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**Pen-Tab**

# notebook

5 subject  
200 sheets

No. 71420



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college ruled  
8 1/2 in. x 11 in.

## Müller

*Me* Matte huts translated to mud brick like <sup>to</sup> stone  
in Djoser complex

- Earliest Egyptian building culture - begins with  
Hor Aha, Saggara N, area of capital:  
Helwan, Giza, Abu Roash

p. 11 - No fore stages of development  
M.b known since end of Nagada II, but no monumental  
architecture

- Balce thought niched architecture developed from  
Delta tradition of building in wood panels

- Delta places shown as (mudbrick) walled  
bastioned enclosures on slate palettes

- Rounded corners to enclosure

- Bastions not regular

- But if walkway - parapet - then not  
pisée but mudbrick - seen on  
detailed Libyan Palette (?)

- Müller discusses sign on Narmer Palette;  
one determined with niched wall enclosure, the  
other with  $\overline{\text{ss}}\overline{\text{v}}$  sign "Papyrus voyager"

• early word for Memphis Keimer

→ walled sign

for Sais → Papyrus

*Me* How about "city dweller"  
papyrus dweller (like Iraqi marsh dwellers)

p. 12.

Founding of Memphis

sudden and "The Wall"  
"The White Wall" since Khasekhemwy

Experience must have been with Delta builders  
used by Up. Eg. conquerors

First brick palace under who had contact with  
Syrian coast

And so Delta folk had  
experience - possibly -

in Mesop. building techniques

Saggaru N Cemetery 1 Km long  
"False Graves" of Kings under which  
principally governors  
princes and queens buried.

\* Necking more complex than walls of Valley enclosures  
in Abydos of Dyn. 1 and 2

System of Niches

↳ Broad niches in hind part,  
decorative  
smaller niches in fore part

p. 13

Painted with <sup>colored</sup> network design

False doors in recessed part taken  
over from Door front of royal  
mudbrick palace

## Memphite Palace

p. 13

Founding of "Wall" of Memphis was a sudden and one-time act.

Possible only after taking Low. Eg. into service experienced in building and wood working from sea-relating - shipping activity

First brick palace under Hor-aha

Dyn. 1 Tombs at N. Saggara are image of palace

Image of Palace taken over - shown - in serekh, royal grave chambers of O.K., cult chambers of private tombs, decorative motif on sarcophagi

Shortly after Hor Aha - palace doorway in Hierakonpolis

Reps transfer of Northern building tradition to South. capital

p. 14

Elevation of Hierakonpolis Palace door - info from serekh development from Hor Aha until Djoser.

Serekh since Hor Aha with 2 or 3 doors increasingly clearer details - inspired by new m.b. palace

Djoser - Ivory plaques, <sup>Unm. el-Qaab</sup> tombstones, 3 tower-like bastions flanking 2 palace doors

p. 14

Tower-like bastions also on stele of  
Qa and Semerkhet

Later depictions - turrets or towers lacking,  
space above door filled with windows,  
with grating of balanced horizontal rungs  
up to ceiling

So tower-like projections a means to  
render forward spring of bastions?

Djet - serakh proportions (2:3) fairly exact  
representation

p. 15

Windows over the doors

Over each small decorative niche of  
projections is heraldic papyrus  
stalks

p. 16

IV The Conversion of the Upper Egyptian  
Tent Palace into the Memphite  
Brick Palace

Serakh in early Horus names shows <sup>schematically</sup> only  
entrance to tent palace; but since Har-Aha  
the door front of mudbrick palace

3-Dimensional rep. in mudbrick of tent palace  
not possible in rigid m.b. like in stone of later  
Dioser complex

(?)

1st Dynasty forms are m.b. equivalent to  
Zoser modelling in stone

p. 16

\*

Conception of monumental M.B. palace comes out of fortified character of enclosure wall and bastions of surrounding Lower Eg. Residences or villages. The bastion-like projections of palace architecture of Eg. Archaic Period cannot be explained any other way.

Me. But these tombs not modeling a fortified town or residence in mudbrick, rather they purport to be a rigid model of wood and mat structure.

Other ideas must <sup>come to</sup> the execution in detail for validity: the projecting and recessed palace front is through the artistic system of variously broad and high niches broken up. The thick vertical arrangement gives the walls gravity, the ~~exchange~~ changing from small and door-like niches leaves the mudbrick wall permeable in appearance.

Me. Each of these tombs was like a brightly colored <sup>wrap-around</sup> false door. The false door of later tombs, was an abbreviation of a simulated royal girdle <sup>pole and</sup> ~~mat~~ <sup>of royal design</sup> ~~set~~ <sup>in firm</sup> ~~mat~~ solid mudbrick <sup>at</sup> ~~the~~ top of the escarpment overlooking the new town, haunted by the spirits of the King's agents and family members.

Matte decoration painting gives unmistakable interpretation of palace's (tomb's) <sup>descent</sup> origin from the ~~created~~ girdle royal tent and its designation as the palace of the ruler of the Two Lands.

p. 16

Breaking up of exterior of strong m.b. walls thru  
Nicked openings must rest on older building  
methods which were also known in Mesopotamia

Nicked openings diminish indeed the wall strength,  
in actuality they lend the wall greater  
solidity. During building or after rain these  
on the m.b. walls <sup>they</sup> allow moisture to evaporate more  
quickly, while air and sunlight could better  
penetrate.

Square recesses as in Djoser wall also openings  
for such purposes. - possibly.

## VI. Papyrus Stalk Pair on the Memphite Palace.

- First time on Djed Stela
- Always on decorative niches, near one small  
entrance doors in recesses.

Müller compares to papyrus stem and wall  
enclosure next to fallen pair on Narmer  
Palette. Keimer, Schott, Sethe: wider  
designation for Memphite name?

2 stems and blossoms stylized in bound  
pair to give <sup>old</sup> name of Lower Egypt.

The two label signs amalgamated in  
Papyrus-pair emblem inset in actual wall.

Papyrus dweller, Town dweller?

Or Papyrus stalk construction.

Does mat/wood construction relate more to L. Eg.

because more bldg. material - tall stalks, wood  
nearby?

## VII. Royal Grave Superstructures of Early Dyn. 1

p. 17

p. 18

N. Cemetery is "False grave" (Cenotaph) cemetery where King present after his death

Here British tradition followed - ruler in his house present for eternity.

As King of Two Lands, the monumental building expressed both British Maat - hut and Up. Eg. Tent palace transported to Memphis as m.b. palace.

Outer appearance must reflect dualistic character

2 elements and traditions not mixed, two elements as self standing bodies, as an inner core construction and as niched outer wall

Inner core reflects <sup>towering</sup> British palace with vaulted roof, niched outer wall is Memphite palace

\*

Ground outline shows two elements combined one in another like Double Crown Up & Low Eg.

p. 18

Palace front of tomb superstructures not formal or measured copy of palace. As excavated only 2m high. Wall thickness enormous: ca. 2.80 m. Breadth of false door in recesses <sup>height</sup> and ~~width~~, indicated in 2 cases by round <sup>wood</sup> balls only 1.55 - far too low.



A complete picture of these tomb superstructures is given by outside of 4th-5th Dyn. sarcophagi which render palace facade. Here the palace door takes only about half height. Here palace door only, half height of entire front and wall surfaces over the doors are set with lattice (or grating) window openings. On Djehuti stela door <sup>claims to be</sup> about  $\frac{2}{3}$  height of the building, height. First Dyn tombs show a palace arrangement following at changed proportions, <sup>because of</sup> with multiple repeating of door motif and with rich window-like external decoration which distanced it from its prototype, yet brought to expression an ideal.

p. 17

To what extent, however, ~~was~~ the window-like forms, with which the relief representations of O.R. tombs and sarcophagi decorated the palace facade, <sup>were</sup> represented on the m.b. arch. of the tomb superstructures through projecting collars and set-backs, is on the basis of what's preserved ~~not~~ no longer to be determined. Supported height <sup>if niched outer side</sup> must depend on relief repr. of palace facade, which correspond with one another in their proportions and details.

M. P. 15 }  
1957, 153f }

Lauer's determination

Top of false door in one of recesses:  $1.55 \text{ m} = 3 \text{ cubits}$   
= about  $\frac{1}{2}$  height of decorative niches of projections

From here to round wood underneath the papyrus emblem 3.10 m (6 cubits)

$\approx \frac{3}{4}$  total building height  
Gives Facade height 4 m (= 8 cubits) from base of building to concluding frieze

So whole building ca. 5 m (10 cubits)

Müller

But how was the upper end - the roof formed?

The Sarcophagi of Dyn 4 & 5 "as three dimensional reproductions of Dyn I tomb superstructures as a rule with an even <sup>arched</sup> vaulted ceiling between the high ~~the~~ head sides. For considerations of maneuverability the Sarcophagus lid is of granite or limestone thick, indicates nonetheless the form of the Buta hut as a firmly fixed component of the tomb superstructure

Sarcophagus of Mentkaure and few others of Dyn 4 have instead of vaulted, a flat lid with a high throat (cornice) under a horizontal round bar. The high cornice as a crowning corresponds to the hieroglyph pr nw (Low Eg. palace) with half-rounded arched roof to form a mat-hut with upper high cornice and round poles on the corners. Sarcophagi indicate pr

nw because of some form Evidence: - Sarcophagi of 12 Dyn. since Sesostris II

- Taking up of niched enclosure walls
- Sesostris III referral to Djoser layout"

- Sarcophagi niched arrangement
- Sarcophagi - niched facade take up half height the sarcophagus
- Towering above is Buta Grave form

p 20

Coop. Amenemhat statue and m.k. drawings at Hierakonpolis

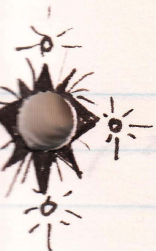
The Buto grave ~~formed~~ dominated also this enclosure wall already as doubled, its recessed and horizontal sides were fixed with a mat decoration. In the 12th Dyn. the tradition yet lived that this part of the sarcophagus represented the Buto tomb.

Certainly ~~in the 12th Dyn.~~ this mat decoration, which in the 12 Dyn. also appeared on Kanopic chests (with vaulted ceilings!), ~~was~~ was not needed as a ~~and~~ ornament on the sarcophagi. ~~The~~

The outer vaulted sarcophagus roof on the grave of Sesostris-onkh in Licht which on the inner side is set with an especially carefully executed mat decoration testifies to this.

In Lauer's reconstruction this imp. element, the Buto grave, building ~~is~~ which towered above the niched "mud brick palace" is entirely disregarded, though sarcophagi of the Old and much more of the Middle Kingdom have truly preserved this element [Müller adds this element as a counter suggestion in Abb. 13]

The architecture of Up. Eg. tendency, especially the 4th Dyn. Pyramids and ~~smooth~~ flat mastabas had for the realization of Low. Eg. concepts no other room for display or development to arise as in interior of the grave on the walls of the ~~to~~ cult chamber and on sarcophagi.



XII.

## ROYAL TOMB SUPERSTRUCTURES

## SAQQARA NORTH

p. 28

Niche Depth	Name	Tomb No	Length x Width	Greatest Preserved Height	Wall Thick. Outer
Large Small					
1.20 .25	<u>HOR AHA</u>	3357	41.60 x 15.55	1.75	2.4 - 2.65
1.10 .25	<u>DJER</u>	3471	41.30 x 16.00	1.00	<sup>W</sup> 2, 2.65 - 2.75
1.10 .25	<u>MERNEITH</u>	3503	42.60 x 16.00	2.20	2.70 - 2.75
1.10 .25	<u>DJET</u>	3504	49.50 x 20.00	2.35	2.90

Earliest, show in ground plan a thick enclosure wall arranged with the complicated palace decoration enclosing a rectangle which <sup>was</sup> through essentially weaker rectilinear tapered walls divided <sup>into</sup> checker board-like. Within the three long rows of chambers there was indicated "the middle strip five adjacent aligned chambers that go together; one large middle, the burial chamber and on either side two smaller for the burial offerings. In the tombs of Hor Aha and Merneith there five chambers are in similar moderately deeper laid out; in the tombs of Djer and Djed the middle burial chamber - as in Giza V - is sunk deeper <sup>in the desert</sup> than the storage chambers. The Up. Eg. pit grave made its influence increase, also <sup>counted</sup> in the tomb superstructure of the Lower Eg. residence. This group of five chambers corresponds to the core building of the tomb at Nagada. In tomb layout of Saqqara North is however, the demarcation against the rest of the chambers and the emphasized <sup>given</sup> as single standing element enclosed by thick walls. However also with these superstructures

The Buto tomb with vaulted ceiling must have considerably towered above being set against the outer wall of niched arrangement like tomb of Shepseskaf, Khentkawes, reconstructed superstructure of Napada tomb

Outer wall at Saggara N thickness from 2.5 to 2.9 m, niches 1.20 m. in mudbrick work; rest of walls @ 1.00 - 1.50 m thick have been sufficient to ~~take the~~ carry the corresponding flat walls (back side) of the Butish tomb, particularly the system of the dividing walls of the chambers of the outer wall additionally supported and the entire construction ~~in the~~ was strongly braced.

If one accepts with Erms that the outer chambers that surrounded the burial and grave good chambers were filled to top with sand, the burial chamber with a ~~base~~ ceiling, <sup>balk</sup> decks and a first sand piling upon it and underneath the roof afterwards <sup>covered</sup> with a ~~base~~ balk-ceiling and sand pile ~~over~~, then the possibility <sup>is filled</sup> of a ~~solid~~ firm stability of a high towering building. With a simple m.b. layer over the uppermost sand bed the ~~flat~~ smooth vaulting between the high end walls have ~~been~~ found their upper completion

# Stadelmann Pyramiden

p. 15.

HOR AHA

3357

Double enclosure wall

41.60 x 15.55 m (80 x 30 cubits)

9 Niches on long sides

3 Niches on short sides

possibly 5.25 m high (10 cubits)

North side } Boat Grave - First example  
Cult layout } Granger

p. 16

No special cult place in mastaba -

Each deep niche fitted with false door

Dead came and go

Not at Hacha → Models bulls heads w/ actual horns in front of and in niches

Burial chamber and storage rooms - N and S of grave pit - in a trench 1.35 m deep in surface, 19.10 x 2.90

Divided by cross walls in 5 chambers

Middle one larger = burial chamber

Walls decorated with multi-colored mats on mud plaster

p. 17

Ceiling - Wood beams and planks

Sand and gravel piled above

Tumulus ≈ 1 m high - reminiscent of those in Umm el Qaab

Rich finds of ceramics, stone vessels, and offerings also clay models of rhinoceros horns at

Stadelmann

comes in fill of superstructure - magical  
protection of grave

## N. Cem. General

Hor Aha = Menes

Fonded Memphis

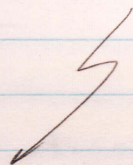
Ptah Temple (?)

Direct Line to Cemetery

And

INBA HEAD

"White  
walls"



Royal City already?

Must take care

Sparse texts leave open possibility that during  
the Thinis period (Dyn. 1-2) no  
one permanent royal residence

King and court travel from place to place

King and Temple

South: Hierakonpolis State god Horus

Sailed north Ombos "Gold City" Seth

Niche Tomb Prince or Neit hotep

Sealings, ivory labels of Hor Aha

53 x 26 m

100 x 50 cubits

(over)

Stadelmann p. 20

Until middle of Dyn 1 the tombs ~~also~~  
measures and form of grave room and checker-  
board <sup>filled</sup> superstructure very similar

Udimu - long reign, real significant change

3 tombs ascribed to him in Saggara

Adjacent S 3036, S 3035

Queen?

largest Akhase grave

First time Entrance from east corridor

Grave could remain open after completion for later  
access for funeral

Beautifully <sup>heavy</sup> hemipostulis stone - the first of this type  
in long line, made possible closing of  
corridor after the funeral

Solved problem of security of mastaba grave  
and accompanying goods, allows in-filling  
but leaves access

p. 21



Burt Emery, G.T.

- Refs. Fa. Key Mon. GT III, p. 4 (no. I)
- 3357 Hor AHA 60, 63, 35
  - 3471 ZER DJER "Name found on some of the jar scalings." GT II, 13
  - 3504 Junker DJET 9 (1940), 139.
  - 3035 DEN
  - 3038 Stadelman ANDU/B MOAIR 28 (1971) 128 f.
  - 3505 QAI
  - 3503 I, I, 882 MER-NEIT
  - 3507 HER-NEIT

3471 - DJER GT I

Main Walls N. 15.15 m

p. 14

3505 GT III, 6, E 41.20

3506 GT III, 41 W 41.30

3507 2.00 - 2.75 m thick

p. 15

Niches Large 2.10 max width  
 1.10 " depth  
 Small .50 m width  
 .25 depth

Plantation 3036 GT I, 73  
 small  
 (see previous list) in wall trench 1.20 m deep  
 the wall 1.60 m

Pottery in-situ in front of niches  
3503 GT11, 139

Ox head in niche Period C 3038  
GT1, pl. 27B

Pavement Holes

Mer Neith 3503 GT11, 131, Fig 201

Hör Aha p. 4, Fig. 6

## Buto Cemetery

Reps. Fa Khry Monuments of Senefertu I  
60, fig. 35

Junker MDAIK 9 (1940), 1-39

Stadelmann MDAIK 27 (1971) 122 f.

See LÄ I, 887 "Buto's Begräbnis"

## Bulls Heads

3505 GT III, 6, 8

3506 GT III, 41

3507 GT III, 75

## Pavement Holes

3505 Corridor GT III, 7  
Stadelmann takes as tree pits  
Pyramiden p. 25

{ decayed wood  
1.75 m springs  
20 cm deep  
16 cm diam.

Plantation 3036 GT I, 73  
small tree remains (roots) in ~~small~~ trench 0.70 m deep  
1.5 m wide  
tree every 1.60 m.

Tumulus

3506 GT III, 41  
 3507 GT III, 73, 77  
 3038  
 3471 <sup>see mention</sup> GT III, 73

Grandaes

Den ? Neska Tomb X GT I, 107  
 Den Setka 3506 GT III, 43  
 Pa Merka 3505 GT III  
 Den Hemaka }  
 Den Ankhka } <sup>3035</sup>  
 Medjedka } → 3036 jar sealings  
 Ka nj } together in 3506 GT III, 61  
 Heruata  
 Djer-Den Sekhka 3507  
 Andjib Den Nebetka 3038 GT I, 82 Name on  
 Den Andjib Sabu 3111 GT I, 95 Grandaes

Sm priests

iry pets

of mr

h3ty-c

nd-hr Councillor

of h3p hr ib "Ruling in Kinsu Heart"

Treasurer - Nes-ka Tomb X

GT I, 71  
 Hemaka } ed mr Hr stnt m  
 Ankhka } best  
 Medjedka } smt necropolis  
 GT III, 70, No. 33 } hrt desert

Governor of District of "Promoting  
 the Necropolis of Horus"

3505

3500

3338

3120

3121

X

3041

3509

MUD SEALINGS

OFFICIALS

- 335 Sekhka
- Neska
- 3421 Setka
- Hemaka
- 2185 Ankhka
- Medjedka
- 3504 NiKa
- Nebetka
- 3035 Sabu
- Merka
- 3036 Horneith
- Hor-Aha
- 350 Mesenka

MUD SEALINGS

	<u>Ruler(s)</u>	<u>Official(s)</u>
350 3357	Hor AHA	-
3471		
350 2185		
3504		
GT III, 32f 3035	5 seals of - QA	Merka stela 2 Merka impressions
3036		
311 3506		
3507		
3505 3038		
3111		
3505 3505		
3500		
3338		
3120		
3120 3121		
X		
3121 3041		
3503	Merneith	
3041		

MUD SEALINGS

REF

Ruler

Official

3357

Architecture

3471

Sketched maps on board faces of painting plates

2185

Narrow vertical surfaces on upright wood parts

3504

Chairs of shapes = wood lockers

GT III, 32f

3035

QA (5 serckhs)

• Netermerib 2 Merka impressions

• MERKA STELA

• SEKHEMKA

3036

direct and deliberate correspondance between mixing and elements of wood frame

3506

reed mat

3503

sculptural treatment of elements in broken structure

3507

Showing the construction of the structure

3038

accentuating the primary skeleton

3111

fracture skeleton

3505

Elaborate mixing of a sculptural treatment of skeleton system

3500

3338

3120

3121

3041

Wood Frame, Reed Mat  
Architecture

x

Stretched mats on broad faces of projecting  
pilasters  
Narrow vertical surfaces are upright wood  
posts

Chairs of ellipses = wood lashings

Very direct and deliberate correspondence between  
niching and elements of wood frame,  
reed mat

Massive system  
Sculptural treatment of elements - fictive skeleton

"Showing the construction" eg. Mies van der Rohe  
Articulated skeletons  
accentuating the primary skeleton

C. Norberg-Schulz  
Intentions in  
Architecture

letting all elements express their role  
fictive skeleton  
Elaborate niching is a sculptural  
treatment of skeleton system

First time  
Nagada tomb is potation  
More house-like within enclosure  
to 5-room house  
No substructure - Delta tradition?  
Hot mid  
No more core building  
Instead a grave pit

# North Sappara Development

①

## Hor AHA

Rectangular pit cut in gravel and rock  
19.10<sup>N2S</sup> x 2.90<sup>E-W</sup> 1.35 in deep

Checkerboard patterned cross walls  
divide into 5 rooms

} Reed  
mats  
stuck on

Central - burial chamber

Side rooms magazines

Roofed by l. wood beams 10 cm diam.

Spaced 25 cm

2. Planks

3. Reed mats

4. M.b.

27 Magazines by unbanded cross walls  
Filled with sand - false floor, 1m high

Magazines prob. like in Hemaka roofed by  
log beams + wood planks + reed mats  
+ brick roofing

## FIRST TOMB

Megada tomb is prototype  
More house-like within enclosure

↳ 5-room house

No substructure - Delta tradition?

Hor Aha - <sup>mid</sup> room goes deeper  
No more core building  
Instead a grave pit



72-73

N. Saggara Development

(2)

Mastaba 2185 Djoser great stone beams over grave chamber

Major innovations in reign of Sen

3036 } stepped  
Pyramid 3035 Henaka } Entrance from E Corridor

Grave could be entered after completion sealed by mastaba superstructure

FIRST PORTCULLIS SLAB closures

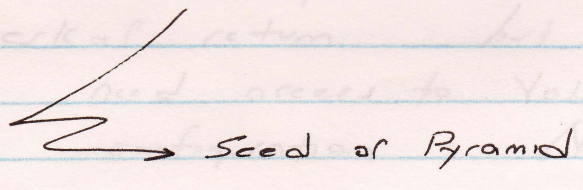
- Lon. line to Pyramid corridors allow closure after funeral

Allowed closure of burial chamber & side mags.

So tumulus 3471 GT I 131F

GT III 73

3507 GT III, 73



Seed of Pyramid

ADJIB 3038

## 72-73 SAQQARA PYRAMIDS An Overview

- Plateau chosen because above Nile Valley  
Choke point
- Largest necropolis from Dyn 1 - Coptic Christian
- Central Plateau is  $2.5 \times 2.5$
- Take in S. Saggara and ~~Abu Sir~~ Abu Sir  
7.5 m long
- Center piece of site ~~tableau~~ is Step Pyramid
- ~~At~~ Perhaps already Zone of royal ~~to~~ enclosures as early as Dyn. 2
  - Galleries of Ni netjer, Hetepsekhemwi
  - Mysterious Giza el Mudir
- Why so far out in desert?
  - Step Pyr. no causeway to connect to valley
  - Wadi was connection - straight to Giza, Sekhemkhet, Zoser
- Hiatus, remaining Dyn. 3, ~~all~~ all of Dyn. 4
  - Sneferu Maidum
  - Dahshur
  - Giza Kings
- Userkaf return but now pyramids need access to valley - dif configuration - NAT. LAKES
- Abu Sir
  - Rough ~~the~~ NE-SW diagonal as at Giza, Um el Qaab, <sup>Central Saggara</sup>
  - Stars in Orions belt
- S. Saggara Djedkare Isesi

Shesepkaf  
Return

Djoser	Sahure
Serkhen Khet	Neuserre
Usertkat	Nefertkare
Unas	Raneferet
Teti	
Merenre	
Pepi I	
Pepi II	
Merykare	
Abi	
Djedkare Isesi	

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Unas - Life 2 ~~1~~ guard posts,  
1st and 1st K of Dyn. 5  
flank Zoser complex

position must have been of some  
importance - witness need of long  
causeway

Teti adds to diagonal

Pepi I and his two sons return to S.

Saggara

About on line of principal run field

Mn-afk "The Perfection of Pepi Endures"

Pyramid Town

Simulation - of (now) mudbrick

and red mud/brick

Meaning of place at another time

Unadorned gateway - walls

Meaning of place at another time

Here act of collaboration - from the door

See Murray, 1995

Statues governing every form  
going forth  
comp. Sta Dgn. tomb of Ty

Circuitousness

Circulation - / m entrance - check granite plug  
and Funerol

Cartese

Model of Funerol

complex, model of tomb

Petrify to Perpetuate

Unique, not repeatable act Stadelmann p.67

Netjer Khut complex is like an architectonic  
sign-list of sacred building hieroglyphs.

See Karp "Vocabulary of forms"

Connect with codify

Yet many forms never used again

Firsts - first colonnade, hypostyle, portico  
life-size statues, torus moulded cornice

74-77 STEP PYRAMID

General

- 3rd Dyn. beginnings
- Question of Beit Khallaf
- Sudden new order of magnitude
  - Size Not one narrow entrance
  - Material
  - Craftsmanship
- Name - check Stadelmann
- Djosor / Imhotep <sup>codification</sup> rep. as founder of Stone Building
- Name Liberation of Gods gbkw ntrw  
BIFAO 81 (1981), 163

Note panels carved in enclosure wall after blocks set

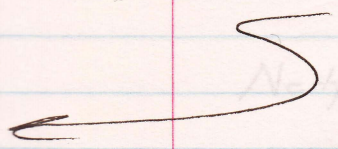
- No tombs within enclosure except few burials of latest period in Saggara - a place w/ burials of every age

Simulation - of (now) mudbrick and reed mat / wood

Enclosure wall squares - built end of wood reinf.  
Log ceilings - eg. Temple T  
So now simulation of simulation of original reed bldgs.

Meaning of stages of construction

- Unaddressed questions workes, economy, quarry
- <sup>Certain</sup> Many forms never again executed or not again for long time
  - Layer I, 144 engaged columns
  - caryatids
  - faience capitals
  - fluted columns
  - faience tile door
- Keep act of codification  
See Anatomy, p. 95



Note: all doors left open

Heb sed see Layer I, p. 6, n. 2

Although created vocabulary of forms

Building Askew

Kaiser MPAIK 1969

Paneling on Colonnade S wall - 16m long

Small buildings in Falkecirke at Abydos

Peribsen 12 x 9 m

Khasekhemwy 18 x 15 m

} with niche decor

Near SW entrance

Netjer-khet Building Askew:

Not Kaiser reconstr. 30 m x 15 m (p. 9, Abb. 2)

Shaft (Lower degrés, I, 115) 25+ m.  
deep.

Corridor with 6 galleries under sanctuary

Oblong chambers connected at E end

S.m.  
Open doors ←

niche winding passage to small

S.m. open  
door ←

chamber

Kaiser

Living palace of King or successor

Helek

Statue palace

Kemp

"Taken palace"

Layer I, 178-179

S. Court.

3/4° off <sup>orientation</sup> ~~axis~~ of enclosure wall  
to west

Parallelogram

3 Faces rich decorated

Closed door with simulated hinge

Originally double leaf door, 3m wide

Not paved, virgin soil too low, banked up w/  
waste of limestone over which a layer  
of soil. cm of <sup>reddish</sup> clay mixed w/ desert pebbles  
Resembles natural soil of region

Altar

limestone 60 cm from casing of P2

36.50 from its SE angle

Ramp to platform, 1 m high, 7 x 7.4 m

Before ramp a <sup>cow</sup> skull with large horns

buried in hole

B-stones



Pyramid P<sub>i</sub>

4th PROJECT

Stadelmann  
P<sub>i</sub> and P<sub>i'</sub>  
still using small  
blocks, on no side  
is smaller material  
higher than M<sub>3</sub>  
p.54

Still core and casing, but profound difference

Abandoned horizontal beds

Adapted accretions, each inclined 15° to 17°  
so far beds

{ Bigger and better blocks

{ Blocks no longer packed in abundant clay  
mortar - laid simply with aid of mortar

Casing blocks no longer bevelled like preceding M<sub>1</sub>-M<sub>3</sub>

Added 5 1/2 cubits to E face M<sub>3</sub> (2.88m)  
and all sides of mastaba

Length 163 cubits E-W

Width 147 cubits N-S

Casing quickly abandoned

Comp M<sub>3</sub>

Core completed

If <sup>steps</sup> same width as P<sub>2</sub>, P<sub>i</sub> only 4 steps

p.18

Massif added to N - for cut chambers

Comparable to that N of STomb

Trial for Funerary temple - T<sub>1</sub>

Small blocks in horizontal beds

P<sub>i'</sub>

5th PROJECT

- Increase of P<sub>i</sub> to N and and West

105 200 cubits

Conserved casing of P<sub>i'</sub> on S. and E

118 225 cubits

Covered T<sub>1</sub>

~~Casing~~ Facing of P<sub>i'</sub> equal to P<sub>i</sub> + M<sub>3</sub>

= 8 cubits

Pro<sup>west</sup>longed P<sub>i</sub> by 62 cubits "theoretically"

West face at Tumulus for height 4.70m

Laver says tumulus leans against Pyramid

Lower levels I p. 17

Pyramid P1

4th process

61  
62  
63  
64  
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99  
100

Abandoned horizontal beds  
Adapted orientation, each measured 12' x 15'  
as far beds  
Bridges and better blocks  
Blocks no longer packed in adjacent rows  
Water in a simply with and a water  
Covered No longer forested like preceding  
Added 2 1/2 cubic to E face M3 (288)  
end on side of water  
Length 123 cubic  
Width 147 cubic

Core directly abandoned  
Core completed  
The same width as P1, P1 only 4 stages

M3 added to N - far east chamber  
Comparable to that N of 2nd  
Trial for further tanks - a T1  
from M1-3

Evolution of Step Pyramid in 2 quick stages  
(P1 and P1')

Probably foreseen from beginning of P1  
or beginning of M1 or stepped bldg.

p. 56 }

"  
" 8 cubic  
" 12 cubic  
" 15 cubic  
" 18 cubic  
" 21 cubic  
" 24 cubic  
" 27 cubic  
" 30 cubic  
" 33 cubic  
" 36 cubic  
" 39 cubic  
" 42 cubic  
" 45 cubic  
" 48 cubic  
" 51 cubic  
" 54 cubic  
" 57 cubic  
" 60 cubic  
" 63 cubic  
" 66 cubic  
" 69 cubic  
" 72 cubic  
" 75 cubic  
" 78 cubic  
" 81 cubic  
" 84 cubic  
" 87 cubic  
" 90 cubic  
" 93 cubic  
" 96 cubic  
" 99 cubic  
" 100 cubic

Massif of P1, would have had 6 steps  
When P1, abandoned for P2, not above 4th step

Each step formed of 2 accretion layers  
average 10-11 cubits wide = 5.24m -  
5.76m  
Facing = 3rd accretion 5 cubits = 2.62

First <sup>inside</sup> ~~of each~~ accretion of each step serves  
as backing of facing of step above

So each step is moved in  $\approx$  12 cubits from  
previous = 6.29m

Steps terminate at a bevel of 20°-23°  
and not at sharp corner

### STADELMANN on P1

P1 little more than a ramp <sup>dressed M-3</sup> with better materials  
and methods - or so builders must have thought  
to contain base of local limestone for P2

P1 hardly built up over M2

2 layer building method - core first, then casing  
= P1 actually built - not so

P1' an extension of P1 to N and W  
or pedestal, <sub>or base</sub> foundation for P2

Over built w/ larger masonry format

So no P1 to 4 steps

P<sup>2</sup>

Lower, degree, I, p. 23-25

For Lower, P<sup>2</sup> simple modification of P<sup>1</sup>'  
By light accretion to N side, 5 cubits wide  
from base to summit of 4th step. From  
here to top building is unity - no structural  
discontinuity. So that top of Pyramid is wider  
than 5 cubits

P<sup>2</sup> - Still bigger blocks

Blocks range from .48 to .52

Masonry more careful

Casing <sup>or</sup> Facing 3 cubits thick

E & S base of 1st step

Added to facing of P<sup>1</sup>'

E & S.

W.

{ So total casing is 8½ cubits  
of fine limestone  
{ From 4.70 from base  
Facing is 5 cubits

N



P<sup>2</sup> facing 5 cubits + Facing P<sup>1</sup>' 8 c.  
= 13 cubits

But with addition of accretion  
on N that covers P<sup>1</sup>' facing  
have 5 cubits facing P<sup>2</sup> and  
when accretion does not cover P<sup>1</sup>'  
facing, obtain 6 cubits total  
facing

N-S dimension 200 cubits P<sup>1</sup>' + 3 c + 5 c = 208

E-W " 225 P<sup>1</sup>' + 2 x 3 cubits = 231

Vertical 114.23 re. Sea Level - Survey of Egypt  
pt. 3-40

p. 24

58.63 above average level of base  
Originally 1.30 above ~~the~~ current top

P2

Lower, degrees, I p. 24

Discrepancy of .76 m from E face - best  
conserved, between middle of face where  
begins casing, and NE Angle when  
0.12

$$\begin{array}{r} \text{Ma} \quad \text{so} \quad .64 \quad \text{OR} \quad -0.12 \\ \quad \quad \quad \frac{-.12}{.52} ? \quad \quad \quad \frac{.64}{.76} ? \end{array}$$

- Builders probably measured in whole numbers from upper edge to upper edge of steps of pyramid
- Side angles of steps vary from  $71^\circ - 76^\circ$  most near  $74^\circ$

S. Tomb Stadelmann, Lower, degrés, I, 94-98

Superstructure

Chapel

N. Tomb Chapel

SW Angle of S. Court

Massif of juts out to N from wall

43 m x 17.35

N and E face fine limestone, panelled - continuation of S. Court wall

Cobra head frieze - cobra above each panel

Sanctuary - vestibule E-W to N-S chamber

Σ Statue Chamber?

Fine masonry badly damaged - so hard to reconst.

Simulated open door?

Superstructure

Set into enclosure wall

{ note t3yt - shroud  
t3yt, shrouded one  
vizier, Osiris  
or Buta goddess

Long superstructure 160 x 25 cubits

Massif cased in fine limestone

Rise above wall terrace by 4 m

~~Vertical~~ End walls near vertical (slight batter 3-4 cm/meter)

Long side walls inclined by 6°

Casing 2 1/2 to 3 cubits

Casing is inclined courses like pyramid P1-2

S. Tomb - Stadelmann, Pyramiden

p 49

Chapel with statue chamber - <sup>abbreviated</sup> reduced version of N. Temple

*M* Orientation E-W, <sup>exit</sup> entrance leads out to W at SW Corner, recalls SW orientation of openings in rows of subsidiary graves, at Umm el-Qaab and archaic "false door" in Diet's tomb

Heb Sed Complex

Lower I, p. 730-

Only access from colonnade

50 m. passage

1. Rectangular court, 2 series of chapels, W & E.
2. Second court passed rounded wall w/ Temple T
3. Labyrinthine passages in massif to S

S. Platform - 2 stairways, 1 m high

= hieroglyph for Sed Festival 2 stairways in date

p. 131

Model of Sed amplex

Like S Tomb + Chapel  
 here hieroglyphic  
 architectural hieroglyphs

Hieroglyphs for Sed



correspond to pavilions and stairway platform

A. W. massif

Composition: 1. Fine limestone facing  $\approx 1.55$  thick

2. Wall of yellow limestone of desert

apart w/ facing leans

3. Core filled with earth, sand, chips w/ desert limestone retaining walls here and there

W. Row:

1. <sup>edifice</sup> Torus molded facade - sh ntr form

Bound to one to N back back wall,

only its distinct roof emerges

Simulated closed door in center of face

Statue Chamber (?) on S of front

enclosure

2. 2 Chapelles with <sup>3</sup> fluted columns

Stairways ascend to large niche on S. side of facade

Shrines  
 on  
 pedestals  
 Lower's  
 subbasement

p. 132.



### 3 2 Statues of Netjerykhat, N and S

M These stairways up to  $\phi$  within per wr type chapel is more glyph for Sed than platform

After Sh ntr 5 following chapels have same form: stone images of wood frame construction <sup>between two tall pilasters on either side</sup> with hung mats, lightly vaulted roof covered by 3 thin fluted pillars - Form of per wer. In front, low walls, c. 2.10 m, defined two parallel chambers forming indirect <sup>unroofed</sup> passage back to a small niche ~~set up~~ built into fine limestone facing at ~~lower~~ <sup>lower</sup> left (south) of chapel center of chapel - statue niche. Entrance to passage ~~also~~ <sup>through simulated open door</sup> at far south but one is ~~fixed to~~ on line with niche, but one is fixed by partition wall between chambers to turn right, then left at end of first room, left again to go back to niche. This indirect <sup>219-229</sup> passage was characteristic of ~~many~~ <sup>many</sup> other structures in the Netjerykhat complex, ~~in fact~~ <sup>at the SE corner</sup> the entrance end of ~~domestic~~ <sup>domestic</sup> 'houses' and palaces in general. Picket fence w/ 6 stakes and cross pieces.

Following 2 similar, no statue niches  
Niche in lower S corner

Chapel X niche placed laterally in NE corner  
Middle of Base of 2nd Chamber an small chamber  
W. Side Sh ntr form

3 More chapels of per wer form

Lower, 4,

E Chapels numbered 6, 7, 8, like 3, 4, 5

Next court penetrates deep into massif

Then 2 More Per Wer 9, 10,

No. 10 no zig zag passage in front only  
open court

To enter 10, have to use winding <sup>divided</sup> court passage  
at N end of Heb Sed court. Next to 10 is  
J, again a sh ntr form - exact size of  
sh ntr form at north end of court

Last edifice, J, sh ntr form again

Row flanked on N & S by sh ntr ends  
one in middle

Door in N gives access to small statue chamber

Socle w/ 4 pairs of feet

Netjer, Khet

Hetep-her-nebti

Int-Ka-s

Queen

p. 134 No <sup>exit</sup> entrance from Heb Sed Court on N.

p. 142 **B. EAST MASSIF**

Backed by massif shared with E side enclosure  
wall

E Chapels more badly destroyed, plan visible  
Series of 12 chapels, fronted by winding open-air  
passage created by dividing court, simulated open  
doors, niche in front of chapel parallel to facade

Lave, degrés, I, 142

E Chapels reduced in width

M → 12 Chapels on E, } 22 = Nomes?  
10 paves on W

No torus molding on basement or on small walls  
No column<sup>fluted</sup>ettes

Facade outlined by torus molding on arch,  
by verticals in relief on 2 sides, 6cm wide  
Sap raised few mm.

Facade outline analogous to the W Chapels  
12 Chapels on E similar Facade

At S. end of row 2 divided court corridor  
much elongated before badly destroyed  
massif, unclear ground plan

C. Statues of Netjer, Khat from here?

- Appear to have been caryatids engaged in a facade. Totally new in Eg. Architecture
- 3 Statues found, but many large blocks to make more (?) abandoned  
Osirid, holding flail and scepter
- 2.20 m high
- Abacus to support <sup>cornice</sup> coping stone
- Situated <sup>intended</sup> in massif R and/or further S. at entrance into Heb Sed court
- Or in niches, like high-~~rel.~~ rel. of statues found in O.K niches

Lower, degrees, I, 145

D. DAIS

5.30 x 4.50

2 Stairs - 3 Steps, bottom rounded

Trace of light walls at SW angle

Torus edge 15cm diam

Double pavilion of Heb Sed

E. Temple T

Original height 6.90 p. 150

Separate court w. of Sed Chapels

Earliest torus molding (rolled binding)

ORIGIN OF EGYPTIAN CORNICHE

Kemp } { One of few "real" buildings of Step Pyramid  
Complete interior of rooms & corridors  
rolled binding  
tops of corbel reduced to plain frieze

- 2 doors - to S and E, simulated open <sup>16 flutes</sup>
- Kind of hypostyle - 3 fluted columns engaged to tongue walls
- Access to 3 courts along W of structure
- To N to "sanctuary" Djed frieze
- Back room (bedroom?)

p. 148-9 Column

Band above base @ .70 m @ 2.5-3 cm wide

So in Mansion of N & S, Temple

Composed of courses of masonry, each course of various 4-5 blocks

Original total height 5m. 95

F.

SE Corner Massif

Lower, degrees, I  
p. 153

Maze of turning corridors, chambers, small sanctuaries

Orientation of sanctuaries appear to play no role

One had access to these corridors before arriving at Heb Sed court, through simulated open door

Chamber 2 - 2 simulated closed doors in S. wall

Small chamber with simulated open door

Corridors probably covered, or could have been, nearly every where

Symbolic indices of N & S constructed by emblematic plants

2 Notional sanctuaries: Per Wen - Nekhen  
Per Nui - But

Residence

Transverse

## Mansions of N and S

Lower degrees, I, 154f

Access to M. South - Through colonnade

Tombs or chapels of princesses - so Fifth because:

Simulated open door

1. Many fragments of stela found in proximity of names Hetep-hetnebti and Inkhases.
2. Situation near corner (NE) of monument resembles position of queens pyramids
3. Each have a serdab-like chamber in addition to niche at end of winding corridors. Serdab resembles that behind serdab of Djoser statue

Access to Mansion of North

## Lower contra hypothesis

Turn at NE corner of Pyramid, enter serdab

1. More stela of princesses found in S. Court + North other places in complex
2. Abnormal placement of pits - not in principal massif.
3. Similarity to P<sub>3</sub> = Offering pits like those found at Bat Khallaf
4. Papyrus column - emblematic of N and probability of street of S. does not suggest princesses' tombs
5. Like Heb Sed chapels resemble houses, no funerary character of Achaic mastabas
6. Princesses probably buried in galleries under E of Pyramid

Symbolic edifices of N + S. characterized by emblematic plants

2 National sanctuaries: Per Wer Nekhen  
Per Nu Buto

Residences

Treasuries

Access to M. South. - Through colonnade,  
S Great Court to SE corner of Pyramid.  
Simulated open door

↳ Inside to R, a 3-niche sanctuary  
↳ Long court along entire E face of Pyramid

Middle of E wall, simulated open door  
to Court of ~~South~~ Mansion of South

Access to Mansion of North:

Turn at NE corner of Pyramid, enter serdab  
court, turn right sharply, corridor to Mansion of  
North

p. 157

FACADES OF  
BOTH MANSIONS

Each

- 4 engaged columns 50 cm diam base
- Framed by uprights  
↳ differ
- 2 Facades about same length
- Each w/ off-axis entrance
- Corridor to small cruciform sanctuary w/ 3 niches  
M. N. has 2 add. niches at ends of approach corridor
- Corridors roofed by log imitates
- Toward extreme SW corner, blocked corridor  
to small chamber - probable serdab, for  
royal statue

Mansions of N and S.

Lower, degree I,

Columns

Kha Khao Faeng

p. 159f

Columns attached, 13 concave flutes

2-3 cm Band @ 60 cm above base

↳ Not a tie with flutes - this not a bundle of stems, flutes hollowed

≈ .50 cm diam. base

.28 " " at capital

2 Center columns about 12 m high

45 higher than 2 flanking

Capitals like pillars in Hab Sed court but twice the size

Front face of the pillar: <sup>square</sup> hole between

11 cm diam. } pendant leaves, smaller square hole  
8 cm diam } below capital To take 2 horizontals

Lower: For wood standard for ensignia or for banners

Down face of column below lower hole are two protrubance like small breasts with a groove between them To take vertical pole of insignia

p. 163

END PILASTERS

M.S. - projects .40 cm

Flat faced corner framing enclosing 4 stems with half column

Half-round column .50 from pilaster face

↳ .70 cm diam.

M.N. Rectangular pilaster, flat inside corner w/ face and exterior corner molded of stems



Laver, degrés I

Mansion of North / KheKher Frieze

p. 166 f

East Across total facade, between pilasters  
and between columns

p. 167

Hieroglyph



MANSION OF SOUTH BUILDINGS

W: Court - West wall 2.10 thick

Open door simulated

N: Facade of M.S.

S: Massif of Heb Sed

Court wall is parallel

P-shaped monument at S end 3.80 across

~~T~~

Tremendous fissure traverse court E-W, filled w/  
masonry, used for access to Pit I

Side ~~and~~ winding passage C to niched  
sanctuary, D <sup>→ simulated open door</sup>

Offering niche for pit P<sub>1</sub> (?)

Facade with 1' single ~~plot~~ plant decor  
only - base, probably emblematic plant  
of S - lotus

Mansion of North Buildings

East facade of court - 3 papyrus columns  
with triangular stem

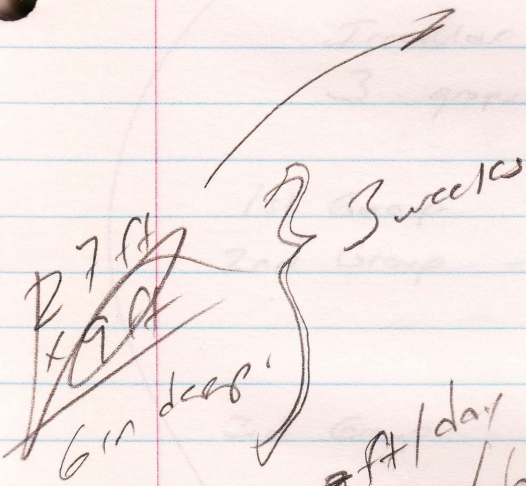
Most ancient of ~~paper~~ papyriform columns



Nick Fairplay

Zoser panel  $9' \times 3' = 81^2'$   
 $9^2$  ft a day @ 6 in depth

$9^2 / 81^2$  days per panel w/  
one man



~~27~~ ft/day  
2 x 3 ft/day  
maybe 3 x 3/day

~~Crew of 100~~  
~~1500 panels~~  
~~9 / 1500 panels~~  
1500 panels  
x 9 days  
365 / 13,500 days  
man  
36.98 years one man  
9 days

Crew of 100  $\frac{135}{13,500}$  man days

135 days

Mansion of N.

Buried Tumuli

Filled platform 4.10m above ground  
 Buried vaulted structures cased w fine limestone  
 within fill D, E & F  
 E Building abutts M.N. on its W. side  
 Other vaulted structures S & W of D  
 entirely destroyed - once buried w/in platform

WEST  
 4 Rectangular structures I, J, K, L once  
 cased in fine limestone, vaulted, buried  
 within debris of platform

N. Court

Entered from serdab court @ N simulated open door  
 Irregular court laid out E-W  
 3 groups of chapels

1st Group - entered @ R

2nd Group - entered by simulated open door @ T  
 possibly <sup>W-facing</sup> facade above inner court like  
 chapels of Heb Sed court

3rd Group - entered by simulated open door  
 Square court with alabastr vase sunk in  
 ground  
 Small rectangular chambers on S N & E

Bounded by  
 thick wall on N (N wall lit enclosure), original  
 NE entrance

## SERDAB COURT

Contrary to later more common serdab chambers,  
placed projecting from pyramid face

M. A box

Inclined  $17^\circ$  to vertical, parallel to incline  
of pyramid face

2 holes not necessarily contemporary

2 projecting side walls with representations  
of open doors - double ~~leaf~~ leaf door  
swung open wide

Blind corridor behind serdab penetrates  
pyramid masonry to P1 with turn to E  
into small chamber. = Earlier serdab of  
P1?

N end of court walled off into smaller  
court

W wall of smaller court had engaged fluted  
columns

Chamber O off <sup>Vestibule</sup> corridor behind columned wall

M = Statue?

Chamber S off N end of vestibule

M Another Statue?

↓ Actually carved in relief on 3/4 projecting  
from corner of backing block

Kind of partition

5 traverses - 2 closed, 3 open

## N Temple

Lover, deqres, I, p. 75

E face only face free, W & N faces  
bounded by massif forming terrace

Temple roof about 1.50 m above (p. 180)

Side entrance via winding passage

Maze-like narrow corridors

1.3 m wide measuring off plan Pl. XII

.99 between jambs, or .66 N entrances

Small chamber U - principal point in  
temple - statue of King?

Similar chamber to W for false door or  
stela?

Door - simulated open

Swing open against N wall

Through doorway, one ascends to <sup>2m-high</sup> platform on  
which temple built

2 Chambers entered via corridor M  
with basins, drains

Inner courts I and II

Each w/ 2 engaged columns on S.

p. 74

## Fluted Column Facade

Each court - 2 pair fluted columns

↓ Actually carved in relief as  $\frac{3}{4}$  projecting  
from corners of backing block

Kind of portico

5 traverses - 2 closed, 3 open

Temple  
badly  
denuded

Like  
T, Entrance

Colonnade

vs.  
to be  
building  
dummy

N. Temple

Lower, degrees 2

20 flutes like Greek Doric columns

p. 75 - 3 Root terrace of temple formed of stone beams with rounded undersides imitate wood beams

- Tops of beams not browned by sun nor finished - covered by layer of clay

Top of temple forms molding - flaring cornice like Temple T around court interior.

These actual load-bearing columns, first attempt at a portico

*Mc*

Note:

2 Courts

2 Porticoes

2 inner sq. chambers

↳ Chamber U and mate to

North

for statue

2 Libation chambers

E side Corridors stairway

~~Red~~ Doubling of major elements

*Mc*

Accessed only by entry below, circumambulating

entire temple to NE corner, proceed up

and ~~west~~ <sup>south</sup> above lower entrance to north

Descent to substructure begins N of temple in extended platform, becomes subterranean under court II

Western Tumuli

3 Tumuli E → W  
I, II, III

Tumulus I

Panelled E wall shared w/ South Court  
Top is terrace 5 m. above ground level in court

Tumulus II limiting on W is higher

Abutts pyramid at SW corner and leans against it for entire length

Casing of pyramid only begins above level of Tumulus I terrace @ 4.70 m

T<sub>2</sub> comes around NW corner <sup>to join</sup> terrace extending from temple, band ~~area~~ of T<sub>2</sub> terrace continues along E side of temple terrace

Tumulus Lower: Here again Pyramid (and temple) support tumulus and preexisted (note: contra Stadelmann)

Vast massif formed by partition walls between which filling of waste material

Tumulus II

Separated from T<sub>1</sub> by trench 2.80 m wide  
Filled in Dyn 3 with stone material  
1.25 W of edge of trench, is casing @ 6° incline 3 m thick against 2nd casing

Andy Obermann

First of casings hardly erected

Whether destroyed mostly, or having served  
a finish never put in place

2nd casing, elevated 2.50 above level of terrace

Superstructure 25 m wide x 400 m long

3 m above level of terrace Tumulus I

Similar in form and construction to S. Tomb

but vaster

Cross section lightly vaulted top

Access to subterranean galleries

P<sub>4</sub>, P<sub>5</sub>, P<sub>6</sub>, P<sub>7</sub>

And descending galleries E at N end  
of tumulus.

As Fitch thought, galleries were mines for  
great quantities of clay for core masonry  
of massifs

### Tumulus III

Belonging to enclosure wall

2 parallel walls spaced 17.60

W 6 m } thick

E 5 m }

Filled w/ debris

Small house found buried in debris fill, 120 m  
from N end of massif

Summit level with cart walk behind parapet



N. Court

Lower, degrees V, 183f.

MAGAZINES

Massif of N. Enclosure wall.

Instead of 2 parallel walls, have 4

Behind fine paneled limestone exterior wall,  
rubble wall 4 m wide

Then small walls, 1.10 m bond to first  
by partition walls - 90 spaced 2m  
forming regular partitions

2nd set of partitions between walls 1.10 m wide  
N. Court, on S, 1.65 m wide

Aspect of magazines, a heap of grain (barley)  
collected from one of enclosed spaces  
"Windows" in ends of magazines facing central  
corridor

Pit in central corridor 60 m west of platform  
Gives access to subterranean magazines  
where first food fruit, bread

Lower p. 184. These subterranean actual  
galleries counterpart to dummy  
galleries in massif above

Central alley above must have been left  
free for access to Pits to fill magazines after  
harvest

Note  
Compare platform  
with gallery arrangement  
at back of platform  
at Amarna, Hall "in  
Heraopolis Temple  
= Receipt of  
offerings over the  
wall into temple  
precinct

Lover, de grés I, 185

185 NE angle enclosure wall - No core wall, only  
outer fine limestone bastioned wall 1.75 m thick

Area particularly overturned, disturbed

Large breaks in Enclosure wall 25-70 m

west of NE corner to take away stone  
during quarrying

Or not completed except outer casing

Found here blocks of parapet and  
w/ small relief rectangles indicating  
outer fine wall was completed

N. Court p. 185

#### PLATFORM

2.80 m higher ground level than base of other  
structures in enclosure

Platform 15 m on a side

cut out of rock

Stairway to South

Rock cut wall Fine limestone casing around core not

At South completely finished to corner

Lover: gigantic table of offerings

Rock on upper part of platform slightly cut down

8m sq. raised in center

Sq. hole to West of stairway, 2.5-3 m X 1.50 m deep  
sim. to pit in front of S. ~~camp~~ platform stairs?

Enormous numbers of blocks around platform  
and <sup>stone</sup> chips

Contents for partition walls? - Destroyed, especially  
S. of platform

N. Court.

Lower, degrees, I p. 186

RAMP

p. 185 Debris near NE of platform is vast ramp  
p. 1 to carry material over the enclosure wall.  
For builders to bring material after Enclosure  
Wall finished

p. 186 Passages along E & W sides of platform  
lead to long corridor sanctuary  
in N. Enclosure wall  
Originally gave access to Pits 8 & 9 in  
Magazine corridor

N Area not intended as a court but vast  
dumping area from other constructions

Possibly intended small court S. of platform  
access via descending stairways from terrace

Lower terrace than that around Temple  
(by 2.80m possibly)

Rock Cut Tombs

At C 4 tombs descend to common  
gallery w/ series of chambers

2 alabaster lion head tables from here

## DRY MOAT

Swelin

### Pyramid Studies

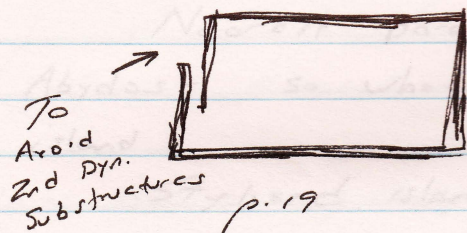
p. 13

Area 750 x 600 m

Width 40 m

Depth to 26 m

Complex at Netjer, Khaf more to S and W



Channels show on aerial photos as shallow depressions of cleaner or more undisturbed sand

N Side of S Channel <sup>outer</sup> not exposed  
E Channel never excavated; shows in aerial photographs, so NE corner; runs  $\approx 60-20$  m E of Userkat Pyramid,  $\approx 120$  m from E. Enclosure Wall

p. 17

N Channel - 70 m from N. Enclosure Wall  
W Channel SW Corner is 40 m north of Sekhemkhet Pyramid

p. 19

Ahmad Moura poked up <sup>west</sup> edge of channel clearing tomb group east of Ptah holes  $\approx 105$  m from W. Enclosure Wall

### Inner S. Channel

S edge to N of Unas complex  
N side few meters from S. Enclosure Wall  
Possibly 27.5 m deep

p. 20

How was Dry Moat crossed?

p. 21 Ascending ramp on inner <sup>sides of</sup> S. Channel

FIRST STAGE - NETJERYKHET

5-6th Dynasty tombs built on platform between moat and Enclosure Wall

Rock cut tombs in walls.

Mc.

PARALLELS

Nearest parallel perhaps the Osirion at Abydos - so whole Netjerykhet complex on island

Stylized island of Nile?

Quarry - source of local stone?

Mantabas M-3

Mantabas at N & S

S. Altar

B-shaped Monuments

Hab Seal Charvats

O'Connor Expedition, Vol 23, No 3 (1991)  
and Colloquia of Memphis

# FIRST STAGE - NETJERYKHET

## Swelin

p 63

Enclosure - enlargement by extending E wall  
N-ward and S wall Westward  
New walls on N & W sides

NE  
entrance

{ N wall and NE entrance still seen behind  
Mansion of the N  
Comp. Khasekhemwy enclosure & Western Mastaba

Building Askew

{ Comp. Peribsen, Khasekhemwy  
at Abydos, possibly Hierakonpolis Open  
Court

S Tomb

Mastabas M1-3

Mansions of N & S

{ Off center to N-NW like  
Mound in Hierakonpolis Temple  
enclosure and Khasekhemwy  
Funerary Palace

S Altar

B-shaped Monuments

Heb Sed Chapels

O'Connor / Expedition, Vol 33, No. 3 (1991)  
and Followers of Horus

Stages - Netjaykhet  
Lower, Pyramid Studies

p. 6 summarizes Kaiser - 'gradual change from mastaba - pyramid accompanied by gradual development of complex'

Lower: change not at all gradual

M2 is simple revetment to protect M2

M3 simple elongation to E

M1-3 changed all at once - new masonry style

p. 7 As Kaiser, thick wall of black masonry limiting Maeson Nord is probably first N wall of complex

But abutment of this wall to E Enclosure wall where false door bastion exists, is not acceptable

So: earlier wall not niched, or mudbrick

Or thick wall in question is not outer N wall of first stage but inner wall for massif

p. 9 "Out of question that heb sed court chapels originally constructed in three groups

No finished surfaces buried within 'later' massif masonry

Same goes for Mansions of N 95.

Simulation architecture vs Functional

} Symbolic for Ka of King in Afterlife

} Functional to carry out funeral ceremonies

Lower, Pyramid Studies

p. 9 Simulation - Symbolic

Heb Sid chapels + Temple T  
Maze of corridors in SE Massif  
Mansions of S + N

Functional - functional

40 columns of Entrance Hall  
Transverse Hall at end of Entrance Hall  
Sanctuary of 'Building Askew'  
Triple Niche sanctuary @ SE Corner of Pyramid  
Offering place ~~at~~ in massif under cobra frieze  
Temple N of Pyramid

Kaiser's criterion to date fictive architecture  
to first stage, architecture actually entered  
and functional to later stage, is not  
applicable

Askew quality, by  $1.5^\circ$  of face of Sanctuary  
and therefore Entrance Hall

Buildings Askew in Abydos Forts  
considerably greater deviation

p. 11 Lower: deviation simply governed by fact that  
W exit in S. Court gives line off-parallel to  
S Enclosure wall

So first enclosure wall more simple - not bastioned  
as in 2nd stage. Present Enclosure Wall built  
after Entrance Colonnade, so E doorway in largest  
bastion did not align with exit



# Lauer, Pyramid Studies

p. 11

Lauer approves idea of Kaiser that relates doubling of tomb to 2 chamber tombs at Umm el-Gaab at end of predynastic

But doubling not, as Kaiser proposes, at Abydos itself since Djer - Umm el-Gaab and Valley Enclosure - because there is no trace at last place of royal sepulchre

Lauer sticks to hypothesis doubling took place at Saggara - Abydos, real tomb vs cenotaph, until Zoser complex.

Revised  
 Books  
 1911 p. 56  
 Zoser

	Natterkhat	Sakherkhat	Zawisat Area	Warden E	Warden F
Lowers	12	14	14	7	8
Angle of incline	74°	71-75°	62°	74°	74°
Stair	C	F			

Concise

Sekhemkhet p. 52

One step only remains

400 feet sq. - larger than Djoser

Unfinished state, height 23 feet

14 skins (accretion layers)

Angle of incline  $71-75^\circ$

Each pair of accretions = 1 step as Djoser

So completed  $\Delta = 7$  steps in place of 6

230 feet finished height - 30 ft. higher than

Djoser

Blocks roughly squared, set in tuffa mortar

taken from tunnelling, underground passages  
with limestone chips mixed in.

laid in alternate headers and stretchers  
like mudbrick

Boundary stela of Djoser found reused in  
masonry - so later

Reisner

BmFA

1911 p. 56

Zawiyet

	Netjerykhet	Sekhemkhet	Zawiyet Aryen	Meidun E <sub>1</sub>	Meidun E <sub>2</sub>
Layers	12	14	14	7	8
Angle of incline	$74^\circ$	$71-75^\circ$	$68^\circ$	$74^\circ$	$74^\circ$
<del>Accretions</del>					
Steps	6	7			

Note - Two years before Netjerykhet (1911)

measured 6 years earlier

Note - Claim that the pyramid was finished for

the masses

Note: MR Part II Addenda

Collapse of corridor ceiling during construction. Was Sakhamkhot left incomplete because builders feared structural failure?

Revised  
Part II  
1911-1912  
Subject

Number	Section	Notes	Remarks
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9
10	10	10	10

## Later Step Pyramids Gen

Huni - name on cone of Elephantine Pyramid

So builder of 7 provincial pyramids?

Symbol of <sup>presence of royal Majesty</sup> centralized state now

germinated along Nile Valley

see Stadelmann: Given up when Sneferu began

first of lasting royal residences

prov. ~~pyr.~~ pyramids given up

Sekhemkhet - When an alabaster coffin dropped into  
burial chamber as temporary tomb  
during building to already make  
functional the rising mound as a  
"possessor of life?" Compare evidence  
of smashed alabaster sarcophagus in  
Netjerikhet, pieces packed around  
granite vaults.

No ba  
formed, no  
real personality  
as King

Was 2-year old child in S. Tomb  
actually Sekhemkhet? Not having gone  
through his Khayem, he could not be  
buried in pyramid - only informed ka  
so placed in S. Tomb. Pyramid given up.

Note  
Sekhemkhet  
burial scene  
in West Mastaba!!

When Netjerikhet died - only male heir  
an infant (Note # of infant burials  
under Step Pyramid) He died @ 2 years  
worth of pyramid building

Note - Turin gives Netjerikhet (Pjoser)  
successor 6 years months?

Note (Lauer Histoire, p. 191 - Jewelry for  
"tiny person")