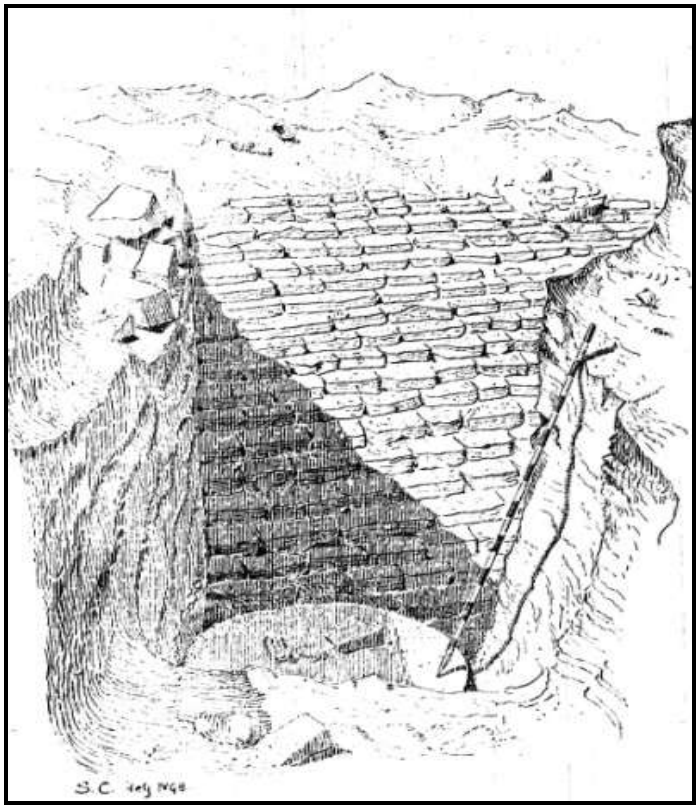
# The Architecture

## Embankments



The early dynastic revetment at Hieraconpolis

The dam at wadi Garawi

The retaining walls of Sekhemkhet north side

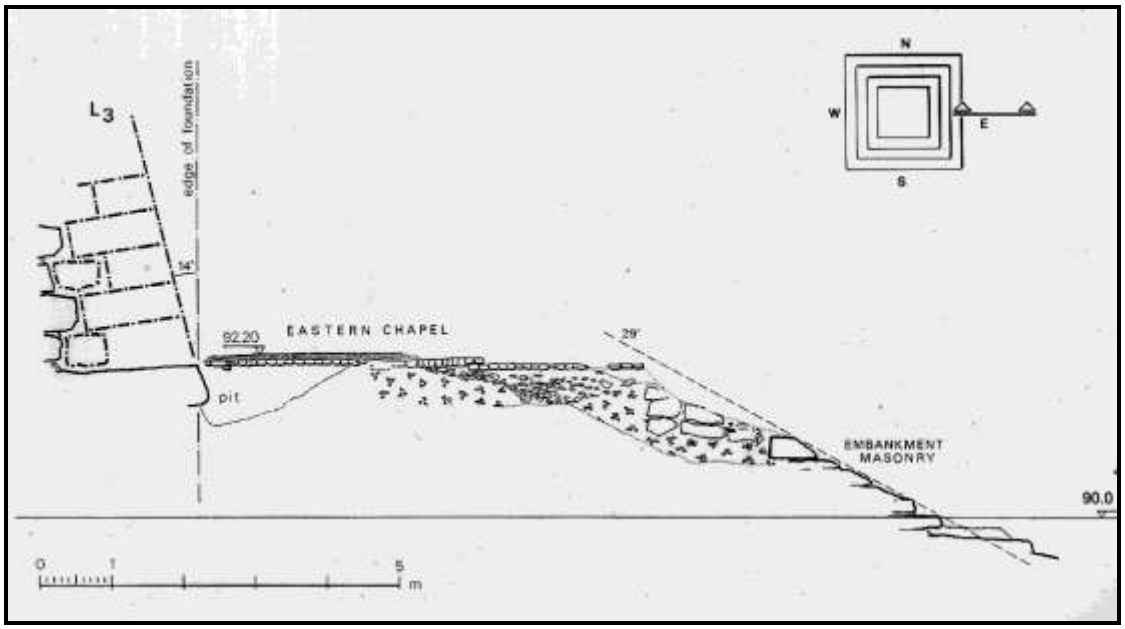
The unidentified structure at north west Saqqara

The exposed embankment east of the chapel at Seila

A section in the masonry of the embankment

Originally the eastern wadi facing the pyramid of Meidum was too close to the outer facing and there was no space for the east chapel. To overcome this difficulty, a stone embankment with a filling was built across the wadi to create a terrace. The sloping angle of the embankment discovered was 28-30° downwards. There was some trimming of the Pliocene conglomerate, to agree with this slope, 7.5 meters east of the foundation edge and 2 meters north of the axis. West of the trimming some brickwork was unearthed, four stretchers ran north south and three stretchers at right angles the south end.
It is hard to tell at present how the sides of the embankment masonry and the conglomerate joined and what material was used for the final facing which covered

the embankment in the middle and the limestone chipping on the sides, moreover we need to check a possibility of a stairway.
During the second season we checked the possibility of an approach to the layer monument along eastern wadi; three soundings were made on the centre line[1] at a distance of 25[2], 60 and 120 meters from the layer monument. None of them disclose any indication of an approach to the layer monument from the east.
The embankment was partly cleared for a distance of 6 meters beyond the terrace by a repeated process of pulling the rubble down the slope for one meter at a time. This was done carefully to allow for examining the rubble for finds. We were rewarded by the discovery of many small fragments of the second libation table or tables and the coins.
A preliminary examination of the embankment shows that the method of construction is similar to the revetment of the archaic temple of Hieraconpolis,[3] the fourth Dynasty dam at Wadi Garawi[4] and the revetment of the terrace of the sun temple of Nyuserra.[5]




A profile of the eastern embankment and the chapel platform at Seila

[1] On a line approximately NE.
[2] Griggs W. supervised the first of these soundings, and made his only, but important, contribution during my 2 seasons. His report to the EAO Jan-March 1988 mentions that: 'Trial trenches and soundings were made in some areas of the east wadi to determine the extent of previous disturbance, if any. A few pieces of pottery were found, but little other indication exists that the wadi had been worked in connection with the pyramid'.
[3] Quibell, J.E., *Hierakonpolis*. pt.I. 1900. Pl. IV.
[4] Leichtweiss-Institut für Wasserbau der Technischen Universitat Braunschweig, *Der Sadd el Kafara* Mitteilungen Heft 81/1983, (Braunschweig 1983)...
[5] Borchardt L, in von Bissing, *Das Re-heiligtum des Konigs Ne-woser-Re* BI**.** *Der bau*, Leipzig 1907. Bl 1-4

**Below the pavement level**

At the layer monuments built on unlevelled rock: Seila, el Kula and Elephantine there is a marked presence of orthostatic masonry.

At Seila we have consider the buildings beneath the pavement level, and conglomerate terraces above it to be foundations. The nucleus corners were built at different levels on the original conglomerate surface; it was partly worked but not completely levelled. The inner parts were built on carefully stepped levels in the conglomerate.

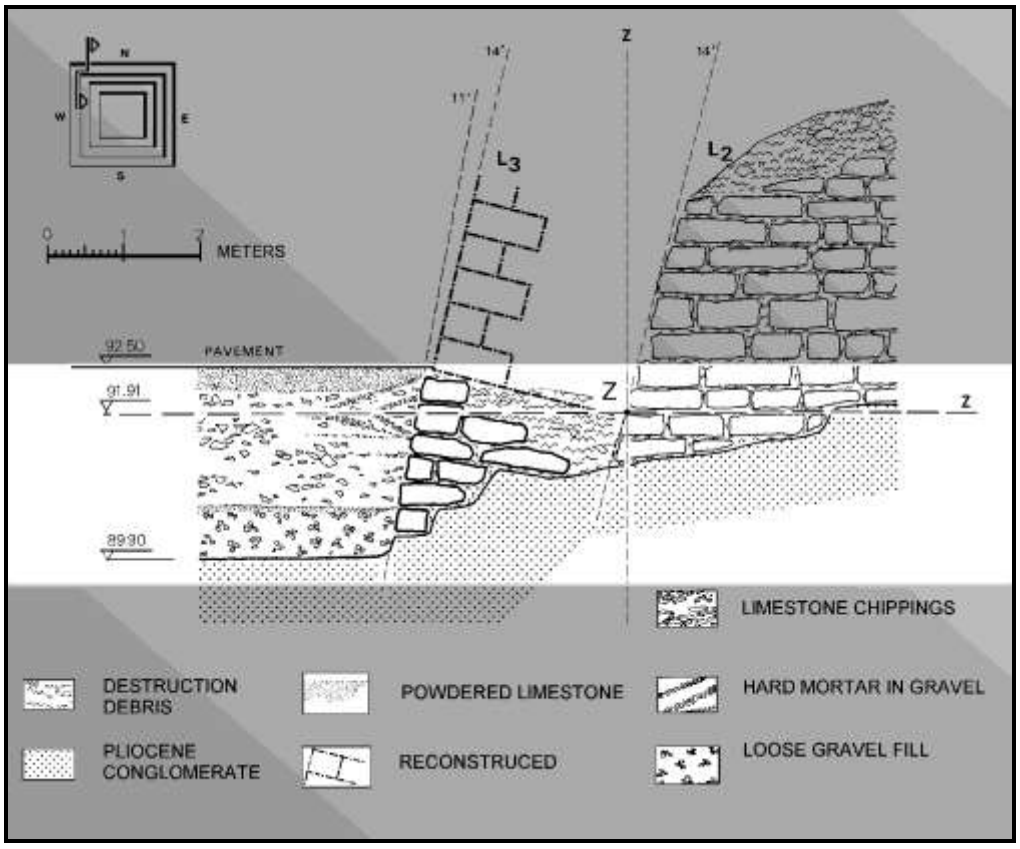
The lower courses of some layers do not run from corner to corner, but are continued by the worked Pliocene conglomerate terrace, see elevations.

Some terraces were narrow so it was necessary to add masonry to bring them to a width of 5 cubits.

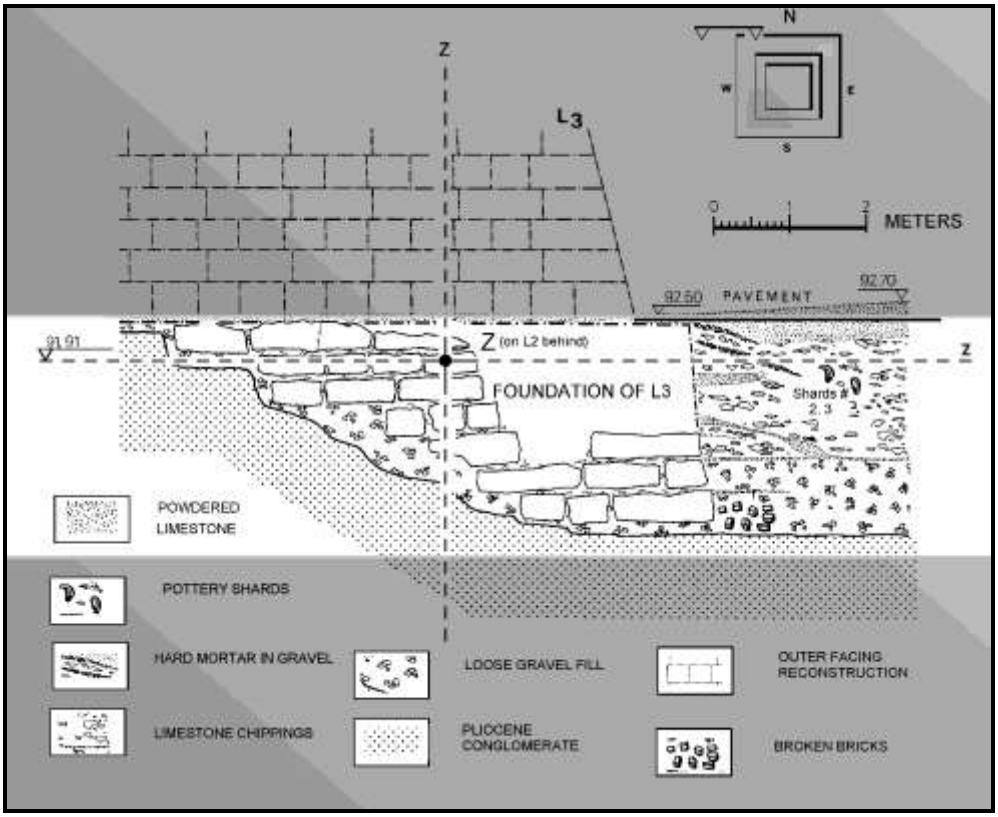
The outer layers are built on lower terraces while the inner layers are built on higher terraces.

Thus we have a case much more complex but similar in principal to the brick pyramid at Abu Rawash and G1c at Giza.

The foundation of the outer facing at Seila was built on levelled steps dug into the sloping conglomerate rock. Courses of masonry were built to extend the shorter steps and reach an all round level for the outer facing to be set. The pavement was constructed at that level.




Below the pavement level on the unlevelled conglomerate at Seila




Below the pavement level on the unlevelled conglomerate at Seila

Below the pavement level on the unlevelled bed rock at el Kula

Below the pavement level on the unlevelled bed rock at Elephantine

**Layers**

The layer pyramid at Zawyet el Aryan East

At the walls of Gisr el Modir

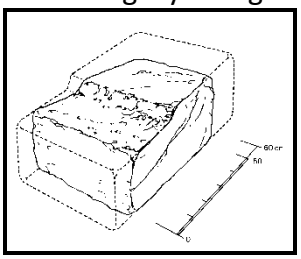
The step pyramid at Saqqara

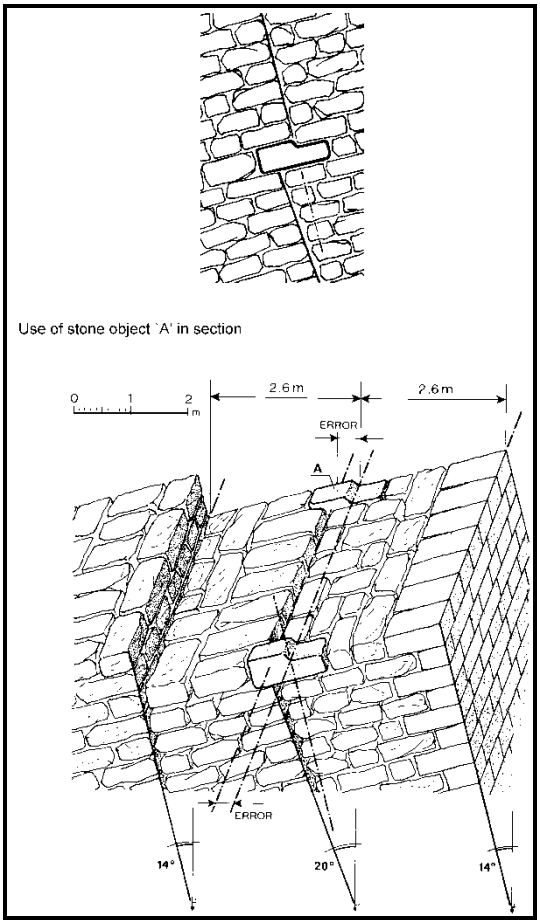
Tat the layer pyramid at Zawyet el Aryan

At Meidum

Section of layer 3 at the north east corner of the nucleus of Seila

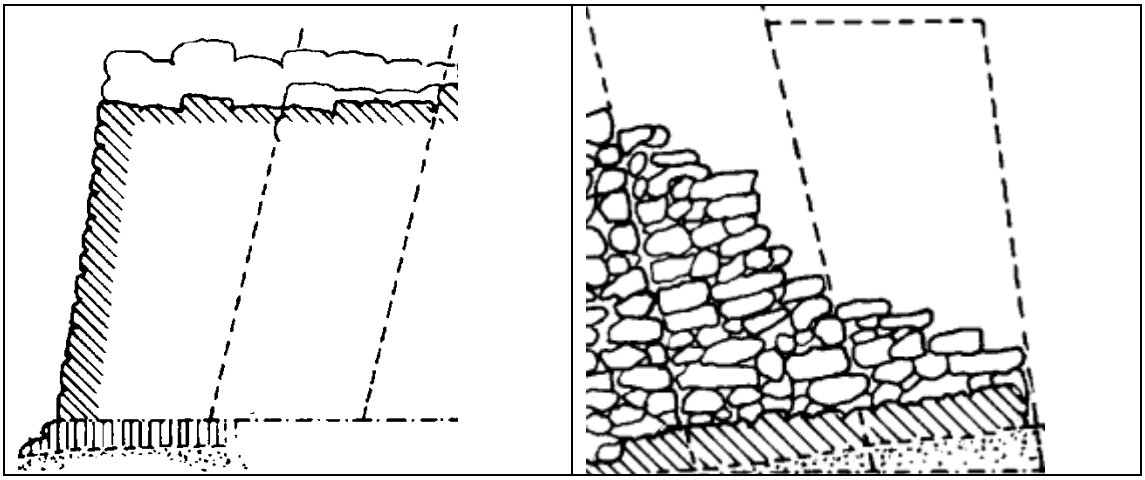
Correcting layer angles



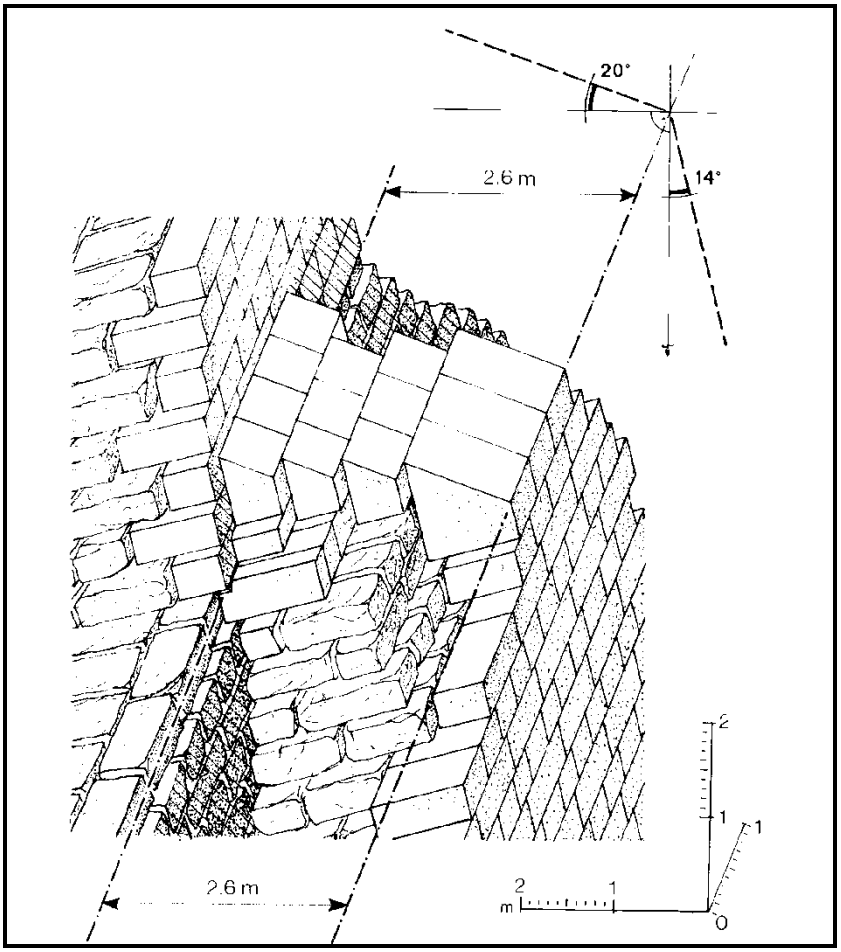



At Seila

At the SW side near the west corner of layer 1, an elongated block projects out of it into layer 2. It looks as if the builders were aware of an increasing error of their plan. This was a reminder of how far back the face of layer 1 was receding. This block tells us also that there is a sequence of building the layers outwards



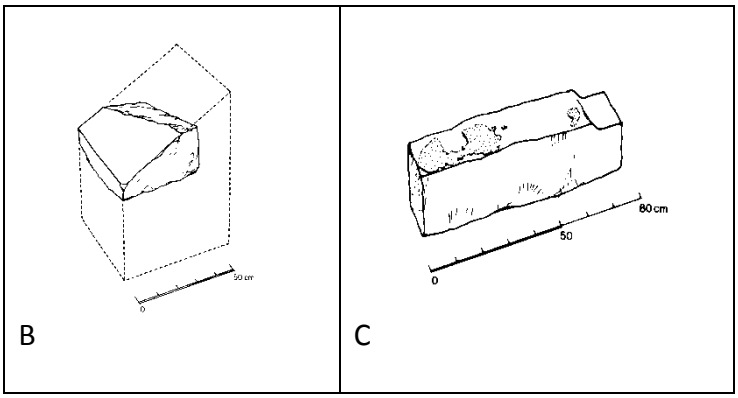
At Elephantine layer 2 grows thicker as the building rises to reach a correct side angle




Axonometric drawing showing the point from which the height of a step is measured at Seila

**Outer facing at Seila**

There is reason to believe that all the layer monuments when completed would have had an outer facing. Seila, Hebenu, Sinki, and Elephantine have preserved their foundations. Seila, Hebenu, Sinki, probably Nubt and, el Kula, would have had limestone facing, while el Ghenimiya and Elephantine may have had sandstone and granite.




Stone objects of the outer facing at Seila.

**Stone object 'B' Seila**

This is an important fragment of an outer facing block from the edge of a step or one of the steps of the monument. It was found on the north side in the rubble above the spalls. It measures approximately 50X40X25cm and maintains two well-cut sides and two dressed faces at an angle 125° to 130° from each other.

**Stone object 'C' Seila**

This stone object was found in the rubble of the destruction above the limestone spalls on the north side. It is a fragment measuring 80x25x15 cm. with an angle cut along the 15-cm. edge. Remains of gypsum mortar are seen on the upper side. Probably used as an initial point for measuring the width of the step of one layer and the height of the step above.

The fineness of the workmanship of this stone object suggests that the northern chapel may have contained some other cult object to which this fragment belonged.

**Stone objects 'H' Seila**

An outer facing, header and stretcher were buried in the spalls. A number of outer facing blocks found in the limestone spalls on the north and east sides see the principal plan this example of a header facing block.

Stone objects 'I' Seila

All the outer facing blocks were removed, and only backing blocks were in situ. Special care was paid to the method by which they were arranged creating a nice smooth level bedding for the outer facing. They were laid like brick in headers which were projecting and stretchers which were receding.

The header courses backed stretcher outer facing courses and the stretcher courses backed header outer facing courses and they were of a cubical form and their visible end was dressed.

The first course of the outer facing had to be built on the level foundation and prepared to maintain an inclined facing of a 7 f seked (offset of 14°) to allow the upper courses to lean backwards figure 10/4.
The outer facing blocks were bound by thinly applied hard white gypsum seen on the fallen ones; figure 7/4, the backing blocks; figure 16/4and on the foundations.
No corner facing blocks were found, but a facing block preserving the angle of a step of the outer facing was found; stone object B.
The foundation of the outer facing exposed on the east side.
At Seila the foundation of the outer facing was the uppermost course built on levelled steps in the sloping conglomerate rock. The facing blocks have been removed exposing the backing blocks seen to the right.
The basket is on the limestone spalls layer 1.5 meters high on the pavement. The spalls covered the outer facing which were removed later
Backing blocks at Seila.
At Seila the projecting courses backed outer facing stretchers and the receding courses backed the outer facing headers
Bedding of an outer facing header.
At Seila a projecting backing block with traces of hard white gypsum on which an outer facing stretcher block was fixed
Section and axonometric drawings showing the arrangement of the outer facing on layers 2 and 3 and the setting of stone objects B and C

**Outer facing at Hebenu and Sinki**

At Hebenu and Sinki, the monuments were constructed in shallow pits which were levelled. Around their nuclei 2 courses of masonry were built as a foundation for the outer facing. Hebenu preserves a few courses of good quality lime stone, while at Sinki it was never built figure 20/4, 21/4 and 22/4. Presumably the pavement was constructed around the monument at that level.
At Hebenu 2 courses of rough masonry were set as a foundation for the fine limestone outer facing. This pit is on the north side resulting in the destruction of the foundation, exposing the backing blocks and the falling of the facing blocks.
At Hebenu the south west corner where the upper course of the foundation is built of rough stones and the outer facing above it in dressed masonry, the nucleus projects above
At Sinki the foundation of the outer facing at the north corner it surrounded the monument see figure /5
Outer facing of Nubt, el Kula and el Ghenimiya
At Nubt and el Ghenimiya no clearance has been made; but like Hebenu and Sinki, it would not be surprising if a pavement, foundation and some outer facing exist under the surrounding rubble.
At el Kula an outer facing on a foundation surrounded by a pavement would have been easily removed from the surface of the sloping bed rock which was not worked.

**Outer facing at Elephantine**

At Elephantine the method of fixing the outer facing, unlike Seila, Hebenu and Sinki, had to be founded like el Kula, on the sloping bed rock, a levelling foundation around

its nucleus would be necessary. Evidence of such a foundation was constructed around and extended under the nucleus.At Elephantine remains of the foundation of the outer facing are badly preserved; 2 courses can be seen in the foreground at the north east corner. The foundation extends under the nucleus

The foundation of the outer facing

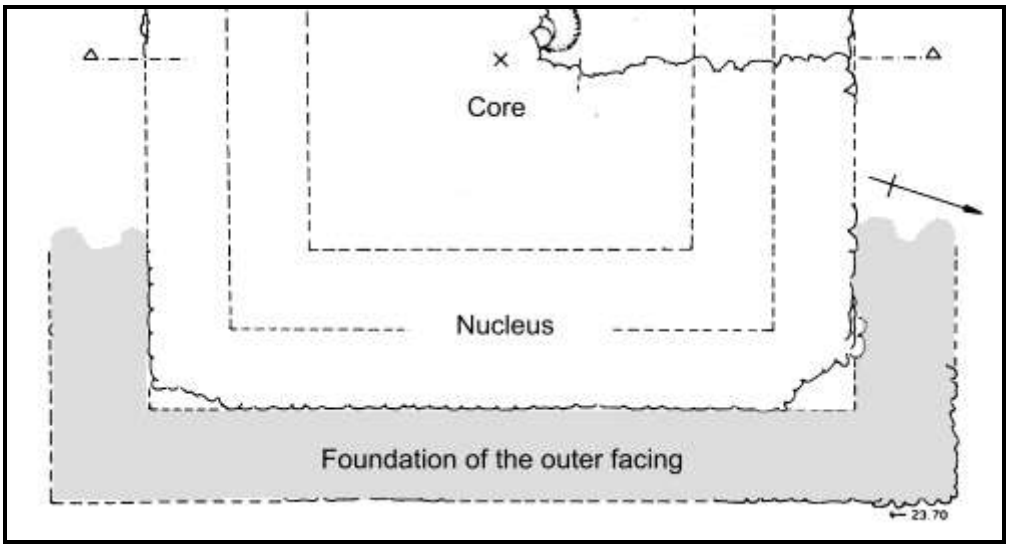
The foundation of the outer facing of the initial mastaba of the step pyramid aqt Saqqara

The foundation of the outer facing at Seila

The foundation of the outer facing at Hebenu

The foundation of the outer facing at Sinki

The foundation of  the Outer facing at Elephantine




The plan of the  foundation of  the Outer facing at Elephantine

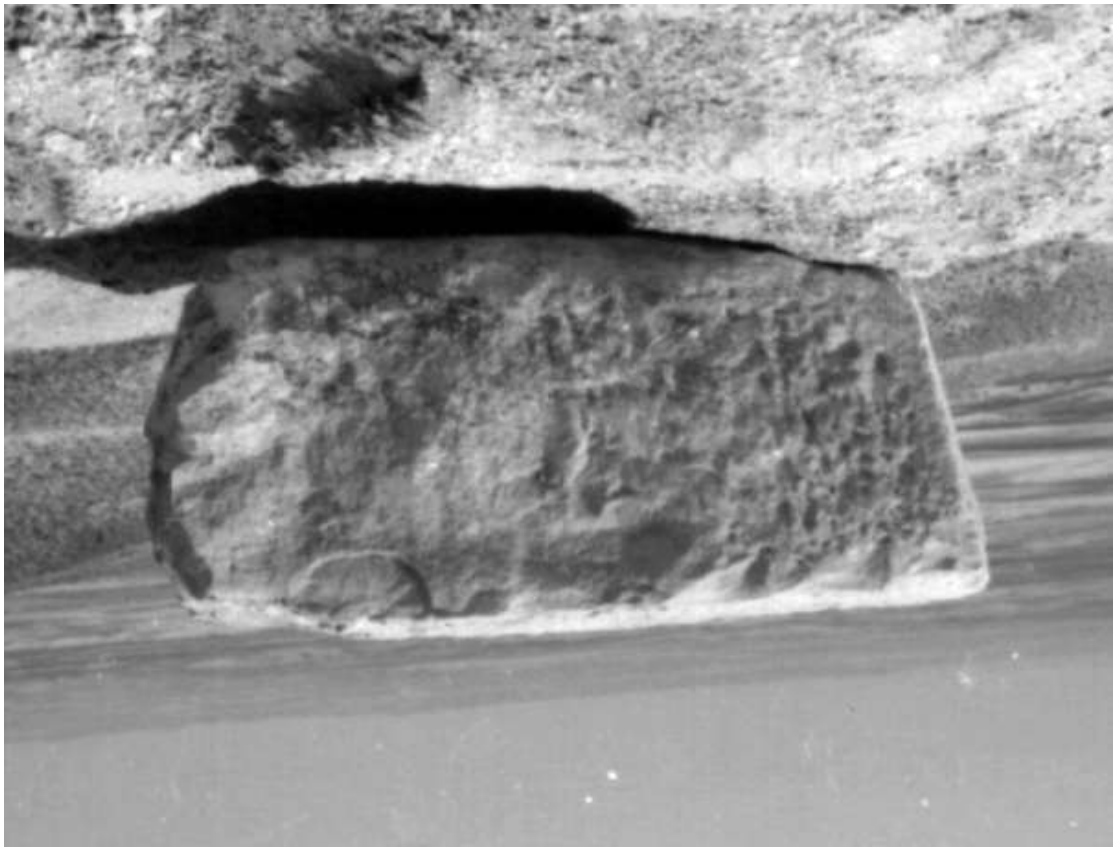
The outer facing

Outer facing of the southern tom of the step pyramid complex

The backing blocks of the outer facing were built with a few kinds of mortar hitherto noticed: Mousterian beach silt, tafl (clay) mortar, and thick chunks of a harder mortar found in the rubble.

Backing blocks at Seila, the projecting courses back the stretchers while the receding courses back the herders

Gypsum on a backing block which  fixes the outer facing blocks at Seila



Outer facing header block at Seila

Outer facing stretcher block at Seila

Outer facing at Hebenu north wet corner note the foundation below the casing blocks

Outer facing at Hebenu north side; note 2 courses of the foundation

Corner of the outer facing of the initial mastaba of the step pyramid at Saqqara

Outer facing remains at the southern tomb of the step pyramid complex

The steps appearance

In the reconstruction's mentioned above the appearance of the step of a step pyramid or of a benben is not always a definite issue; sometimes the top of the step is horizontal and sometimes sloping.

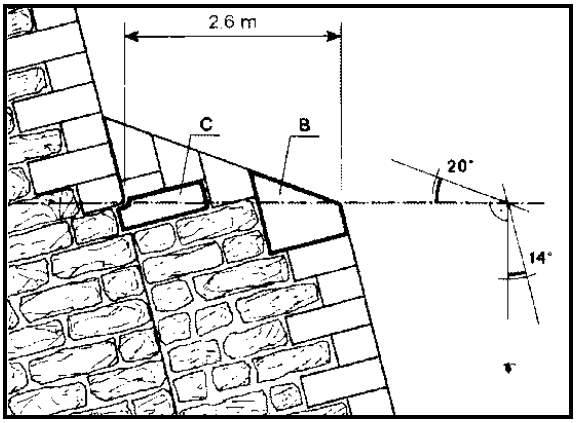
At the layer monument of Seila stone object 'B' fig. 16b displays dressed surfaces and angles of basic importance to the slope of the step or steps of the layer monument. Fig. 19, 21a, 21b illustrate how I suggest the appearance of the step or steps at the layer monument of Seila appeared to be.

A reference point for measurements

At the layer monument of Seila another interesting stone object 'C' fig. 16c, suggests a method of fixing a point from which measurements of upper constructions were made. The block presents a curious horizontal cut at one end and remains of mortar on the surface. This mortar is of the same thin white constitution as that on the backing blocks found in situ on the north, east and south sides. This evidence tells us that stone object `C' was used was used in the outer facing or something similar. I suggested that the inner corner of the cut was a point from which:

The horizontal width of the step was measured.
And from which the vertical height of the next step, or construction, was measured.
In the two options for reconstructing the layer monument of Seila in fig. 21a and 21b stone object `C' is built in L2. The position however is different because:
In the step pyramid option it measures the width of the second step and the height of the third step.
In the benben option it measures the width of the first step and the height of the second step, the obelisk shaft.

**The shape of the step**




At Seila, stone objects B and C show the appearance of the step at Seila; this can apply to the benben option

Sloping steps at the step pyramid

Flat steps at Meidum