Palaces and Temples in Ancient Mesopotamia

MICHAEL ROAF

This chapter reviews the architecture of ancient Mesopotamia, the lands watered by the Euphrates and Tigris rivers and their tributaries. The evidence is both too extensive and too fragmentary to treat this subject in a comprehensive manner, therefore only the best-preserved and most clearly delineated examples are discussed here.

The mud-brick architecture of ancient Mesopotamia was constantly evolving: new building materials were developed, new building techniques were adopted, and above all the designs of buildings were modified to suit the changing requirements of the inhabitants. It is difficult to know when and where such changes were introduced, because despite the large number of buildings which have been excavated, most excavations have produced only fragmentary ground plans and there are regions of Mesopotamia and long periods for which there is little or no architectural information. Furthermore the elevations of buildings are unknown except for a very few exceptionally well preserved structures and for a limited number of examples illustrated on bas-reliefs or on seals (see fig. 2 and figs. 12 and 15). Mesopotamia was not isolated from the surrounding regions and its architecture influenced, and, in turn, was influenced by, the traditions of its neighbors and cases of such influence can sometimes be identified.

This chapter describes first the building materials used and the techniques employed and then gives examples of the principal types of buildings, houses, temples, palaces, tombs, forts, hydraulic works, and gardens: the most characteristic forms of each building type are discussed in roughly chronological order.

BUILDING MATERIALS

The main material used in ancient near eastern buildings was mud. The walls were made of mud, the floors were made of mud, even the roofs were made of mud. This is not surprising for mud is readily available in the alluvial plains of Mesopotamia: indeed, even the life-giving waters of the great rivers of Mesopotamia in some seasons consist of liquid mud. Without mud there would have been no pottery, no clay tablets, and no Mesopotamian civilization.

Mud is a very versatile building material: walls can be built up in lumps, a technique known in Arabic as tauf and normally called pisé in English. The mud can be formed into bricks either modeled by hand or shaped in a mold. After they have dried in the sun and become hard, it is easy to build with them. Mud-bricks were fired in a kiln to make baked bricks to be used in drains, in paths, and in other places where sun-dried mud-bricks would be eroded.
by running water. (Baked bricks are still the most commonly used building material in the industrialized world.) Mud also made a strong mortar and an effective plaster for walls, floors, and roofs. In order to build effectively with mud, it is necessary to temper it so that it does not crack when it dries. The most common temper was straw, but a variety of materials were used, including other plant material, animal dung, animal fibers, sand, or grit.

The shapes and sizes of mud-bricks varied over the centuries. The earliest bricks were long and thin. In the fourth and third millennia, bricks were generally rectangular, often twice as long as they were wide. In the Early Dynastic period, rectangular bricks with convex tops, so-called plano-convex bricks, were often used. From the Akkadian period onward, bricks in Mesopotamia tended to be square, although other shapes could be used. Mathematical texts recorded bricks of various shapes and dimensions and many of these have been found in archaeological excavations: in particular bricks of about thirty-five square centimeters (two-thirds cubit) are common, but many other sizes are also found.

Baked bricks and sometimes sun-dried mud-bricks used on royal buildings were often stamped with the titles of the royal builder and sometimes with the name of the building. Normally these inscriptions can be used to date or identify the building but there are cases when bricks intended for one building were actually used on another.

If mud-brick or baked-brick arches and vaults were used, no other structural materials were needed, but more often than not the lintels and roofs were made of timber or reed. In ancient Mesopotamia, as in the Near East today, the buildings usually were made of rectangular or square mold-made mud-bricks laid with mud-mortar and covered with mud-plaster. Wooden beams supported a roof that consisted of layers of brushwood or matting covered with a layer of earth and capped with mud-plaster.

While mud was the most widely available building material, the date palm of southern Mesopotamia and poplar and other trees elsewhere provided a source of timber that could be used for roofing normal-sized rooms. Palms provided the building material for huts (sarifa or barasti), which were made of palm fronds tied together with cord also derived from the palm. Stone, found in most areas except those covered by alluvial silt, could be used for building. In the marshes of southern Iraq abundant thickets of reeds (Phragmites australis) gave rise to an alternative architectural tradition. Spectacular reception halls known as mudhifs are built (in the twentieth century AD) almost entirely from reeds (see fig. 1). Similarly constructed buildings appear on cylinder seals of the Uruk period from more than five thousand years ago (see fig. 2).

Mud was readily available and labor was cheap. For prestige buildings more expensive materials were often used, such as baked brick with bitumen mortar, timber imported from the Lebanon and Anamus mountains, and stones often transported a considerable distance, and the rooms were decorated with expensive fittings, such as wall paintings, geometric mosaics, carved-stone orthostats, or paneling in rare or aromatic wood or in ivory.

BUILDING TECHNIQUES

Even before plants and animals were domesticated, humankind had established permanent settlements. Indeed, one of the major reasons that farming was adopted so widely was that it enabled people to stay in the same place and to establish permanent homes in which the environment could be improved through building. The earliest buildings were semi-sunken round huts, but building methods developed rapidly.

Fig. 1. Sketch of a mudhif built by the Marsh Arabs of southern Iraq. ASHMOLEAN MUSEUM, OXFORD
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and the use of rectangular rooms with walls of sun-dried mud-brick and mud-plastered roofs supported by wooden beams appear in the Hassunan, Samarran, and Ubaid periods perhaps as early as 6000 BCE. Building techniques were normally quite simple. Mesopotamian builders knew how to build arches and vaults and at times used freestanding or attached columns, although flat roofs supported on timber beams were most common.

Several examples of building plans have been found on clay tablets, showing that Mesopotamian buildings were often carefully designed and that measured plans were often used in their construction. A seated statue of Gudea, ruler of Lagash (circa 2100), is depicted with such a plan together with a scale ruler on his knee. Evidence from Persepolis (circa 500) suggests that the palaces were laid out using a fixed metrological system. Such a system has not been demonstrated with certainty for earlier periods but it is very likely that this was the case. On the other hand, it is less likely that either geometric or numerical theories exercised great influence on Mesopotamian architects.

BUILDING TYPES

The architecture of ancient Mesopotamia has been revealed through archaeological excavations. Although the eroded forms of the immense temple pyramids or ziggurats still dominate the skylines of the ancient cities, none of the details could be identified until they were excavated. No standing buildings survive in Mesopotamia from before the Parthian period and most of the ruins are covered by thick layers of mud mostly derived from the decay of the buildings themselves. Only in exceptional circumstances can the plans of buildings be observed on the surface—for example, the temple and ziggurat at Larsa (modern Tell Senkereh)—and even rarer are opportunities for the examination of town planning, such as in the surface survey of Tell Taya or by scraping the surface at Abu Salabikh. The excavation of extensive areas of housing as was done at Ur (modern Tell al-Muqayyar) in the 1920s is beyond the resources of most recent excavations.

At different periods different types of building were characteristic. The earliest structures have been identified as dwellings, though some Neolithic buildings may have served additional functions. From the Ubaid period on there are recognizable temples, and by the Uruk period these came to dominate the architecture of the cities, along with public buildings that may have been used for administration and as residences for the religious rulers. In the middle of the third millennium the first palaces appear. Temples and palaces are the staple of the Mesopotamian architectural tradition and predominate over other building types. At the end of the third millennium, a particular type of temple—a high-staged platform with a temple on top, known as the ziggurat—became standard. Other, largely functional, buildings were constructed, but they are of no particular architectural interest.

Houses

A fundamental architectural form of the Mesopotamian world was the house (ē in Sumerian, bitū in Akkadian), which primarily meant the house of a family but was also used to refer to palaces and temples. These terms were sometimes qualified as in ē.gal (ekallum), large house or palace, or in ē.mah, exalted house, or ē.kur, mountain house, both meaning temple.

Samarran houses had many rectangular rooms with the internal walls matching the external buttresses. Those at Tell al-Sawwan were T-shaped and divided into two parts. At Songor and Choga Mami, houses were rectangular and the rooms formed a regular grid. In the Halaf period (circa 6000–5400 BCE) the typical houses were round structures often with a rectangular annex (often incorrectly called tholoi).
In the Ubaid period the houses were tripartite, that is, they had a large central room (sometimes cruciform in plan) running the width of the building with rows of smaller rooms on both sides. Typical examples were found at Tepe Gawra and at Tell Madhhur (see fig. 3). More elaborate versions with three interlocked cruciform halls were excavated at Tell Abada and Kheit Qasim.

In the Uruk period the tripartite house continued but also a new form of domestic residence, the courtyard house, was introduced. The courtyard house had an open central courtyard with rooms on all sides. The main reception room or living room was on one of the sides of the courtyard away from the main entrance. On occasion both tripartite and courtyard houses were combined in a single building. Buildings with courtyards were the basis for most ancient Mesopotamian architecture and also formed the basis for Islamic architecture. Courtyard houses are commonly used in the Near East today.

The courtyard house (see fig. 4) formed the ideal and was adopted as the standard model for both temples and palaces. There were, however, occasions when other types of houses were constructed. In cities, if there was insufficient space, there might be rooms on only three or two sides of the courtyard, and in the poorer areas there might not be a courtyard at all. Furthermore the Mesopotamian inheritance laws led to the subdivision of properties, which often resulted in the splitting of a single residence into a number of smaller units. Since mud-brick is a versatile building material, it was quite easy to block old doorways and to cut new doorways where they were required.

**Temples**

Archaeologists have classified temples according to the means of access and the shape of the cella, where the god resided. These types are not exclusive. For example, Babylonian temples were typically courtyard temples with broad-room cellas and a direct-axis approach, while Late Assyrian temples were most commonly courtyard temples with Long-room cellas with Direct-axis approach. Temples were commonly equipped with one or even two antecellae. Long narrow rooms surrounding the shrines served to insulate the shrine from the outside (fig. 5).

Another typical feature of Mesopotamian temples was the elaborate decoration of the facades, which had complicated niches and recesses. Sometimes these facades were ornamented with attached columns, occasionally spiral or imitating palm trunks. The principal doorways in temples stepped in and out with multiple rabbets. These multiple rabbets are almost entirely restricted to religious buildings in Mesopotamia. (See "Ancient Mesopotamian Religious Iconography" in Part 8, Vol. III.)
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The principal shrine in a temple was that of the main deity, but often the deity’s consort would also have a shrine and other gods might be worshiped in the same building as well.

Sometimes temples and palaces were combined in a single structure. The giparu at Ur, the residence of the entu, the chief priestess of the moon-god Nanna, contained a temple of Ningal, the wife of Nanna. Temples were often included in palaces as, for example, in the Palace of the Governors at Eshnunna (Eshnunnak, modern Tell Asmar) (fig. 6) and Sargon’s palace at DurSharrukin (modern Khorsabad). The temple of Nabu at Kalkhu (modern Nimrud) included a throne room; such rooms are normally only found in palaces.

EARLY PERIODS

A remarkable series of temples was found at Eridu (Abu Shahrain) dating to the Ubaid period. The earliest example had a single room while the later temples had the standard tripartite house form, but they were more elaborate. The outside facades were buttressed and recessed where the outer walls of domestic houses normally were stepped in and out. Even more intricate niche facades were found on the Ubaid temples at Gawra, where the excavators discovered small-scale model bricks that could have been used in planning the brick lays for these facades. These early temples had altars for the cult statue or divine emblem and platforms for the offerings to the gods.

Uruk temples were derived from those of the preceding period and the tripartite plan was standard. In the later part of the fourth millennium the temples follow the Ubaid tripartite plan more closely as, for example, those in the Uruk “colonies” at Habuba al-Kabira and Jebel Aruda in Syria, the Eye Temple at Tell Brak, the painted temple at Tell al-Uqair, and the White Temple at Uruk. The White Temple (see fig. 7), so-called because the walls were covered with a thin layer of white gypsum plaster, was set on a platform about 13 meters (43 feet) high, considerably higher than the platforms on which the Ubaid temples at Eridu were built. About 500 meters (1,600 feet) away from White Temple was Eanna, the religious complex that was dedicated to the goddess Inanna. Here in the second half of the fourth millennium an astonishing array of buildings was constructed. Even when only a few courses of mud-brick remain, excavators have painstakingly reconstructed the plans.

Classification of Temple Cellas

Bent axis, in which the principal entrance to the cella was at right angles to the wall with the altar. This type was particularly characteristic of the Early Dynastic period, but is also found at later periods.

Direct axis, in which the principal entrance to the cella was in a direct line with the altar.

Broad room (called in German Breitraum), in which the altar lies in the middle of one of the long sides of the cella.

Long room (called in German Langraum), in which the altar lies in the middle of one of the short sides of the cella.
for such buildings and unraveled as far as possible the order in which they were built. Some of these buildings fit into the scheme we have seen elsewhere: most of them are tripartite and some have cruciform central halls ultimately based on the Ubaid house. The largest of these, Temple D, measured some 80 meters (260 feet) by 50 meters (165 feet) and covered twice the area of the Parthenon at Athens built some three thousand years later. The central cruciform hall was more than 10 meters (30 feet) wide and timber must have been imported to roof it. The exceptionally complicated niching is also reminiscent of the Ubaid temples at Tepe Gawra.

There are also buildings in the Eanna that do not conform to the tripartite model. Most notable is the Square Building, which had similar niching to Temple D but had a very symmetrical plan consisting of an extensive courtyard more than 30 meters (100 feet) square with large rooms on the four sides of the courtyard. The function of the building is uncertain but because of its location it must have been used for religious ceremonies. (See “Theologies, Priests, and Worship in Ancient Mesopotamia” in Part 8, Vol. III.)

Another exceptional feature of some of the buildings at Uruk was the use of columns. Sporadic examples of columns in Mesopotamia can be found in almost every period but they did not form part of the mainstream of architectural practice as they did in Egypt, Greece, and Persia.

Another innovation in the Late Uruk period was the use of cone mosaic to decorate the walls. Cones of pottery or stone about 10 to 15 centimeters (4 to 6 inches) long with colored ends were stuck into a thick layer of mud-mortar arranged to form geometrical patterns of chevrons, lozenges, triangles, and so on. This technique is not found after the Uruk period.

THE LATER PERIODS

Throughout the period of ancient Mesopotamian civilization there is continuity in religious architecture. The temple at Eridu continued to be rebuilt until the first millennium BCE even though the city itself had long been abandoned. The Kassite rebuilding of the Lower Temple at Nippur (modern Nuffar) followed exactly the plan of the Isin-Larsa temple despite a three-hundred-year gap during which there is no evidence for occupation at the site. Later rulers indeed recorded that they had searched in the foundations and had copied the earlier plans. Nevertheless there was some variety in the plans of Mesopotamian temples. The earlier type of tripartite temple continued to be used in the third millennium, often as part of a larger temple complex. In the later Early Dynastic period, courtyard temples built around an internal open courtyard became the norm and remained the most common type of temple. The most important temples had several courtyards and the principal entrances leading to the temple cella had doorways with stepped outlines (see fig. 8). Such multiple rabbets are characteristic of Mesopotamian religious architecture. Often in front of the cella was an antecella and on occasion more than one.

Three other special forms of temple may be recognized on the basis of their architectural form. The first, which is restricted to the Early Dynastic period, is the Oval Temple (see fig. 10).
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The distinguishing feature of this type of building is a large curving wall surrounding the religious precinct. Examples have been found at Tell Khafaje, Tell al-Ubaid, and Tell al-Hiba (ancient Lagash). A temple at Barbar on the island of Bahrain has been claimed as a fourth example of this type of building, but the similarity may be coincidental. The arrangement within the perimeter wall of the Oval Temples is not certain but at least at Tell al-Ubaid and at Tell Khafaje there was a shrine on a platform reached by stairs.

The second type is the Platform Temple. Already in the Ubaid period (fifth millennium) temples were located in elevated areas and were built on platforms approached by stairs. For millennia temples continued to be built on raised podiums.

The third type, the ziggurat (in Akkadian ziqqurratu), is a particular form of platform temple with several stages. The earliest ziggurats were built by Ur-Nammu (2112–2095), the first king of the Third Dynasty of Ur. He constructed similar buildings at Ur, Eridu, Uruk, and Nippur. These had several stages and were equipped with three staircases meeting at right angles. The ziggurat at Ur is the best known of these early examples (see fig. 9; see also fig. 1 in “Shulgi of Ur: King of a Neo-Sumerian Empire” in Part 5, Vol. II). The core of the structure was made of sun-dried...
mud-brick, but the staircases were made of baked brick and the whole had a facing of baked brick about 2.4 meters (8 feet) thick set in bitumen mortar. Its rectangular lower stage measured about 60 by 45 meters (198 by 149 feet) and was 15 meters (50 feet) high. The outline of the second stage was traced by the excavator and the mud-brick core of the third stage was identified. It is assumed that the actual shrine was situated on top of the third stage, though no trace of a shrine has survived on any ziggurat.

Although it has been suggested that structures concealed within later ziggurats were earlier ziggurats, and that the two structures of baked plano-convex bricks of the Early Dynastic period at Kish (Tell Ingharra) might have been ziggurats, these structures are not well known and they may have been platform temples rather than staged tower temples.

In the Isin-Larsa and Old Babylonian periods that followed, ziggurats were built in most of
the major Mesopotamian cities: Larsa, Borsippa, Babylon, Kish, Sippar, Ashshur, Qatara (Tell al-Rimah), Shubat-Enlil (Tell Leilan), and probably other cities. Later ziggurats were built in the capital cities of Al-Untash-Napirisha (Chogha Zanbil in Elam), Dur-Kurigalzu (modern Aqar Quf), Kalkhu, and Dur-Sharrukin. Particularly under the Neo-Babylonian kings, many of the ziggurats were restored or rather rebuilt (see the photograph in the chapter on "Susa" in Part 5).

The most famous of all ziggurats was the ziggurat of Babylon, Ē.TEMEN.ANKī ("the temple which is the foundation of heaven and earth"), the inspiration for the Tower of Babel in the Bible. It is thought that the original structure was built by Hammurabi (1792-1750). It was restored by Nebuchadnezzar (Nebuchadrezzar) in the sixth century BCE.

Cuneiform texts give the name ākītu to a particular type of temple not so much because of the nature of the building but because of the associated rituals. Ākītu temples were built outside the city walls—examples have been investigated at Uruk, Babylon, and Ashshur—and during the New Year a ritual procession was made to them.

Building Records

Most Mesopotamian royal inscriptions were deposited in the foundations or walls of buildings and included descriptions of the activities of royal building. They include interesting details of methods of construction, such as mixing scented oils, resins, ghee, and honey into the mortar, or making the doors of cypress, cedar, juniper, or boxwood. The following selection illustrates the royal interest in building and restoring the temples of the gods.

(Yakhdu-Lim) erected the temple of his lord Shamash for his well-being; he made for him a temple of perfect construction in every aspect of craftsmanship, befitting his godhead, and installed him in this magnificent abode. He named this temple Egīrzuanki meaning "The temple which is the pride of heaven and earth." (After A. Leo Oppenheim in James B. Pritchard, ed., Ancient Near Eastern Texts [3rd ed., 1969], pp. 556-557)

In my accession year the gods Anu and Adad, the great gods my lords who love my priesthood, commanded me to rebuild their shrine. I made bricks. I delineated its area, dug down to the bottom of its foundation pit, and laid its foundation upon bedrock. I piled up that entire area with bricks like an oven, making it fifty layers of brick deep. I laid thereon the stone foundation of the temple of the gods Anu and Adad. I rebuilt it from top to bottom and made it bigger than before. I constructed two large ziggurats which were appropriate for their great divinity. I planned and laboriously rebuit and completed the pure temple, the holy shrine, their joyful abode, their happy dwelling which stands out like the stars of heaven and which represents the choicest skills of the building trade. Its interior I decorated like the interior of heaven. I decorated its walls as splendidly as the brilliance of rising stars. I raised its tower-gates and its zigurats to the sky and made fast its parapets with baked brick. I brought the gods Anu and Adad, the great gods, inside and set them on their exalted thrones. (Tiglath-pileser I [1114-1078 BCE], after A. K. Grayson, Assyrian Royal Inscriptions, vol. 2 [1976], p. 18)

At that time the temple of the goddess Ishtar of Nineveh, my mistress, in the grounds of Emashmash—the old temple which Shamshi-Adad, king of Assyria, a prince who preceded me, had built—that temple had become dilapidated and fallen into ruin. With the wisdom of the god Nudimmud, the great lord, with the wide understanding which the god Ea had granted to me, for the adornment of the heroic nature of the goddess Ishtar, my mistress: with regard to that temple, I delineated its area, dug out its foundation pit, rebuilt it from top to bottom, and completed it. I made it larger than before. The excellent [shrine] I built in a splendid fashion for the abode of the goddess Ishtar, my mistress. I properly settled [her great] divinity in her shrine. (Assurubani pal II [883-859 BCE], after A. K. Grayson, Assyrian Royal Inscriptions, vol. 2 [1976], p. 185)

Egīgunu, the ziggurat of Nippur, the foundation of which is placed in the breast of the ocean, the walls of which had grown old, and which had fallen into decay,—I built that house with baked bricks and bitumen, and completed its construction. With the art of the god of bricks I restored it and made it bright as the day. I raised its head like a mountain and caused its splendor to shine. (Assurbanipal [868-circa 857 BCE], after D. D. Luckenbill, Ancient Records of Assyria and Babylonia, vol. 2 [1927], p. 390)

I searched for its old foundation; I dug down 18 cubits into the ground and Shamash, the lord of Eabbarra, the temple where his heart is pleased, revealed to me the foundation of Naram-Sin, son of Sargon, which no king before me had seen for 3200 years... I laid its brickwork on the foundation of Naram-Sin, son of Sargon, not protruding or receding an inch. (Nabonidus [555-539 BCE], after Richard S. Ellis, Foundation Deposits in Ancient Mesopotamia [1968], p. 183)
PALACES

The Early Periods

The earliest monumental buildings of the Ubaid and Uruk periods have been identified as religious structures, both because they were situated within the area later occupied by religious buildings and because of their plans and their ornamentation with elaborate niches and recesses. There are, however, a few buildings that are not typical of temple architecture. A partly investigated building at Tell-Uqair and a number of buildings in the Eanna complex at Uruk do not show the typical tripartite plan of contemporary temples. The forms of these Uruk buildings are not repeated in later periods and it is impossible to tell whether they were unusual religious or secular buildings. In the early periods (and also later) the rulers exercised religious responsibilities and, indeed, the term "priest-king" has been coined to describe the person in authority in the fourth millennium at Uruk and Susa. There is the possibility that some of these elaborate buildings at Uruk were used for both an administrative and a ceremonial purpose. A similar function has been ascribed to the large building at Jemdet Nasr, which contained account tablets and bullae.

Third and Second Millennia

Early secular monumental buildings, which are dated to the middle of the Early Dynastic period, have been found at Kish (the Plano-Convex Building and Palace A) and at Eridu. Because these are clearly different from the contemporary temples and were not built on the site of earlier or later temples, it has been suggested that they were palaces where the ruler resided. Later palaces such as those at Ebla and Mari are identified with more certainty, but doubt still
attaches to the precise function of the "Palace of Naram-Sin" at Tell Brak and the ī.HUR.SAG of Ur-Namma and Shulgi at Ur.

The classic example of a Mesopotamian palace is the Palace of the Governors at Eshnunna, which is combined with two typical Babylonian temple complexes (see fig. 6). The characteristic feature of the palace, which is repeated in later Mesopotamian palaces, is the division between an outer courtyard, or babānū, where public affairs were conducted, and an inner, or bitānu, courtyard, which was reserved for more private functions. Bridging the two courtyards was the throne room, used as an audience hall by the ruler. This configuration is the classic layout of later Mesopotamian palaces.

The plan of the palace at Mari (Tell Hariri), which was built over a period of some three hundred years, contains the same element of outer courtyards used for public administration, but the palace itself was much more extensive than the Palace of the Governors at Eshnunna: it had more than 260 ground-floor rooms and covered more than 2 hectares (5 acres). Mesopotamian palaces were not just residential, ceremonial, and administrative centers but also might include temples, storerooms, and factories for the manufacture of a wide range of goods.

The excavated palaces of the second millennium vary greatly in size and in preservation. The Kassite palace at Dur-Kurigalzu, for example, was unusual because instead of the normal arrangement of two rows of rooms between courtyards (so that all the rooms had an external wall and direct access to a courtyard), there were three rows of rooms.
The Late Assyrian Period

The most quintessentially Mesopotamian of all palaces are those of the Late Assyrian kings discovered at Kalkhu, Dur-Sharrukin, and Nineveh (Tell Kuyunjik). The royal Assyrian palaces follow the architectural formula seen in the Palace of the Governors at Eshnunna and the same formula appears in large private houses. The most extensive palace plan is that of the palace of Sargon at Dur-Sharrukin (see fig. 11) built between 717 and 707, largely abandoned after Sargon’s death in battle in 705. The citadel lies astride the city wall: the royal palace and temple area were built on a platform while the residences of the high officials were at a lower level. The palace occupied three quarters of the citadel with the temples and ziggurat squeezed into one corner. The palace had two outer courtyards, where the more public functions of the palace administration were conducted. The largest room in the palace was the throne room, which, as is typical in these buildings, separated the outer courtyards from the inner. The throne room had three large doors. At one end the throne stood on a stone podium and at the other end an antechamber and a large spiral staircase led up to the roof. Assyrian palaces were normally single-story buildings but there is some evidence that the king carried out religious ceremonies on the roof. In many cases two parallel rows of stone were set into the floor of the throne room. Along these “tramlines” a wheeled brazier was rolled providing a welcome source of

Fig. 11. Reconstruction drawing of the palace area at Dur-Sharrukin (Khorsabad), 717–707 BCE. HELEN LEACROFT AND RICHARD LEACROFT, THE BUILDINGS OF ANCIENT MESOPOTAMIA (1974)
heat for the ruler. These throne rooms have a bent-axis approach but in the seventh century, perhaps as a result of influence from Babylonia, there seems to have been a change to a direct-axis approach.

The inner walls of the rooms of the royal palaces were covered with stone orthostats, normally carved with scenes of the court, religious symbols, hunting scenes, and records of military campaigns (see fig. 12). These relief carvings provide valuable evidence for the appearance of buildings since normally only the lower parts of the walls have been recovered.

Fig. 12. Assyrian relief from the North Palace at Nineveh dating to the reign of Assurbanipal (668–627 BCE), thought to show the walls of the Southwest Palace at Nineveh built by Sennacherib (704–681 BCE). BRITISH MUSEUM, LONDON

Neo-Babylonian Period

In the Neo-Babylonian period the main reception room normally appeared on the south side of the courtyard. If the outer wall was not aligned east to west, the shapes and sizes of the rooms were adjusted so that the main reception room faced north (see fig. 13). The most impressive of the Babylonian palaces is the Southern Citadel in Babylon itself (see fig. 14). Constructed over centuries and rebuilt by successive rulers, the citadel was called by Nebuchadnezzar II “the marvel of mankind, the center of the land, the shining residence, the dwelling of majesty.” The palace had a series of five different courtyards, the inner four of which had reception rooms on the south side. In the third courtyard lay the principal throne room that measured some 42 by 17 meters (140 by 55 feet). Its facade was covered in glazed bricks depicting lions and stylized trunks and palmettes. There were three entrances to the throne room, the middle one being about 6 meters (20 feet) wide. These doorways, like those of the Assyrian palaces, were arched. How the throne room was roofed is not certain. The throne room’s width would preclude unsupported beams and since no evidence for columns was found within the throne room, it may have been vaulted.

In the northeast corner of this building was an unusual arrangement of rooms identified by the excavator with the Hanging Gardens of Babylon. While it is difficult to disprove this suggestion the plan of this section of the palace is more like a strongly constructed series of storerooms rather than the foundations of the legendary Hanging Gardens.

Achaemenid Period

When the Persian Achaemenid kings conquered the ancient empires of the Near East they reoccupied the palaces of the defeated rulers. The palaces of Babylon remained in use until the Seleucid period. The palaces built by the Persian kings, however, while fulfilling the same functions as the Mesopotamian palaces, were of different design. The character of the palaces on the Iranian plateau, first at Pasargadae and then at Persepolis, was determined by the extensive use of columns both for halls and for porticoes. (See “Art and Archaeology of the Achaemenid Empire” in Part 10, Vol. IV.)


**Bit hilāni**

In the inscriptions describing the construction of his palace at Dur-Sharrukin, Sargon II of Assyria recorded:

I built a portico patterned after a Hittite palace, which they call a *bit hilāni* in the Amorite tongue, in front of the gates. Eight lions in pairs, weighing 4610 talents of shining bronze, fashioned according to the workmanship of (the god) Ninagal, and of dazzling brightness; four cedar columns, exceedingly high, each 1 GAll in thickness, products of Mount Amanus, I placed on top of the lion colossi, and set them up as posts to support their entrances. (D. D. Luckenbill, *Ancient Records of Assyria and Babylonia* [1926], p. 53.)

Although some doubt still attaches to the interpretation of this term it seems that the *bit hilāni* refers to a type of doorway set with columns, a pillared portico of a type found in Syria, which at this period was known to the Assyrians as the land of the Hittites. Examples have been found in the excavated Palace of Niqmepa in Alalakh (modern Tell Atchana), built in the second millennium, and the palace of Kapara at Guzana (Tell Halaf), built in the early first millennium.

Darius built a palace at Susa in which a series of courtyards in the Babylonian style were combined with a hypostyle, or columned, hall with three porticoes in the Persepolitan style. Achaemenid architecture incorporated features taken from the artistic and architectural traditions of those conquered by the Persian army. Thus the columned hall had its forerunner in seventh-century Media; the column shafts and volute capitals are Greek; the palmiform capitals are of Egyptian inspiration; and the low reliefs decorating the platforms on which the palaces were built are based on earlier Mesopotamian prototypes. The conquest of the Near East by Alexander brought an end to the ancient Mesopotamian architectural traditions; even though some buildings remained in use, the later building incorporated new designs and techniques either taken from the Hellenistic world or developed in the Near East.

TOMBS

The Mesopotamians made provision for the afterlife. In general, underground structures were constructed for burial and for burial gifts. These structures were sometimes intramural—beneath the floors of houses or palaces—and sometimes were located in separate cemeteries. The superstructures are often not known, but in the early-third-millennium cemetery at (modern) Kheit Qasim, there is evidence for vaulted roofs and for external benches or platforms on which funerary offerings were placed. Because tombs were buried, they often have been well preserved. Thus, tombs with intact vaults were discovered at Tepe Gawra dating to a period when vaults have not survived from buildings standing above ground.

The tombs of royalty were not spectacular architectural monuments even though the wealth buried within them was staggering. The main exception is the royal mausoleum at Ur, where the tombs of the rulers of the Third Dynasty of Ur were excavated. These tombs were located in vaulted rooms beneath a building that may have been used for religious ceremonies, perhaps for ministering to the spirits of the deceased.

The tombs of the Late Assyrian kings were in underground chambers in the palace at Assur and tombs of Assyrian queens have been found in the southern part of the North-West Palace at Kalkhu. The graves were vaulted with baked brick and some had stone doors. Despite the fabulous wealth in gold vessels and jewelry deposited in the graves, the chambers themselves were small and only furnished with a few niches.

FORTS AND FORTIFICATIONS

Mesopotamian fortifications normally consisted of mud-brick though sometimes the lower parts of the walls were reinforced with stone. The lines of the city walls are often easily visible and can be traced for miles, though seldom have the
upper parts of the fortifications been preserved. A good idea of the appearance of such fortifications is given in the Late Assyrian reliefs. (See also “Fortification of Cities” in Part 7, Vol. III.)

The walls provided defense against attack and in southern Mesopotamia protection from flooding. They also defined the area of the settlement or precinct and served as a visible reminder of the presence of authority. One of the earliest fortification walls (circa 7000 BC) was found at the village of Maghzalia, near modern Telafar, where it seems to have had more of a symbolic value than a defensive function.

Along the Euphrates a number of walled settlements—as well as walled islands—were investigated in the course of the Haditha Dam Salvage Project (1978–1984). These settlements could be dated to the first half of the first millennium when Sukhu was an independent state nominally owing allegiance to Assyria. The fortifications of Sur Jar’a were extensive. The central citadel, about 300 meters (1,000 feet) square, was
defended by an inner mud-brick wall, a high
bank surmounted by a wall, and a deep moat.
There was also an outer wall and moat some 750
meters (2,475 feet) long.

Only a few smaller fortresses have been exca­
vated in Mesopotamia; indeed, few small sites
of the historical period have been excavated be­
cause archaeologists have concentrated on the
larger cities. A small hilltop settlement at Yemni­
yeh on the Euphrates has been interpreted as a
ninth-century military guardpost of the Sukhu.
A square, compact mud-brick fortress on the top
of Tell Gubba may have marked the border be­
tween Media and Babylonia in the early sixth
century.

Mesopotamian rulers often recorded the con­
struction of cross-country walls as a protection
either from nomads or from flooding. These
walls often extended for dozens of miles. Per­
haps the most famous was that built by Nebu­
chadnezzar between the Euphrates and the
Tigris, which was later known as the Wall of
Media. The course of this wall was in doubt for
a long time, but in 1983 part of it was excavated
and it proved to have been faced with baked
bricks stamped with an inscription of Nebuchad­
nezzar set in bitumen mortar.

BRIDGES AND OTHER
HYDRAULIC WORKS

The canals that provided the lifeblood of souther­
ern Mesopotamia rank among the most impres­
sive feats of ancient construction. These canals
required a heavy investment both in construc­
tion and in maintenance; as did the dams, weirs,
quay walls, and other hydraulic works associated
with them. One of these, identified as a water
regulator, was excavated at Tello (ancient
Girsu). In northern Mesopotamia an extensive
network of canals was created by the Late Assy­
ian kings. At Jerwan, near Nineveh, the water was carried across a valley on a stone aqueduct.

Bridges have seldom been found. At Khorsabad a corbelled stone bridge was constructed between the citadel and the Temple of Nabu. In Babylon, the boat-shaped stone piers of a bridge that crossed the Euphrates and connected the two sides of the city have been discovered. It seems probable that floating bridges of boats were more common than fixed bridges.

OTHER STRUCTURES

There are a number of structures which have been discovered that cannot be easily classified as houses, temples, palaces, fortifications, or hydraulic installations. One such example at Tell Gubba dating to about 2800 consisted of a series of concentric walls. Suggestions of its function have varied from a temple or fortress to a vast storeroom. Grain was often stored in subterranean pits but at certain periods, particularly in the fourth and third millennia, mud-brick storage chambers on parallel sleeper walls were constructed.

GARDENS AND PAVILIONS

Cuneiform texts describe gardens and orchards within the cities of Mesopotamia. A map of the

Fig. 15. The mountainous gardens of Nineveh illustrated on an Assyrian relief. The relief shows an aqueduct, canals, a pavilion, a royal stela, an altar, and a path set in wooded terrain. These gardens that imitated the mountains of Amanus may have been the source for the story of the hanging gardens of Babylon. BRITISH MUSEUM, LONDON
Social Institutions

city of Nippur dating to about 1300 shows that the southwestern corner of the city contained extensive gardens. In the hot, dry climate of the Near East gardens provided a welcome respite from the harsh climate.

Royal inscriptions show the interest that the rulers of Mesopotamia had in improving their environment by creating luxurious gardens. The Assyrian kings in particular boasted of creating parks that they compared to the mountains of Amanus and of introducing rare and exotic plants and animals into them. Sometimes these parks are illustrated on the Assyrian stone reliefs (see fig. 15).

There is also evidence for more formal gardens. The excavation of the akatu temple outside the city of Asshur revealed a regular arrangement of pits that have been interpreted as pits in which trees or shrubs were planted. The most impressive of ancient gardens is that of Cyrus excavated at Pasargadae, where stone channels and small basins were discovered. Although the excavations have not provided any evidence for the types or arrangement of plants in this garden, classical authors recorded the interest among the Persians in trees and in the regular arrangement of the planting. In the Pasargadae garden were various pavilions, some small and some larger. The design of these pavilions with open colonnades on four sides has not been found in lowland Mesopotamia, but similar buildings are shown on the Assyrian reliefs.

The most famous of Mesopotamian gardens, the Hanging Gardens of Babylon, were, according to one story (Josephus citing Berossus) constructed by a Babylonian king who sought to create a garden for his Median wife reminiscent of her native mountains. (See also "Nabonidus" in Part 5, Vol. II.) The Hanging Gardens, along with the walls of Babylon, were later included among the Seven Wonders of the World. The five accounts that describe these gardens date from the first century BCE or later, long after the period of the Neo-Babylonian kings. They describe ascending terraces built of stone and baked brick with the use of bitumen mortar and lead sheathing for waterproofing. Furthermore, unusual devices such as bends and spirals were used to raise water for the gardens. Various sites have been suggested as the location of the Hanging Gardens. None of these suggestions is convincing, and it must be acknowledged that given the lateness of the sources and the absence of any description of such gardens in the inscriptions of the Neo-Babylonian kings, their very existence must be subject to doubt. Stephanie Dalley (1992) has suggested that the Hanging Gardens were a dimly remembered version of the mountainous gardens of the Late Assyrian kings, perhaps combined with the notion of the tall-stepped ziggurats. The confusion in the classical world of Babylonia and Assyria led to the assumption that the Hanging Gardens were located in Babylon rather than Nineveh.

CONCLUSIONS

The architectural tradition of ancient Mesopotamia survived for more than three thousand years. It was largely dependent on royal patronage and was expressed chiefly in the construction of temples and palaces. When political power fell into the hands of foreign rulers, Greek and Iranian, and as new religious beliefs usurped the place of the age-old Mesopotamian religion and the cuneiform tradition faded, the Mesopotamian building practices, founded on humble sun-dried mud-bricks, decayed. These ancient practices were replaced by an architecture based on brick or stone held together with gypsum or lime mortar, in which the dominant forms were the arches and domes that contributed to the creation of Islamic architecture.

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