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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. Unfortunately no part of the structures had been spared by the gangs of workmen who were commissioned by the priests of Amman 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 certainty.

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 sides. 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 Thutmosis IV acknowledged him. In Karnak Hatshepsut boasted: "I am (also) the Aten, who procured the beings, who bound up the earth and finished its shapes". Thutmosis IV fought, "with the Aten before him" and wanted that the "foreigners be like the (Egyptian) people in order to serve the Aten forever". In both instances Aten is already 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: Banose, "steward in the Temple of the Aton", and Penbwy, "scribe of the Treasury of the Temple of the Aton". The blocks with raised reliefs which were retrieved from the Ninth and Tenth Pyramids 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 been. Amenhotep III had a barge called "Aten gleams" on the lake of Tiyr fronting the Palace of Western Thebes. The excavation of this temple of the Aten, which stood outside the eastern enclosure wall of Aten at Karnak north of the gateway, 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...
pylons at Karnak come from this temple. They provide, together with other blocks found at Hermopolis and Assis, 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 "nen pi nes", the name of a sanctuary to the Aten, could imply that this sanctuary existed there. The remains of a sun-temple of Akhenaten were found in the northern area of the fortified city of Sesebi in the Sudan, and we know of a temple of the Aten in Syria.

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 mentioned in the contemporaneous inscriptions. Perhaps can the interpretation of the temples be carried one step further with the explanation of their unique architectural characteristics which were invented as part of the akhet 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-Ati/Gem-Aten, the smaller Sanctuary in the south of the royal residence, the Mun-Aten and the so-called "North Palace" in 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 Temple 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 temple area east-west of about 1550 x 920 cubits of 0.525 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-Ati/Gem-Aten, is an exceptionally long rectangular enclosure about 405 x 160 cubits featuring a series of six courtyards as broad as the enclosure (Fig. 1). At its eastern end is the Per-Ati, a hypostyle hall which the representations in the tombs show to have been flanked by two pylons. Besides the hypostyle hall all the other elements of the plan are unique. Outside the Per-Ati is a thick wall running from the end of its front facade 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 about 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 smaller and has a colonnaded porch 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:

- the entrance is screened with a winding approach;
- they are bordered by a continuous series of cells, probably receives;
- 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.

Fig. 1. Plans of the Per-Heq/Gem-Aten at Amarna showing the rows 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, but excluding the second court, we find 363 offering-tables. These are subdivided among the courts in a striking way: 112 in the first court (half); 112 in the second court; (54 + 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 sun cult 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 king. 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 cells). The scheme would have corresponded exactly to:

- 8 cells = 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 366 days. It is noteworthy that the architect who surveyed the temple restored the rear row of cells as three cells with three altars each, on the evidence of actual remains he found; though in his earlier plan he had left the area of the communicating cells quite blank. Pendebury mentioned that there "was no reason to believe that there was a door leading out eastwards". On the other hand the representation from the tomb of Panehesy seems to show eight offering-tables only in the three rear cells, while that of Meryre I shows four (?) offering-tables in four cells. That the arrangement of the remotest row of cells in the restored plan is questionable is obvious, I would surmise, on the evidence from the representation of Panehesy, 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 I that the royal decree of Canopus ordered to add one day every four years to the five days before the Festival of the New Year. There is no doubt that it had been observed for many centuries that the ordinary year of 365 days was 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 (Keener, Montet, Erman). The exact calendar was not enforced, however, before Julius Caesar who pro...

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2. Blackman, Liturgy, p. 322.
3. Blackman, ibid. pl. III, IV.
5. Ibid., p. 16.
6. Ibid., pl. V.
Is such a calendric symbol 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 Egyptians present had to abide by the solar calendar, as his illiterate successor still does nowadays when he reckon 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 soil, harvesting. The names of the seasons of 120 days each actually expressed these phases, Inundation, Vegetation and Harvest. The closest parallel to these symbolisms in the plan of the Gem-Men is found in the Akhnaton, the mythical tomb of Osiris, on the island of Buge. 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." 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 libations of milk. A similar report about Buge 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." The emphasis laid in both texts upon the daily service is to be noticed, but it is evident that only one offering-table ("vesse") was filled in succession every day. This interpretation is corroborated by the decree of Sheshonq I which fixes the provisioning of 365 oxen to the god Heryshaf of Herakleopolis by certain categories of persons at various times along the twelve months of every year. Evidently only one ox was sacrificed every day, just as well as only one libation was poured on an altar at Buge or at Amarna.

A decree of Osorkon specifies that the temple of Ment and that of Amenophis at Karnak were to be provided daily with one goose each, making 730 geese in the year. A similar one-day service for everyone of the shawabti-figures laid by the deceased is implied when the total number of these "respondents" corresponded to the number of days in a year. Calendric cycles are to be found in the description of the destiny of the deceased king in the Pyramid Texts: "When the great ones are for his morning meal, their middle-sized ones for his evening meal, and their little ones for his night meal", when he accompanies the sun every day in his bout, when he regulates the hours (Pyr. 12:1). According to the texts of Memphis theology there were four bulls in Memphis

4) Badian, ibid.
5) Ahmed Bey Kamal, Record de Travaux, Monument Nouveau de Sheshonq I, XXIV, pp. 23–38.
symbolizing the cycle of life: the Lord of Birth, the Lord of Age, the Lord of Death and the Lord of Eternity.

Besides the use of numbers symbolizing explicitly a calendric cycle the Egyptians often used them to represent occurrences in time. The stela with representations in low relief of as many as 365 ears, as well as the model wall with ears, were to indicate the times a certain god had "listened" to the prayers of the dedicators. It is noteworthy that in the Gem-Aten the length from the rear to the junction with the Per-Jn is 360 cubits, very probably an implication for the purpose of the ritual by means of the actual overall dimensions of the design. The total length of the temple of the Great Temple from the basic entrance of Gem-Aten to the back of the Sanctuary is about 1440 cubits, possibly an implication of the 154 years of the gods before the foundation of Memphis.

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-palm and that the wall of Babylon was 360 stadia long. The outer wall of Babylon had actually about 360 towers.

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 1000 on either side?

These are represented in the tomb scenes (Meryre) and Davies suggested that they were furnished with the offerings of the private people. Blackman was of the opinion that the king did not proceed further than the outer court of either the Great Temple or the Sanctuaries, except when they were in attendance of the king. This restricted attribution would explain the large number of offering-tables which had been found 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-im-n-Pr-im is clearly "The House of Aten in Akhetaton" and that of Pr-Im-n-n-Pr-im is "House of Reaping of the Aten in the House of Aten in Akhetaton". The common interpretation, however, of Gem-Im-n-Pr-im is "The Aten is found" or of Gem p-Im-n-Pr-im is "The Aten is found in the House of Aten in Akhetaton".

This interpretation, however, hardly conforms to the dynamics 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 palaces"; "He fills (every land) with his rays, and makes all men live; with beholding whom may my eyes be satisfied daily, when he awakens in this house of Aton"; "Behold what thou dost every day". Akhenaten himself is "born anew every morning, like the sun-god his father".

A comparison with the names of the subdivisions of the Gem-Aten such as: Pr-im-n-n-Pr-im-Pr-im is "The monument of the Aten-furnishes forever in Gem p-Im-n-Pr-im-Pr-im". The monument of the Aten, however, is not retained in in Gem p-Im-n-Pr-im-Pr-im. The Luxor Library, London, 1951, p. 385.


Strabo, XVI, 1. 5.

Stienecker, XVI, 1. 5.


Pendlebury, C. of A. III, p. 56.

N. de G. Davies, Rock Tombs of E2 Amarna, II, pl. XVIII.

Davies, Amarna, II, p. 22.

Blackman, Hib. p. 547.


B. Reade, Development, pp. 325-332.

Erman, Blackman, Literature, p. 279.

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 Amenemhet showing the constructional diagram, the module system and the significant horizon points along the axis.
in the House of the Aten in Akhetaten", or its variant nfr.tkh.tlm, as a subdivision of the Per
Hani as nfr.tlm "Aten shines" would suggest by analogy, the translation of tlm by a sense of continuous action. The verbal root tlm means "to find" something, and in religious connotation, this is the members of their, a sacred animal. But it also means "to meet" somebody, or to discover, to mention, to find out.2 The Captive form nfr.tlm renders the abstract "to understand, grasp, know". Against the ideological background defined by Akhenaten himself: "May we ever be satisfied daily with beholding him, when he dawns in this house of the Aten" such a translation of tlm as "Meeting Aten" would be 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".3

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". The sign nfr, however, represents the fortified enclosure wall of a palace or a castle, perhaps even a citadel, and this meaning for the Sanctuary is strikingly corroborated by its buttressed temenos wall. It resembles that of the mortuary temple of Ramses III at Medinet Habu.

The temenos wall of the "Castle of the Aten" on the Royal Road is about 200 x 100 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 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 square. 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 receding 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 clear of 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 court immediately abutting the Sanctuary. Perhaps it was the latter the Mansion of the Henben,6 where the Henben would be the great steatopy. Tutu prays that he might follow the Aten as did his favorites in the court of the Mansion of the Henben.

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 reconstruction.7

3) Ibid., p. 169.
7) A. Bond, Le dessin architectural chez les Anciens Egyptiens, Le Caire 1924, pp. 45-56.
8) Pendlebury, C. of A. III, pl. XVI.
9) Pendlebury, ibid., pp. 76-77.
The numbers of the offering-tables do not seem to have any calendric symbolization as in the Great Temple. 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 plan. 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, 90 cubits (west) and 55 cubits (east) to these sides, 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: 36 cubits from the main axis to that of the cul-de-sac, 34 cubits for the depth of this cul-de-sac, 36 cubits for the side of the inner square between the façades of the lateral cells 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 \[ \frac{\sqrt{5}+1}{2} = \Phi \] or \[ \frac{1}{\Phi} = 0.618, \] a ratio which becomes more accurate with the higher numbers.

At this point let us refer to the numbers of the offering-tables. According to the restored plan 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 remains does not at all validate the restored plan. This is especially clear for the restoration of two offering-tables in every cell in the rear court. The representations had all one offering-table in every cell. Pendlebury-Frankfort wrote in this connection: "In each of them an altar or offering-table is shown. In our restored plan and drawings 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 out. This would agree with the isolated offering-table in every cell in the Sanctuary on the Royal Road and also in the smaller cells of the Gem-Aten. If we restore, accordingly, one offering-table instead of two in each of the two cells we have 54 for the total of the offering-tables in the rear court. The figures of the offering-tables are then 55, 89, 144 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 \( \Phi \).

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 different people or children could indulge in it building it up. As to the actual design it has become apparent that...
the Egyptians used twisted ropes and wooden triangles in the shape of an isosceles triangle, height base 5:8:5 to design and lay out their plans in the field.

The two Sanctuaries of Amarna are not the only Egyptian monuments designed harmonically. But they are the best evidence for the use "in clay" 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 Amarna.

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...

What expression could render this sense more accurately than that used by Akhenaten in describing the Aten on one of his boundary-stones: "My rampart of a million cubits, my reminder of eternity, my witness of the things of eternity."

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 201-300 in a non-mathematical sequence, where each member is paralleled by a pun. 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 "Ih." 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; 1, 2, 3, 4, 5...".

The Maru-Aten. I have tried elsewhere to show the calendrical 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 "favouring" 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 elsewhere.

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2) Brewster, Development, p. 332; May Sandman, Texts from the Time of Akhenaten, Beekhuis, 1936, p. 111.
4) Erman, Blackman, Literature, pp. 289ff.
7) Blackman, Ritual, p. 547.
I had tentatively mentioned as a parallel the "festival-house" of Mesopotamian gods located upstream outside the cities of Babylon or Assyria. The procession during the New Year festival would start from the temple toward the quay, embark on boats and row against the current to 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). As András 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,

Fig. 3. Plan of the North Palace

"AMARNA
LOCATION OF CHAPELS IN VILLA"

Fig. 1. Plans of the entrances to four villas at Amarna showing the important location of the chapel.
as far as I know, any evidence of such a processional ritual at "Amenem the Mari-Aten accessible by boat and from the Royal Road would be an adequate festival-home 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 "Laylat al-Layla" "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 Qid" (1).

The North Palace. At the northern end of Amarna, along the river bank, a large rectangular enclosure (112 x 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. 7). The complex has been variously named "ecological garden" and "zooogarden" on account of the evidence of quarters for animals (north of second court) and cubicles with niches for hides (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 enclosures. The second court was mostly occupied by a large water pond, probably swimming with varieties of fish. A large window of appearance separated the front court from the water-court. The north 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 bathrooms to the rear reception halls. It could have formed as a counterpart to the Mari-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 art present for them."

"The fishes in the river leap up before thy face. Thy rays are in the sea."

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

The River Temple. 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 hypostyle shrine into a roofed one (Rameses II?).

The Desert Altars. 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 II, 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 Akhenaten.

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2) Overlooked by Smith, Art, p. 196.
4) Peet, Woolley, C. of A., I, p. 120, pl. XIII.
5) Frankfurt-Pendlebury, C. of A. II, pp. 101-2, pls. XXVI–XX VII.
Fig. 6. Harmonic and constructional diagrams of the layout of the Chapel of Hatiay

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-ced festival. 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 Tributes' set across the temple wall of the Great Temple has a similar plan with a cruciform hall of Paliadion type ending into four vestibules, each with its lateral stairways. It was identified with a representation of a "Great throne of Akhenaten he receiving the impost 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. 36.38, T. 33.12, T. 36.5, T. 35.21, T. 35.19, T. 37.5, N. 49.10, O. 49.23), or toward east (T. 36.11, T. 34.6, T. 36.54, O. 48.18, P. 47.22). The service seems to have been indiscriminately performed in front of the altar or behind it. The emphasis laid upon the chapel is often 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. 34.4). 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 rearmost 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 naves or from the square throne room in the palace.

A good example for analytical study is the layout of the villa of the architect Hatay (T. 34.1). 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 cela itself. The latter arm is recurring in a way similar to that of the arms of the Sanctuaries. It obviously the same process but more elaborate and on a smaller scale. It is not impossible that Hatay was the architect who designed the temple. Such double arms on a simpler plan are known in at least one other villa (T. 36.37). A basic difference between the arms in the chapels and those of the temples is that the latter had obviously no architectural function, while in the chapels they could have served as stage-like pseudo-facades, larger than the actual façades of the cells. In Hatay’s chapel the width of the front arm is double the module of 4½ 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 recurring 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 8x7 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 ‘cœur 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 cela, over the center of the altar; the front line of the altar complex is determined harmonically from the front width of the larger arm (see Fig. 6; Harmonic Diagram).

1) Pendlebury, C. 1, 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. 65—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 smaller altars which flank the larger one, probably that of the Aten, were those of Akhenaten and Nefertiti. The dual representation of Hathor, on one of his lintels, adorning the two large caryatids 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 Chapels. These are in the vicinity of the northeast corner of the workmen’s village. They are oriented to the north (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 stela. 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 niched of the Marn-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 or Lame 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 recurving ‘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 inceles triangle 8:5. The substitution of a clear numerical method in the empirical 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 mythic 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 Marn-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 fine 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 fourishes forever”, “Aten shines”, “Sighting-place of Aten”, all suggesting the eternal dynamism “of the boundless vital force that makes festive the Two Lands and createth what the whole land needeth”.

1) Frankfort-Pendlebury, op. cit., II, p. 61.
2) Petrie-Woolley, op. cit., I, pp. 92—100, pl. XXXIV—XXXV.