vanganga and Hiran rivers, three of the more prominent ones in this area. These intersections of plateau, hills and the rivers have provided spectacular scenic splendour. Jabalpur is a town for the pleasure seeking as well as for those who are looking for solitude and tranquility.

Places to visit. There are many beautiful spots around Jabalpur for outings and picnics. More prominent of these are:

1) Beraghat: (A dream in the marbale rocks). This is a small town on the bank of Narmada and is famous for its marble rocks. It is at a distance of about 21 Kms. from Jabalpur by road. The holy river Narmada flows between the marble rocks which rise up to more than 100 feet on each side. Boating facilities are available here and boating in moon light is a thrilling experience. These rocks have recently been flood lit, adding new dimension to their beauty.
2) **Dhuandhar Falls**: The life line of Madhya Pradesh, river Narmada, before cutting through the marble rocks, narrows down and then plummets into a waterfall known as Dhuandhar or the smoke cascade. So powerful is the plunge that its roar is heard from a distance of more than a kilometer. The fall and breaking of the volume of water at the crest presents an awesome spectacle of nature’s power unleashed.

3) **Chausath Yogini Temple**: Situated on a hill and approached by steps, the chaunsath yogini temple commands a singularly beautiful sight of the whole area around and also of the river flowing through the marble rocks. Dedicated to Lord Shiva, this 10th century Kalchuri temple has exquisitely carved, sixty four sculptures of various goddess froms of Durga, besides a Shiva temple.

4) **Madan Mahal or the Palace of Love**: This palace was built by the Gond King Raja Madan Shah. The palace dominates the skyline and provides a panoramic view of the city and area around it. The famous balancing rocks are located slightly off the path that leads to this palace.

5) **Rani Durgavati Museum**: Dedicated to the memory of the great Gond queen Durgavati, this is one of the more famous museums of Madhya Pradesh. A vast collection of sculptures, inscriptions and other artefacts of great historical and cultural importance are preserved in this museum.

6) **Tripuri (Tewar)**: This ancient town is situated 13 Kms. to the west of Jabalpur on the Bheraghat road. Archeological remains of the ancient city of Tripuri are spread extensively over a vast area covering several kilometers. Archeological excavations carried out here have thrown much light on the ancient history of this area in general and Jabalpur in particular. This village was also the site of 1939 session of All India Congress, where Netaji Subhash Chandra Bose was elected president. A monument in the form of a gate (Kamania) was erected in the city to commemorate the event.

Besides the above, Jabalpur has very pleasant picnic spots at Water works (6 Kms.), Pariyat resersior (8 Kms.) and Katao (35 Kms.).

The city is also the headquarters of two Universities Rani Durgavati University and Jawahar Lal Nehru University of Agricultural Sciences. A Medical college and an Engineering college, besides a very large number of Arts, Science and Commerce colleges have been functioning in the city Robertson College which was established way back in 1835 is now functioning as Government Science College and Mahakoshai Arts and Commerce College, two of the several autonomous colleges of Rani Durgavati University.
पर्यटन के अनुकूल मनोरम स्थली कालिंजर :

प्राचीन मंदिर, अनेक सूक्ष्मकृत्ति मुर्तियों, विशाल एवं दुर्ग वन क्षेत्र, पद्म अन्नमय, त्वरि-यंन घूमनी, जल के अनजन स्रोत, निर्माणशील सिंहु के समान बिल्लु तथा बांध से आवृत्त शीतल, तथा राक-क्लाइमिंग के अंतर्गत सबसे उपयुक्त कालिंजर की जानकारी पर्यटन मात्रा विश्व के किसी भी पर्यटन स्थल से अधिक अवलोकन तथा रमणीय है।

इस पूरे क्षेत्र में अनेक जल-बूटियों, घोषधियों, महर तथा मघु का प्रचुर मंदिर है - यह वैज्ञानिकों, शिल्पकृत्सनां, इतिहासविद, संस्कृति भी अवश्य बांध, वृक्षारोप, वास्तुविद एवं मंदिरके के लिये एक महत्वपूर्ण स्थल है।

जाने का रास्ता :

वाहनार्थ :

बासुधाान से जाने के लिये निकटतम द्वारा भवन खयाल होगा (म. प्र.) है। कानपुर से बांध होते हुए भी यही पहुंच जा सकता है।

रेलमार्ग :

निकटतम रेलवे स्टेशन बांध (उ. प्र.) (58 किलोमीटर) तथा सतना (म. प्र.) (लगभग - 85 किलोमीटर) में रेलवे पर है।

बाहरार्थ :

बांध (उ. प्र.) एवं सतना (म. प्र.) से बस सुविधा है। सुजुराही, बांध और सतना से टैक्सीयों भी मिलती है।

आलेख : डॉ. सुशील कुमार सुलेहर

डॉ. भारतेन्दु प्रकाश
कालज्ञर

भारत का एक विलक्षण दुर्गः

कालज्ञर, उत्तर प्रदेश के बाबा जिले का ऐतिहासिक दुर्गः भारत की विशाल कला धरोहर के लिये अनुशंस देना है। इसकी गणना चंदेलों के आठ प्रमुख दुर्गों में से की जाती है। उत्तर प्रदेश-मध्य प्रदेश सीमा में स्थित यह दुर्ग एक सजग प्रहरी की तरह रक्षक की एक महत्वपूर्ण मूर्तिका बिखराले से निवाह दर्शन करता रहता है।

दुर्गकरण के पूर्व कालज्ञर तत्काल स्थल, तीर्थ स्थल एवं आरामस्थल का केन्द्र था। इसकी महत्व बहुत, महाकाव्यों, पुराणों, बौद्ध, जैन तथा अन्य अनेक साहित्यिक कृतियों, आलम्बनों, लोक गाथाओं में वर्णित है। कालज्ञर और विषब एक दूसरे के पूरक एवं पर्याय हैं। अभिलेखों में इसे "कालज्ञर", "कालज्ञराद्वी", "कालज्ञर गिरि" एवं "कालज्ञरपुर" आदि नामों से तथा विषब (नीलकंठ) के अधिवास के रूप में सुविक्षय कहा गया है।

इस दुर्ग का सामान्य महत्व के कारण प्राचीन भारत के अनेक राजवंश इसे अधिकृत करने के लिये नालपथित रहते थे। इसे प्रामाण कर वे "कालज्ञर

पुरावाहीस्वर, "कालज्ञरगिरि" एवं "कालज्ञरद्वी" की उपाधियों धारण करते थे। भारत के इस वेदाङ्ग जिले की प्राचार्य मुस्लिम इतिहासकारों ने "सिंकत्र की दीवाल" कहा कर की है।

दुर्ग का मुख्य प्राचीर 25-30 मीटर ऊँचा पर 30-35 मीटर उच्चा, शैव में 8 मीटर चौड़ा तथा 7.5 किलोमीटर लम्बा चट्टानों, पथरों को एक के ऊपर रखकर अचछा चुने के जीड़ से बनाया गया है।

कालज्ञर दुर्ग का धितना सामान्य एवं प्रतिरक्षा भवन था, उससे कहीं अधिक महत्व दुर्गवासु, शैववासु एवं कलाकेन्द्र के रूप में है। कालज्ञर के शैवशास्त्र तुषद, नुक्लिया और तालाब अद्वैत है। शैवों का शैव, शाक, बौद्ध एवं लोकिक प्रतिमाएं विलक्षण हैं। इनके अध्ययन से भारतीय प्रतिमा विज्ञान के विकास पर महत्वपूर्ण प्रभाव पाता है। यहाँ की कलशित देव प्रतिमाएं मौलिक एवं विलक्षण हैं और भारतीय कला की अत्याधुनिक एवं अंतर्राष्ट्रीय कृतियाँ हैं। यहाँ की मूर्तिकला में जन-जीवन के विविध पक्षों, पशु, पक्षियों, अस्त्रों, मिठासों एवं क्षेत्रीय कला अभिव्यक्ति का अंकन है।
अमान सिंह महल
बुनेलवाला शासक अमानसिंह ने अपने रहने के लिए कालजंग दुर्ग के कोटीदर्श तालाब के तट पर एक महल बनवाया था। यहुँ बुनेलवाला राजपत्र का उद्धारण है तथा अब छवस्त अभयारण में है। यहाँ पर पुरातत्त्व विभाग द्वारा दुर्ग में विषयी हुई प्रतिमाएं संग्रहीत की गई है। इनमें कुछ प्रतिमाएं भारतीय कला की दृष्टि कला-कृतियाँ हैं। प्रतिमाएँ शैव, शाती, वैष्णव जैन आदि विभिन्न समुदरायों से सम्बंध हैं।

दर्शनीय स्थल:
सावन्दार:
कालजंग दुर्ग समुद्रतल से सम्बन्धित की ऊंचाई पर है। किले पर जाने के लिये दो मार्ग हैं। इनमें से दो मार्ग कालजंग नगर के उत्तर दिशा में है, उस ओर से जाने पर सन्त द्वार मिलते हैं, हुनमान, लाल और बड़ा द्वार हैं। पहले द्वार पर द्वार की मरम्मत और रेतेजल के पुत्र युवराज द्वारा 1673 ई. में करवाये जाने का उल्लेख उत्कीर्ण लेख में ही तथा दुर्ग की 'सिंहासन की दीवाल' की तरह मजबूत किये जाने का विवरण है।
सीतासेवा:
यहाँ पर शैलोत्कीर्ण एक लघु कथा है। यहाँ पर पावन निमित्त एक हैदर और तत्कालिन है। जनजाति के अनुसार इसे सीता का विश्राम स्थल माना जाता है। यहाँ पर तीर्थयात्रियों के अनेक अभिलेख हैं तथा एक जलकुण्ड है जो सीताकुण्ड कहलाता है।

बुढ़क क्षेत्र:
यहाँ पर दो समुद्र तालाब है। इनका जल छठोंगों के लिये लाभकारी कहा जाता है। ऐसी आँधुरित है कि यहाँ पर स्नान करने से बुढ़क रोग दूर हो जाता है। चन्देल शासक की विविधांकन का कुठार रोग यहाँ पर स्नान करने से दूर हो गया।
कोटी तीर्थ:
बर्तमान में इसे कोटी तीर्थ कहते हैं लेकिन इसका वास्तविक नाम कोटी तीर्थ है अपनी जाँही पर सहसावों तीर्थ एकाधिक है। यहाँ के व्यस्ताधिकारियों अनेक मन्दिरों का आयाम करते हैं। बर्तमान में यहाँ पर एक तालाब तथा कुछ भवन है। यहाँ पर गुप्तकाल से लेकर मध्यकाल तक के अनेक अभिलेख विद्यमान हैं। शंकरलिपि के तीन अभिलेख भी यहाँ दर्शनीय हैं।

माडूका भेरव एवं मेहरी:
सबूतिक दुर्ग स्थान पर शिला के अंदर सीढ़ी बनाई भेरव एवं मेहरी की प्रतिमाएं अवस्थान सुधर तथा मनोहर है। ये विभिन्न प्रतिमाओं की अनेक वृक्ष सिंहकार की कृतियाँ हैं और कालजंग के महत्त्व एवं गरिमा की बड़ी हैं।

मुम्बाडा:
दुर्ग के दक्षिण मध्य की ओर मुम्बाडा है। यहाँ पर पवित्र को तराश कर दो कक्ष बनाये गये हैं। एक कक्ष में सदस्यों की मुरकारी है। यहाँ पर निरस्त्र जल बहता है। यहुँ स्थान पुराणों में वर्णित सत्य शैवों की कथा से सम्बन्ध माना जाता है। यहाँ पर गुप्तकाल से मध्यकाल तक के अनेक तीर्थयात्री अभिलेख हैं।
नीलकंठ मंदिर

नीलकंठ महादेव कालागर के अभिषेकात्मक देवता है। कालागर दुर्ग का सबसे प्राचीन, पवित्र एवं प्रसिद्ध तथा नीलकंठ मंदिर ही है। यह किन्ने के परिक्रमा कोने पर है। यहीं पर जाने के लिए दो द्वारों से होकर जाना पड़ता है। यहीं से प्राकृतिक सुंदरता का दृश्य बड़ा मनोहर दृष्टिक देता है। यहीं पर अनेक सुंदर एवं मूर्तियों पर्वत को काटकर बनाये गये हैं। नीलकंठ मंदिर का मंदिर चन्देल वास्तु शिल्प की अद्वितीय उदाहरण है। एक अभिलेख में मंदिर का निर्माण चन्देल शासक कौतिल्यनु के समय में किये गये तथा उल्लेख है। इस मंदिर से कुछ हुआ शैलोत्सवात गण्म-गुहा है जिसमें स्वयं-मू शिव लिंग प्रतिष्ठित है। प्रेमवस द्वार में चन्देल शासक परमात्मेश द्वारा रचित शिव सुंदर है। मंदिर के ऊपर पर्वत के काटकर दो जलकुंड बनाये गये हैं। इन्हें स्वागरित्रण कुंड कहते हैं। इसके बाद पर्वत को काटकर बनाई गया है, जबकि उल्लेख अबुलफजल ने भी किया है। इसके अतिरिक्त, यहीं पर अनेक मुबलिङ्क तथा अनेक मूर्तियों मिलती हैं। यहीं पर अनेक तीर्थ-यात्रियों तथा चन्देलों के अभिलेख भी हैं।
UNIT 16 ARCHITECTURE: FUNCTIONAL CATEGORIES

Structure

16.0 Objectives
16.1 Introduction
16.2 Residential
16.3 Religious
16.4 Ceremonial
16.5 Strategic
16.6 Public Utility
16.7 Let Us Sum UP
16.8 Answers to Check Your Progress Exercises

16.0 OBJECTIVES

Architecture basically deals with building activity, which is carried out for some particular purpose. In this Unit we shall try to understand the functional aspect of various monuments, which are traceable from ancient times. After reading this Unit you will be aware of the:

- functional utility of numerous monuments spread over time,
- relevance of a monument for its society, and
- importance of a particular kind of architecture prevalent in a particular region.

16.1 INTRODUCTION

Architecture is an art and science of building construction. As a science it develops various methods and technique by which open space can be covered for different purposes. It is a science which deals with space. Architecture is also conditioned by the available building material, because it is the kind of building material which determines the durability of building and cost factor. The other aspect of architecture is the art involved. Building activity to a great extent is influenced by the aesthetic of the region also.

An important factor in any architectural activity is its utility. It is this feature which provides an insight into the functional use of the construction. It is the purpose, which determines the use. The purpose also plays a crucial role in the determination of a particular kind of style for a building. In the previous two units we have discussed the art and science of architectural activity. In this unit we shall make an endeavor to understand the architectural activity, through its utility.

It should be kept in mind while identifying the particular building that it can be classified in different categories as any building can perform one or more than one functions. We have classified architectural activities in the following five categories, in the Unit.

1) Residential
2) Religious
3) Ceremonial
4) Strategic
5) Public Utility.
The construction of houses of non-perishable material was confined mainly to the cities in ancient times. Even in cities perishable material like wood was extensively used. We have very few examples of residential architecture from ancient period, but we have enough textual references available from the medieval period.

Apart from the caves used by Hunters and Gatherers, the first information about residential architecture in India comes from Harappan civilization.

The settlements of Harappa, Mohenjodaro and Kalibangan show certain uniformity in their planning. These cities were divided into a citadel on the west side and a lower town on the eastern side of the settlement. The average citizen seems to have lived in the blocks of houses in the lower city. Here too there were variations in the sizes of houses. It could be a single room tenement meant for slaves. There were other houses complete with courtyards and having up to twelve rooms. The bigger houses were provided with private wells and toilets. These houses had much the same plan - a square courtyard around which were a number of rooms. The entrances to the houses were from the narrow lanes which cut the streets at right angles. No windows faced the street. This meant that the roadward facing of the houses would be like a row of brick walls.

The surviving specimens of residential houses for the period following the decline of the Harappan civilization are almost none. In fact, the extant buildings under this category date only from about the 13th century A.D. These are mostly the palaces of the kings and their nobles.

The most spectacular palace architecture is that of the Rajputs. They achieve a picturesque contrast between the exercises of defence and the excesses of retreat. Perhaps due to long familiarity with the grand scale of the imperial court and certainly in conscious rivalry with one and then as prodigal builders, most Rajput rulers had extended their establishments to provide grand palaces.
Aping the palaces of the rulers in elaboration of detail, at least, the private houses – havelis of the rich are particularly notable for their intricate wood work - some strikingly reminiscent of the oldest images of the prasada. There are many splendid examples in Jaipur, in Gwalior’s Lashkari Bazar, indeed in all the prosperous cities of the Rajputs, but unsurpassed are those of Jaisalmer.

In the early surviving mansions of Jaisalmer, the ground floor has no more than a heavy paneled door and the upper ones broad balconies, carried on elaborate brackets, between two screened bays with some sort of terrace above. The characteristic feature is the extremely fine jali work in the gold coloured sandstone, occasionally embossed with heraldic beasts or lotus medallions. Sandstone was used as timber might have been, for posts and beams in the traditional Hindu manner.

Storeys proliferate in the later houses and so too do balconies, galleries, deeply banded, cusped arches, and floral panels.

Check Your Progress-1

1) List the functional categories of architecture.


2) Write five sentences on residential architecture.


16.3 RELIGIOUS

Religious buildings performed a great functional role in Indian society. The religious activities are also oriented towards social welfare. It is probably for this reason that the extant specimens of religious architecture date back from almost the beginning of the Indian civilization. In the following passages we have traced the main phases of the development of religious architecture in India.

The Harappan town of Mohenjodaro provides us with the earliest religious building.

Harappan civilization has been deciphered only through the study of architectural and other remains. Among these architectural remains is the famous Great Bath of Mohenjodaro. This brick built structure measures 12m by 7m, and is about 3m. deep. It is approached at either end by flight of steps. The bed of the bath was made watertight by the use of bitumen. Water was supplied by a large well in an adjacent room. There was corbelled drain for disgorging water too. The bath was surrounded by porticos and sets of rooms. Scholars generally believe that the place was used for ritual bathing of kings, or priests. It appears to
have been a part of the ritual of city life. It did not function as ordinary bathroom but must have had a sanctity provided by rituals.

Almost the entire artistic expression of the pre-Gupta period, whether architecture or sculpture, centred on Buddhism, and most of it was made possible through the patronage of wealthy merchants, guilds and royal donations. Remains of the religious architecture of this phase are the stupas, which trace its origin to pre-Buddhist burial mounds. A stupa is a hemispherical dome or mound built over a sacred relic either of the Buddha himself or of a sanctified monk or saint or a sacred text. The relic was generally kept in a casket in a smaller chamber in the centre of the base of the stupa. Encircling the stupa was a forced path. At the four points of the compass there was a break in the railing with a gateway which gave the sculptor scope to show his skill.

In their functional aspect stupas worked as a focal point where believers of the sect gathered and shared the doctrine of the religion. As mentioned in Unit 14, these were constructed with the help of individual or royal donations which explains that such an activity provided an avenue to invest in. The construction, and later on maintenance, of such monuments were taken care by the donation of nearby land/villages to the monument. Hence such monuments functioned as local self-governed institutions. This explains not the religious but also socio-economic function of such monuments.

It must be remembered in discussing the religious architecture that it must first and foremost be regarded from its metaphysical aspect, that is as a kind of magic replica of some unseen sacred being. The temple is therefore at once the house and body of the deity, its fabric the very substance of the divinity. Unlike the Christian cathedral or the Buddhist chaitya, the Hindu temple was never designed for congregational worship. Like the Greek temple, it was itself a concrete object of devotion and the dwelling place of the gods.

In its functional utility the temple had played a crucial role. Temple itself was a concrete object of devotion. It was a symbol through which common man identified himself with the religion, be it a Vaishnavite, or aShaivite. The temple also sometimes functioned as a tool to implement and demonstrate the differentiation based on castes. We have references that temples also functioned as a kind of a bank, a treasury, where common man could deposit the money for safety and security. The attack on the temple of Somanatha by Mahmud of Ghazni is famous because of the wealth temple possessed.

Mosques are religious places for the followers of Islam. Islam being a community based religion expected a meeting of everybody at least once a week. It is the Friday when followers of Islam offer namaz/prayer in the mosque. Hence mosque in its functional aspect is a place for congregation.

In Islam, since religious authority was also the guardian of political authority, a political functional utility mosque also served. There had been a practice of pronouncing khutba. It was a practice by which the name of the king was pronounced by the Maulvi during the Friday prayers. The purpose was to spread the name of the king even in the countryside. Khutba had religious sanctity too as it was read by a Maulvi and from the pulpit of the Mosque itself. In the times of low communication this practice functioned as information and broadcasting facility.

Among different kinds of religious architecture in India the church finds a place of prominence. It was constructed by a well-organized authority. For Catholics it was the holy Roman Empire and for Protestants it was the organized Protestant church. The earliest church buildings in India are located in Goa. Later, however, the urban landscape of the country came to be dotted with a number of church buildings.

16.4 CEREMONIAL

The ceremonial architecture in India, interestingly, has been dominated by tombs and mausoleums which heavily outnumber all other types. We have, therefore, discussed in some detail the tomb and mausoleum architecture below. Tombs in addition to being ceremonial, also occupy an important place in the category of religious architecture. Since Delhi was the capital, large number of tombs were built in and around Delhi. Some of these structures are important from architectural point of view and can be considered as heralding a distinct style.
The more important of these tomb-buildings took two separate forms, the distinguishing features of which are given below.

a) Mausoleums designed on an octagonal plan incorporating the following elements:
- Main tomb chamber surrounded by an arched verandah,
- One storey high,
- Verandah with projecting eaves supported on brackets.

b) The other type was built on square plan. These were characterised by the following elements:
- Absence of verandah around the main tomb chambers,
- Exterior comprised of two and sometime three storeys,
- Absence of caves and supporting brackets.

Later on during the Mughul period the scheme envisaged the location of tomb in the midst of an enclosed garden with gateway in the centre of each side of the enclosing wall. Generally the site and the designing of the proposed tomb was decided by the king himself. It shows the functional importance of the building as it was supposed to be a monument through which the name/fame of the king could survive over a long period of time. Taj Mahal constructed by Shahjahan in the memory of his wife Mumtaz Mahal is a world famous tomb.

The practice of laying out gardens had started quite early. The Lodis made it a practice to place their tombs in the midst of gardens in an attempt perhaps to place their remains in a peaceful natural surrounding. This trend continued during the Mughul period too. Babur started laying out gardens for recreational purposes. In one of the miniatures he has been depicted inspecting the lay out plan of a garden at Dholpur. Today, only the excavated ruins of this garden are visible. Two more gardens, Ram Bagh and Zuhra Bagh at Agra, are also attributed to him.

The great grandson of Babur, Jahangir was a far greater patron of the art of painting. His love of flowers and animals as reflected in the miniature painting of his period made him a great lover of the art of laying out gardens rather than building high monuments. Some of the famous Mughal gardens of Kashmir such as the Shafimar Bagh and the Nishat Bagh stand as testimony to Jahangir’s passion.

16.5 STRATEGIC

Since ancient past kings and rulers were fighting with each other to expand their territory. This quest for war necessitated defence mechanism. In Harappan culture we have evidence of cities with surrounding walls, to protect against invaders. The practice of construction of fortification continued later too without many survivals of actual buildings. It was however, the coming of the Turks in 13th century from which time we have architectural references of forts.

Fortifications built by the Turkish and the Mughal powers reflect developments in the west - notably in the Holyland of the crusaders. The isolation of a citadel from a more expensive outwork was highly characteristic.

However the use of artillery in the 15th - 16th century changed the nature of fortification fundamentally. The height and thickness of walls had formerly been crucial but it was gradually realized that they had to be brought low and sunk into cliffs to present a minimal target and to give their canons command of the level approach. Instead of missiles hurled forward from a great height, now saturation coverage by cross-fire was essential. With steady improvement in the range and accuracy of fire-arms, bastions covering one another had to be pushed further out. Thickness was greatly increased, often by massive battering - but the curved forms were replaced by angular ones to deflect shots. Some of the famous forts in India are:
Architecture

- Agra Fort
- Delhi Fort
- Allahabad Fort
- Chittorgarh
- Kumbhalgarh
- Gwalior Fort

Check Your Progress-2

1) Describe the functional utility of mosques.

2) Write three lines on tomb architecture in India.
16.6 PUBLIC UTILITY

The historical evidence on the construction of public buildings for the welfare of the people comes from a very early period in Indian history. The earliest reference, of course, comes from the excavated remains of Harappa culture.

The Indus cities - whether Harappa or Mohenjo-daro - show town planning of a truly amazing nature. Cities are built on a uniform plan. An important feature of town planning was sewage system. The bathrooms of the houses were connected by a drainage channel to the sewers in the main streets, leading to soak pits. The sewers in the streets were covered through their length by bricks or sometimes stone slabs.

We have no reference about any public authority who managed the system, but it is very much evident from uniformity and specifications that a central authority must have managed the system.

Another important structure, though not specifically a public building was Granary. Granaries have been discovered at Mohenjo-daro and Harappa. Harappan is comparatively less well known where within 91 meters of the river-bed lay two rows of six granaries each with a central passage 7 meters wide (akin to that of Mohenjo-daro). The combined floor space of the twelve granaries was something over 90 square meters. To the south of the granaries are situated lines of circular platforms which suggest the occupation of the barracks by those who poured the grain. The flow of grain, the principal source of civic wealth, was most probably regulated and distributed by government officials. In both Mohenjo-daro and Harappa, the granaries were replenished by a system of state-tribute. They fulfilled in the state economy the function of the modern state bank or treasury. In a moneyless age, their condition at any given moment, must have reflected, however partially, the national credit and the efficiency or good fortune of the administration.

Sarais are perhaps the most conspicuous of the public buildings introduced in India by the Turks in the 13th century. The earliest mention of the existence of a sarai is from Balban's time (c.1266). Among later rulers both Muhammad Tugluk and Feroz Tugluq are known to have built a large number of sarais in Delhi as also along the major trade-routes of the Sultanate. The main features of these sarais may be listed thus:

- Square or rectangular disposition, enclosed on all four sides by masonry walls, with entry through one or sometimes two gateways.
- Series of rooms fronted by small vaulted spaces along all four sides. Inside the enclosure warehouses in the corners of the enclosure.
- Existence of a mosque and one or more wells in the open courts and within the enclosure.

These sarais were basically hotels located along the highways to promote the trade. These were managed by the local officials who were supposed to maintain the basic amenities and...
Bridges are another important category of public buildings.

The masonry bridges of medieval India were basically structures composed of arches resting on piers, a series of which carried the road across a stream of water. With the exception of few bridges surviving from the pre-Turkish period, in which the spans are raised on the principle of corbelling, almost all other extant structures of the medieval period are known to have used true arches, with voussoirs and key stones. In terms of their load-bearing strength as also the width covered by their spans, bridges with arches possessed an inherent advantage over other architectural forms practiced in masonry and remained the dominant type throughout the medieval period to be supplanted eventually in the nineteenth century with the replacement of stone with iron as the principal building material.

It is an interesting fact that these bridges are all built on medium and small sized rivers. They also span narrow gorges, ditches and moats. Large rivers such as Ganga and Yamuna in the North and Godavari and Krishna in South did not possess such bridges until late in the 19th century.

Some of the important surviving structures deserving a visit by any tourist are listed below:

1) Gomati Bridge at Jaunpur, a medium sized town in Uttar Pradesh. The bridge dates from Akbar’s period (latter half of sixteenth century).

2) Gambhir Bridge, at Chittorgarh, in Rajasthan. The bridge is ascribed to Alauddin Khalji’s period (first half of 14th century)

3) Atharnala Bridge, near Puri, Orissa, dating back to the early decades of 11th century.

Check Your Progress-3

1) Write five lines on the Granaries.

2) Describe the main features of medieval sarais.

3) What is the main difference between pre-Turkish and Turkish masonry bridges?
16.7 LET US SUM UP

This Unit provides you a glimpse of various architectural forms. We have discussed the practical utility of different kinds of architectural designs. It also makes you aware about the symbolic importance of a particular kind of architecture. In those times when communication facilities were very weak these huge architectural monuments functioned as representative of particular message. This unit completes the study of architecture in its own terms and in its relationship with the society.

16.8 ANSWERS TO CHECK YOUR PROGRESS EXERCISES

Check Your Progress-1

1) There are five main function categories, listed in Sec. 16.1
2) See Sec. 16.2.

Check Your Progress-2

1) See Sec. 16.3.
2) See Sec. 16.4.

Check Your Progress-3

1) See Sec. 16.6.
2) Three of these features are described in Sec. 16.6.
3) Pre-Turkish bridges of masonry are built on the principle of corbeling. The Turkish masonry bridges are arched in character.