Some Remarks on the Great Rectangular Monuments of Middle Saqqara*)

By Nabil Swelim

Introduction

It is surprising how little we know about the early great rectangular monuments in Egypt[1]). Whilst some archaeological progress is under way at Hieraconpolis and Abydos[2]), nothing, at present, seems to be intended at middle Saqqara and Abu Rawash[3]) – the former being spectacular. I believe that they could offer us some interesting information by studying aerial photographic maps and by investigating their sites. Unfortunately, however, ed-Dair, the rectangular monument with a square brick massif at Abu Rawash, has been so badly disturbed for civil purposes[4]) and academic efforts spent on studying the great rectangular monuments of middle Saqqara do not result in agreement among scholars[5]).

Looking at the layout of the great rectangular monuments of middle Saqqara, namely Gisr el-Modir, the remains of a second rectangular monument, the Netjerykhet complex and the constructions of Sekhemkhet, I imagine that the builders could have chosen better and easier locations[6]); and I observe that certain orientations and relationships with each other and with some

*) This study is gratefully presented to Professor Werner Kaiser who is a promoter of contemporary progress of the study of earliest Egypt, moreover, his ideas will undoubtedly remain a landmark in the literature of our fascinating science.

1) I believe that the term 'great rectangular monument' is more appropriate and covers all those specifically called 'step pyramid complexes', 'forts', 'enclosures', 'open courts', 'funerary palaces', 'valley buildings', 'Talbezirke' etc. Moreover, it seems to me that there is no proof that the unfinished step pyramid of Sekhemkhet was surrounded by a complex similar to that of Netjerykhet, consequently I will refer to it as the 'constructions of Sekhemkhet' until some clearer understanding of this monument is reached.

2) The untimely death of the late Prof. M. Hoffman earlier this year (1990) will have some negative bearings on the important current work at Hieraconpolis; D. O'Connor, *New Funerary Enclosures (Talbezirke) of the Early Dynastic Period at Abydos,* in: *JARCE* 26, 1989, pp. 51–86.

3) Concerning these monuments at Saqqara the only activities were the result of a by-product in the Polish expedition, K. Myśliwiec, in: *Abstracts of Papers, Fifth Congress of Egyptology,* Cairo 1988, p. 201. He mentions the discovery of blue tiles in an excavation west of the Netjerykhet complex. This work was hardly begun when it was unfortunately discontinued.

4) N. Swelim, *The Brick Pyramid at Abu Rawash,* Alexandria 1987, pp. 91–95.

5) R. Stadelmann thinks that, apart from those of Netjerykhet and Sekhemkhet, three other great rectangular monuments at middle Saqqara date to kings Hetepsekhemuy, Ninetjer and Khasekhemuy of the 2nd dynasty (in: *Fs Mokhtar* II, *BdE* 97, Cairo 1985, p. 306 and *Die ägyptischen Pyramiden,* Darmstadt 1985, p. 30). W. Kaiser believes these monuments belong to the 3rd dynasty (*Ein Kultbezirk des Königs Den in Sakkara,* in: *MDAIK* 41, 1985, p. 54, no. 39). O'Connor opposes the 2nd dynasty dating (in: *JARCE* 26, p. 83 no. 60). The idea that these great rectangular monuments predate the complex of Netjerykhet was first announced by the present writer in a series of lectures following his discovery of the pyramid at Sinky (October 1977) in Grenoble during the Second Congress of Egyptologists (September 1979) and published in: N. Swelim, *Some Problems on the History of the Third Dynasty,* Alexandria 1983, p. 29, 33–35, 224.

6) A better place to view the Netjerykhet complex and the Sekhemkhet constructions from the cultivation would be to the east of their present location close to the edge of the plateau (in subdivisions L 21 [5] and Apa Jeremias [9], see

archaic monuments are maintained. Have these better and easier locations been occupied by earlier monuments which are unnoticed by us?

The scientific aims of this study are to argue the close by areas after subdividing middle Saqqara, and to point out the mutual relationships of the great rectangular monuments.

The site of middle Saqqara

Whilst writing this thesis, I discovered that local names of the topographical features of middle Saqqara were long lost and new names of the wadis needed to be introduced. The borderlines of the subdivisions need to be determined by geographical latitudes and longitudes, and the topography has to be briefly explained to understand its influences.

Here I offer names to the wadis and subdivisions of the site under discussion. On the published map (fig. A) the reader will find the following new names: 'Wadi Userkaf', 'Wadi Unas', 'Wadi Sekhemkhet', 'Wadi el-Ṃodir' and 'Wadi Pepi I'. The subdivisions mentioned below are numbered and named after monuments within them; those without monuments are given descriptive names.

By the term middle Saqqara, I mean an almost square area of the desert plateau from the latitude of the office of the chief inspector in the north to a latitude running through 'Wadi Pepi I', immediately north of his pyramid, in the south, 2,5 kilometres long, and from a longitude running along the extreme easterly desert outcrop in the east to a longitude 100 m west of the north-west corner of Gisr el-Modir in the west, 2,18 kilometres wide. North Saqqara extends northwards for a distance of a little less than one kilometre where archaic mastabas and Late Period galleries of sacred animals were excavated. It is a triangular extension of the elevated desert plateau of middle Saqqara, surrounded by the cultivation and the village of Abu Sir on the east and a natural depression on the west. South Saqqara extends southwards for a distance of 3,5 kilometres from 'Wadi Pepi I' to the pyramid Lepsius XLVI – a trapezoidal part of the plateau cut across by 'Wadi et-Taflah'. Its border with Dahshur, in the south, is the Bahriya Oasis railway line.

The topography of middle Saqqara shows a desert plateau rising to the height of 40,5–63,1 m above sea level, overlooking the flood plain cultivation which is 17,2–21,5 m above sea level. The eastern side of the plateau, as a result of quarrying at some areas, is cliff-like, rising to a height of 30–40 m over a horizontal east-west distance of less than 200 m, and is roughly bearing north-south. The cliff recedes westwards at two places:

At the area called 'Sign Youssef', approximately measuring 100 × 150 m, which continues rising westwards as 'Wadi Userkaf' towards that king's pyramid.

At the valley temple of Unas a sandy depression, approximately measuring 300 × 150 m, continues in two directions: In the north-west it follows the causeway of Unas, partly built in the outer south channel of the dry moat of the Netjerykhet complex, as 'Wadi Unas' and in the south-west it rises as 'Wadi Sekhemkhet' towards his constructions. These two wadis embrace the plateau of Apa Jeremias and the New Kingdom necropolis.

Generally speaking, the desert surface of middle Saqqara is high in the north-east, east and south and low in the west and north-west by the natural depression, which continues along the western side of north Saqqara. Beyond this depression is the site of the pyramids of Abu Sir.

below). An easier location to build Gisr el-Modir and the Sekhemkhet constructions would be a little to the south, in the southern subdivision [12] (see below) for the first, and a little to the east, in the subdivision of Apa Jeremias [9] (see below) for the second, where the plateau is more level and there would be no need for the builders to work on enormous embankments and terraces.

The subdivisions of middle Saqqara

The site of middle Saqqara is divided into subdivisions some of which are occupied by great rectangular monuments. The subdivisions have been delineated by geographical latitudes and longitudes crossing and running along very close to or at an indicated distance from a well known reference point. Only in one case the division line is a diagonal north-east of Gisr el-Modir. I have considered 12 unequal subdivisions in this area. The subdivisions are given numbers from east to west as we go south on the reduced reproduction of the maps *Le Caire H 22* and *H 23* (1:5000) in this study (see fig. A).

[1] The subdivision of the pyramid of Teti

The borders of this area measure 520 m N., 630 m E., 520 m S., and 630 m W. between the latitudes of the chief inspector's office in the north, 'Wadi Userkaf' in the south, the longitudes of the easterly desert outcrop in the east and L 21 in the west.

To the north are the 1st dynasty mastabas, to the east is the Anubieion, to the south is 'Sign Youssef' and 'Wadi Userkaf', and to the north-west the plateau drops 10 m where the subdivision of D 70 [2] is located. To the south-west the north-east corner and the east channel of the dry moat of the Netjerykhet complex [6] is found.

The absence of archaic mastabas in this subdivision is remarkable; the southern logical limit of the archaic necropolis should overlook, 'Sign Youssef' and 'Wadi Userkaf'. In other words, the monuments of this subdivision may have been built over them. The pyramid Lepsius XXIX in this subdivision is thought to date to the 5th dynasty but this has not been proved. It is interesting however that the pyramids of Teti and his queens are oriented 11° west of north thus following the direction of a 1st dynasty row of tombs in the subdivision of the Serapeum [3], while the pyramids of Userkaf and Unas are correctly oriented to the cardinal points.

[2] The subdivision of the tomb no. D 70

The borders of this area measure 610 m N., 370 m E., 610 m S. and 370 m W. between the latitudes of the chief inspector's office in the north, the resthouse in the south, the longitudes of L 21 in the east and Ptahhotep in the west.

This subdivision separates the north channel of the dry moat from the tombs of the nobles of Netjerykhet. Why should such a gap exist? Do the archaic mastabas and the sacred animal galleries of north Saqqara extend southwards into this subdivision? It is curious also that, whilst almost all mastabas are oriented with their longer axis bearing north-south, the important mastaba D 70 of the 5th dynasty is oriented east-west.

[3] The subdivision of the Serapeum

The borders of this area measure 500 m N., 370 m E., 500 m S. and 370 m W. between the latitudes of the chief inspector's office in the north, the resthouse in the south, the longitudes of Ptahhotep in the east and 170 m west of the second rectangular monument in the west.

The subdivisions of the Serapeum [3], the second rectangular monument [7] and the area of the longitude of 'Wadi el-Modir' are part of a natural depression separating Abu Sir from Saqqara to the north and extending into middle Saqqara to the west and south. The west channel of the dry moat of Netjerykhet, the pyramid of Unas, the north-western half of the constructions of Sekhemkhet, the north-eastern part of Gisr el-Modir and the east side of the north-western subdivision are surrounding this depression on levels which are 15–20 m higher.

It has been suggested that the second rectangular monument extended into this subdivision (see below). At a distance of 100 m towards the north from the Serapeum itself are groups of tombs of the 1st dynasty. One of them, group F, dating to Horus Den contains 22 tombs in one line of 75 m oriented 11° west of north. It is not therefore clear, if they were subsidiary to some rectangular brick monument as we see at Abydos. They were excavated by R. Macramallah and are considered as cult area of Horus Den by W. Kaiser[7]). It would be logical to ask if other subdivisions, e.g. D 70 [3], L 21 [5], Apa Jeremias [9] and the southern subdivision [12], could possibly hide great rectangular monuments which are not surrounded by subsidiary tombs and which are not seen on the aerial photographic map.

[4] The north-western subdivision

The borders of this area measure 550 m N., 800 m E., 550 m S. and 800 m W. between the latitudes of the chief inspector's office in the north, 100 m north of Gisr el-Modir in the south, the longitudes of 170 m west of the second rectangular monument in the east and 100 m west of Gisr el-Modir in the west.

This subdivision is a south-western extension of the Abu Sir plateau overlooking the depression. Like the subdivisions of L 21 [5], the second rectangular monument [7], Gisr el-Modir [11] and the southern one [12] this subdivision of middle Saqqara has not been excavated.

[5] The subdivision of the shaft number L 21

The borders of this area measure 520 m N., 570 m E., 520 m S. and 570 m W. between the latitudes of 'Wadi Userkaf' in the north, 'Wadi Unas' in the south, the longitudes of the easterly desert outcrop in the east and L 21 in the west.

I have named this subdivision after a Late Period shaft numbered 21 by Lepsius which lies 10 m to the east of the east channel of the dry moat of Netjerykhet. This unexcavated subdivision would be a convenient site for a great rectangular monument. If the prominence of the Netjerykhet complex were a true claim, the first choice of its builders would have been this area. Was there an earlier rectangular monument which prevented them or is the prominence of the complex of Netjerykhet unimportant? I wish that these two questions could be clarified.

[6] The subdivision of the complex of Netjerykhet

The borders of this area measure 630 m N., 800 m E., 260 + 370 m S., and 140 + 660 m W. between the latitudes of the resthouse in the north, 'Wadi Unas' in the east half of the southern border, the north side of the pyramid of Unas in the west half of the southern border, the longitudes of L 21 in the east and Ptahhotep in the west.

It had been built in the centre of middle Saqqara on the high desert east of the depression. The temenos wall of the complex is surrounded by the dry moat. They measure 272×536 m and 750×600 m respectively[8]). Their orientation is 4° east of north, consequently the dry moat does not coincide with the borders of this subdivision; it comes within it.

While the complex of Netjerykhet is enclosed by the temenos wall and the dry moat, the boundaries of the other great rectangular monuments (Gisr el-Modir, the second great rectangu-

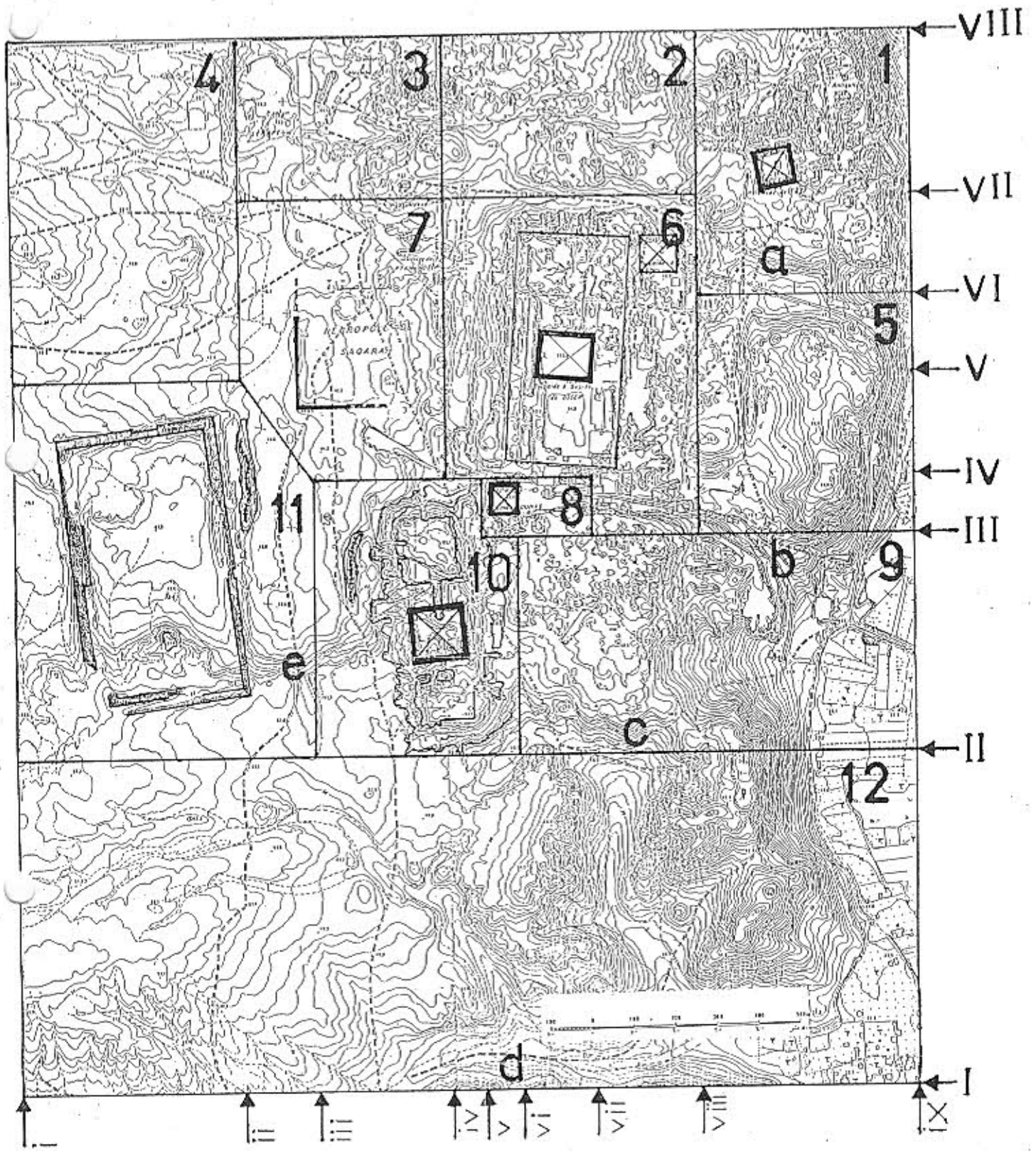
[7]) R. Macramallah, *Une cimetière archaïque de la classe moyenne du peuple à Saqqarah, Fouilles Saqq.* 16, 1940; W. Kaiser, in: *MDAIK* 41, 1985.

[8]) N. Swelim, *The Dry Moat of the Netjerykhet Complex*, in: *Fs Edwards*, London 1988, p. 12.

A

THE SUBDIVISIONS OF MIDDLE SAQQARA

[A reduced extract from the maps Le Caire H 22 and 23; 1:5000]



SUBDIVISIONS:

[1] Teti. [4] North Western. [7] Second Rec.M. [10] Sekhemkhet.
[2] D 70. [5] L 21. [8] Unas. [11] Gisr el Modir.
[3] Serapeum. [6] Netjerykhet. [9] A.Jeremias. [12] Southern.

WADIES:

[a] Wadi Userkaf. [c] Wadi Sekhemkhet. [e] Wadi el Modir. [b] Wadi Unas.
[d] Wadi Pepi I.

LATITUDES:

I- Wadi Pepi I. III- Wadi Unas. V- 100 m. N. G el Modir. VII- Rest House.
II- Wadi Sekhemkhet. IV- N. side Unas Pyr. VI- Wadi Userkaf. VIII- C.Insp. office.

LONGITUDES:

i- 100 m. W. Gisr el Modir. iv- Ptah Hotep. vii- Unas boat pits.
ii- 170 m. W. Second Rectangular Mon. v- W. encl. wall Unas Pyr. viii- L 21.
iii- Wadi el Modir. vi- 100 m. E. Sekhemkhet. ix- Eastern desert outcrop.

lar monument and the constructions of Sekhemkhet) are embankment walls; in my opinion, this creates a serious difference.

[7] The subdivision of the second rectangular monument

The borders of this area measure 500 m N., 660 m E., 310 m S., 430 m W., and 310 m diagonally SW. between the latitudes of the resthouse in the north, the north side of the pyramid of Unas in the south, the longitudes of Ptahhotep in the east and 170 m west of the second rectangular monument in the west and the south western diagonal.

In the depression of middle Saqqara the south-west corner of the second rectangular monument can be observed in a central location. The two stone walls creating this corner are oriented to the north and east running for a distance of 100 m and 40 m respectively. This corner is a fundamental point in the mutual bearings of the great rectangular monuments (see fig. E).

The dimensions of a reconstruction of the second rectangular monument by MARAGIOGLIO and RINALDI show it as large as Gisr el-Modir[9]) but LAUER does not agree with that[10]).

[8] The subdivision of the pyramid of Unas

The borders of this area measure 270 m N., 170 m E., 270 m S. and 170 m W. between the latitudes of the north side of the pyramid of Unas in the north, 'Wadi Unas' in the south, the longitudes of the Unas boat pits in the east and the west enclosure wall of Unas in the west.

The boat pits and part of the causeway of Unas were constructed in the outer south channel of the dry moat of Netjerykhet. The 2nd dynasty royal galleries under the upper temple of Unas and under the mastaba of Nebkauhor and the possibility of a third one under the west side of the pyramid of Unas, where the bed rock was excavated and filled in for the foundation of the pyramid, make this little subdivision very important.

The burial chamber of the gallery of Hetepsekhemuy is on an extension of the east-west axis of Gisr el-Modir. Had these galleries any superstructures and enclosure walls, and how do they relate to their predecessors and their successors? In other words, in which channel of development do they stand[11])?

[9] The subdivision of the monastery of Apa Jeremias

The borders of this area measure 950 m N., 500 m E., 950 m S. and 500 m W. between the latitudes of 'Wadi Unas' in the north, 'Wadi Sekhemkhet' in the south, the longitudes of the desert outcrop in the east and 100 m east of Sekhemkhet in the west.

The desert plateau in this subdivision is a triangular area measuring 600×700×800 m. This interesting subdivision poses a similar situation to that of subdivision L 21 [5]: At this site the builders of the constructions of Sekhemkhet could have possessed a better location concerning its prominence and levelling. Was there an earlier rectangular monument which prevented them or is the prominence of the constructions of Sekhemkhet unimportant?

[9]) V. MARAGIOGLIO and C. RINALDI, *L'architettura delle pyramidi menfite* II, Turin 1963, p. 53, Tav. 7.

[10]) J.-P. LAUER, *A propos de l'invention de la pierre de taille par Imhotep*, in: *Fs Mokhtar* II, *BdE* 97, Cairo 1985, p. 66.

[11]) Investigations carried out in that very difficult area by P. MUNRO may throw some light on these tombs.

[10] The subdivision of the constructions of Sekhemkhet

The borders of this area measure 100 + 410 m N., 140 + 500 m E., 510 m S. and 670 m W. between the latitudes of the north side of the pyramid of Unas, 'Wadi Unas' in the north, 'Wadi Sekhemkhet' in the south, the longitudes of the west enclosure wall of Unas and 100 m east of Sekhemkhet in the east and 'Wadi el-Modir' in the west.

The constructions of this king have always been referred to as a step pyramid complex. It was built on the south-east rise of the depression and is orientated 6° 30′ west of north. These constructions are a partly cased temenos wall, an unfinished, uncased square pyramid in layers and a southern tomb which were intentionally surrounded by great embankment constructions and covered by 7 m of *tafl*, out of which nothing seems to have been projected for anyone to see. The buried embankment construction measures 536×187–194 m, consisting of 3 sections measuring 187×187 m in the north, 252×187 m in the middle and 92×194 m in the south. The desert building site shows at least 15 m difference in the levels. The middle section revealed the four corners of a pyramid measuring 120×120 m, built on a natural desert surface which has a level difference of more than 5 m south of the buried pyramid; and very close to it is a buried construction a little off the common axis which has been considered a southern tomb.

This situation, except for the pyramid and southern tomb, which is different from the Netjerykhet complex is more in common with Gisr el-Modir which was built on an unlevelled site with great walls which I believe are unfinished embankments.

[11] The subdivision of the constructions of Gisr el-Modir

The borders of this area measure 310 m diagonally NE., 550 m N., 640 m E., 720 m S. and 900 m W. between the latitudes 100 m north of Gisr el-Modir in the north, 'Wadi Sekhemkhet' in the south, the longitudes of 'Wadi el-Modir' in the east and 100 m west of Gisr el-Modir in the west.

A quarter of this construction is built on the high desert to the south and three quarters are built in the depression (see fig. B).

On the map *H 22*, 'Gisr el-Modir' measures 400×680 m and is oriented 7° west of north, almost in the same direction as the constructions of Sekhemkhet and a small wadi between them ('Wadi el-Modir').

The highest and lowest points at the site of 'Gisr el-Modir' are 58,8 m and 43,2 m above sea level, creating a difference in heights of 15,6 m. The highest and lowest points of the desert within the construction are 57,6 m and 43,2 m above sea level, creating a difference in heights of 13,6 m. A few metres west of the high point (57,6 m) is the centre of the southern half of Gisr el-Modir (on the published figures it is marked by an 'X' on the axis). This is an important point in the mutual relationships of the great rectangular monuments.

The highest and lowest points of the remaining construction are 58,8 m and 47,2 m above sea level, creating a difference in the heights of 11,6 m. The heights above sea level of the four corners are: 48 m NE., 52,4 m NW., 55,5 m SE., 58,8 m SW. (closest preserved part of the construction).

The northern and the eastern constructions are preserved for the whole width and length of the great rectangular monument, i.e. 400 m and 680 m. The southern and western constructions disappear at 3 places, one of them being the south-west corner.

The maximum and minimum thicknesses of these constructions, as they project out of the present desert levels, are 40 m and 12 m.

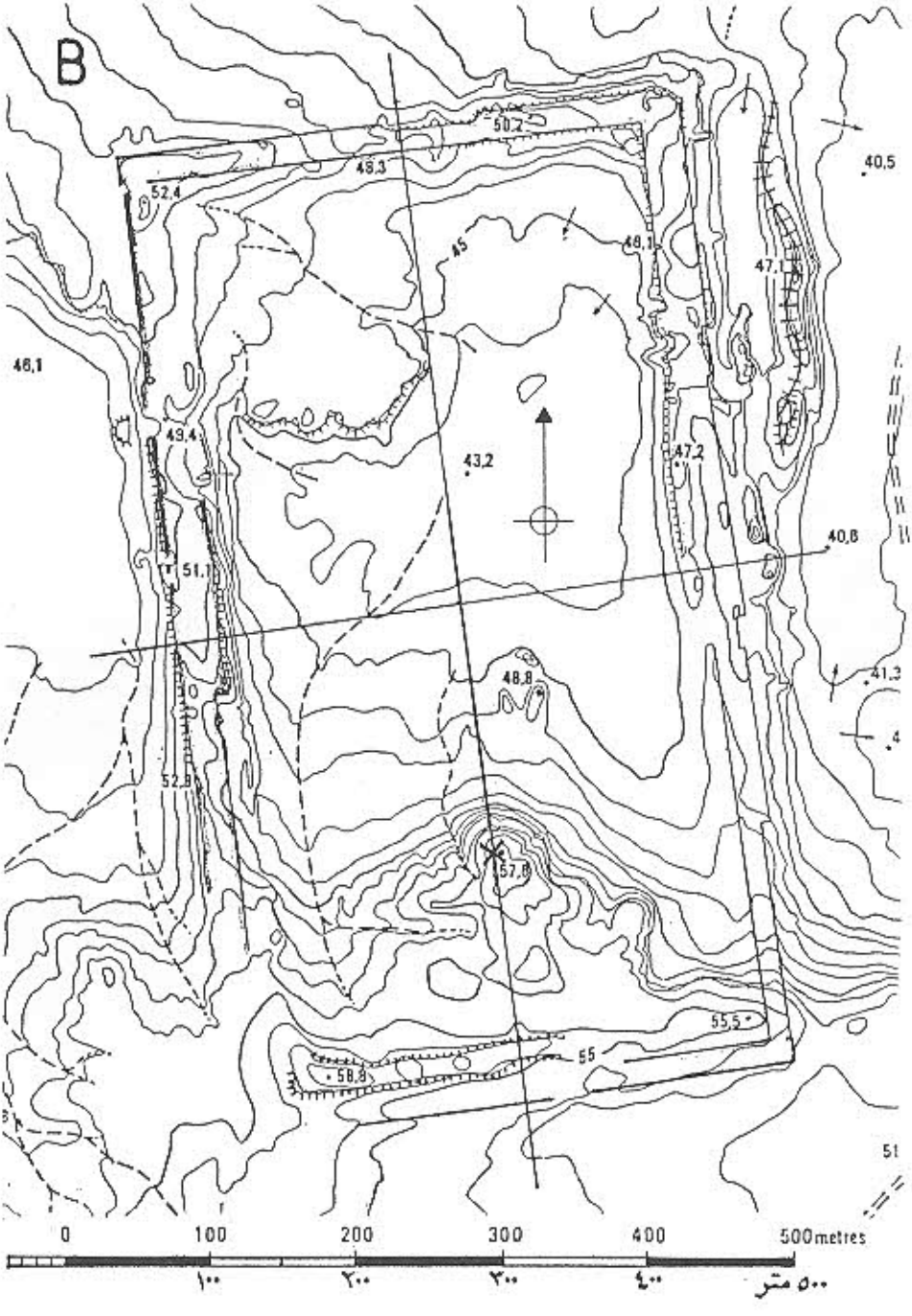


Fig. B: Gisr el-Modir (from the map *Le Caire H 22*)

The north side:

Considering the northern wall-like construction, there exists an easterly, off-centre, 65 m long indentation in the outer side of the northern wall-like constructions, reducing its thickness from 20 m to 18 m at a distance of 145 m and 190 m from the north-east and north-west corners.

The east side:

Considering the eastern wall-like construction from north to south, it has a thickness of 30 m for a distance of 165 m. The eastern face recedes westwards for 2 m over a distance of 35 m. Then it recedes a second time westwards for 2 m over a distance of 170 m. The western face over the total length of 205 m of the two recessions is recognizable over a distance of 100 m. A trench or some destruction cuts the construction in the north portion and sand covers the southern portion. It almost reaches the east-west axis. In the preserved portion of this part the thickness is 40 m.

The eastern face recedes for the third time 40 m south of the axis into an indentation of 20 m, then continues for 120 m having thicknesses of 18 m and 20 m. The eastern face recedes 2 m westwards for the fourth time and continues for a distance of 165 m to the south-east corner. The thickness of this portion is 12 m.

The south side:

Considering the southern wall-like construction, the south-west corner ist not recognized, yet it seems to be composed of two walls which do not line up; a space of 5 m separates the outer from the inner walls. The distance from the east corner, i.e. the length of the outer wall is 275 m, and from the west, the length of the inner wall is 195 m. Thus, there is a similarity in plan to the animal enclosure depicted on Narmer's mace head at the Ashmolean Museum, the dry moat of Netjerykhet and the elbow of the southern enclosure wall of Khafra.

The west side:

The preserved part of the inner face of the western wall starts 220 m south of the east-west axis and continues for 100 m, thus having a total length of 320 m. Then this face becomes sanded over for the rest of its length[12]). On the inner side occurs a recession of 10 m at 40 m south of the axis, it is corresponding to the third recession on the east side of the eastern wall. The western outer face is almost continuous up to the north-west corner of Gisr el-Modir. The length is 500 m. At a distance of 25 m from the north-western corner the outer face recedes slightly and continues for 130 m, where it projects outwards. The thicknesses of the wall on this side are 30 m and 40 m.

[12] The southern subdivision

The borders of this area measure 2180 m N., 800 m E., 2180 m S. and 800 m W. between the latitudes of 'Wadi Sekhemkhet' in the north, 'Wadi Pepi I' in the south, the longitudes of the easterly desert outcrop in the east and 100 m west of Gisr el-Modir in the west.

This is the largest and most neglected subdivision with sandy hills in the east and a large area crossed by two desert trails in the west. It would be the normal area for the expansion of the activities which had taken place in middle Saqqara, moreover a more suitable place for constructing Gisr el-Modir and the constructions of Sekhemkhet.

[12]) See my description of this part of Gisr el-Modir, in: *Some Problems on the History of the Third Dynasty*, Alexandria 1983, p. 33–35.

The Orientation of Monuments

At the subdivisions of middle Saqqara the orientation of the great rectangular and other monuments are observed as follows:

4° east of north:
At subdivision [6] of Netjerykhet: all components within the dry moat of the complex except the entrance colonnade and the pyramid of Userkaf.

True north:
At subdivision [7] of the second great rectangular monument: the ruins of that construction.
At subdivision [6] of Netjerykhet: the Pyramid of Userkaf.
At subdivision [8] of Unas: two rock cut 2nd dynasty royal tombs and the pyramid of Unas.

6–7° west of north:
At subdivision [11] of Gisr el-Modir: the construction of Gisr el-Modir.
At subdivision [10] of Sekhemkhet: the constructions of Sekhemkhet; the small Wadi el-Modir between these constructions.

11° west of north:
At subdivision [1] of Teti: the pyramids of Teti and his queens.
At subdivision [3] of the Serapeum: a 1st dynasty row of tombs
(MAKRAMALLAH's group F).

The mutual relationships

It is amazing to discover how the great rectangular and archaic monuments are related to each other. I am sure that further relationships will appear, if excavations were conducted. In the following presentation, however, I would suggest that a building which creates a visual obstruction, should be considered of a later date. The relationships of the great rectangular monuments follow:

Gisr el-Modir (relationships 1–5, 11–15, 18, 20–22, 27, 29, 31–33)

To follow the relationships made at Gisr el-Modir one needs to be reminded (see fig. B), that there are indentations, various thicknesses, the probability of two walls in the south side and the centre of the southern half of the monument is a few metres west of the point 57,6 m. A south-western corner which cannot be seen on the original map has been added to the figs. C–H.

1. (fig. C) A straight line from the easterly off-centre indentation in the north wall passes over the south-west corner of the second rectangular monument to the centre of the step pyramid.

2. (fig. C) A straight line extending from the east-west axis crosses over the burial chamber of Hetepsekhemwy (close to the south-east corner of the pyramid of Unas) and extends to the inner south-east corner of the dry moat of the Netjerykhet complex.

3. (fig. D) A straight line extends from the diagonal of the inner corners of the northern half to the axis of Sekhemkhet at the south wall.

4. (fig. D) A straight line extends from the diagonal of the outer corners of the southern half to the north-western corner of the Netjerykhet complex.

5. (fig. D) A straight line extends from the diagonal of the outer corners of the south-eastern quarter to the south-western corner of the second rectangular monument.

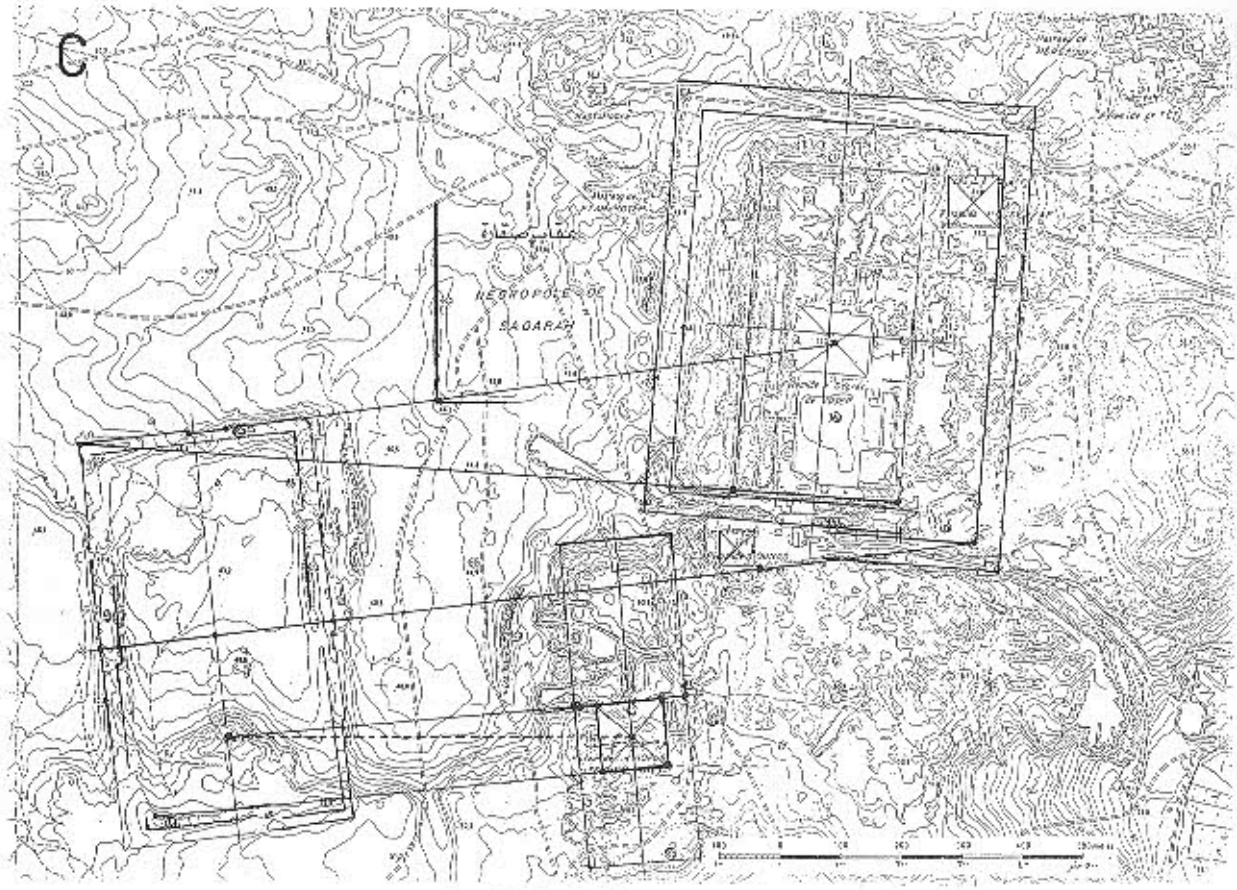


Fig. C: Relationships 1, 2, 13, 20–22

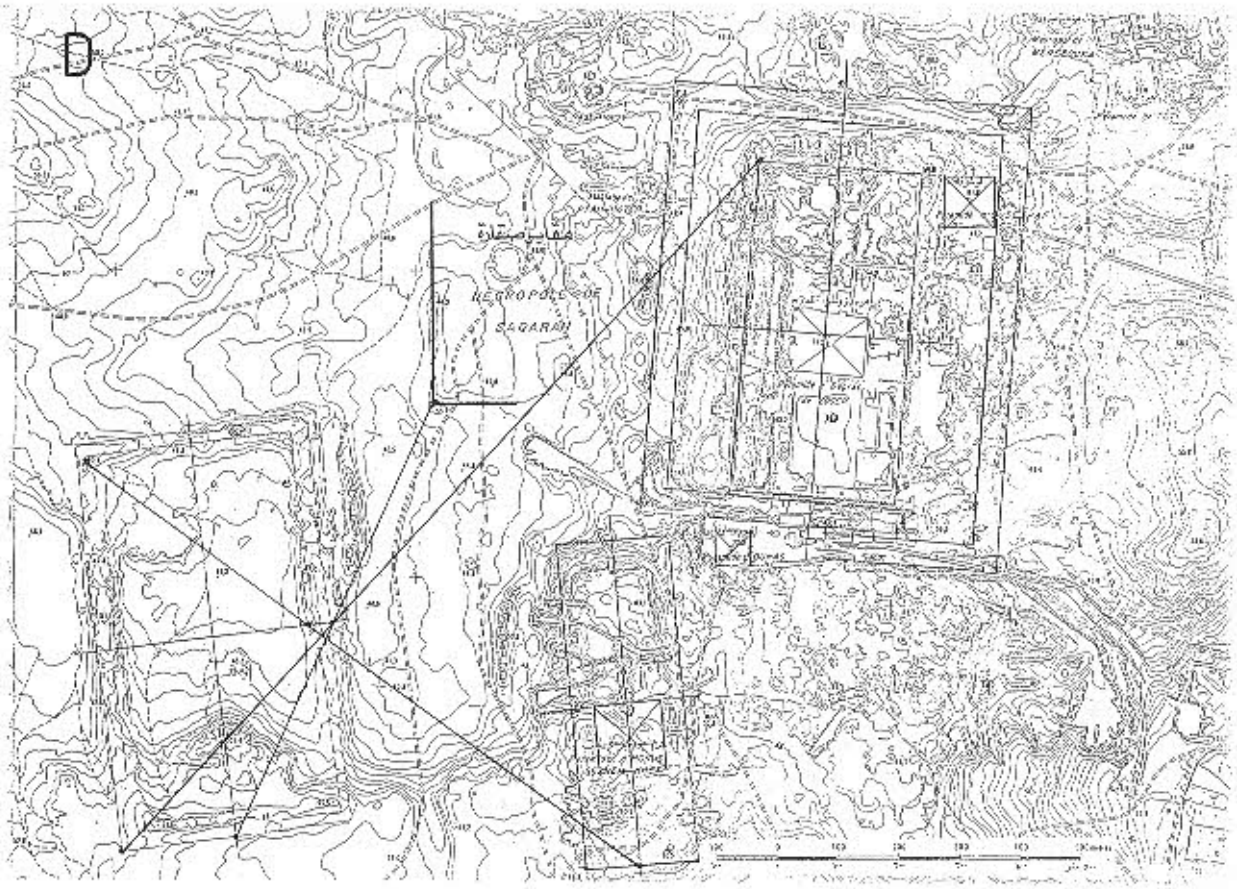


Fig. D: Relationships 3–5

The second rectangular monument (relationships 5–12, 25, 28, 30)

The only point which could be considered is the south-west corner. It is at the centre of a circle which passes over seven points at:

6–9. (fig. E) Four points at the Netjerykhet complex: 6. The outer north-west corner of the dry moat; 7. The north-west corner of the complex; 8. The centre of the step pyramid; 9. The shaft of the southern tomb of the complex.

10. (fig. E) One point at the south-west corner of the unfinished pyramid of Sekhemkhet.

11–12. (fig. E) Two points at Gisr el-Modir: 11. The centre of the southern half, a few metres west of the point 57,6 m; 12. The axis at the inner side of the west wall.

The complex of Netjerykhet (relationships 1, 2, 4, 6–9, 13–19, 22–24, 26–33)

13. (fig. C) A straight line extending from the south temenos wall points to the north-west corner of Gisr el-Modir.

14–19. (fig. F) Six diagonals extend to four points at Gisr el-Modir and four points at Sekhemkhet; 14. From the inner corners of the dry moat to the axis of Sekhemkhet at the north wall and to the outer south-east corner of Gisr el-Modir; 15. From the northern half of the complex to the south-west corners of Gisr el-Modir; 16. From the north-western quarter of the complex to the axis of Sekhemkhet at the north wall; 17. The diagonal of the step pyramid to the north-west corner of Sekhemkhet; 18. From the southern half of the complex to the north-east corner of Sekhemkhet and the inner south-east corners of Gisr el-Modir; 19. From the south-eastern quarter to the south-west corner of Sekhemkhet.

The constructions of Sekhemkhet (relationships 3, 10, 14, 16–33)

The constructions of Sekhemkhet have many relationships with the other three monuments:

20. (fig. C) The unfinished pyramid centre and the centre of the southern half of Gisr el-Modir are bearing east-west from each other, indicated by a dotted line on the figure.

21. (fig. C) The north face of the unfinished pyramid which is the axis of the constructions extends to the centre of the southern half of Gisr el-Modir.

22. (fig. C) The south face of the unfinished pyramid extends along the inner side of the inner south wall of Gisr el-Modir.

23–25 (fig. G) Three diagonals extend to two positions at the complex of Netjerykhet and one position at the second rectangular monument; 23. The diagonal of the constructions to the north-west corner of the complex of Netjerykhet; 24. The diagonal of the south-east quarter of the constructions to the axis of the Netjerykhet complex at the outer side of the north channel of the dry moat; 25. The diagonal of the northern half of the constructions to the south-west corner of the second rectangular monument.

26–33. (fig. H) Six positions at the constructions of Sekhemkhet, each is at an equal distance from two points at the other monuments; 26. The north-east corner is at an equal distance from the north-west corner of the complex of Netjerykhet and the north-east corner of Gisr el-Modir; 27+28. The north-west corner is at an equal distance from the centres of the complex of Netjerykhet and Gisr el-Modir, and at an equal distance from the south-west corners of the complex of Netjerykhet and the second rectangular monument; 29. The south-east corner is at an equal distance from the outer south-west corner of the dry moat of the complex of Netjerykhet and the south-east corner of Gisr el-Modir; 30. The south-west corner is at an equal distance from the south-east corner of the complex of Netherykhet and the south-west corner of the second rectangular monument; 31. The centre of the constructions of Sekhemkhet is at an equal distance from the centres of the complex of Netjerykhet and Gisr el-Modir; 32+33. The centre of

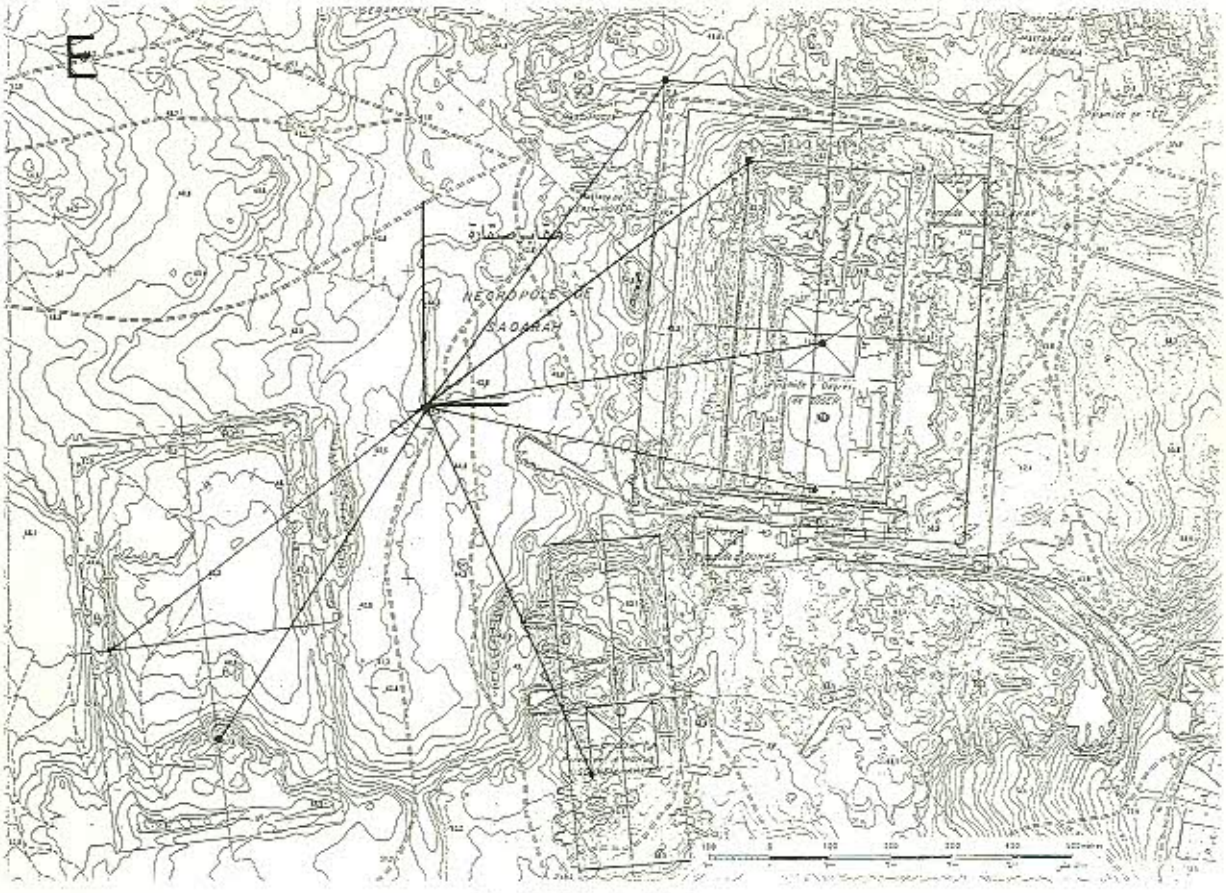


Fig. E: Relationships 6–12

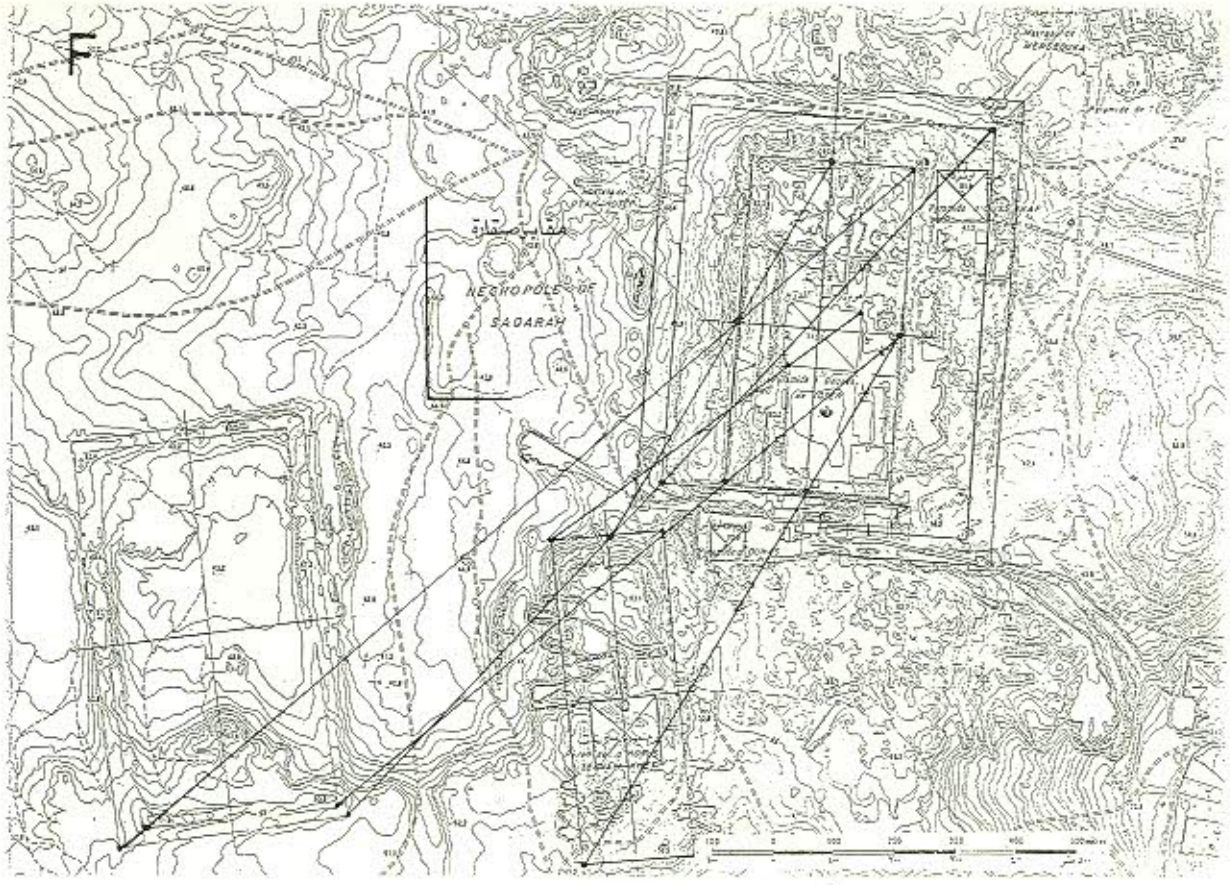


Fig. F: Relationships 14–19

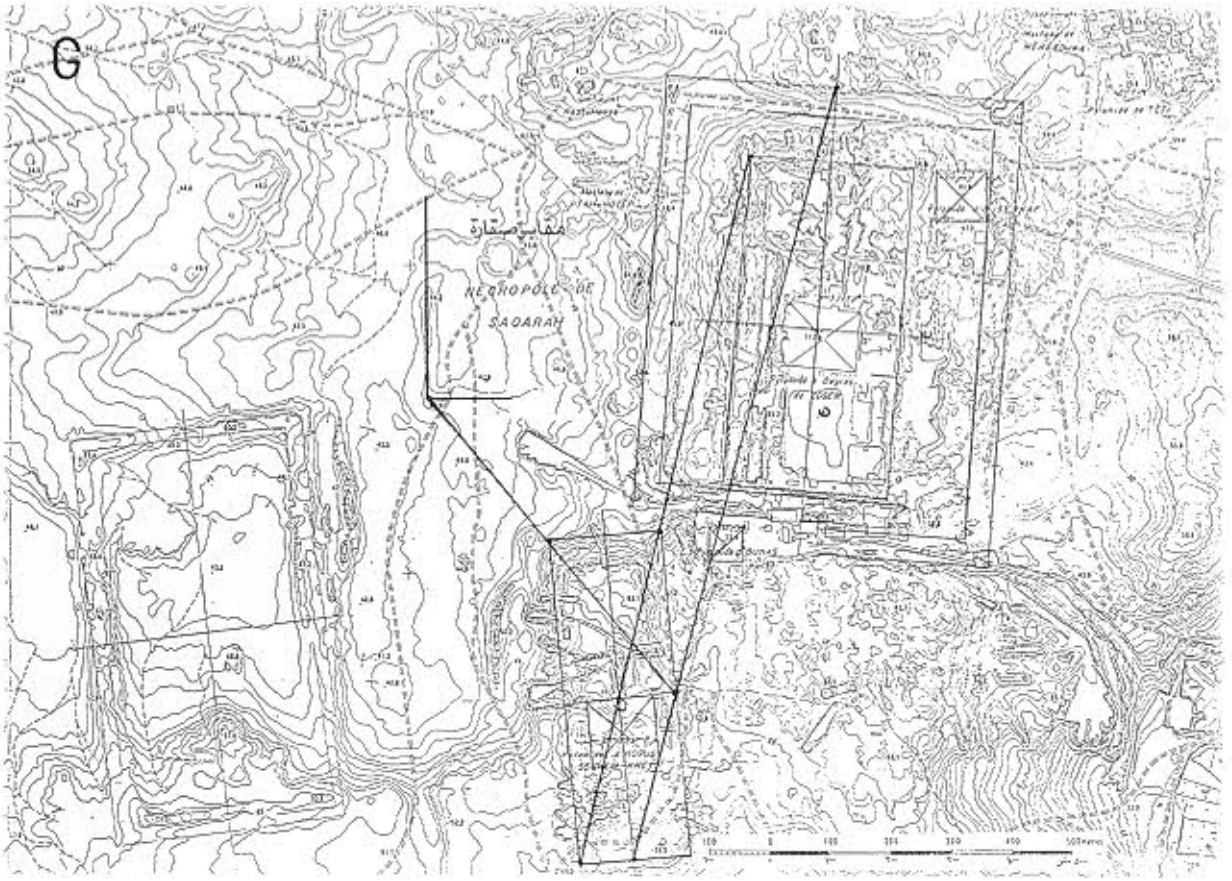


Fig. G: Relationships 23–25

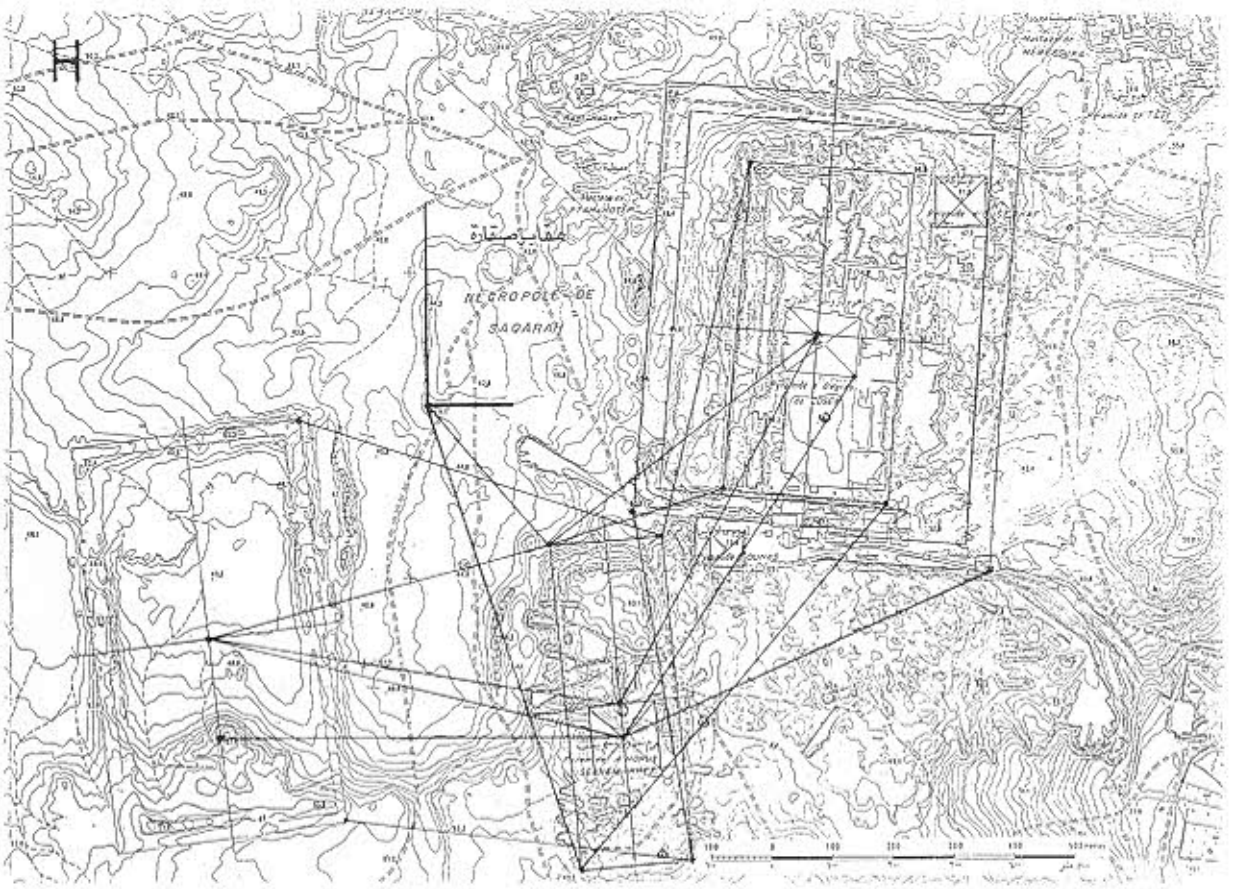


Fig. H: Relationships 26–33

the unfinished pyramid is at an equal distance from the south-east corner of the step pyramid and the centre of Gisr el-Modir, and at an equal distance from the south-east outer corner of the dry moat of the complex of Netjerykhet and the centre of the southern half of Gisr el-Modir.

Conclusion

The great rectangular and archaic monuments are partly or totally unexcavated and the plans of the superstructures of the Second Dynasty tombs in the subdivision of Unas [8] are hitherto unknown. Thus one cannot suggest any reasons for the importance of the following:

- The centres of the three great rectangular monuments themselves, the centres of the step pyramids within two of them and the centre of the southern half within the third one (Gisr el-Modir).
- The straight lines which connect three or more points at two or more monuments, e.g. the centres of the tomb of Djet no. 3304 at north Saqqara, the step pyramid and the unfinished pyramid of Sekhemkhet (not indicated in the figures) and the sides, diagonals or axes of monuments pointing at certain positions in others, so for example the burial chamber of Hetepsekhemuy is on an extension of the axis of Gisr el-Modir.
- The corners of some monuments are at equal distances from two or more positions at the other monuments, so for example the south-west corner of the second rectangular monument is at an equal distance from seven positions.

In my opinion the relationships between the great rectangular and archaic monuments cannot be accidental. I wonder if they are the result of traditional requirements, surveyers plans – or are they, after all, the result of building at random?