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The Technical School of the Central Nabataean Temples

Abstract

This research is about the technical school of the ventral Nabataean temples. The Nabataean architects borrowed from the Mesopotamian, Egyptian, Greek, and Roman civilizations but also tried to maintain local Nabataean character in architecture and decoration. Each school of influence had a prominent role in enriching Nabataean architecture, especially the central Nabataean temples. These temples attracted their worshippers as religious facilities that had a direct impact on the social and economic life of the community's daily life.

The local community obviously placed great importance on temple architecture and decoration, which they inherited from the culture of the nation before them. Nabataean architecture expressed this through the way building of the temple was directed, as well as the outside design of the temple, and the appropriateness of the inside design of the temple, such as the Holy of Holies. These temples served as a place for pilgrimage, especially for the Nabataeans. These places were considered to be radiation centers of the religious culture of pilgrims who came to visit one temple then the other, at certain times and certain seasons of worship.

Introduction

Before turning your attention to the subject of Nabataean architectural decoration, we must acknowledge the influence of previous architectural schools, whose presence in the area date back to the old Mesopotamian era and other civilizations. Many common features are shared by those cultures which left their fingerprints on these temples, which I will discuss according to their chronological order: KHirbat At Tannūr, Ramm, KHirbat Adh DHarīḥ, and the Temple of the Winged Lions in Petra. Considering the local character in the

use of some architectural arts, so that the elements of those arts fit in the environment of each of the above-mentioned temples, the influence of the local style on the architecture is obvious.

We can trace the architectural roots of each Nabataean temple, which have different characteristics as follows. The three-dimensional architectural construction techniques for the central Nabataean temples can be seen in FIGS. 1, 2, 3, and 4. The schools of Nabataean art and architecture were divided according to the architectural schools of civilizations, starting with Mesopotamian.

Nabataean temples had the distinguishing characteristic of giving the walls of the central sanctuary of the temple a prominent system of buttresses and recesses, a feature that gives the building strength and support, as well as achieving further capacity for the building walls (FIG. 5). It is also clear to the followers of artistic origins that the effect of this feature gives the building an aesthetic appeal that originates from Mesopotamia, as is obvious from the ruins of Eridu (Safar *et al.* 1982: 104–112) going back to the Ubaid-Uruk era (4000–3500BC) (Frankfort 1977: 17–19) (FIGS. 6a, 6b, and 6c).

Another distinctive characteristic of the architecture of Nabataean temples, especially the central ones, is the use of platforms or benches (FIG. 7a), specifically in the sanctuary of those temples, as a more correct assessment of the buildings' locations and to obtain the best benefits that derive their origins from the Mesopotamian school as an addition to the architectural arts of the civilizations that followed. The origins of these must have derived from the Mesopotamian civilization, specifically from the culture of Uruk, (FIGS. 7b and 7c), dating to the period 3500–2800BC (Frankfort 1977: 18–37) (FIGS. 7a, 7b, and 7c).

A Nabataean temple was a place where a statue of a god and goddess (FIG. 8) was erected on one bench, which was embodied in a bench prepared for the erection of a statue of the god and his wife on the one hand (FIG. 9), which led to a construction position dependent on the axis of movement located opposite the openings of the temple's doors, and on the other hand to present an orientation for worshipers (FIG. 10). This style can be assigned to the school of Mesopotamia, which was common in the Temple of Nabu and his wife Tashmettum in Babylonia and Nimrud Khorsabad (Frankfort 1977: 18–37).

Nabataean architecture focused on orienting the structure towards the east or south for several reasons, one of which is that it exposes the facades to natural lighting and the influence of sunlight through the main windows and entrances of the temple, as well as being points for the summer breeze to enter through those openings. Nabataean architects directed the two temples of KHirbat At Tannūr (Glueck 1938: 8–10) and Ramm (Tholbecq 1998: 250) towards the east, which is the direction that the Mesopotamian architects preferred in directing the buildings of their temples (FIG. 11). The city of Sippar[1] in Babylon is also a witness to that same trend with the indication that it was mentioned in the cuneiform texts as the city of the sun (FIG. 12), which was singled out the God of the Sun as a chief deity (Al Jader 1988: 3).

The planners of Nabataean temples followed the rectangular shape in general so as not to conflict with the division of the building in a triangular way from the

[1] Sippar is described as one of the five Sumerian cities mentioned in the legend of the flood at the end of the Ubaid era (4500–3800 BC) (Baqir 1986: 289–315).

inside at the sanctuary area. The central sacred part was surrounded by two side rooms. This idea was derived from Mesopotamian civilization, as in Eridu and Uruk (3500–2800BC) (Frankfort 1977: 20), and even the three-part buildings in the Middle Babylonian period (Kassite) (1420–1400BC) as in the Kara Indach temples in Uruk (FIG. 13). The Hellenistic Garius in Uruk (FIG. 14) also followed the same schematic pattern in the Egyptian civilization as in the Mādī (ماضي) city temple in Egypt (3100–332 BC).

Nabataean architecture focused on the entrances facing each other according to their axes (north-south or east-west) based on geographical factors mean the nature of the soil, the types of rocks available, and the availability of forests or not, in addition to the climate factors, including temperature, humidity, and wind. Environmental factors such as inherited traditions, or the influences imported to the place also played a role, as did creativity and innovation. These all had effects on religious buildings. The interior design of the two temples of KHirbat At Tannūr and Ramm were adapted from the countries of the Nile. In the temples of the pyramids and the buildings of the city of Luxor (ancient Thebes), the large size of the doors granted privacy to the temples and gave them a luxurious (FIGS. 15 and 16) and prestigious characteristic that distinguished them from other buildings. Such doors were used for the entrances to the Temple of Ramm (Savignace 1932 248–253), where the width is 1.75m, and at the Temple of the Winged Lions, which reaches 4.36m (Hammond 1982: 231–235). The origins of the width of the large entrances derive from the country of the Nile Valley (Shukri 1970: 42, 68, 97).

The Nabataean builders used free columns with circular bases. Annular grooves emerge from the base surface (FIG. 17). These concave grooves seem to consist of more than one piece shaping gradually at the surface of the square base, and they are commonly used at the corners and sides surrounding the Temple of the Winged Lions in Petra and at KHirbat Adh DHarīh (FIG. 18). Their origins derive from Nile countries too (FIG. 16) (Tholbecq 1998: 1078–1079). The square columns of Nabataean temples derive from the temples of Egyptian cities, such as Luxor.

The Nabatean architect focused his attention when designing the temples on the holy room, which was known by the term *naos* (FIG. 19), which is commonly used regarding Greek temples (Cook 1972: 211–220). The Nabataean architect was also keen to organize the space surrounding the sanctuary of the Nabatean temples by distributing columns (Tholbecq 1998: 1083–1085) on covered corridors extended by the ribs of an existing courtyard to protect visitors to the temples. This arrangement derives its origins from the Greek civilization, which called such a hall type a "*megaron*" (FIG. 20) (Martin 1988: 223), as in the Parthenon on the Acropolis of Athens built 448–432BC (Bahnasy 1987: 79).

Remains of Ionic columns shafts (FIGS. 21 and 22) appear at the Temple of the Winged Lions (Blagg 1990: 131). These are characterized by being slender at the upper parts and puffier in the lower third so that they do not appear thin due to the "Perspective Modulations" (Bahnasy 1987: 75). It is common for Nabataean architecture to use a type of column with a heart-shaped cross-section (FIGS. 23 and 24), which occurs as a result of the fusion of two quarter-joint columns, which protrude from the walls of the building from the inside. As for the exterior of the building, because of the merge, it takes the form of a sharp

angle or even 90-degree angle to provide the building with support and strength (FIGS. 25 and 26). Because of the way force is distributed on this type of column, allowing it to bear the weight of the upper building, it was commonly used in the sanctuaries of the Nabatean temples such as KHirbat At Tannūr, Adh DHarīḥ and the Temple of the Winged Lions in Nabataean Petra (Tholbecq 1998: 1079). Nabataean architects derived this style of columns with the "heart-shaped" shaft from the west and south, where it was in common use in the Greek settlements in Asia Minor and in the Greek cities of Cyrene and Alexandria (Martine 1988: 199).

Nabataean architects used column shafts consisting of one drum (FIG. 27) or several drums (FIG. 22). They may be sharp, with grooved edges, half round, oval in shape, or have smooth edges. The number of the grooves is between 20 to 24 (FIG. 28) (Cook 1972: 194, 215–216) taking into consideration the hardness of the raw materials and the weight-bearing requirements of the building according to the location. The use of this type was required in the columns at KHirbat At Tannūr (Glueck 1938: 11) and the Ramm Temple (Tholbecq 1998: 243–244), and at the columns of KHirbat Adh DHarīḥ (Muḥaysin and Villeneuve 1994: 486–489) and at the Temple of the Winged Lions in Petra (Hammond 1975: 23–24). The column shafts of the Nabataean temples were derived from the temples of Egyptian cities, such as Luxor.

The column capitals were ornamented with volutes in the form of a helical coil located at the four corners (FIG. 29). The use of the Ionic column capital order spread at the Temple of the Winged Lions in Petra. The architect adapted the volute shape from Mesopotamia (Layard 1849: 273), as it is one of the symbols of the goddess Inanna/Ishtar (FIG. 30). The same style spread in the city of Khorsabad located in Nineveh (FIG. 31) (Al-Sultan 2000: 102). The Nabataean builder preferred ornamented column capitals with acanthus leaves from the Corinthian order (FIG. 32) combined with volutes at the four corners from the Ionic order. Examples of the composite Nabataean capital are found in the central temple of KHirbat At Tannūr and on the façade of the temple at Adh DHarīḥ (FIG. 33) (Bieara 1993: 68). The same style spread in the city of Babylon (FIGS. 34 and 35), and builders used it in the temples of the Greek civilization (Al-Sultan 2000: 146). The uniqueness of the local Nabataean temples (FIG. 36) was reflected in its column capitals, which are polygonal in shape with prominent protrusions at the center of one of two sides of the crown (FIG. 37) (Makenzie 1990: 190). In the middle of its crown, the Nabataean column has a unique design in the form of a horn or projections that casts a shadow that varies with the angle of the sun's rays, producing a reference for telling the time (FIG. 38). This was widespread in the Nabataean temples, as in the temple of KHirbat At Tannūr. Nabataean capitals also ornamented the engaged columns surrounding the sanctuary of the Temple of Ramm so that the architectural elements fit in rhythmically with the functional details of the temple.

A composite-style (FIG. 39) column capital emerged at the Nabataean temples, with volutes from the Ionic order that ornaments the upper four corners of the crown, as well as acanthus leaves adorning part of the capital, consisting of the composite of the two elements on all sides of the capitals in a consistent manner. This type was commonly used on the facade of the KHirbat Adh DHarīḥ temple (FIG. 3) (Villeneuve

and Al-Muheisen 1988: 474, fig. 9) and the Temple of the Winged Lions (FIG. 4) (Hammond 1975: 22) and was commonly used in Roman architecture.

Both the sculptor and the architect took into consideration the sections of the facade of the building in terms of distributing the weight of the building, taking into account that the vertical axis represented by the columns and between the architrave was the center of the horizontal axis (Cook 1972: 195). This achieved balance in the general view through which the sculptor unloads his art starting from the architrave, which rested on the capitals of the columns, or directly under the frieze.

The architrave (الساكف) (Sidqi 1988: 45) was commonly used in the temples of KHirbat At Tannūr (FIG. 40) (Glueck 1970: 222) and in the facade of the temples of Ramm (Savignace 1935: 248), KHirbat Adh DHarīḥ (FIG. 18) (Villeneuve and Al-Muheisen 1988: 471–477) and the Temple of the Winged Lions (Hammond 1982: 231–238). Its architectural origins stem from Mesopotamia, (FIG. 41), and it was widely used in Greek buildings.

Architecture and sculpture have perpetuated their art by ornamenting the surfaces of the facades of the temples of KHirbat At Tannūr (FIG. 40) (Tholbecq 1998: 1078–1079) and Adh DHarīḥ (FIG. 42) (Villeneuve and Al-Muheisen 1988: 471–477) with the semi-square panels separating the triglyphs from the upper surface (FIG. 43a and 43b), a style adapted from the Mesopotamian school (FIGS. 44a, 44b, and 44c). The upper extremity seems to be a little longer than below, and this is done by perspective. The use of semi-square panels and triglyphs is adapted from the city of Khorsabad and sculptures such as those found on the Parthenon.

The entablature ends with a pediment (Sidqi 1988: 296), as we see in the KHirbat Adh DHarīḥ (Villeneuve 1986: 11–20). When analyzing why architects chose the triangular pediment, it may be partly because of its symbolic relationship with the soul, but also because of the usefulness of the shape to withstand weight and give the building strength and durability that earns it resistance to high winds, ease of removing snow, and also reduces the afternoon heat. It also acts as a lightning rod when it receives the volume of electric charges to be passed through a pointed metal stick on both sides. The electrical charges are received from one end and passed through varying surfaces that carry the prominent parts off the roof of the building's facade through ceilings, walls, and pillars to connect to the ground[2].

The pediment (القوصرة) derives from Greek architecture, but artistic carvings from Mesopotamia also indicate the use of the pediment in the construction of reed houses there. An example is a house made of reeds in the Iraq marshlands (FIGS. 45a and 45b), which is depicted in a relief sculpture on the Temple of Uruk (4000–3500 BC) (FIGS. 46a and 46b) (Frankfort 1977: 27).

The Nabataean style of frieze (FIG. 47) has protrusions extending from the façade wall, and it is ornamented with relief carvings that relate directly to the architrave site of the column capitals. We find widespread use of this element in the temples of KHirbat At Tannūr (Glueck 1940: 222), Ramm (Savignace 1932: 248), KHirbat Adh DHarīḥ (Villeneuve and Al-Muheisen 1988: 471–477), and the Temple of the Winged Lions in Petra (Hammond 1982: 231–238). This element has spread since early periods in the history of Petra from Mesopotamia

[2] See https://ar.royalmarinescadetsportsmouth.co.uk/symbolism-triangle.

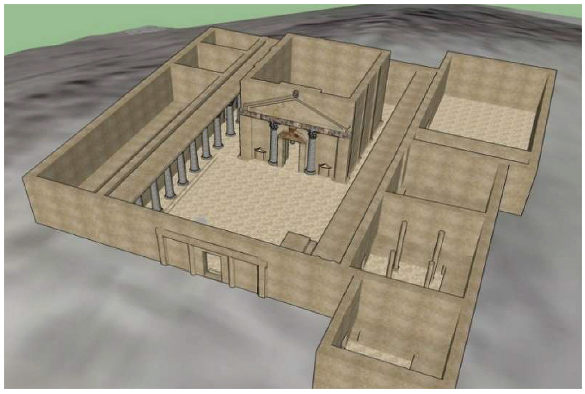
and continued even in the later Assyrian (FIG. 41) and Hittite architecture.

Nabataean temples usually had triclinia, which contained benches on three sides for seating (FIG. 48), which are attached to the two temples of KHirbat At Tannūr (FIG. 2) and Ramm (Tarrier 1980: 20). This architectural style derives from Roman civilization, as does the term "triclinium" (Wheeler 1979: 14–18).

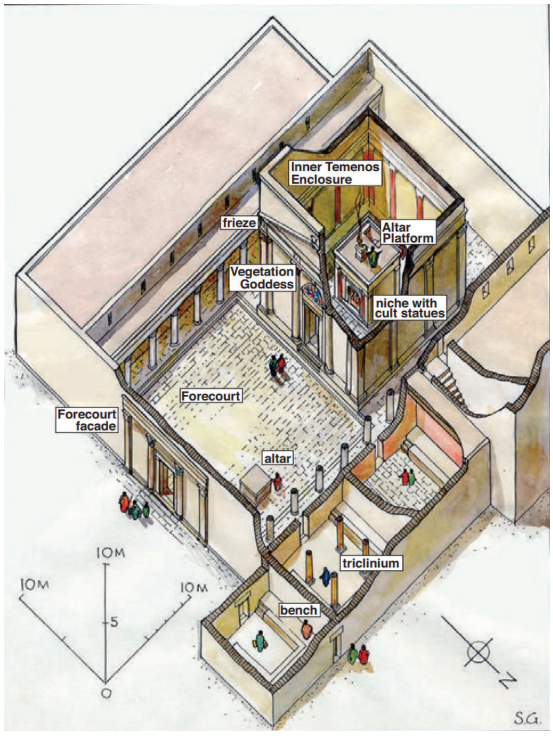
The quarryman schools that contributed to building the Nabataean temples were sophisticated in terms of the methods they used for polishing the stones on two sides, as well as setting the stones. The stones were laid in "header and stretcher" (FIG. 49) formation which derives from Greek architecture (Fletcher 1975: 192). The surface of the stones were cut at a 45-degree angle so that they could be easily fitted together with gypsum mortar (FIG. 50) (Tholbecq 1998: 1078–1079). This "header notched" technique was used in all Nabataean temples (Fletcher 1975: 192). The origins of this technique lie in Roman architecture (Wheeler 1979: 14).

Moreover, Nabataean temple architecture made use of the surface of the interior walls (FIG. 51) by incorporating niches for statues of the gods (FIGS. 52a and 52b). The niches could be tall or wide (Wheeler 1979: 14–18). We find examples in the Nabataean temples of KHirbat Adh DHarīḥ and the Temple of the Winged Lions (Tholbecq 1998: 1078–1079). The use of such niches in temples was common during the Parthian occupation (Colledge 1977: 70).

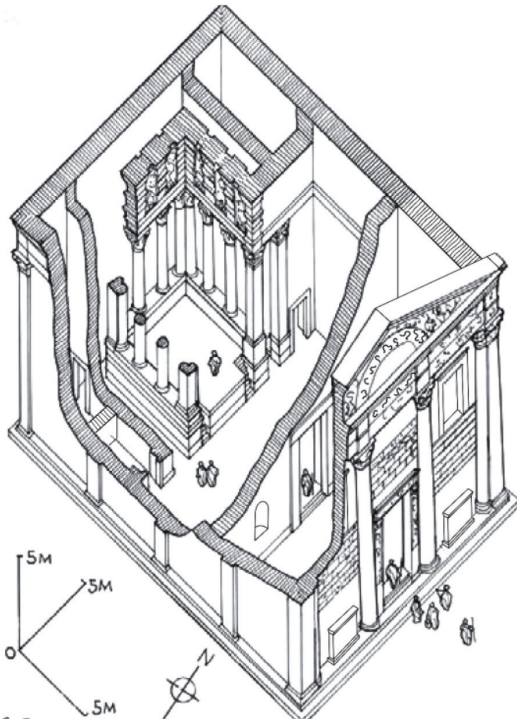
In conclusion, technical schools in the architecture of Nabataean temples fused with the environmental reality and the prevailing social customs at the time.



1. Reconstruction of the KHirbat At Tannūr Temple (image from Tebes 2020: 333–347, fig. 2).



2. The walls of the central sanctuary of the KHirbat At Tannūr Temple with characteristic buttresses and recesses (drawing from Whiting and Wellman 2016: 2, fig. 1).



3. Axonometric reconstruction of the KHirbat Adh DHarīh Temple showing system of buttresses and partitions (drawing from Whiting and Wellman 2016: 24, fig. 33).

4. Axonometric reconstruction of the Temple of the Winged Lions; the author believes this shows a system of buttresses and partitions (photo from Fournet et al. 2021: 299, fig. 1).

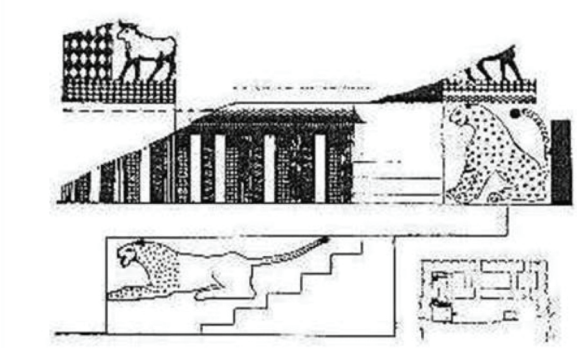
5. System of buttresses and partitions at the KHirbat Adh DHarīh Temple (photo from Seigneuret 2013: fig. 9).

A

B

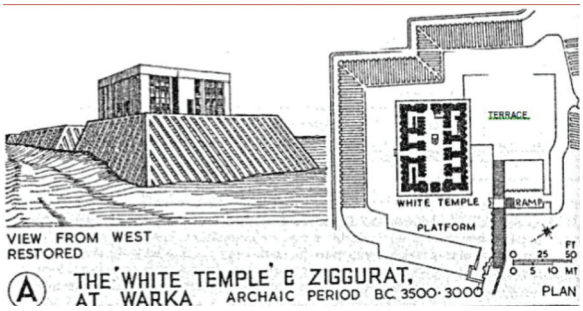
C

6. A) A system of buttresses and recesses of Warka (photo from Klink 2013); B) A system of buttresses and recesses at the Eanna Temple, Uruk (photo from Abed 2021: fig. 8); C) A system of buttresses and recesses. The author believes that the system of buttresses and recesses of the water god and the inlets are of the female deity, represented by the goddess Inanna (photo from Choudhury 2019).



A

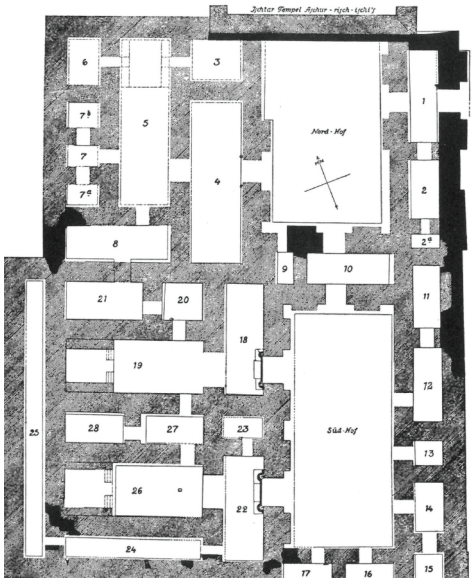
B



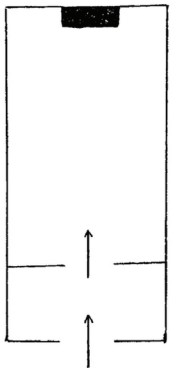
C

7. A) The use of platforms or benches, specifically at temple sanctuaries (drawing from Mortcart 1975: 61, fig. 12); B) From the culture of Uruk (drawing from Mesopotamian Gods and Kings, n.d.); C) The White Temple and Ziggurat at Warka (drawing from Pataliputra 2020).

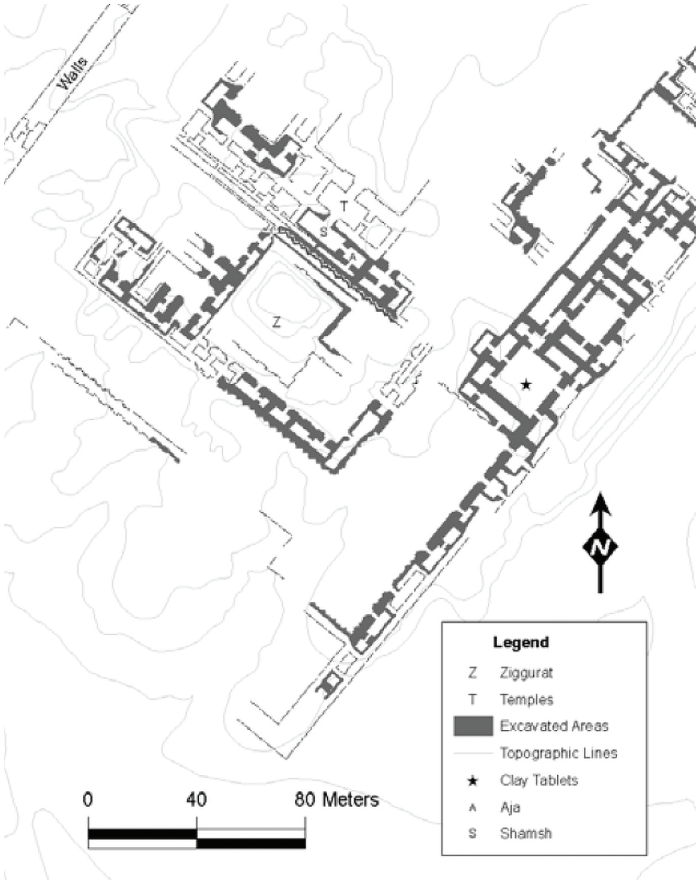
8. Bench prepared to erect a statue of the god and goddess, Pergamon museum, Staatliche Museen zu Berlin inv. no. VA 8146. (Staatliche Museen zu Berlin n.d.)



9. The Temple in Aššur (drawing from Stępniowski 2003: 243, fig. 11).



10. Drawing of the longitudinal room whose entrance faces the statue of god and goddess (drawing from Said 1985: 109, fig. 4B).



11. Shamash Temple at Sippar (drawing from Al Jader 1988: 69, fig. 9).

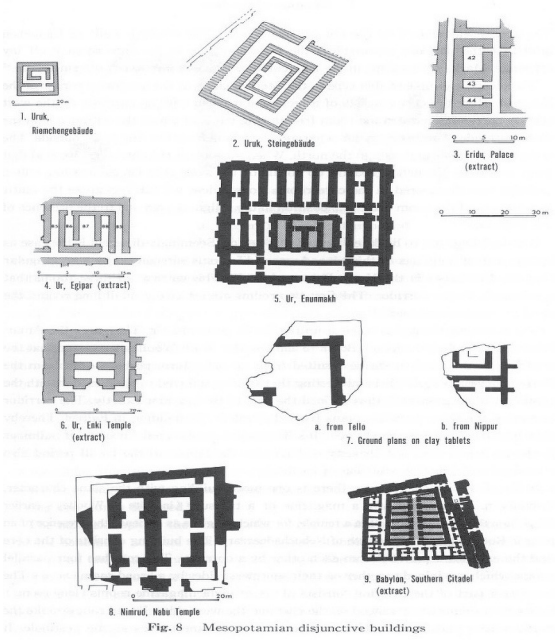
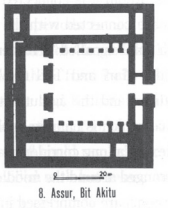


Fig. 8 Mesopotamian disjunctive buildings

12. Direction of the entrances to the temples of the sun god in ancient Iraq. city of the sun (drawing from Shepperson 2012: fig. 2).

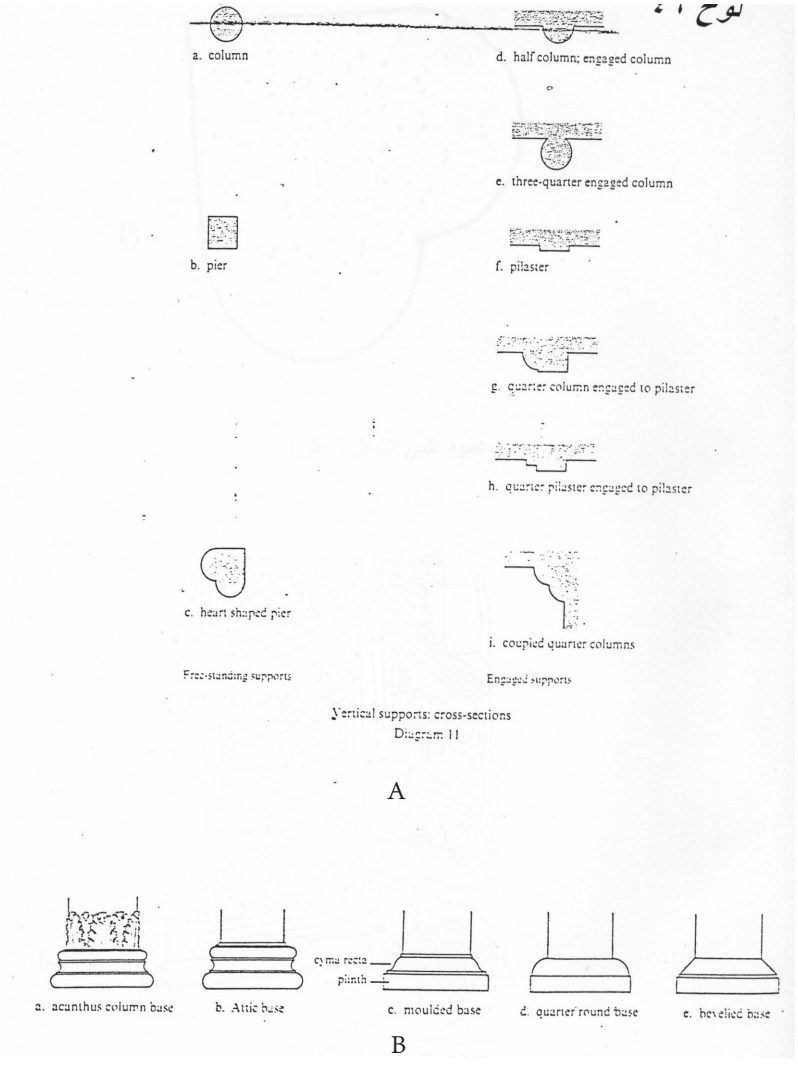


13. The division of the rectangular-shaped temple into three parts (drawing from Al Jader 1988: 27: fig. 13, no. 8)

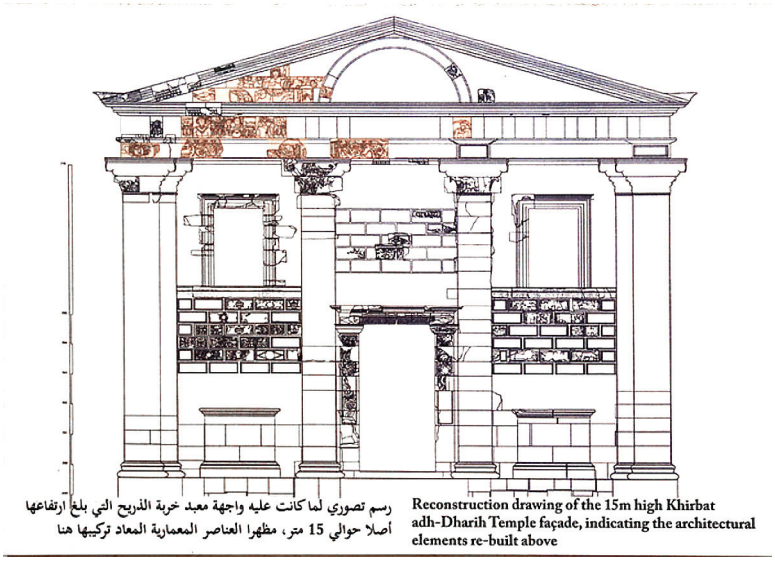
14. The Hellenistic Temple of Garius in Uruk (photo from Alqasab 2014).

15. The great entrance to the southern end of the eastern façade (wall) surrounding the Third Dynasty Step Pyramid complex of Djoser at Saqqara, Egypt, after restoration (photo from Badawy 1954: 407, fig. 3-A).

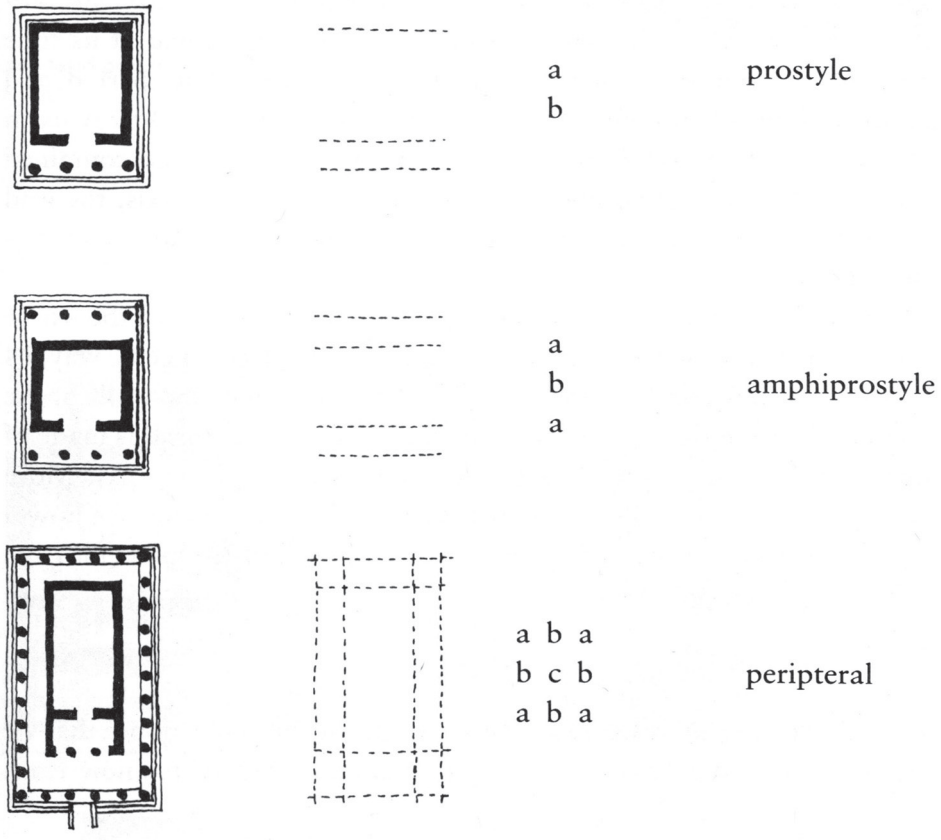
16. Khufu valley temple, Giza (photo from Talk 2022 [2024]).



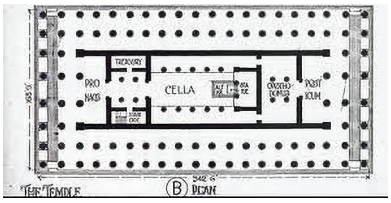
17. A: Vertical support cross-sections; B: Nabataean column base models (drawing from McKenzie 1990: fig. 188d).



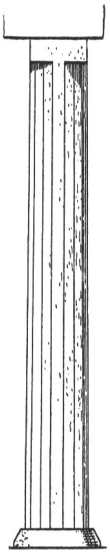
18. Circular bases of ruined columns at KHirbat Adh DHarīh (drawing from Universes in Universe n.d).



19. *Naos* (a term commonly used in Greek) or *cella* in Latin (drawings from Hamlin 1906: 54, fig. 31).



20. "Megaron" as in the Parthenon in Athens (drawing from Barletta 2001: 86.).

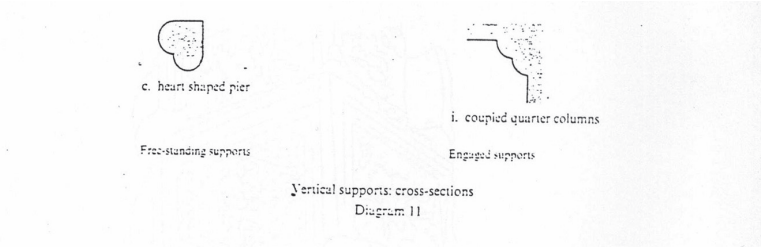


(شكل ١٦٥ أ)
عمود ذو ستة عشر
ضلعا

21. Column shaft with 16 sides (drawing after Barozzi 1889: pls. XVI, XVII).

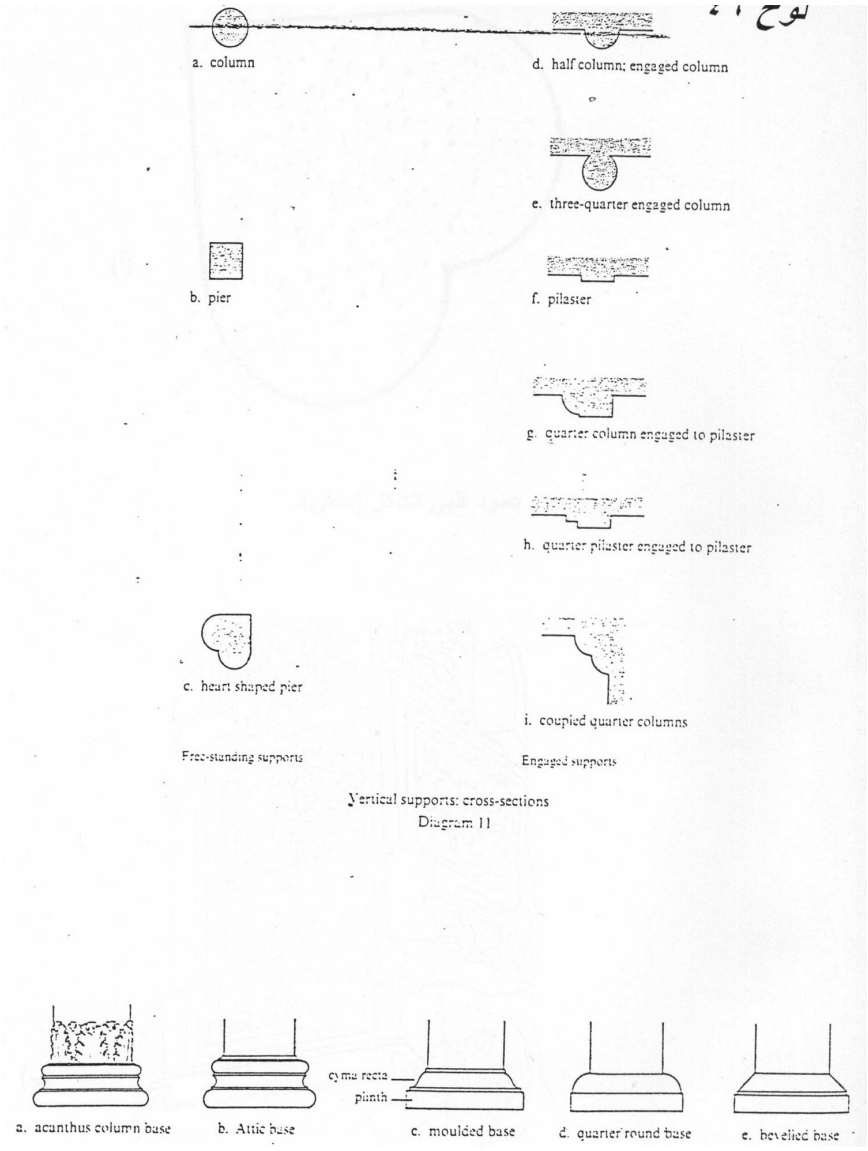
22. Column shafts often consist of several drums (photo from Al-Muheisen and Villeneuve 1993).

23. The column with a heart shape (photo from Dell'Acqua 2023).



24. Heart-shaped pier (drawing from McKenzie 1990: fig. 188c).

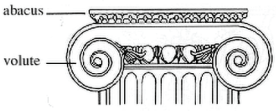
25. Heart-shaped pillar in KHirbat Adh DHarīh (photo from Villeneuve and Al Muheisen 1988).



26. The column can take the form of a sharp angle or may take the shape of a 90-degree angle (drawing from McKenzie 1990: fig. 188i).

27. Column shafts consisting of one drum (photo from Abd-Allah *et al*. 2010: 99, fig. 2).

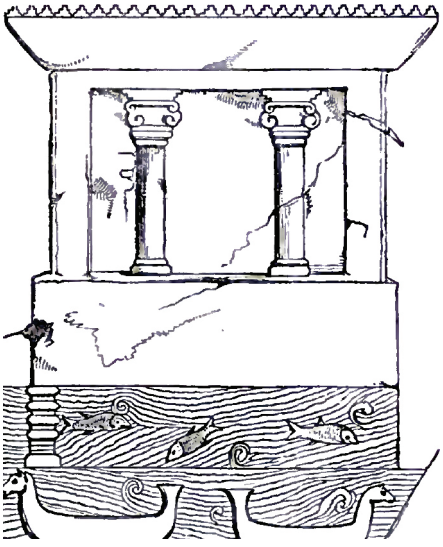
28. The column shift consisting of one drum they may be sharp,with grooved edges, half round, oval in shape, or smooth edged (photo from Epigraphic Survey 1998, pl. 129).



Ionic Capital

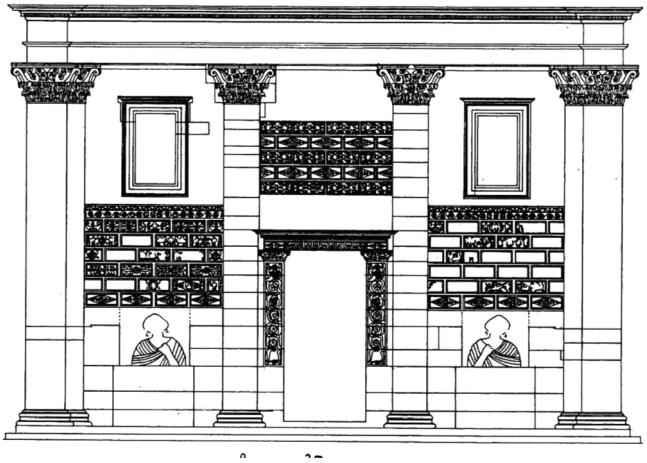
29. Ionic capital (drawing from McKenzie 1990: fig. 191).

30. The symbols of the goddess Inanna/Ishtar (photo from Miller *et al.* 56: fig. 1).

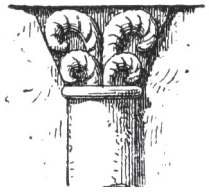


31. The volute shape from Nineveh (drawing from Layard 1849: 273).

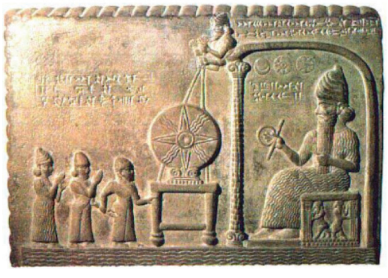
32. Corinthian order from the temple at Adh DHarīḥ (drawing and photo from McKenzie 1990: fig. 191).



33. The façade of the Temple at Adh DHarīḥ (drawing from Villeneuve and Al Muheisen 2000: 1544, fig. 11).

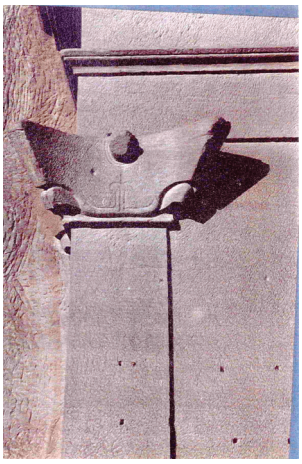


34. Capital style that spread in the city of Babylon (drawing from Perrot and Chipiez 1884, vol. 1: 209, fig. 75).

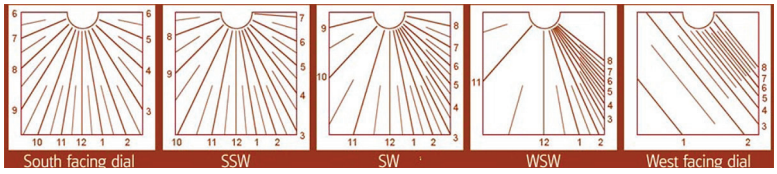


35. An ancient Babylonian column capital similar to an Ionic column (photo from Leick 1997: fig. 26).

36. The local character of the Nabataean temples was reflected in their column capitals (photo by Z. Sultan).



37. Nabataean capital (photo from Al-Talhi 2000: 275, ph. 3.3).



38. When shining through the protrusions, the sun sheds its light in a way that indicates the time (drawing from Vincent 2008: fig. 7).

39. Composite-style column capitals, Temple of the Winged Lions, Petra (photo from Tuttle *et al*. 2017: 177, fig. 5).

40. The architrave of the Temple at KHirbat At Tannūr (photo from Glueck 1940: 222).

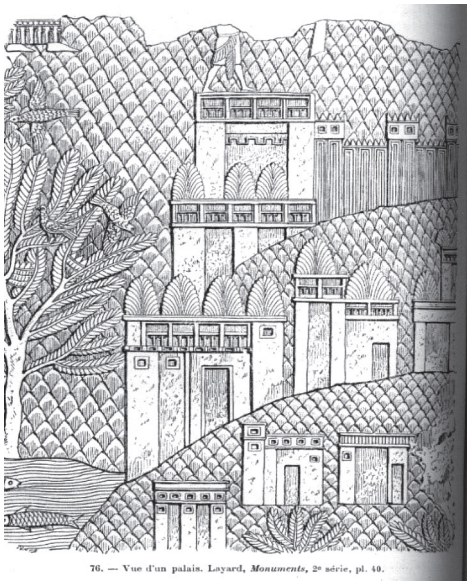
41. Relief from Koyunjik showing an architrave (drawing from Perrot and Chipiez 1884, vol. 2: 30, fig. 8).

42. The architrave of the Temple at KHirbat Adh DHarīḥ (photo by Z. Sultan).

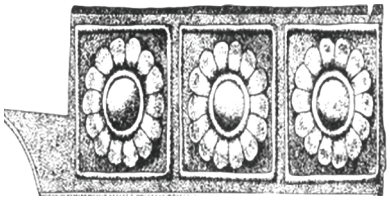
A

B

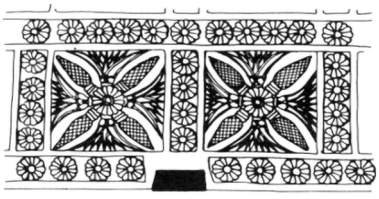
43. The semi-square panels (A: Villeneuve and Al Muheisen 2000: 1563, fig. 17; B: Seigneuret 2004: 662, fig. 6).



A

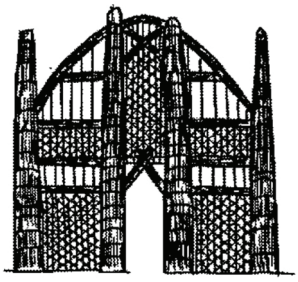


B



C

44. The semi-square panel from the Mesopotamian school (drawings from Layard 1849–1853).

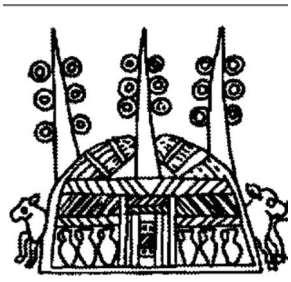


A

B

45. A) Drawing of two reed huts shown on a cylinder seal of the Uruk period (drawing from Michael 2016: 425, fig. 2); B) Reed house in the Iraq marshlands (photo from Al-Hamdani 2018).

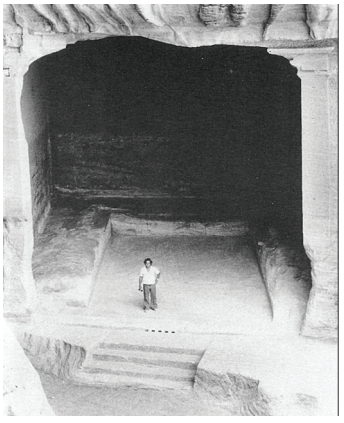
A



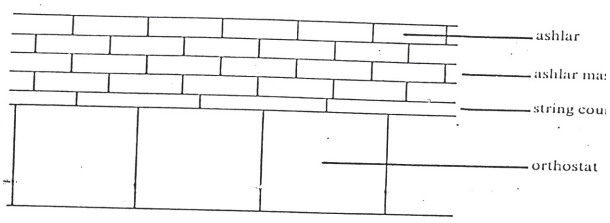
B

46. Sculpture from the Temple of Uruk. A: (photo from Lloyd 1992–1993: 81, fig. 27); B: (drawing from Roaf 2000: 425, fig. 2).

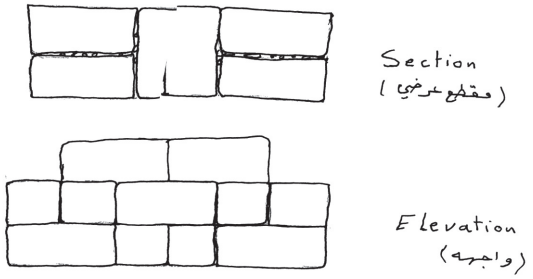
47. Nabataean-style frieze from KHirbat At Tannūr (photo from Whiting and Wellman 2018: 3, fig. 3.).



48. Triclinium (photo from Tarrier 1986: pl. 4B).

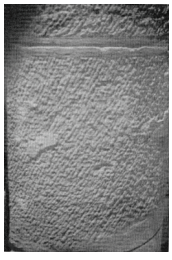


(ب) طريقة الأورثوستات في تنضيد أحجار البناء.

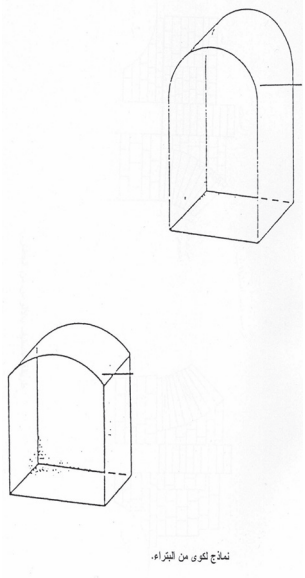


(أ) طريقة تنضيد أحجار البناء المعـــابد النبطيـــة بـــأطلاق عليـــها تســـمية "Header Streacher"

49. Header and stretcher (drawing by Z. Sultan).



50. Notched header (photo by Z. Sultan).



نماذج لكوى من البتراء.

51. Niches (drawing by Z. Sultan).

A

B

52. Niches (photos from Alpass 2010: 5, fig. 2.; 7 fig. 3).

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