

ZEITSCHRIFT
FÜR
ÄGYPTISCHE SPRACHE
UND
ALTERTUMSKUNDE

HERAUSGEGEBEN
VON
FRITZ HINTZE UND SIEGFRIED MORENZ

87. BAND
Mit 9 Tafeln und 26 Abbildungen im Text

1962

AKADEMIE-VERLAG · BERLIN
IN ARBEITSGEMEINSCHAFT MIT J.C. HINRICHS VERLAG · LEIPZIG

ALEXANDER BADAWY

The Symbolism of the Temples at 'Amarna'

When Blackman studied the liturgy of the Aten in the temples of 'Amarna' he relied solely on the representations of those temples on the walls of the rock-tombs. Since then the temples themselves have been uncovered and published in detail. Unhappily no part of the structures had been spared by the gangs of workmen who were commissioned by the priests of Amun and Horemheb to destroy the official buildings and wipe off every trace of the Aten and his "heretic" supporter, Akhenaten. Enough remains, however, as foundation trenches and platforms to allow the excavators and their architects to survey the plans of the various buildings and restore some perspective views to a fair degree of certainty¹.

It is obvious that the typical temple of the sun-disk Aten should be hypaethral. This is clearly shown by all the representations of the various temples in the tomb scenes. The plan is different from the typical cult temple, though still symmetrical. New unknown elements appear for the first time and will never occur again. I would only mention the lateral walls in the shape of 'arms' protruding at either end of the front of the Sanctuaries, the numerous rows of offering-tables set in a grid pattern in the open courts of the Great Temple and outside it and the Desert Altars with four axial stairways perpendicular to the four sides². The unique character of these elements has been recognized but no attempt, as far as I know, has been made toward their elucidation.

Were these new types of temples invented by Akhenaten? There is no doubt now that the Aten had not been an unknown deity, at least during the earlier times of the Eighteenth Dynasty. Both Hatshepsut and Thutmose IV acknowledged him. In Karnak Hatshepsut boasted: "I am (also) the Aten, who procreated the beings, who bound up the earth and finished its shapes"³. Thutmose IV fought, "with the Aten before him", and wanted that the "foreigners be like the (Egyptian) people in order to serve the Aten forever"⁴. In both instances Aten is really a deity worshipped and not only the sun-disk. In the reign of Amenhotep III Aten had a temple at Karnak and at least two of its officials are known: Ramose, "steward in the Temple of the Aten", and Penbuy, "scribe of the Treasury of the Temple of the Aten"⁵. The blocks with raised reliefs which were retrieved from the Ninth and Tenth Pylons at Karnak had probably belonged to that temple since the name of Amenhotep IV was inscribed on them over hammered out areas where that of his father Amenhotep III had been⁶. Amenhotep III had a barge called "Aten gleams" on the lake of Tiye fronting the Palace of Western Thebes⁷. The excavation of this temple of the Aten, which stood outside the eastern enclosure wall of Aten at Karnak, north of the gateway⁸, has not yielded its plan. A few of the colossal statues of Amenhotep IV which had stood around the courtyard have been restored and show an early stage of the peculiar style which was to evolve at 'Amarna. It is possible that the numerous small sandstone blocks with reliefs which are extracted from the

¹ I dedicate this study to the memory of my master, colleague and friend the late Professor Vladimir Vikentiev, a man of wisdom, courage and heart.

² A. M. Blackman, *A Study of the Liturgy celebrated in the Temple of the Aton at El-Amarna*, Recueil d'Études Égyptologiques dédiées à la mémoire de Jean-François Champollion, Paris 1922, pp. 505-527.

³ T. Eric Peet-C. Leonard Woolley, *The City of Akhenaten*, Part I, London 1923. II. Frankfurt-J. D. S. Pendlebury, Part II, 1933. J. D. S. Pendlebury, Part III, 2 vols. 1951.

⁴ Pendlebury, C. of A. III, pp. 5-15, 92 ff. Frankfurt-Pendlebury, C. of A., II, pp. 401 ff.

⁵ H. Kees, *Das Alte Ägypten*, Berlin 1938, p. 153.

⁶ A. Shorter, *J. E. A.*, XV II, London 1931, pp. 23 ff.; XVIII, 1932, pp. 110 ff.; XXII, 1936, pp. 3 ff.

⁷ S. R. K. Glanville, *J. E. A.*, XV, 1929, pp. 5 ff. J. Wilson, *The Culture of Ancient Egypt*, Chicago 1958, p. 210.

⁸ W. S. Smith, *The Art and Architecture of Ancient Egypt*, Baltimore 1958, p. 179.

⁹ J. H. Breasted, *Ancient Records of Egypt*, II, 869. ¹⁰ Smith, *Art.*, p. 179.

pylons at Karnak come from that temple. They provide, together with other blocks found at Hermopolis and Assiut, unique data for the study of the ritual of the Aten, in correlation with the representations from the tombs at Amarna. Some blocks found in the temple of Luxor and inscribed with *Gm p-itu*, the name of a sanctuary to the Aten, could imply that this structure existed there¹. The remains of a sun-temple of Akhenaten were found in the northern area of the fortified city of Sesebi in the Sudan² and we know of a temple of the Aten in Syria³.

The architectural data derived from the remains at Amarna are by far the richest. A step toward the interpretation has been made by correlating the structures with the names of the temples as mentioned in the contemporaneous inscriptions⁴. Perhaps can the interpretation of the temples be carried one step farther with the explanation of their unique architectural characteristics which were invented as part of the *sb-qt* by Akhenaten to be a concrete expression of his ideology?

A complete list of the official temples, chapels and altars at Amarna comprises the precinct of the Great Temple with its Sanctuary and Per-H'ai/Gem-Aten, the smaller Sanctuary to the south of the royal residence, the Maru-Aten and the so-called 'North Palace' to the south and north ends of the city, respectively, the Desert Altars and the River Temple. To these should be added the private chapels to the Aten in the villas and the funerary chapels on the eastern outskirts of the desert.

The Great Temple⁵ was erected on the earliest site to be chosen for a temple at Amarna. It passed through three periods of construction and the final layout features a large rectangular temenos east-west of about 1456×520 cubits of 0.523 m. within which are the temple itself at the western end and the Sanctuary at the eastern end, both on the main longitudinal axis.

The temple itself, identified by Fairman as the complex named in the inscriptions Per-H'ai/Gem-Aten, is an exceptionally long rectangular enclosure about 405×55 cubits featuring a series of six courtyards as broad as the enclosure (Fig. 1). At its eastern end is the Per-H'ai, a hypostyle hall which the representations in the tombs show to have been fronted by two pylons. Besides this hypostyle hall all the other elements of the plan are unique. Outside the Per-H'ai is a thick wall running from the end of its front façade very close to either side. The similarity of these two appendages with those at the front of the two Sanctuaries and in a few private chapels is obvious. Any function which could have been presumed for such transverse appendages would be impossible in this case since the walls are related to abut the sides of the hypostyle hall. It will be shown that they indicate a basic element, probably a square, in the constructional diagram of the plan. One striking feature is the symmetry of the various elements about the longitudinal axis. In each court there are two rectangular areas on either side of the axis covered with rows of identical mud brick bases, identified as offering-tables from a comparison with the representations in the tomb scenes. Each court is separated from the next one by a thick pylon and the levels of the courts rise eastward by means of terraces, one step higher at a time. The two first courts are identical, except for the four large elements at the western end of the rows of altars in the first court. The third court is squarish and has a colonnaded portico along its rear side. The fourth court is still smaller and covered with offering-tables. The two last courts are again identical and they differ from the preceding ones in three points:

- their entrance is screened with a winding approach.
- they are bordered by a continuous series of cellae, probably roofless.
- there is a large altar in the axis toward the rear of either court.

These two courts were obviously for the performance of the cult ritual.

¹ Pendlebury, C. of A. III, p. 192.

² A. Blackman, A Preliminary Report on the Excavations at Sesebi, Northern Province, Anglo Egyptian Sudan 1936-1937, J. E. A., XXIII, 1937, pls. XIII-XIX. J. H. Breasted, Journal of Semitic Languages and Literatures, XXV, Chicago 1908, pp. 51ff.

³ J. H. Breasted, Zeitschrift für Ägyptische Sprache, XV, pp. 106ff.

⁴ H. W. Fairman, The Topography of the Central City, in Pendlebury, C. of A. III, pp. 189-197.

⁵ Pendlebury, C. of A. III, pp. 5-20.

THE GREAT TEMPLE AT AMARNA

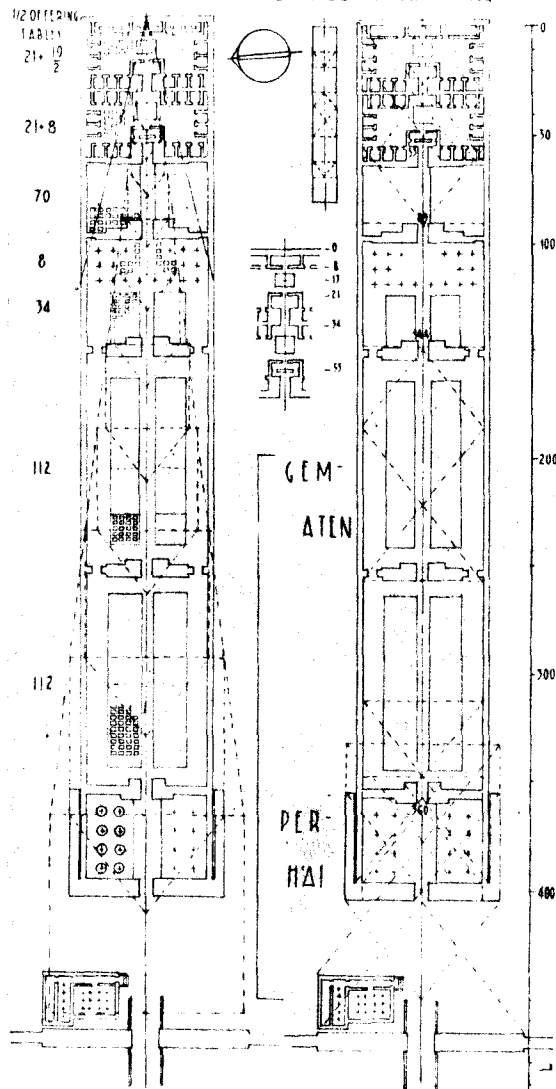


Fig. 1. Plans of the Per-Hai/Gem-Aten at Amarna showing the series of offering-tables and the constructional diagram of the design, with significant points along the axis

But why two such identical layouts for the cult? If we count the offering-tables on either side of the axis to the rear of the front altar court, but excluding the second court, we find 365 offering-tables. These are subdivided among the courts in a striking way: 112 in the first court (half); 112 in the second court; (34 + 8) in the third court; 70 in the fourth court and (21 + 8) in the altar court. It will be noticed that the total for both the third and fourth courts is again 112, the same figure as in each of the two preceding courts. A simple interpretation of the layout is that each of the offering-tables was to be loaded with offerings for one day in the year. The duality of the series possibly expressed the dual service at sunrise and sunset, as it was the case for the usual cult¹. Or was it for offerings in the name of Akhenaten and others in the name of Nefertiti? From the representations we deduce that the queen took the same part in the service as the king². The subdivision into three courts with 112 offering-tables each would be symbolic for the ordinary days of the three seasons of the Egyptian year. The ritual of offering during the festival days would be performed in the front altar courtyard, so that the 29 offering-tables in the latter would represent the remaining 29 days of the year: 8 festivals for each of the three seasons and five epagomenal days. As to the repartition of these festivals among the offering-tables it could be suggested that the eight offering-tables inside the eight cells would have been for the main festivals, namely the first of each season and the five epagomenal days. The remaining twenty-one offering-tables in one half of the courtyard would have been used for the festivals of the first and fifteenth of every month (except for the first of every season celebrated inside one of the cellae). The scheme would have corresponded exactly to:

8 cellae = 3 (first of every season) + 5 (epagomenal days)

21 offering-tables in the open court = 9 (first of every month) + 12 (fifteenth of every month)

Taking into account the second altar courtyard instead of the first one one reaches the controversial total of 366½. It is noteworthy that the architect who surveyed the temple restored the rear row of cellae as three cellae with three altars each, on the evidence of actual remains he found³, though in his earlier plan he had left the area of the communicating cellae quite blank⁴. Pendlebury mentioned that there "was no reason to believe that there was a door leading out eastwards"⁵. On the other hand the representation from the tomb of Panehsy seems to show eight offering-tables only in the three rear cellae, while that of Meryre I shows four (?) offering-tables in four cellae⁶. That the arrangement of the rearmost row of cellae in the restored plan is questionable is obvious. I would surmise, on the evidence from the representation of Panehsy, that only eight offering-tables were actually set at the back, or four on either side of the axis. The total of 366 would correspond to the ritual for a bissextile year.

The Egyptian texts are silent about the bissextile year. It is only under Ptolemy III that the royal decree of Canopus ordered to add one day every four years to the five days before the Festival of the New Year⁷. There is no doubt that it had been observed for many centuries that the ordinary year of 365 days fell short by a quarter of a day of the true solar year. Several Egyptologists are even of the opinion that the exact computation of the solar year had been kept by the priesthood and the peasants while the deficient vulgar year was used for civic purposes (Kees⁸, Montet⁹, Erman¹⁰). The exact calendar was not enforced, however, before Julius Caesar who pro-

¹ S. Sauneron, *Les prêtres de l'ancienne Egypte*, Paris 1957, pp. 81 ff.

² Blackman, *Liturgy*, p. 522.

³ Blackman, *ibid.* pis III, IV.

⁴ Pendlebury, *Preliminary Report on the Excavations at Tell El 'Amarnah 1932-1933*, J. E. A. XIX, pl. XIII.

⁵ *ibid.*, p. 16. ⁶ *ibid.*, pl. V.

⁷ E. W. Budge, *The Rosetta Stone*, London 1929, pp. 260-1, 289-290, pl. XXII, 1, 22-23. J. P. Mahaffey, *The Empire of the Ptolemies*, London 1895, p. 231, n. 11, 35.

⁸ Kees, *Alte Ägypten*, p. 20.

⁹ P. Montet, *La Vie Quotidienne en Egypte*, Paris 1946, p. 39.

¹⁰ A. Erman, *La Civilisation égyptienne*, Paris 1952, p. 558.

bably adopted the civil practice of the Alexandrines or followed the advice of Sosigenes¹. The Gem-Aten at Amarna aimed at expressing by its plan a calendric symbolism of the solar year in connection with the cult ritual of the sun-disk Aten. It is understandable that the notion of the exact leap-year, if it were extant, would have been embodied in the design. That all the offering tables are represented as covered with offerings in the tomb-scenes is not a proof that this was actually the case for the daily ritual. As the Egyptian drawing always aimed at showing the most complete aspect of things this would have represented the sequence of offering during the whole year. This does not exclude that the temple could have served for sed-festivals².

Is such a calendric symbolism embodied in a plan or in a series of elements unique in Egypt? There are many instances to prove the contrary. Ever since the earliest times the Egyptian peasant had to abide by the solar calendar, as his illiterate successor still does nowadays when he reckons his dates by means of the Coptic months. The complete calendric cycle was represented in the mastaba tombs of the Old Kingdom by the agricultural scenes characteristic for each season: plowing, sowing, trampling in the seed, harvesting. The names of the seasons of 120 days each actually expressed these phases, Inundation, Vegetation and Harvest. The closest parallel to the symbolism in the plan of the Gem-Aten is found in the Abaton, the mythical tomb of Osiris, on the island of Biga. The decree from the time of Hadrian concerning the sacred ritual specifies: "Let there be provided for him (Osiris), round this place, 365 offering-tables, upon which there shall be palm leaves, in order that the libations may not cease, that water may never be lacking about him. Let there be every day divine service by the appointed high priest; let there be a libation to Isis, Lady of Philae, when the libation of every day is poured"³. It is further stated that Isis and her priests would sail across from Philae every tenth day and on the holy days to pour the libation of milk. A similar report about Biga is given by Diodorus Siculus: "The tomb of Osiris, venerated by the priests throughout Egypt, and the 360 vessels for the libations surrounding it. The priests of the locality fill these vessels with milk every day"⁴. The emphasis laid in both texts upon the daily service is to be noticed, but it is evident that only one offering-table ("vessel") was filled in succession every day. This interpretation is corroborated by the decree of Sheshonq I⁵ which fixes the provisioning of 365 oxen to the god Heryshef of Herakleopolis by certain categories of persons at various times along the twelve months of every year⁶. Evidently only one ox was sacrificed every day, just as well as only one libation was poured on an altar at Biga or at Amarna. A decree of Osorkon specifies that the temple of Mont and that of Amenope at Karnak were to be provided daily with one goose each, making 730 geese in the year⁷. A similar one-day service for everyone of the shawabti-figurines laid by the deceased is implied when the total number of these "respondents" corresponded to the number of days in a year⁸. Calendric cycles are to be found in the description of the destiny of the deceased king in the Pyramid Texts: when "their great ones are for his morning meal, their middle-sized ones for his evening meal, and their little ones for his night meal"⁹; when he accompanies the sun every day in his boat, when he regulates the hours (Pyr. 320)⁹. According to the texts of Memphite theology there were four bulls in Memphis

¹ Strabo, *The Geography*, H. C. Hamilton-W. Falconer, London 1906, III, p. 262, note.

² C. Aldred, *The Beginning of the El-Amarna Period*, J.E.A., 45, Dec. 59, p. 28.

³ E. Drioton, *Philae, the sacred island*, *The Unesco Courier*, Feb. 1960, 13th year, p. 36. Kees, *Alte Ägypten*, p. 188.

⁴ Drioton, *ibid.*

⁵ Ahmed bey Kamal, *Recueil de Travaux, Monument Nouveau de Sheshonq Ier*, 1909, XXXI, pp. 33—38. Maspero, *ibid.*, pp. 38—40; J. Baillet, *Le régime pharaonique*, Paris 1913, pp. 532. A. Gardiner, *Egypt of the Pharaohs*, Oxford 1961, pp. 327—328.

⁶ A. Gardiner, *Egypt of the Pharaohs*, Oxford 1961, p. 332.

⁷ J. H. Breasted, *Development of Religion and Thought in Ancient Egypt*, N. Y. 1959, p. 295.

⁸ Erman-Blackman, *The Literature of the Ancient Egyptians*, London 1927, p. 6. *Pyr. Texts* 273—274.

⁹ S. Mercer, *Literary Criticism of the Pyramid Texts*, London 1956, pp. 60—61.

symbolizing the cycle of life: the Lord of Birth, the Lord of Age, the Lord of Death and the Lord of Burial¹¹.

Besides the use of numbers symbolizing explicitly a calendric cycle the Egyptians often used them to represent occurrences in time. The stelae with representations in low relief of as many as 376 ears, as well as the model wall with ears¹², were to indicate the times a certain god had "listened" to the prayers of the dedicator. It is noteworthy that in the Gem-Aten the length from the rear to the junction with the Per-Ij'ai is 360 cubits, very probably an implication for the purport of the ritual by means of the actual overall dimension of the design. The total length of the temenos of the Great Temple from the front entrance of Gem-Aten to the back of the Sanctuary is about 1354 cubits, possibly an implication of the 1354 years of the Gods before the foundation of Memphis¹³.

Other ideologies in the ancient Near East also used the figures 360 or 365 on account of their calendric potentiality, implying the cycle of life or just life. Strabo mentions a Persian song which praised the 360 uses of the date-palm¹⁴ and that the wall of Babylon was 365 stadia long¹⁵. The outer wall of Babylon had actually about 360 towers¹⁶.

What were the numerous offering-tables which were aligned outside the Great Temple, north and south, in 45 rows east-west by 20 rows north-south, with a total of more than 900 on either side?¹⁷ These are represented in the tomb scenes (Meryre)¹⁸ and Davies suggested that they were furnished with the offerings of the private people¹⁹. Blackman was of the opinion that the laity did not proceed farther than the outer court of either the Great Temple or the Sanctuaries, except when they were in attendance of the king²⁰. This restricted attribution would explain the large number of offering-tables which had been founded or reserved for the prominent citizens of Amarna to receive their own offerings.

It may have been noticed that till now we have not mentioned the translation of the name Gem-Aten. The name of the whole complex *Pr-Atn m -ht-Atn* is clearly "The House of Aten in Akhetaten"²¹ and that of *Pr-k'y n p' -Atn m Pr-Atn m -ht-Atn* is "House of Rejoicing of the Aten in the House of Aten in Akhetaten". The common interpretation, however, of *Gm-Atn* is "Aten is found" or of *Gm p' -Atn m Pr-Atn m -ht-Atn* "The Aten is found in the House of Aten in Akhetaten". This interpretation, however, hardly conforms to the dynamism of an ideology based upon the eternal creation by the sun-disk, reborn daily in the eastern horizon. This miracle is renewed constantly every day: "Thou art in the sky, but thy rays are on earth"; "Thy rays carry a million royal jubilees"; "He fills (every land) with his rays, and makes all men to live; with beholding whom may my eyes be satisfied daily, when he dawns in this house of Aten"²²; "Behold what thou doest every day"²³. Akhenaten himself is "born anew every morning, like the sun-god his father"²⁴. A comparison with the names of the subdivisions of the Gem-Aten such as: *rw d mnw n Atn r hb m Gm p' -Atn m Pr-Atn m -ht-Atn*. "The monument of the Aten flourishes forever in Gem p' Aten

¹¹ W. Erichsen-Schott, *Fragmente memphitischer Theologie in demotischer Schrift*, Wiesbaden 1954, p. 383.

¹² H. Fisher, *Review of (Medinet Habu V)*, *American Journal of Archaeology*, 63, p. 198. Erman, *Civilization*, p. 347.

¹³ Erichsen-Schott, *op. cit.*, pp. 313, 380, 392.

¹⁴ Strabo, XVI I. 14.

¹⁵ Strabo, XVI I. 5.

¹⁶ B. Koldewey, *Das wiedererlebende Babylon*, 1925, p. 152f.

¹⁷ Pendlebury, *C. of A. III*, p. 16.

¹⁸ N. de G. Davies, *Rock Tombs of El Amarna*, II, pl. XVIII.

¹⁹ Davies, *Amarna*, II, p. 22.

²⁰ Blackman, *Ritual*, p. 527.

²¹ Fairman in Pendlebury, *C. of A. III*, pp. 191-193.

²² Breasted, *Development*, pp. 332-333.

²³ Erman-Blackman, *Literatura*, p. 292.

²⁴ W. F. Albright, *From the Stone Age to Christianity*, N. Y., 1957, p. 222.

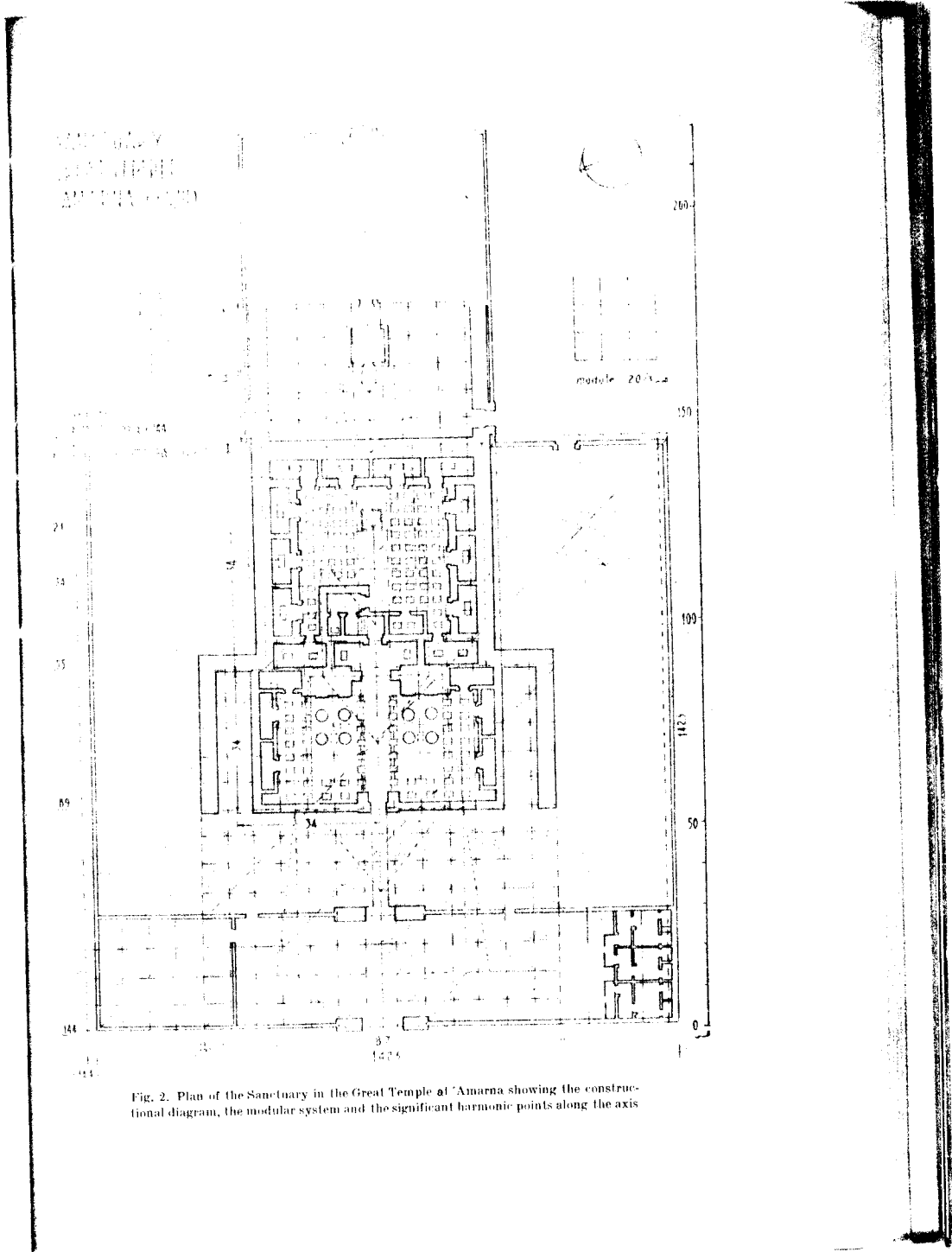
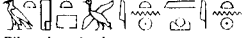


Fig. 2. Plan of the Sanctuary in the Great Temple at Amarna showing the construction diagram, the modular system and the significant harmonic points along the axis

in the House of the Aten in Akhetaten", or its variante *rwf'nhw itn*, or a subdivision of the Per H'ai as *whn itn* "Aten shines"¹ would suggest by analogy the translation of *Gm* by a tense of continuous action. The verbal root *gm* means "to find" something, and in religious connotation, Osiris, the members of Osiris, a sacred animal². But it also means "to meet" somebody, or "to discover, to mention, to find out"³. The Coptic form *ouue*⁴:*xuu*⁵ renders the abstract "to understand, grasp, know"⁶. Against the ideological background defined by Akhenaten himself: "May my eyes be satisfied daily with beholding him, when he dawns in this house of the Aten" such a translation of *Gm itn* as "Meeting Aten" would be by far more satisfactory. It agrees better with the ethics of the eternal creator "who himself fashioned himself with his own hands, whom no artificer knew"⁷.

The Sanctuary. Two similar, though not quite identical, temples have been given this name by the excavators. The one is located to the rear, within the temenos of the Great Temple, and the other is surrounded by its own enclosure to the south of the royal residence on the Royal Road.

The name of the latter  has been translated "The Mansion of the Aten in Akhetaten"⁸. The sign *ht*, however, represents the fortified enclosure wall of a palace or a castle, perhaps even a citadel⁹, and this meaning for the Sanctuary is strikingly corroborated by its buttressed temenos wall¹⁰. It resembles that of the mortuary temple of Ramses III at Medinet Habu.

The temenos wall of the "Castle of the Aten"¹¹ on the Royal Road is about 200x100 m. east-west, enclosing three courtyards formed by two transverse walls. Three pylons form the successive entrances. On both sides of the ramp which proceeds from the first pylon there is a series of 52 offering-tables flanking a central altar. In the second courtyard there is nothing except a priest's house fronting the south tower of the third pylon. In the rear courtyard is the sanctuary itself on the main axis. It consists of two courtyards of the same width, the front one shallow, the rear one squarish. They are separated by a screen wall forming a winding entrance to the second courtyard. In each courtyard two series of offering-tables in rows parallel to the longitudinal axis resemble the arrangement of the Gem-Aten. In the axis is a large altar.

On the outside, as deep as the first court of the sanctuary and running parallel to it on either side, are two walls recurving at their western end toward the body of the temple. These 'arms' are similar to those at the front of the Per-H'ai, though here set clearly at some distance from the structure and forming two cul-de-sacs as is corroborated by the representations in the tombs.

The Sanctuary in the rear part of the Great Temple is similar and is surrounded by a thin enclosure wall which abuts its rear side and forms a shallow forecourt at its front (Fig. 2). Beyond it, at the back, two courts are set, the one behind the other, of the same width as the Sanctuary itself. There is a large altar in the axis of the court immediately abutting the Sanctuary. Perhaps was the latter the Mansion of the Benben¹², where the benben would be the great stela? Tutu prays that he might follow the Aten as did his favorites in the court of the Mansion-of-the-Benben.

The purport of this strange layout has never been alluded to and the existence of the two 'arms' or so-called screen-walls is even ignored by the excavator in his comment upon his reconstruction¹³.

¹) Fairman, *op. cit.*, pp. 192—193.

²) Erman-Grapow, *Wörterbuch der Ägyptischen Sprache*, V, p. 166. ³) *ibid.*, p. 169.

⁴) W. Till, *Koptische Grammatik*, Leipzig 1955, p. 206.

⁵) Breasted, *Development*, p.332. A. Gardiner, *Egypt of the Pharaohs*, Oxford 1961, p. 223 translates "Finding Aten".

⁶) Fairman in Pendlebury, *C. of A. III*, p. 191.

⁷) Alexandre Badawy, *Le dessin architectural chez les Anciens Egyptiens*, Le Caire 1948, pp. 45—46.

⁸) Pendlebury, *C. of A. III*, pl. XVI.

⁹) Pendlebury, *ibid.*, pp. 92—97.

¹⁰) Fairman in Pendlebury, *C. of A. III*, p. 195.

¹¹) Pendlebury, *ibid.*, p. 9. Mentioned briefly in the actual remains, p. 7.

The numbers of the offering-tables do not seem to have any calendric symbolism as in the Gem-Aten. The cul-de-sac, about four meters wide and occasionally represented as sheltering a small structure in the scenes from the tombs, does not have any functional purpose as to architecture.

The mystery is, however, unravelled with the analysis of the design of the plan¹. This yields for both sanctuaries two similar constructional diagrams. That of the more complete sanctuary in the Great Temple features within a large axial square of 144 cubits to its side two smaller squares also on the axis, one behind the other, 89 cubits (west) and 55 cubits (east) to their side, respectively. These figures 55, 89, 144 are the consecutive numbers of a summation series of the Fibonacci-Lamé type whose previous sequence would be 1 : 2 : 3 : 5 : 8 : 13 : 21 : 34 : That the embodiment of these figures was done on purpose is proved by their occurrence in the basic dimensions of the plan: 34 cubits from the main axis to that of the cul-de-sac, 34 cubits for the depth of this cul-de-sac, 34 cubits for the side of the inner square between the façades of the lateral cellae in the rear courtyard, a sequence 8 : 13 : 21 : 34 from the doorway of the rear court to the front of the great altar. The purpose of the two 'arms' becomes evident: it was to provide the data for the constructional square of 89 cubits to its side which was not embodied in any functional element, yet had to be mentioned to preserve intact the sequence of the series. The importance of this intact series is explained by its unique property: the same constant ratio between any two consecutive numbers $1.618 = \Phi$ or $1/\Phi = 0.618$, a ratio which becomes more accurate with the higher members.

At this point let us refer to the numbers of the offering-tables. According to the restored plans the total for those in the Sanctuary of the Great Temple is: 54 in the front court and 99 in the rear one, giving a grand total of 153. The correlation of these figures with the three consecutive numbers of the summation series 55 : 89 : 144 is obvious. If we inquire into the possibility of some closer approximation we find that the plan of the existing remains² does not at all validate the restored plan. This is especially clear for the restoration of two offering-tables in every cella around the rear court. The representations had all one offering-table in every cella. Pendlebury-Frankfort wrote in this connection³: "In each of them an altar or offering-table is shown. In our restored plan and drawing we have inserted two such, since that number seems to be indicated by the marks on the plaster". Going back to the plan of the existing remains we find only at two points the characteristic depressions for isolated offering-tables marked out⁴. This would agree with the isolated offering-table in every cella in the Sanctuary on the Royal Road and also in the smaller cellae of the Gem-Aten. If we restore, accordingly, one offering-table instead of two in each of the ten cellae we have 89 for the total of the offering-tables in the rear court. The figures of the offering-tables are then 54, 89, 143 which agree surprisingly well with the actual dimensions of the sides of the constructional squares in the plan. The actual dimensions of the side of the largest courtyard is 142.5 cubits square, that of the intermediate square indicated by the span of the two 'arms' 87 cubits and the rear courtyard 54 cubits. It is noteworthy that the plan of the first period showed trees around the three sides of the Sanctuaries, a total of 54 for the Great Temple Sanctuary and 50 (?) for the other one. This establishes the proof for a purposeful use of the Fibonacci summation series in the design of the Sanctuaries at Amarna. A result of this is that the design is harmonic, every significant element being in relation to a corresponding one according to the ratio Φ .

Was this process alien to the empirical line of thought of the Egyptian or his methods of construction? The nature of a summation series of the Fibonacci type is so primary that illiterate people or children could indulge in it building it up. As to the actual design it has become apparent that

¹) For a brief explanation of harmonic design in Egyptian architecture: Alexander Badawy, *The Harmonic System of Architectural Design in Ancient Egypt*, *Mitteilungen des Instituts für Orientforschung*, Band VIII, Heft 1, Berlin 1961, pp. 1-44.

²) Pendlebury, C. of A. III, pt. VII.

³) Pendlebury, *ibid.*, p. 10.

⁴) Pendlebury, *ibid.*, pl. VII.

the Egyptians used knotted ropes and wooden triangles in the shape of an isosceles triangle: height:base = 5:8 to design and lay out their plans in the field.

The two Sanctuaries at Amarna are not the only Egyptian monuments designed harmonically. But they are the best evidence for the use 'in clear' of the figures of the summation series in the significant dimensions of their plans. This open use of the actual figures conforms with the notion of 'truth' as evidenced in the art and literature at Amarna¹.

What could have been the purpose of this numerical symbolism embodied in architecture? The nature of the constant ratio ϕ for all consecutive pairs of numbers would suggest a constant cycle of ever recurring elements. To the peasant it would parallel the ever recurring days, seasons and years without end, a concrete aspect of the more sophisticated sense of dynamic eternity of Egyptian texts 𓁚 𓁚 . What expression could render this sense more accurately than that used by Akhenaten in describing the Aten on one of his boundary-stelae (K): "My rampart of a million cubits, my reminder of eternity, my witness of the things of eternity"².



The emphasis laid upon the notion of eternity by Akhenaten is conspicuous from the festivals 𓁚 𓁚 𓁚 𓁚 Hb-Dt on the third day of the first month of Inundation, and 𓁚 𓁚 𓁚 𓁚 Hb-Hh also in the same month³.

Another instance of a numerical sequence which could have meant a similar cycle of time is found in a poem on Thebes dating from the New-Kingdom. The chapters 1-10 are followed by nine chapters numbered 20-100, then by seven others numbered 200-800 in a non-mathematical sequence, where each member is paralleled by a pun⁴. That a numerical sequence was associated with a religious dogma is not astounding. The symbol for the eye of the falcon-god Horus had been torn into fragments by Seth. These components of the original symbol were given the values of a series of fractions in geometric progression 1/2 : 1/4 : 1/8 : 1/16 : 1/32 used in connection with the measure of corn hk - r^5 . In modern Egypt the itinerant dealer introduces the counting of his wares or change with the basic dogma of Islam: "Allah is One, He has no second, 3, 4, 5, 6 . . .".

The Maru-Aten. I have tried elsewhere⁶ to show the calendric symbolism of the layout of the Maru-Aten located on the Nile at the southern end of Akhetaten. The name would mean "Viewing-place of Aten", possibly consisting of the so-called 'front temple' at the eastern end of the lake, the lake itself and the quay at the western end, all three set along the same longitudinal axis east-west. At the same time the monthly festivals of the 'Birth of Aten' would have been celebrated in the chapel on the island and in connection with the eleven T-shaped tanks in the so-called 'water-court'. The painting of these tanks with shrubs implies the „flourishing" of plant-life as one of the aspects of the creative activity of the sun-disk, so well chanted in the hymns of Amarna. According to the representations of the ritual in the tombs the offering of flowers at Amarna seems to have played in the ritual a role more important than elsewhere⁷.

¹ Kees, *Alte Ägypten*, p. 166. Also: Albright, *From Stone Age to Christianity*, p. 221. Against the evidence of 'truth': Smith, *Art.*, p. 177. S. Donadoni, *Arte Egizia*, 1959, p. 85. A. Gardiner, *Egypt of the Pharaohs*, Oxford 1961, p. 222.

² Breasted, *Development*, p. 332. May Sandman, *Texts from the Time of Akhenaten*, Bruxelles 1938, p. 111.

³ Fairman in Pendlebury, *C. of A. III*, p. 174.

⁴ Erman-Blackman, *Literature*, pp. 293ff.

⁵ A. H. Gardiner, *Egyptian Grammar*, 3rd. ed., Oxford 1957, pp. 197-198.

⁶ Alexander Badawy, *Maru-Aten: Pleasure Resort or Temple?*, *J.E.A.*, vol. 42, 1956, pp. 58-64.

⁷ Blackman, *Ritual*, p. 517.

I had tentatively mentioned as a parallel the 'festival-house' of Mesopotamian gods located upstream outside the cities of Babylon or Assur. The procession during the New Year festival would start from the temple toward the quay, embark on boats and row against the current to

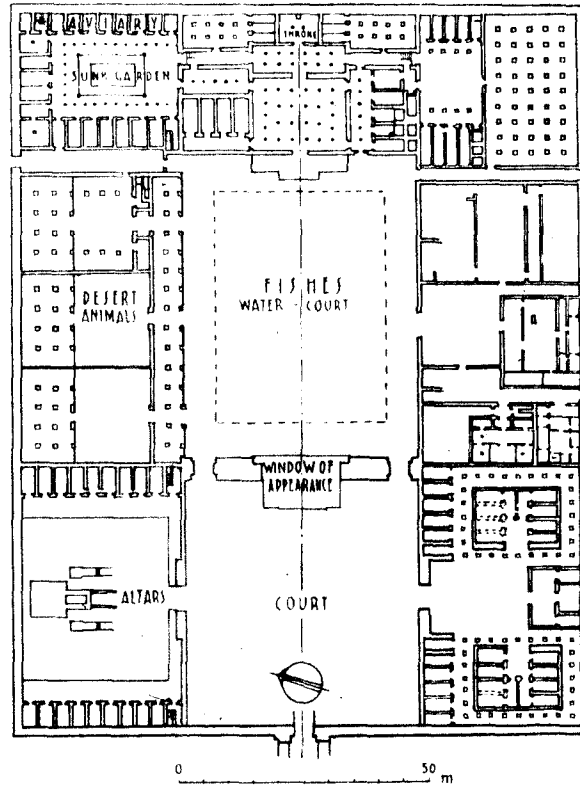
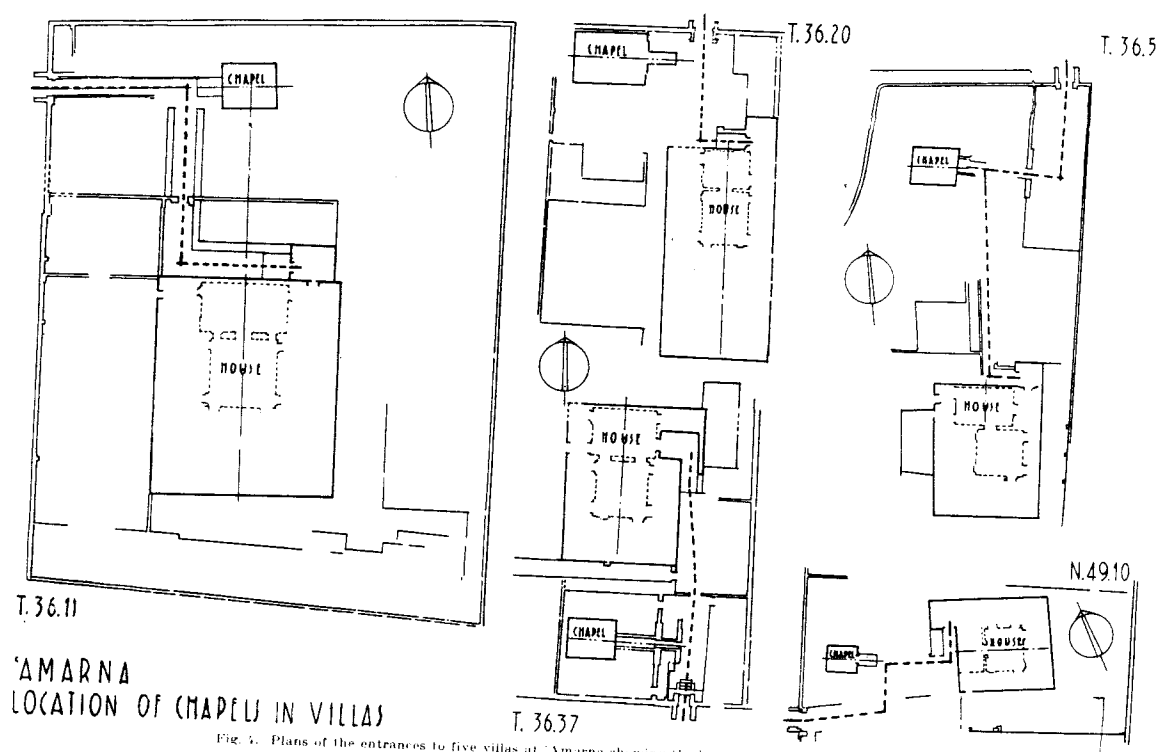


Fig. 3. Plan of the North Palace

the festival-house, an open layout with palm-groves, and return to the city on chariots. The symbolic implication is calendric: the death of the old year (stretch within the walls), the voyage of the dead (river voyage) and the rebirth and return to earth (from the festival-house to the city on chariots)¹. As Andrae has put it "the processional street was the link which bound the divinity (temple) to Nature (festival-house, park) in the connotation to man (palace)". Though there is not,

¹ W. Andrae, *Die Feststraße im Nahen Osten*, 1941, pp. 19-42.



'AMARNA
LOCATION OF CHAPEL IN VILLAS

Fig. 3. Plans of the entrances to five villas at Amarna showing the important location of the chapel

LOCATION OF (HAPU) IN VILLA)

L. 5077

Fig. 3. Plans of the entrances to five villas at Amarna showing the important location of the chapel

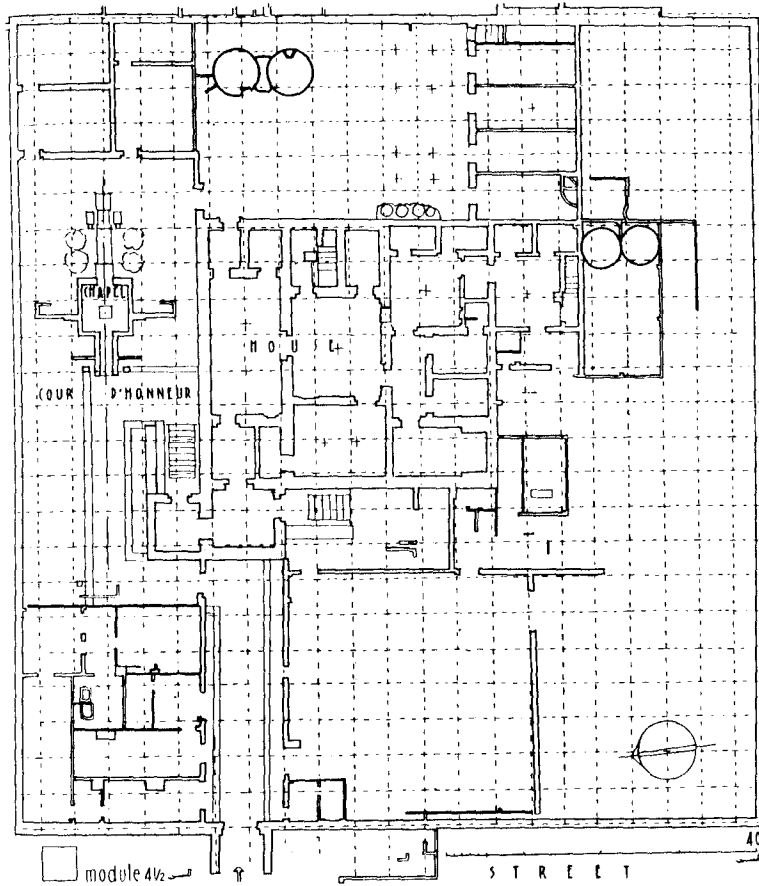



Fig. 5. Plan of the villa of the architect Hattiy showing the modular system based upon the layout of the chapel

as far as I know, any evidence of such a processional ritual at Amarna the Maru-Aten accessible by boat and from the Royal Road would be an adequate festival-house for the ritual of the New Year. It will be recalled that the night of the New Moon in the Islamic month of Ramadan is called 'Leylet el Ro'ya' "Night-of-the-sighting" and in Cairo several persons were, till lately, commissioned to go out in the desert to sight the new moon. The news was received by an official procession who rode in state from the Citadel to the Qady's Court¹.


¹ E. W. Lane, *An Account of the Manners and Customs of the Modern Egyptians*, London 1871, vol. 2, p. 203. *Zeitschr. für Ägypt. Sprache*, 87, Band

The North Palace¹. At the northern end of Amarna, along the river-bank, a large rectangular enclosure (112×142 m.) east-west surrounds a well-balanced layout of two courts flanked by lateral groups of buildings and bordered to its rear by a reception suite and residence with a sunken garden (Fig. 3). The complex has been variously named 'zoological garden' and 'aviary' on account of the evidence of quarters for animals (north of second court) and cubicles with niches for birds (north-east garden). Remarkable carvings of antelopes, ibexes and gazelles decorated the mangers and beautiful paintings of birds in papyrus thickets and wild shrubs along watercourses covered the walls of the aviary. From a sighting window accessible through a few steps from the reception suite the king and his guests could admire the inmates of the cubicles. The second court was mostly occupied by a large water pond, probably swarming with varieties of fish. A large window of appearance separated the front court from the water-court. The south range of apartments featured quarters for the officials and others with cells for animals (south-east). The religious character of the building is proved by the chapel flanked by two altars in the north-east court, bordered by two series of contiguous cells. Two staircases rose to the terrace of the first floor. The building has nothing of a residential palace, though it does offer a slight accommodation in the shape of bedrooms and bathroom(s)² to the south of the rear reception halls. It could have formed as a counterpart to the Maru-Aten as a reserve for the animals of various species kept as a living symbol of the potentiality of Aten as the Creator of animal life:

"All beasts are content with their pasture, the trees and herbs are verdant.

The birds fly out of their nests and their wings praise thy ka 

All wild beasts dance on (their) feet. All that fly and flutter—they live when thou arisest for them".

"The fishes in the river leap up before thy face 

Thy rays are in the sea"³. 

The characteristic joy in nature, plants and animals of this universal doctrine of Aten, as expounded in this instruction of his prophet Akhenaten, would have been adequately symbolized in the southern and northern reserves, respectively.

The River Temple⁴. At mid height of Amarna, to the south of Central City, is a partly excavated temple along the Nile bank. It consisted of a small court with a large altar at its rear, approached by a few steps. Probably two columns were added later to transform the hypaethral shrine into a roofed one (Ramses II?).

The Desert Altars⁵. In the desert south-east of the North Palace is a complex of large altars and chapels along one axis north-south. Originally there were an altar and a chapel. The altar is a square platform with stairways perpendicular in plan to every one of its four sides. The structure is similar to the heb-sed platform of Osorkhon II⁶, also oriented to the four compass points. Both have a cosmic implication and it is likely that this one at Amarna was also for the festival of the jubilee. Three heb-sed festivals of Amenhotep III and Aten were celebrated in Years 2, 6, 9 of Akhenaten⁷.

¹ Davies in Frankfort, The Mural Painting of El-Amarnah, London 1929, pp. 58—71. Smith, Art. pp. 190—4. Newton, Excavations at El-Amarna, 1923—1924, J.E.A., X, pp. 294—8. Whittemore, The Excavations at El-Amarna, Season 1924—1925, J.E.A., XII, pp. 3—9. H. Frankfort, Preliminary Report on the Excavations, J.E.A., XIII, p. 218.

² Overlooked by Smith, Art, p. 190.

³ Erman-Blackman, Literature, p. 289. Sandman, Texts, p. 9, 11.5—9.

⁴ Peet-Woolley, C. of A. I, p. 128, pl. XLI.

⁵ Frankfort-Pendlebury, C. of A. II, pp. 101—2, pls. XXVI—XXVII.

⁶ B. Naville, The Festival-Hall of Osorkhon II, 1892, p. 17, pl. II, 8.

⁷ Aldred, The Beginning of The El-Amarna Period, J.E.A., vol. 45, 1959, pp. 32—33.

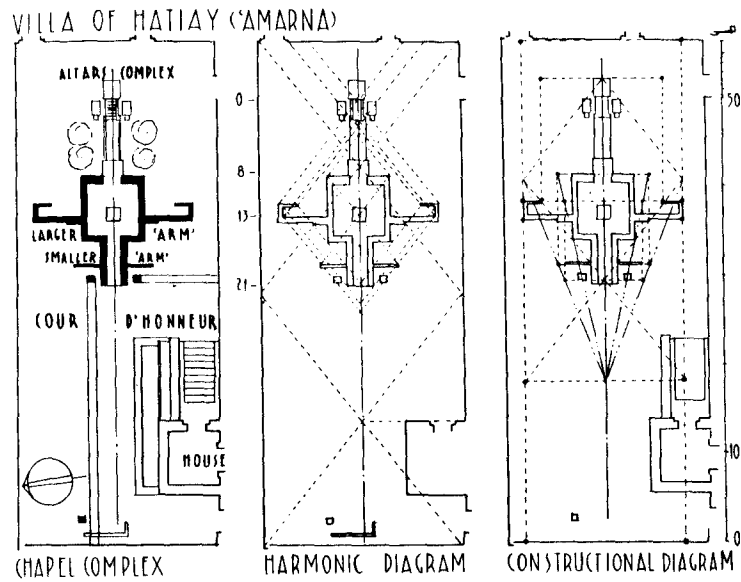


Fig. 6. Harmonic and constructional diagrams of the layout of the Chapel of Hatia

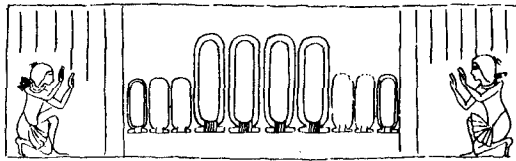


Fig. 7. The scheme of the design of Hatia's lintel showing the arrangement of the cartouches

The original chapel to the south of this altar was replaced by a larger one fronted by a ramp (north), flanked by two altars, each with a ramp. Two piers in the sand filling of the structure could have supported two columns. A base in the original chapel could have carried a stela or an altar. It has been stated that there was a buttressed temenos wall around the two structures, though the existing remains of the wall are outside their area and askew to the main axis.

The third platform is a larger rectangular structure built later to the south, still on the general axis, with internal piers in the filling and four ramps rising against the four sides which were originally lined with stone. The cosmic implication of the pavilion infers that it served also for the *heb-sed* festivals. A road leading from the rock tombs to the northern altar would prove that it served later for funerary ritual.

The so-called 'Hall of Foreign Tribute'¹ set across the temenos wall of the Great Temple has a similar plan with a cruciform hall of Palladian type ending into four vestibules, each with two lateral stairways. It was identified with a representation of a "Great Throne of Akhenaten for receiving the imposts of every land", and was not basically a religious building.

The Private Chapels? Every large mansion of the villa type has its private chapel. It is located in the court to be along the passageway from the street gate to the villa, usually to the left of the person entering (T. 36.37, N. 49.10), but occasionally also to his right (T. 36.5, T. 36.20). Its orientation varies accordingly (Fig. 4), though the basic one seems to be with the back wall toward west (T. 36.36, T. 33.12, T. 36.5, T. 35.21, T. 35.19, T. 37.6, N. 49.10, O. 49.23), or toward east (T. 36.11, T. 34.1, T. 36.54, O. 48.17, P. 47.32). The service seems to have been indiscriminately performed in front of the altar or behind it. The emphasis laid upon the chapel is often even more conspicuous when the passageway to the house is in the axis of the chapel, leading directly to its front façade before turning at right angles to the house (T. 36.11), or turning at right angles to face the entrance façade before turning again (T. 36.5, T. 34.1). The location of an altar at a conspicuous place in the Egyptian house is found in the workmen's houses at Deir el Medina and in the rear-most room in the house of Ur III, but nowhere else does the chapel play such an important role in the general layout as in the villa at Amarna. This role is even basic in the design since it seems that the whole layout is based upon a module embodied in the dimensions of the chapel. From my analyses of the plans of Egyptian temples it is apparent that quite often the modular system of the design is based on a square module derived from the depth of the naos, or from the square throne room in the palace.

A good example for analytical study is the layout of the villa of the architect Hattiy (T. 34.1)². The approach is through a pathway (Fig. 5) which bends at right angles twice to proceed in the axis of the chapel, then bends again twice to face the front stairway of the house. The chapel itself is unique in having a very elaborate system of 'arms' protruding transversely on either side of the stairway and of the cella itself. The latter arm is recurving in a way similar to that of the arms of the Sanctuaries. It is obviously the same process but more elaborate and on a smaller scale. It is not impossible that Hattiy was the architect who designed the temples. Such double arms on a simpler plan are known in at least one other chapel (T. 36.37). A basic difference between the arms in the chapels and those of the temples is that the latter had obviously no architectonic function, while in the chapels they could have served as stage-like pseudo-façades, larger than the actual façades of the cella. In Hattiy's chapel the width of the front arm is double the module of $4\frac{1}{2}$ cubits. It will be seen from the modular analysis that the modular grid passes along significant points of the chapel, its front, the back of the recurving arm, the step in the alignment of its rear passage, the front and back of the altar and that it conforms very adequately to the plan of the villa. It gives 8×7 modules for the internal rectangle of the main body of the house. In the chapel of T. 36.11, which has no protruding arm, the module is half the width of the chapel or 5 cubits.

It can be safely deduced that the chapel embodies the modular unit and defines the position of the modular grid of the whole layout.

It will also be seen from the constructional and harmonic diagrams the design of the chapel conforms to the harmonic system, based here upon the use of the isosceles triangle 8:5 (Fig. 6). In the constructional diagram (Fig. 6) the location of the chapel complex is defined in the 'cour d'honneur' by means of the three superimposed equal squares which determine its proportions and the side of which is determined by the larger arm. The harmonic diagram shows how well both arms are integrated in the design. Just two basic instances: the smaller arm is proportional to the rear side of the cella, over the center of the altar; the front line of the altars complex is determined harmonically from the front width of the larger arm (see Fig. 6: Harmonic Diagram).

¹) Pendlebury, *C. of A. III*, pp. 22-24, pl. X.

²) Peet-Woolley, *op. cit.*, I, pp. 37ff. Frankfort-Pendlebury, *op. cit.*, II, pp. 5ff.

³) Frankfort-Pendlebury, *op. cit.*, II, pl. XV, pp. 63-65.

The ideology of harmonic design carried out by means of the 8:5 triangle is similar to that using a sequence of basic dimensions from the Fibonacci series. It is symbolic for dynamic eternity.

One more point should be mentioned: it has been suggested that the two small altars which flank the larger one, probably that of the Aten, were those of Akhenaten and Nefertiti¹. The dual representation of Hattiy, on one of his lintels, adoring the two large cartouches of Aten flanked by two smaller ones of Akhenaten and one of Nefertiti shows an arrangement similar to that of the altars (Fig. 7). Or could the smaller altars be repositories for the offerings for sunrise and sunset rituals, as were the offering-tables in the Gem-Aten, while the ritual was actually performed around the large altar?

The Mortuary Chapels². These are in the vicinity of the north-east corner of the workmen's village. They are oriented to the south (eleven ones) or to the west (eleven ones) and feature two courtyards fronting a terrace with two columns and backed by a wall with niches for stelae. A pedestal stood in front of the niche. The chapel is not located near a tomb nor is there any element which would suggest a symbolic implication in the design.

As a result to this study it has been possible to ascertain that the symbolism in the religious architecture at Amarna was as universal in its media as the doctrine of the Aten itself.

The calendric symbolism, as embodied in the layout of the Gem-Aten, was to impress with the yearly cycle of the seasons, months and days in a duality of rituals at sunrise and sunset. In the water-court and kiosk of the Maru-Aten are the symbols for the twelve months in connection to plant-life.

The harmonic symbolism in the design of the plans of the two Sanctuaries differs from that used ever since the earliest times in religious architecture in the fact that the dimensions in cubits of the basic elements conform to the consecutive members of a summation series of the Fibonacci-Lamé type. When there is no functional element in the design to express one figure of the series a non-functional wall in the shape of a recurring 'arm' is attached at the proper place on either side of the temple to provide for the missing link. This method to achieve a harmonic design is similar to the normal one used by the Egyptians and which is based on a grid derived from the isosceles triangle 8:5. The substitution of a clear numerical method to the empiric graphical one agrees well with the open character of Akhenaten's ideology and his concept of 'truth' as is proved in his doctrine and in his art. In the best private altars the same method is apparent.

The representative symbolism is less subtle or abstract and provides, with the help of sculpture and painting, the representation of animal life, plant life or a whole district of the mythical cosmos. In the 'North Palace' fishes, desert animals and birds are set in an architectural environment as a symbol of everlasting animal life. In the Maru-Aten plants are painted along the rims of the basins to symbolize the months and represent the cycle of plant-life. Nearby the sun-disk can be sighted as it comes out of, or is submerged into, the large pond symbolic for the Nun, the waters of the underworld.

Even cosmic symbolism is implied in the square altars accessible from four stairways rising from the four directions to the four sides. The Hall of Foreign Tribute is indeed a symbol for the four regions of the world.

This vast symbolic program of religious architecture at Amarna is but one way of expression for the ideology of Akhenaten. Let us remember in this connection that above the foundation of white plaster in the Gem-Aten a layer of clean sand and final coat of mud were set to provide for the ritually pure floor. Let us also remember the names given by Akhenaten to his architectural creations: "The Horizon of Aten", "Meeting the Aten", "The Monument of Aten flourishes forever", "Aten shines", "Sighting-place of Aten", all suggesting the eternal dynamism "of the beautiful vital force that makes festive the Two Lands and createth what the whole land needeth"³.

¹ Frankfort-Pendlebury, *op. cit.*, II, p. 64.

² Peet-Woolley, *op. cit.*, I, pp. 92-108, pls. XXIV-XXV. ³ Erman-Blackman, *Literature*, p. 292.