

**ANTH.106:  
Introduction to Archaeology.**

**Special Lecture no.1:**

**An additional guide to Mid-Term Exam-1**

**ASSIGNMENT:**

**Use provided Q-sheet to answer ...**

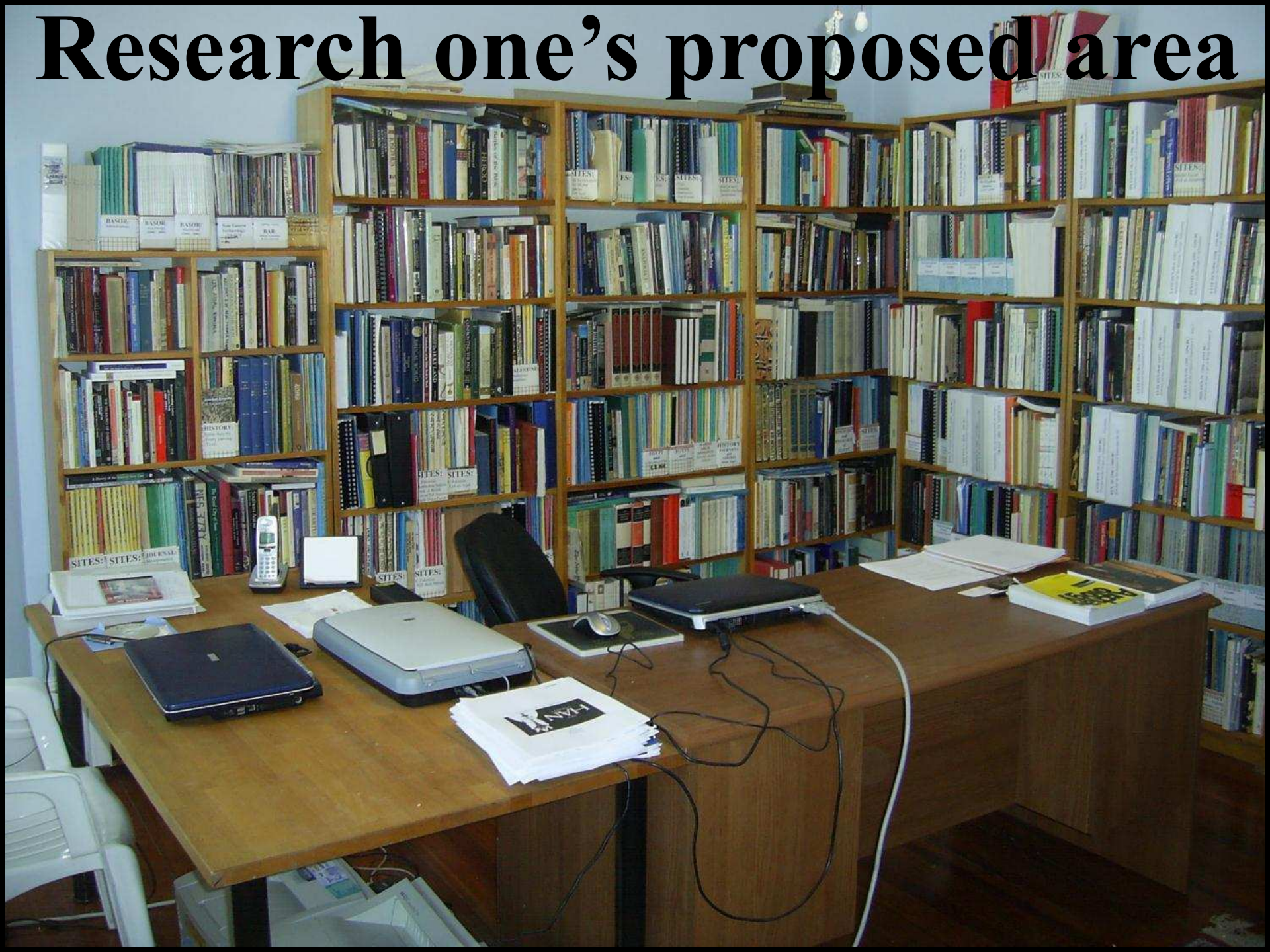
**(1) Research design; (2) Loc.; (3) Digging;  
(4) Recording techniques; (5) Analysis; +**

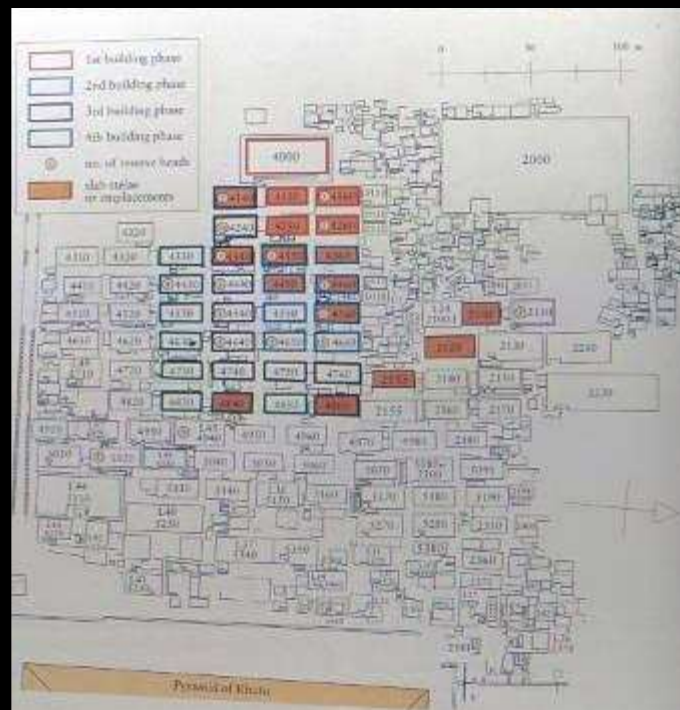
**(a). Defining a potential project's  
Research design:**

**Step-1: Familiarizing oneself  
with the time period, materials,  
issues, etc. in order to design an  
adequate research proposal:**

**i.e., Why survey/dig a specific site?**

# Research one's proposed area





# OLD KINGDOM:

Dyns. 3-6:  
2700-2200 BC

“Divine”

Kingship

Height of power



2600  
BC  
4



Dyn.4:  
Sneferu



Dyn.4:  
Sneferu



Dyn.4:  
Sneferu

4



Dyn.4:  
Khufu+



Dyn.4:  
Khafre



Dyn.4: Menkaure

5



Dyn.5: Sahure



Dyn.5 Niuserre



Dyn.5:  
Unas

6

EB IV  
2200  
BC



Dyn.6: Teti



Dyn.6: Pepy I



Dyn.6:  
Pepy II

# BACKGROUND: Old Kingdom Dyns.3-6 (c. 2700-2200 BC)



## Old Kingdom Sinai expeditions:

- "Royal missions" from palace
- Turquoise & copper mining
- Average = 1,400 personnel (+/-)
- Maritime transport (e.g., 5 ships)
- Overland component (donkeys)
- 250 km distance (8-10 days)
- Normally in summer
- Guides & "interpreters"? ('w)

## Wadi Maghara



# Old Kingdom expeditions to South Sinai:

## 1. Expedition leaders:

- Commander of troops
- Administrator of foreign lands
- God's treasurer
- Pilot
- Captain
- Overseer/Controller of officials
- Controller of sea captains
- Elder of the council chamber
- King's son
- King's friend

## 2. Officer:

- Overseer/controller of officials
- Sea captain
- Pilot

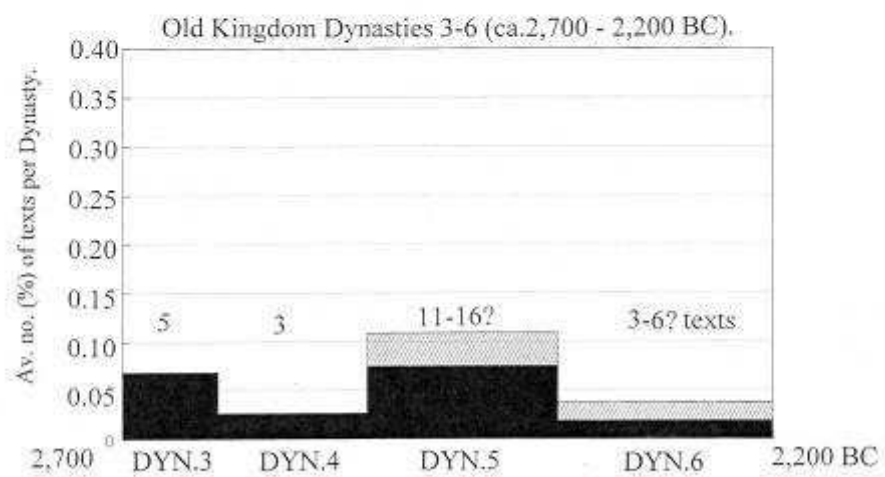
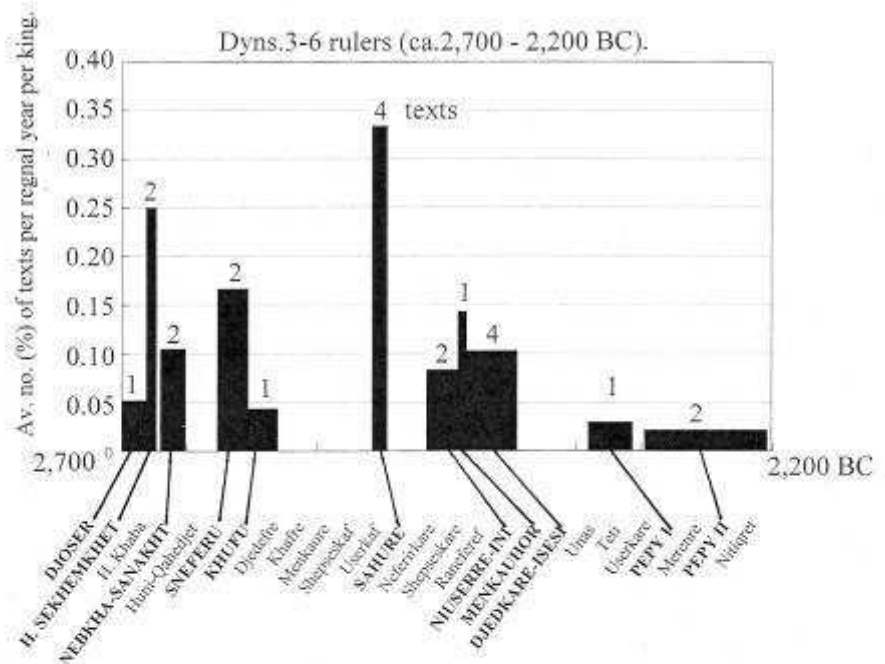
## 3. Subordinate officers:

- Judge
- Overseer of scribes
- Controller of copper
- Overseer of interpreters
- Second-in-charge of interpreters
- Leader of recruits
- Overseer of 10

## 4. Workforce:

- <Egyptian labourers>
- Sailors
- <interpreters>
- <non-Egyptian labourers>

# Old Kingdom Impact upon South Sinai.



\* Sekhemkhet: 2 texts at W. Maghara in 8-year reign = 1/4 yr. av. (0.25)  
 \* Sahure: 4 texts involving Sinai in 12-year reign = 1/3 yr. av. (0.33)  
 \* Pepy II: 1-(2) texts involving Sinai in 94-yr reign = 1/47 yr. av. (0.02)

MEDITERRANEAN SEA  
**DYNs.3-6 direct Egyptian exploitation**



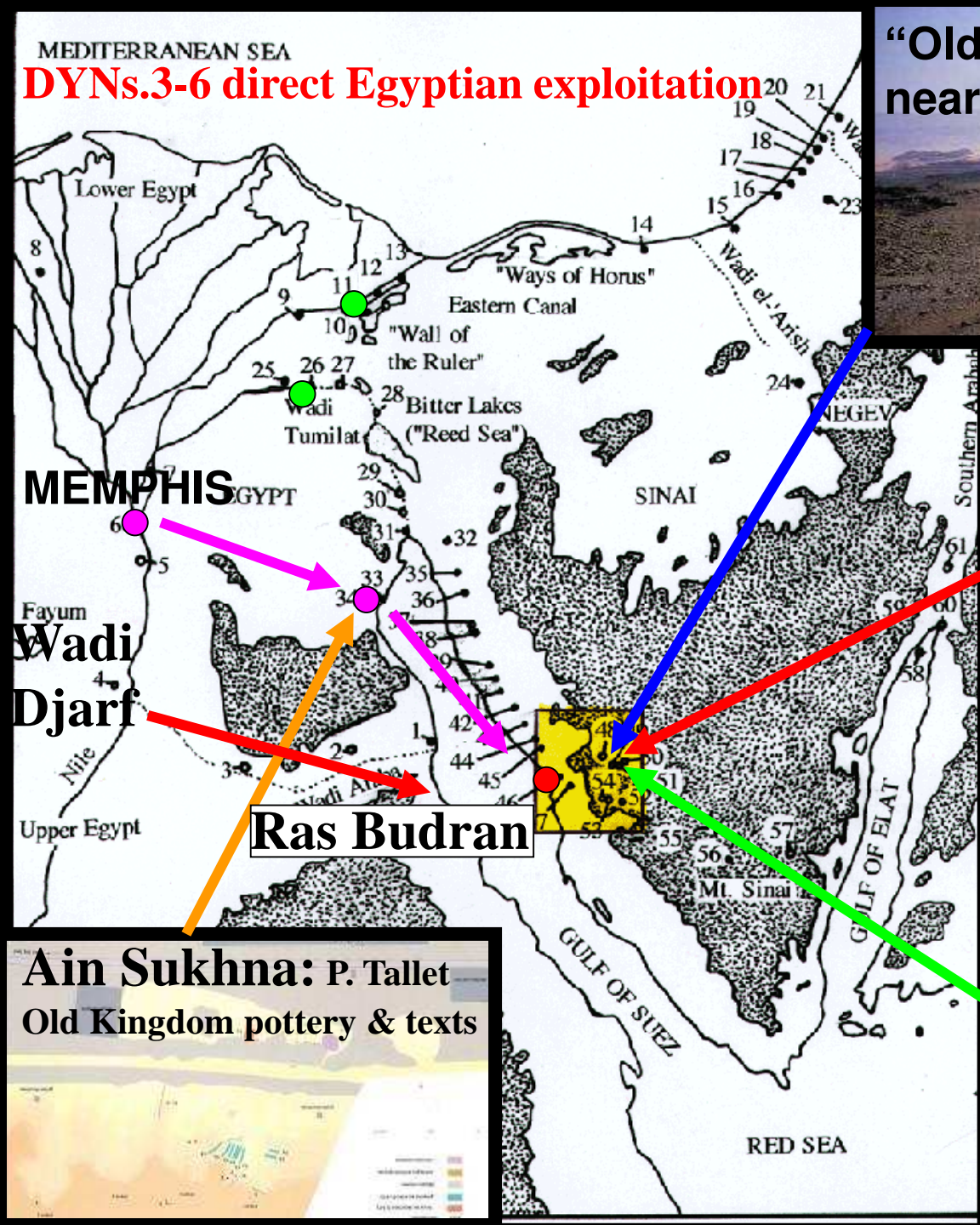
**“Old Kingdom” Site 702B  
near Serabit el-Khadim**



**Wadi Kharig: Dyn.5**



**Wadi Maghara: Dyns.3-6**



**MEMPHIS** EGYPT

**Wadi Djarf**

**Ras Budran**

**Ain Sukhna: P. Tallet**  
Old Kingdom pottery & texts





## **Ain Sukhneh (SW of Suez):**

Old Kingdom & later remains;  
Prob. facilitating departures for  
Ras Budran (South Sinai).

**Also O.K. remains at  
Wadi Digla (SCA).**

**O.K. at W. Gawasis**

**Example of rock-cut cartouches:**

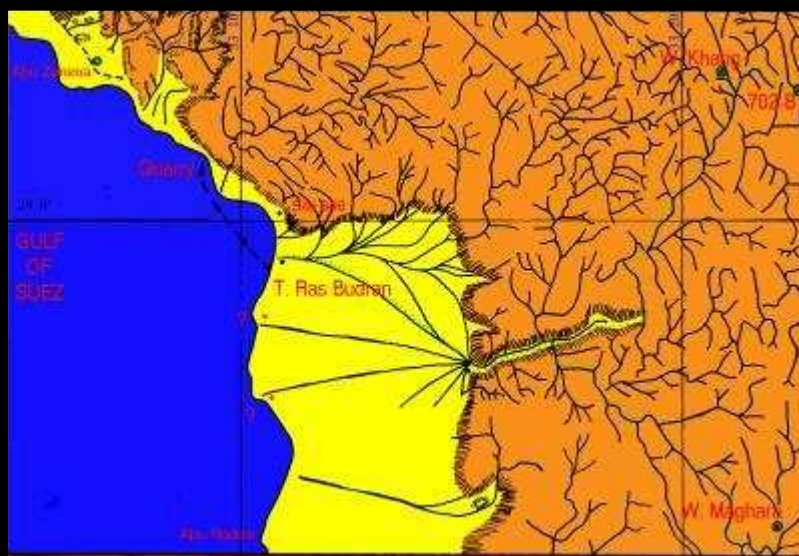


# Late Old Kingdom ships:

Model based on Sahure' (Dyn.5)

Depiction of sea-going vessel.

e.g., 5 ships to Sinai



S. Sinai Bedouin: Old Kingdom 2700-2200 BC



Djoser  
Dyn.3



Sekhemkhet  
Dyn.3



Sanakht  
Dyn.3



Sneferu  
Dyn.4



Sneferu  
Dyn.4

Iwnwt



Khufu  
Dyn.4



Sahure  
Dyn.5



Niuserre  
Dyn.5



chief  
of  
h3st  
Djedkare-Isesi  
Dyn.5



Mntjw  
Pepy I  
Dyn.6



Fortified/defendable mining camps

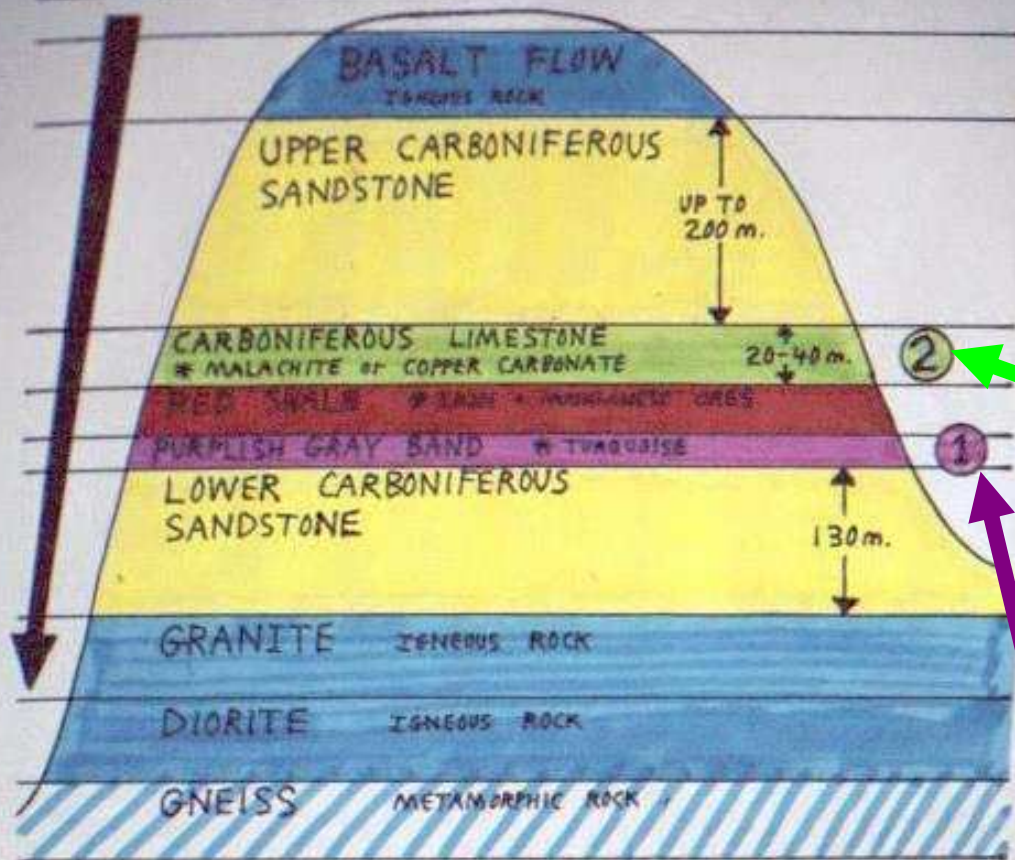


**Wadi Maghara: Old, Middle and New Kingdom mines and mining camp.**



# GENERAL GEOLOGY OF SINAI

## WATER-CUT VALLEYS



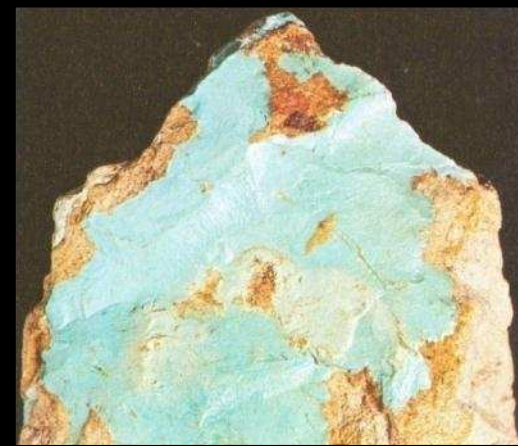
NOT TO SCALE

① { mfk3t = mefkat, "TURQUOISE" CDME p. 106

② { hmt (?), "COPPER" CDME p. 169



Copper carbonate or malachite in carboniferous limestone.



Turquoise in thin purplish-Grey layer under red shale & iron & manganese ores.

**Pharaonic mine/gallery**



**Pharaonic mine/gallery**



# Egyptian objectives in South Sinaitic (since Predynastic):

## Copper:

Statuary; tools; furniture; containers;  
fittings; weapons; other items.

## Malachite:

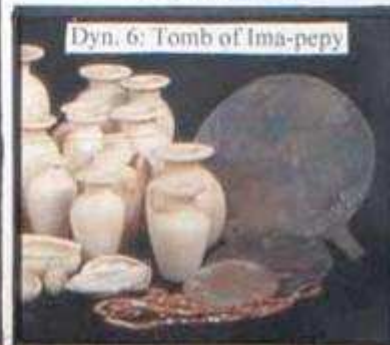
Pigment;  
Cosmetic

## Turquoise:

Jewellery



Old Kingdom axe



# **(b)-(c). Locating/Finding the study site/region in one's research design:**

**Step-1: Further literature search**  
i.e., has anyone worked here/at site?

**Step-2: Locating/re-locating the site/sites** via published descriptions, maps, visiting the region prior to bringing a crew, other techniques.



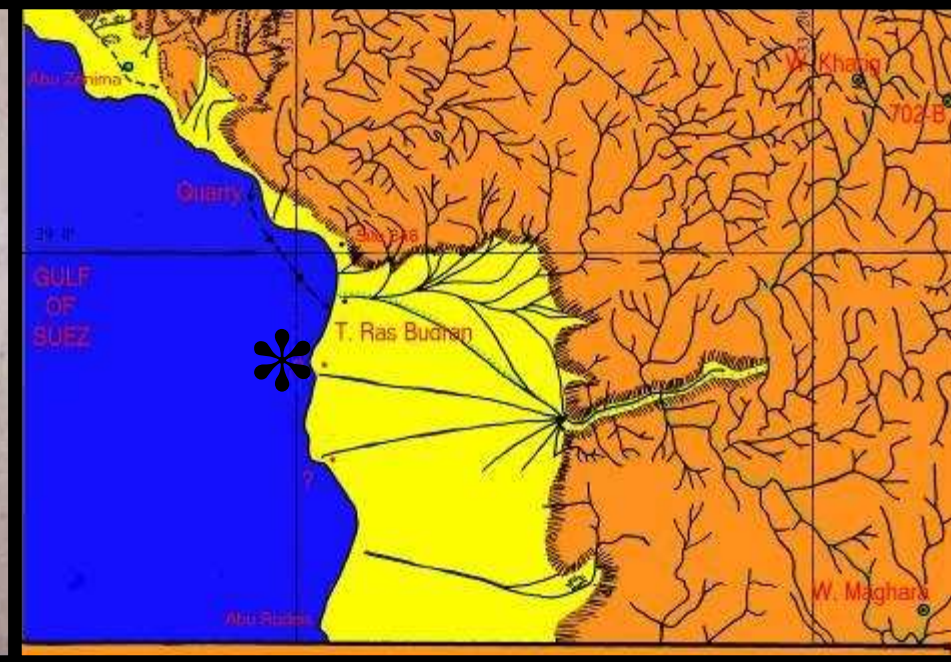
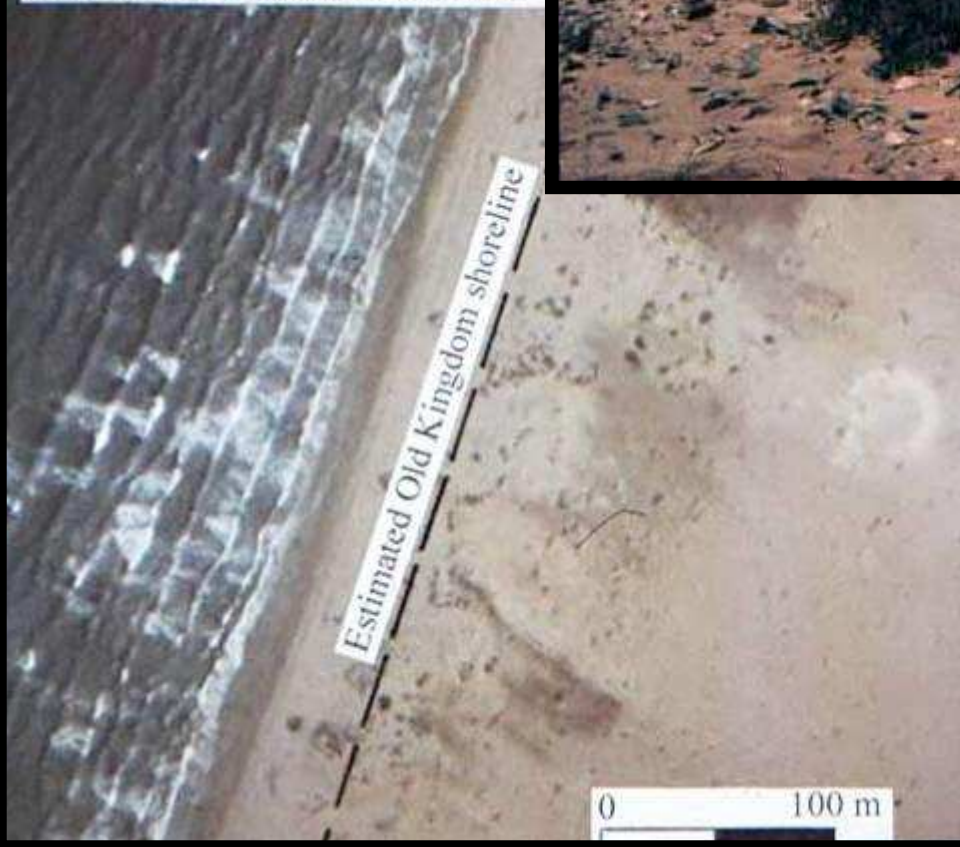
**El-Markha Plain:**  
**Tell Ras Budran**  
**(Site 345)**

**\*1967 Rothenberg**  
**2002, 04, 08, 10.**  
**U. Toronto & UAB**

# 1. Initial discovery:



**S. SINAI, El-Markha Plain:**



**Other sites? Bedu report similar site to South**

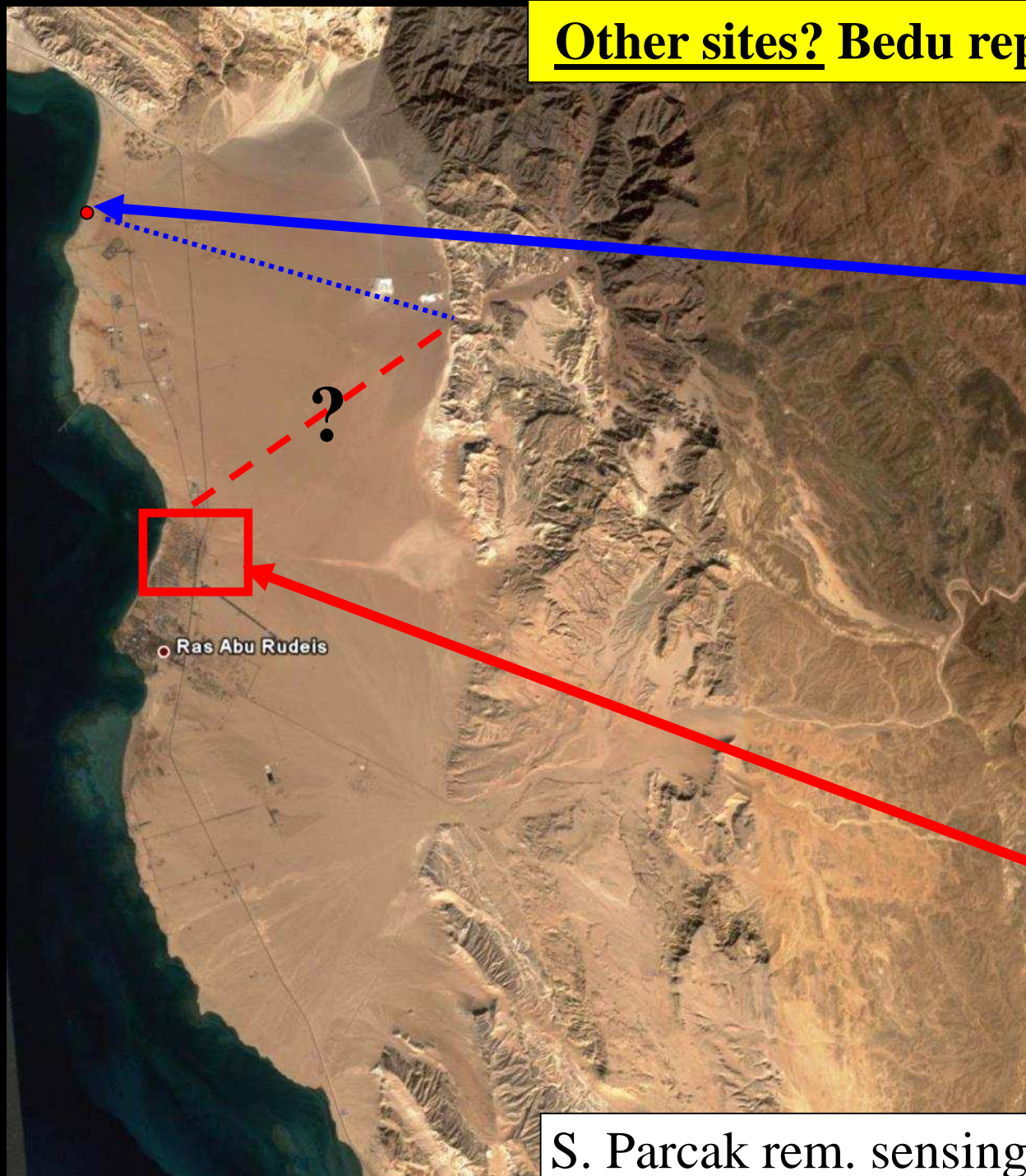
**Tell Ras Budran: 2004**



**Potential site-1 (?)**



**Potential site-2 (?)**



Ras Abu Rudeis

S. Parcak rem. sensing

**(d)-(e). Excavating & recording approaches within study site/area:**

**Specific approaches at Ras Budran:**

i.e., Test pits; trenches; sieving; gridding; drawing; photography; etc.

**Other potential approaches:**

i.e., Textbook section on excavating

i.e., What is collected/sampled?

# Recent excavations at a late Old Kingdom (EB IV) fort at Ras Budran in South Sinai (2002-2010).

**Gregory Mumford** (in collaboration with excavation team)  
(Dept. of History & Anthropology, University of Alabama at Birmingham)

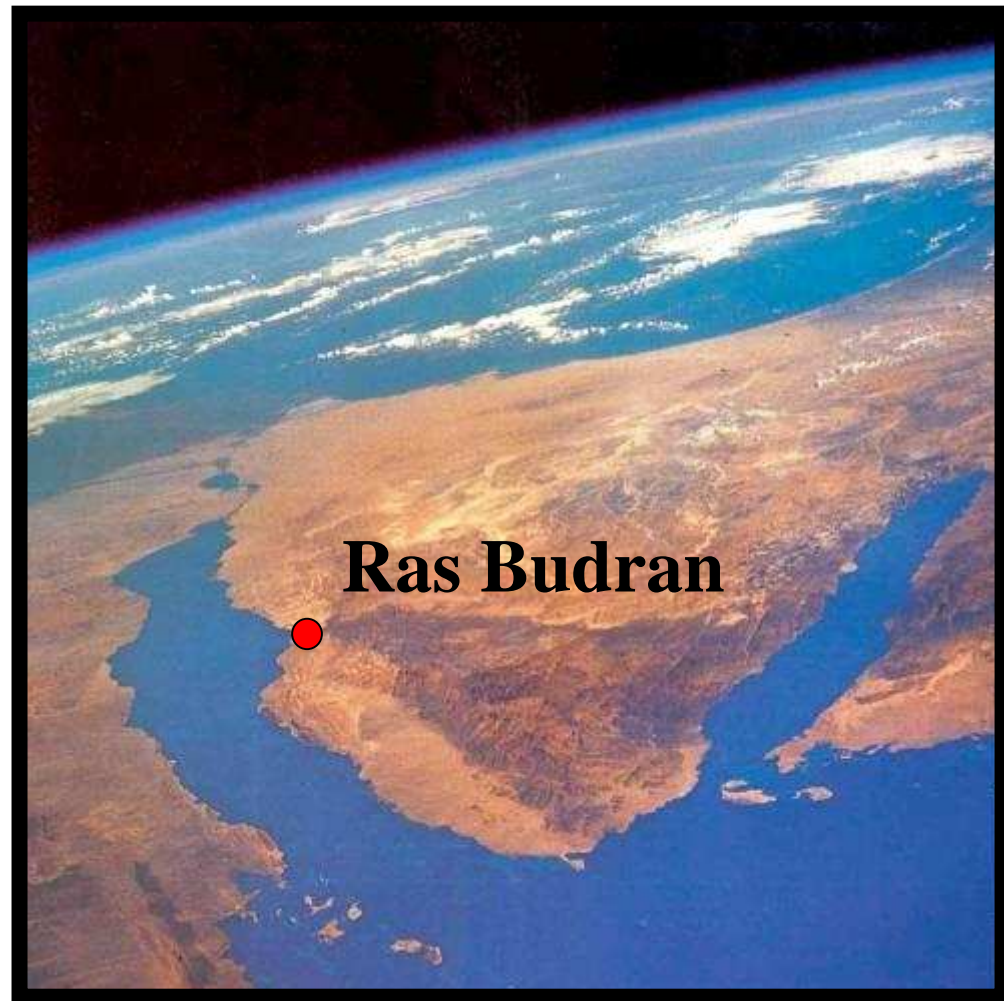
**Co-director: Sarah Parcak (UAB)**

**Funded by:**

- Social Sciences and Humanities Research Council of Canada,
- NASA-UAB LGHO funding
- NSF-Advance Program funds
- Private donors: G. Abott; D. Baker; B. Cahill; M. Karten; Gathings Family; S. Hull; Mumford-Parcak; H. Sheeler; K. Sheeler; M. Yasuda.

**Supported by:**

- The Supreme Council of Antiquities,
- American Research Center in Egypt,
- Dept. NMC (University of Toronto),
- Dept. History & Anthropology (UAB).



# Markha Plain, Tell Ras Budran: 2002 & 2004 staff.

G. Mumford (director & architect); M. Rezk (SCA inspector); D. Donnelly (Supervisor); Z. McQuinn (Supervisor); R. Hummel (Ceramicist); P. Carstens (photographer); S. Parcak (remote sensing); S. Christodoulou (artist-registrar)

Additional 2002 staff: M. Bontty (registrar); C. Gilbert (Supervisor); L. Pavlish (survey)

2004 →



2002 ↓



**June 1 – July 7, 2008: Bedouin staff from Kilo Tisa, near Ras Budran**

**2008**



**Special thanks to Reis Omer Farouk**

**Special thanks to the SCA,  
Suez Oil Company (SUCCO),  
Egyptian police & military forces,  
and villagers of Kilo Tisa (S.Sinai)**



**Initial work:**

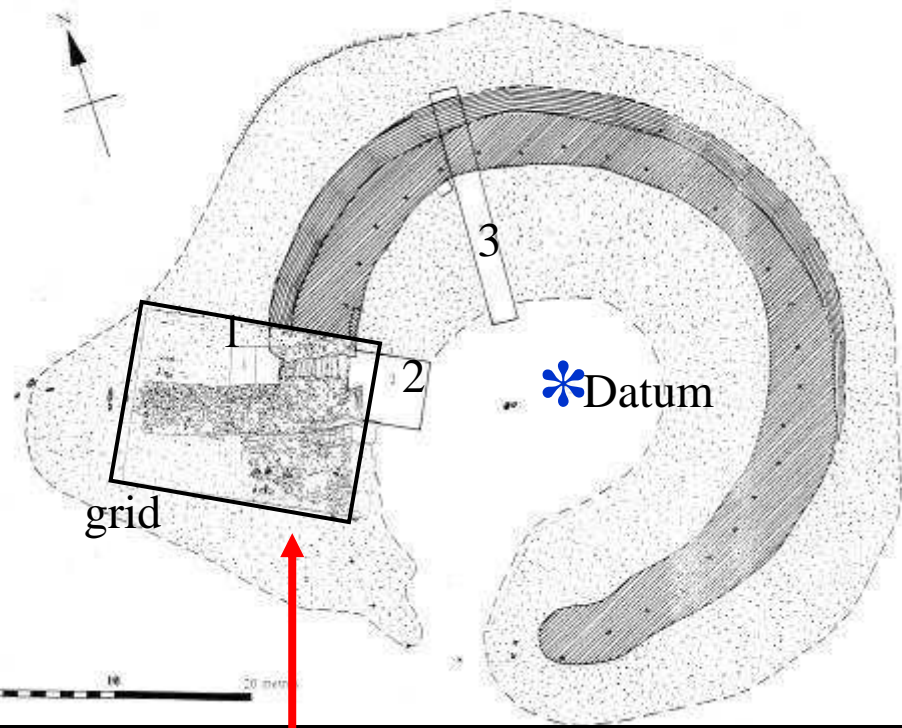
**Summary of the**

**2002, 2004, 2008**

**seasons ...**

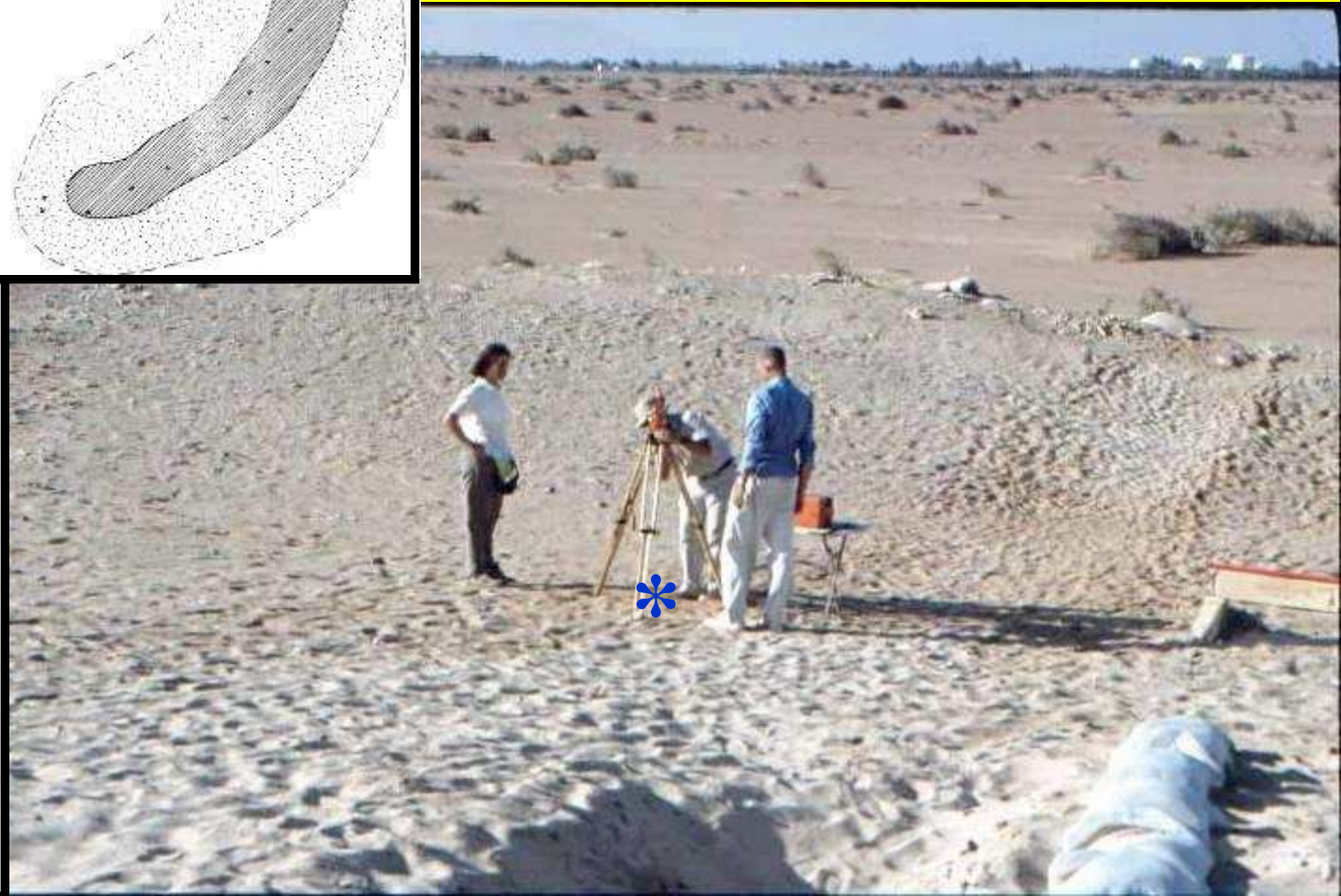
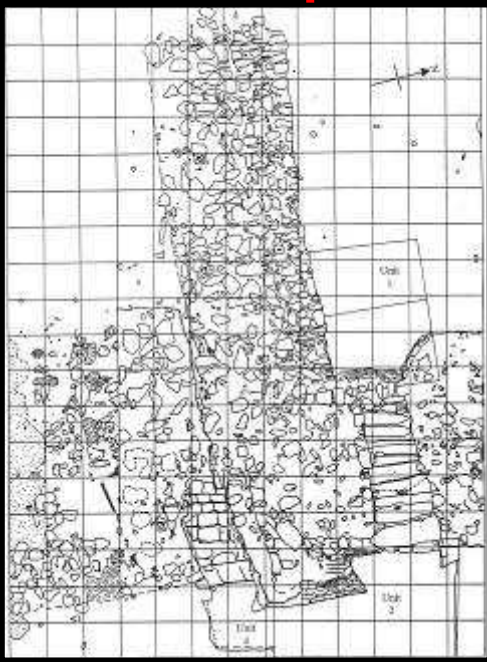


Tell Ras Budran (Site 345):



## 2002 mapping basic features:

- Topographic map
- Along each  $10^\circ$  line (0 -  $360^\circ$ )
- Detail plan (13 x 21 m grid)

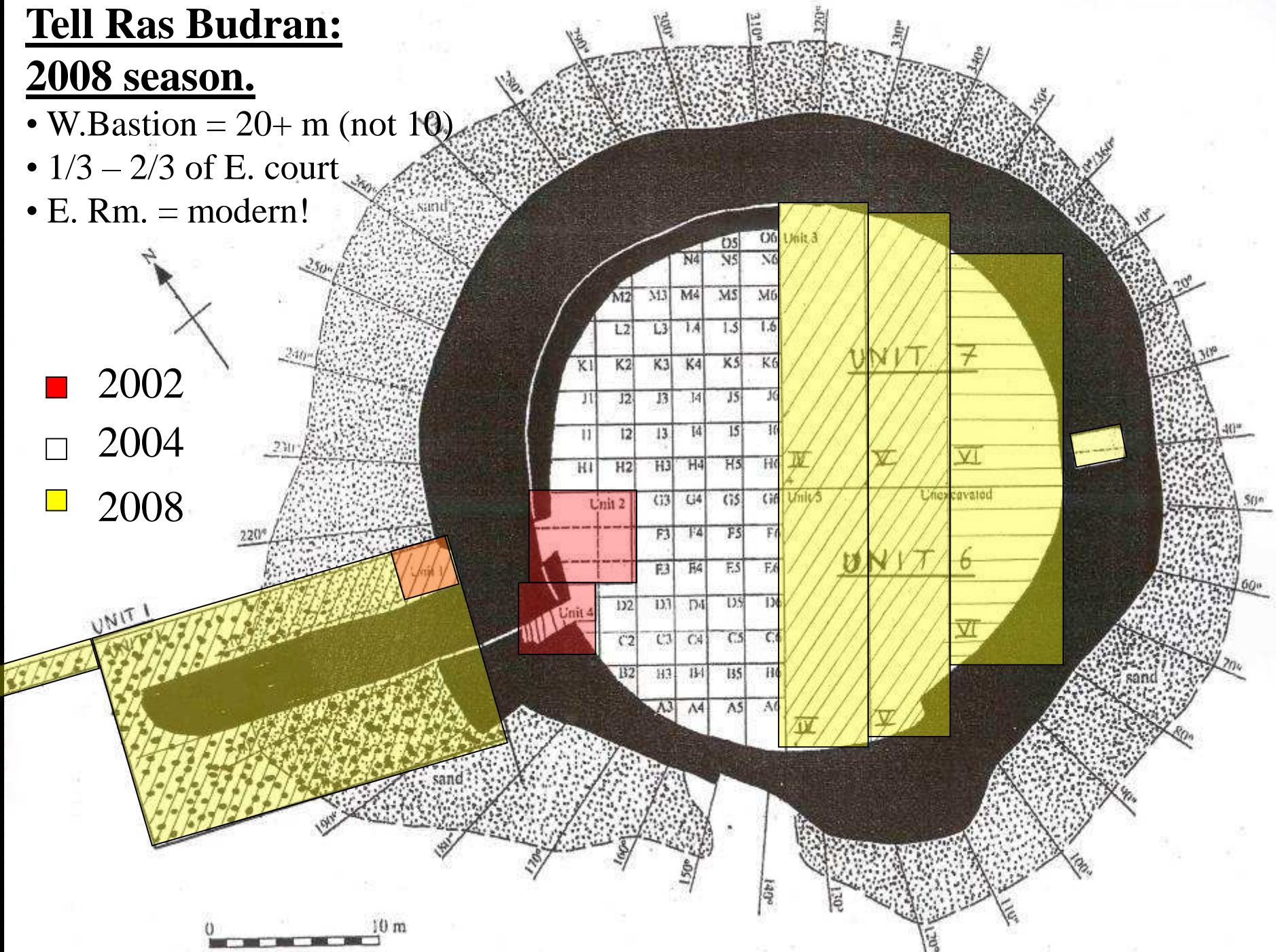


# Tell Ras Budran:

## 2008 season.

- W. Bastion = 20+ m (not 10)
- 1/3 – 2/3 of E. court
- E. Rm. = modern!

- 2002
- 2004
- 2008





## Initial 2002 discovery & sondage:

### Upper occupation: camp site.

- Potsherd scatter & hearth (late OK)

### Lower floor associated with fort:

- Black ash & organic materials

- Cobblestone ramp sealing

interior blocked-up doorway

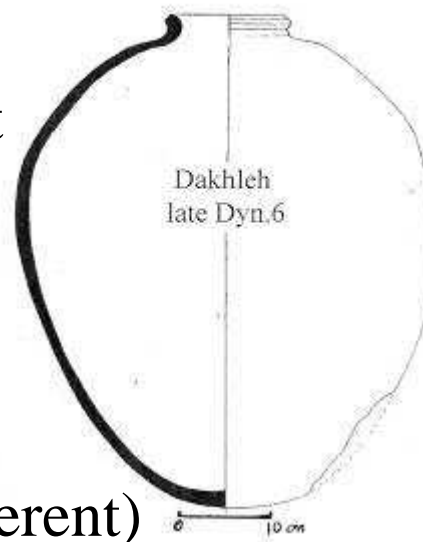
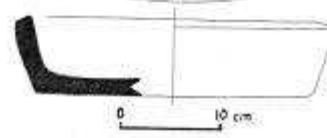
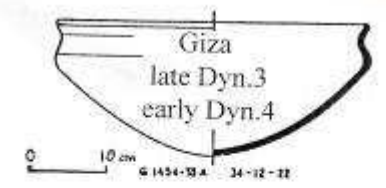
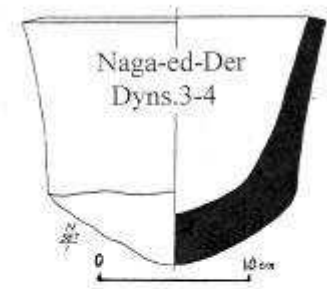
late Old Kingdom



# 2004 → Old Kingdom



Old Kingdom pottery from Egypt.



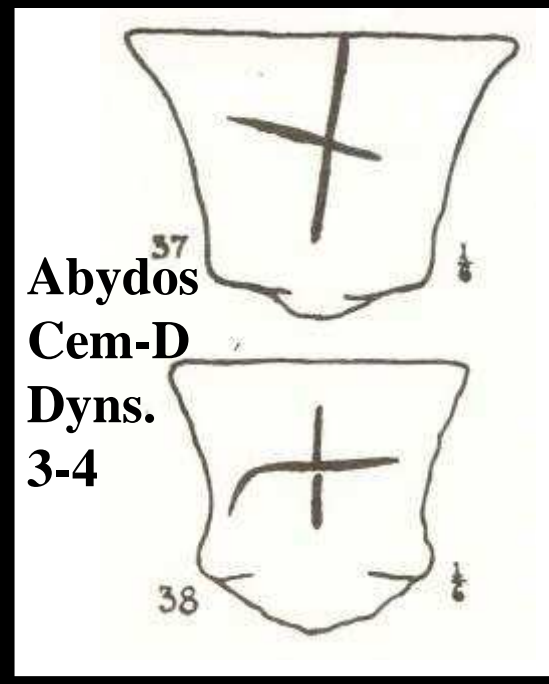
## 2004 season:

- 10% Nile Silt & 90% Sinaitic fabrics
- Pottery from floor associated with fort  
*e.g.*, spouted bowl.

## Egyptian parallels:

- From (late) Old Kingdom contexts  
(note: EB Age Levantine forms = different)

**Tell Ras Budran 2004 & 2008 seasons:  
RB.660: classic Old Kingdom bread mould**



**Abydos  
Cem-D  
Dyns.  
3-4**



# South Sinai, Tell Ras Budran 2004: Old Kingdom fort.



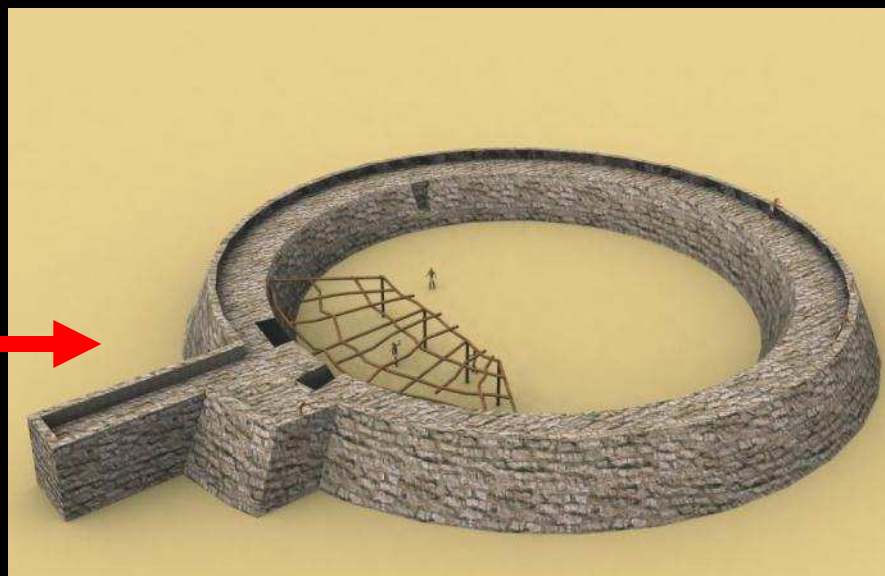
**Original entry**

**2004**

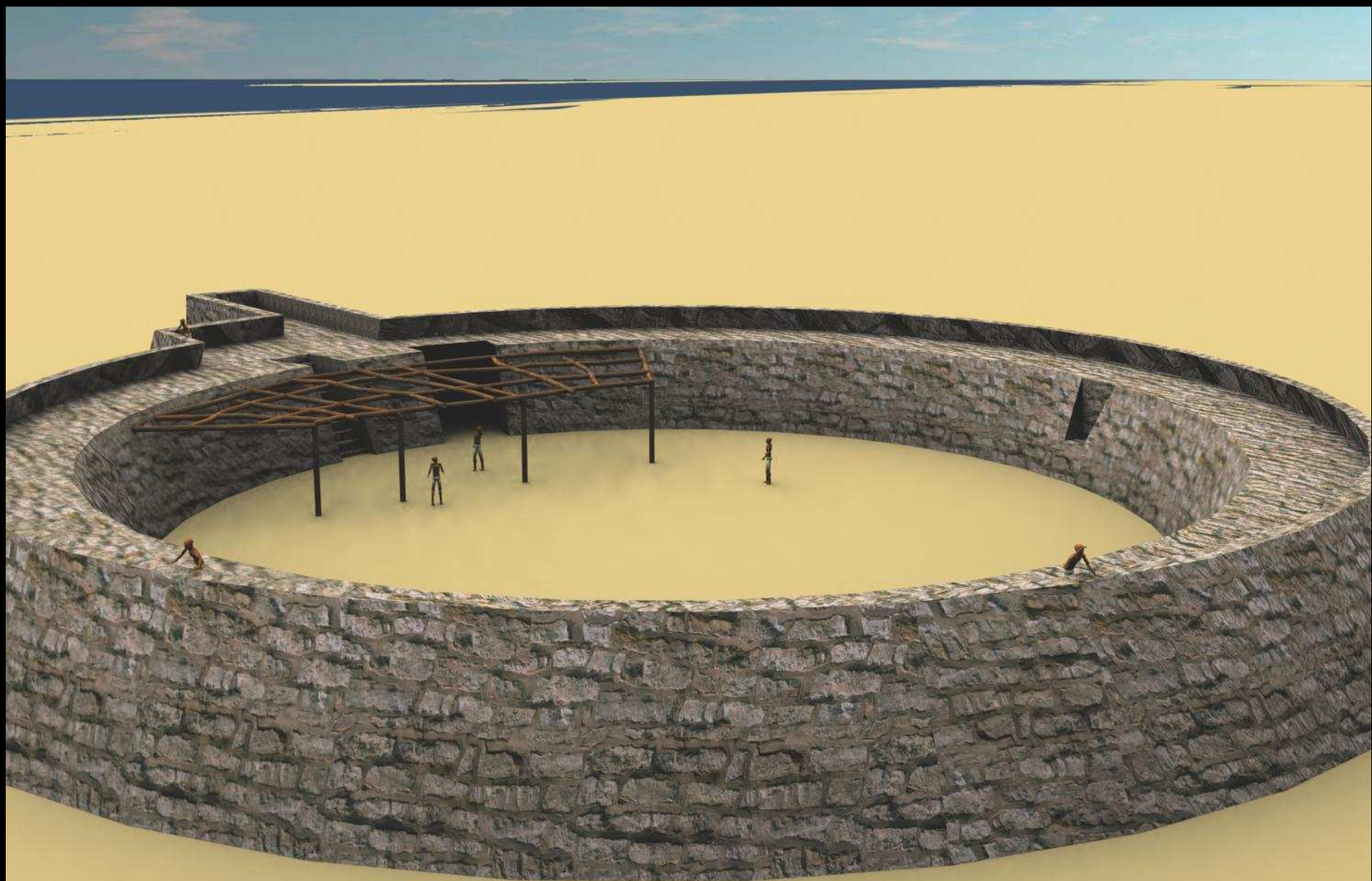
**2008**



**Exterior door fully blocked**



**Minimum reconstruction of fort:** 44 m in diameter, incl. 7 m wide wall-base.  
3.5 m high preservation along northern side; 1 m high screen wall? → **wall 4.5 m high**





**Interior door blocking**



**Additional cobblestone ramp sealing interior door.**

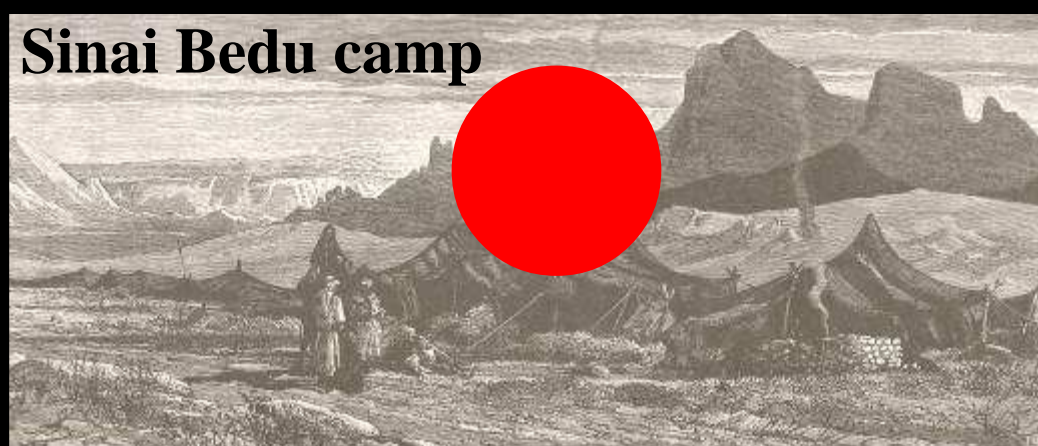


# Tell Ras Budran:

Late Old Kingdom cobblestone ramp sealing interior entry door and passageway



# Parallel(?) with blocked door at Monastery of Saint Catherine



16<sup>th</sup> cent. blocked-up



## Original entryway to fort:

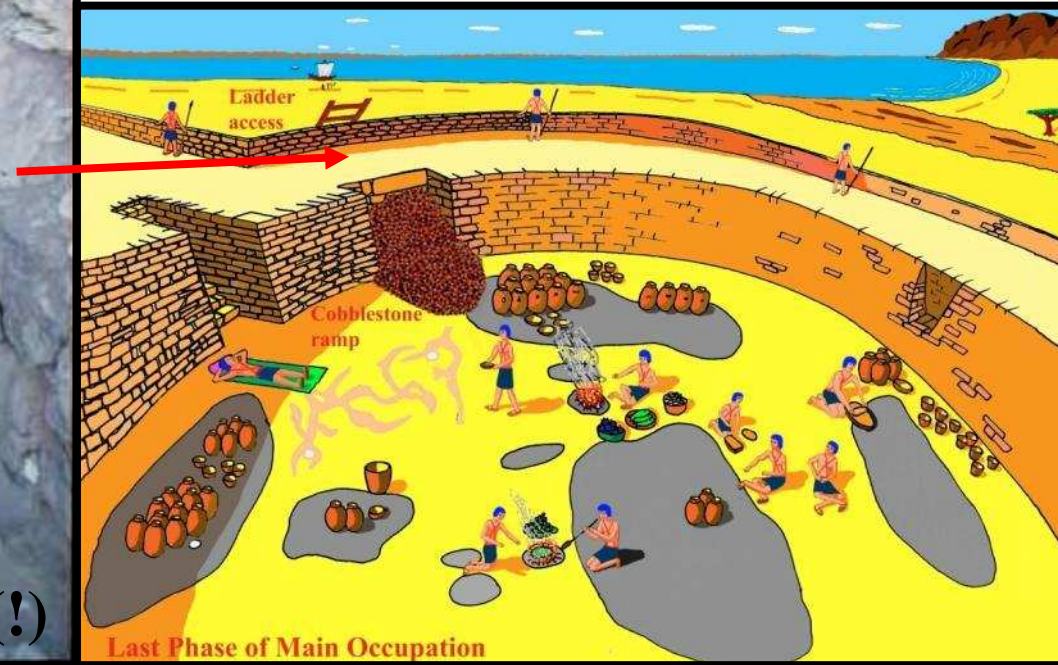
- West exterior door permanent blocking.
- East interior door removable blocking with cobblestone ramp against it.
- Now entry via ladder like fort-tower

## Implications of exterior blocking:

- Entryway = unstable? (some cracking; OK)
- Entryway = a security danger (probably)

## Interior blocking:

- Inter-seasonal cupboard (like Gawasis?)
- Virtually empty (later ceiling breach)

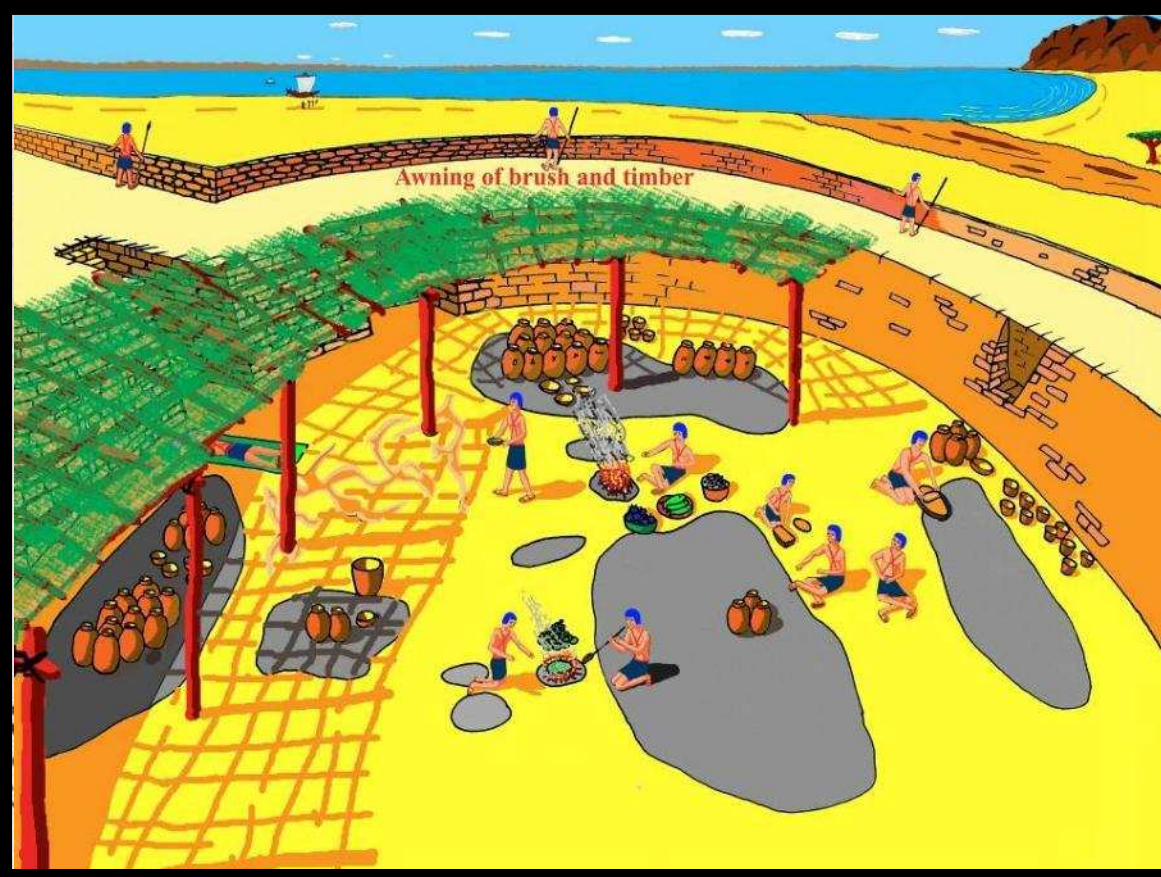
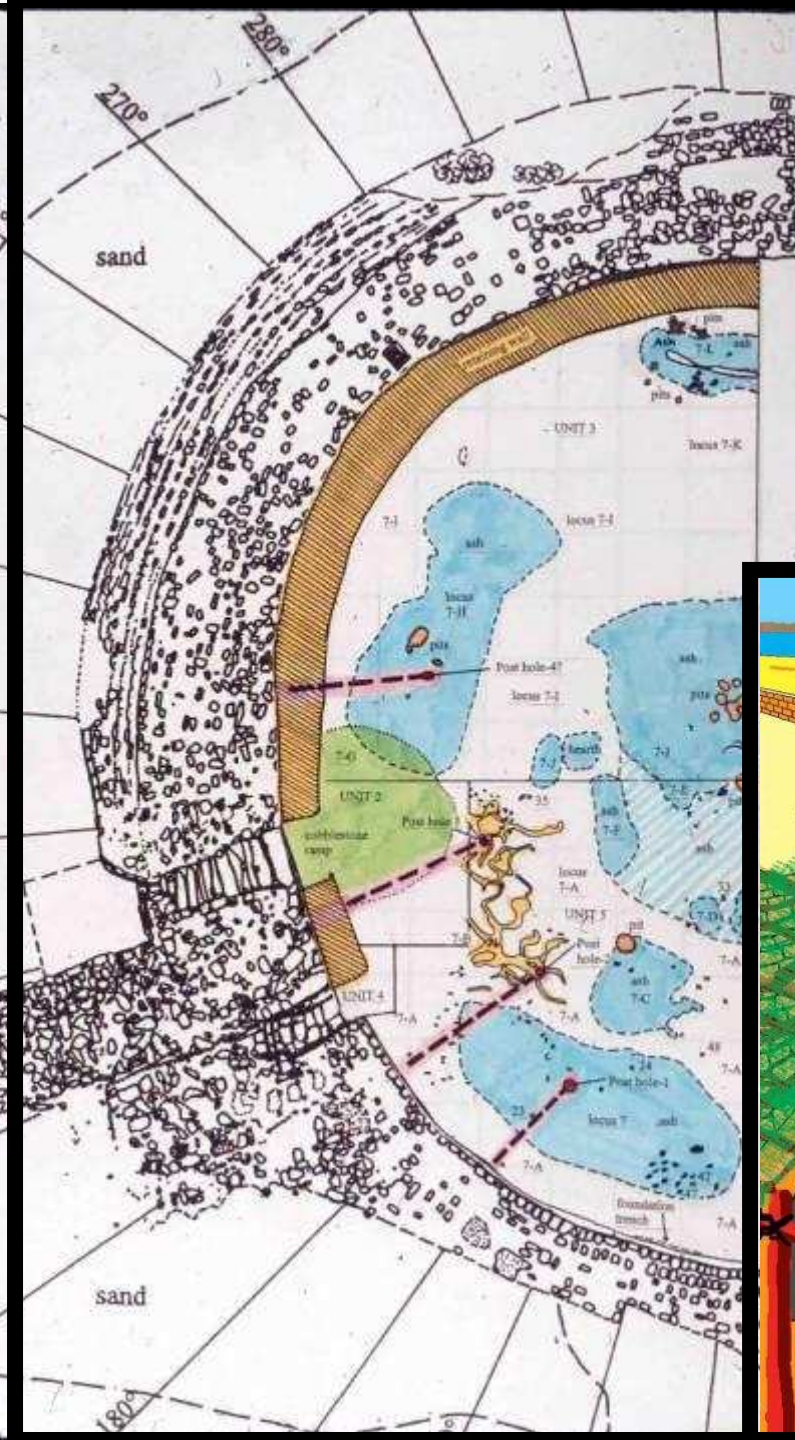


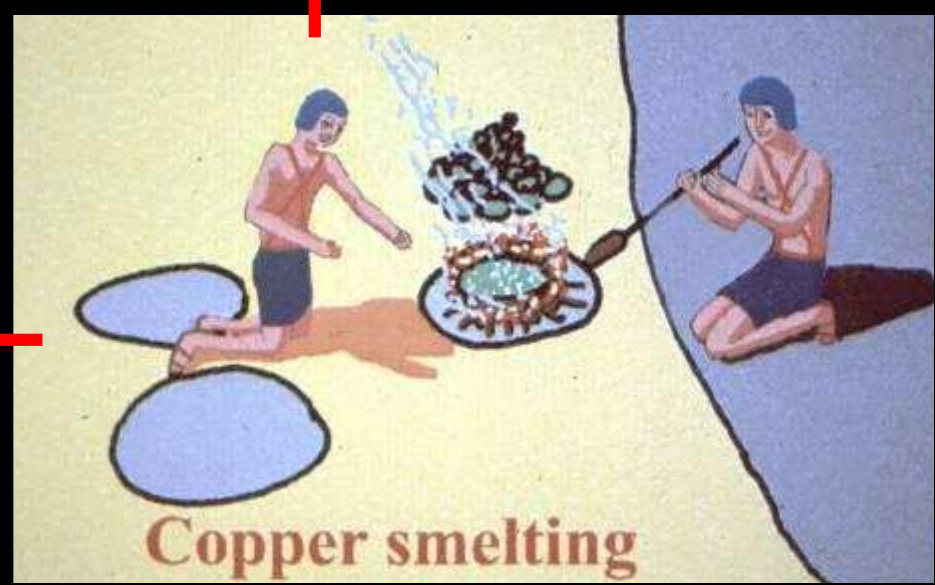
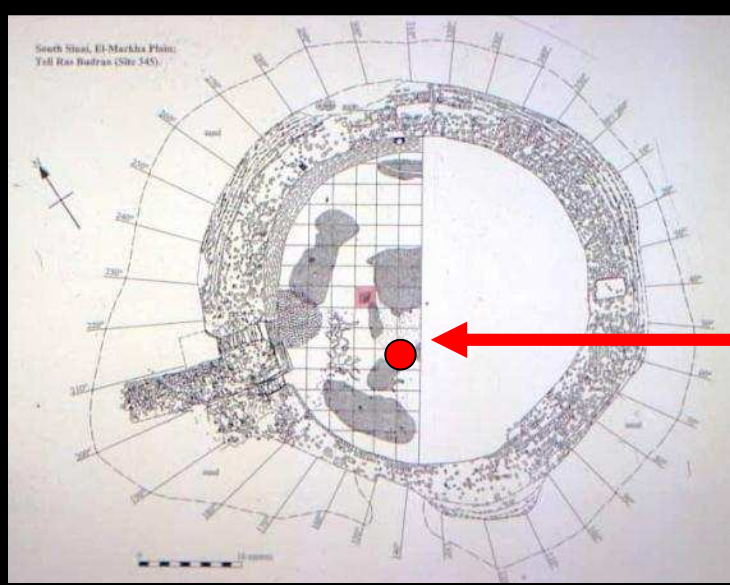
## Paved entryway:

→ initial intended usage  
i.e., not construction access(!)

## **Interior structures: post-holes for awning.**

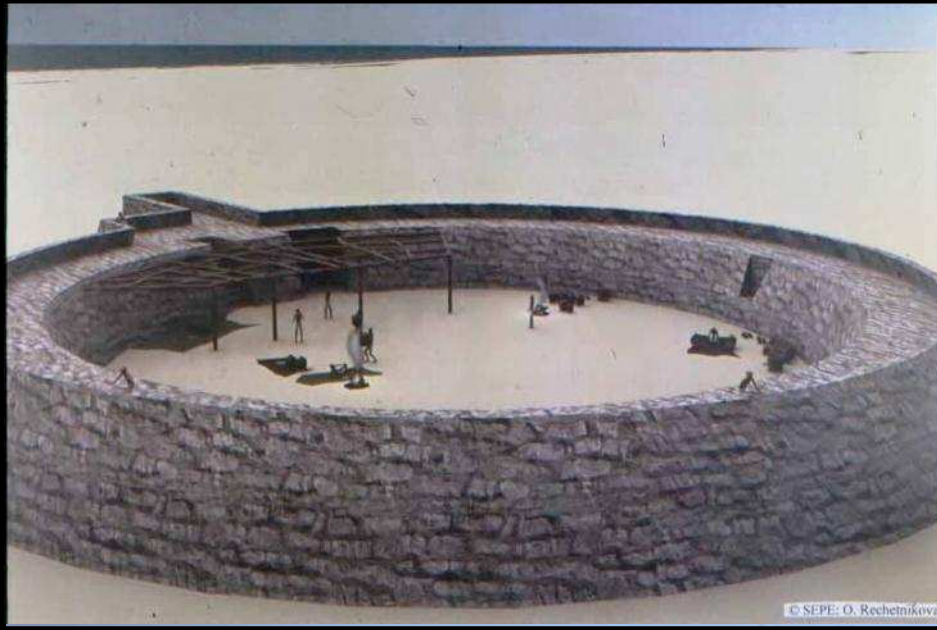
- A series of post-holes lay parallel to the western interior wall face, suggesting that an awning provided shade for the fort's occupants and clusters of storage jars.
- The post-holes did not appear along the north side of the courtyard, where open vessels and baking operations appear to cluster.

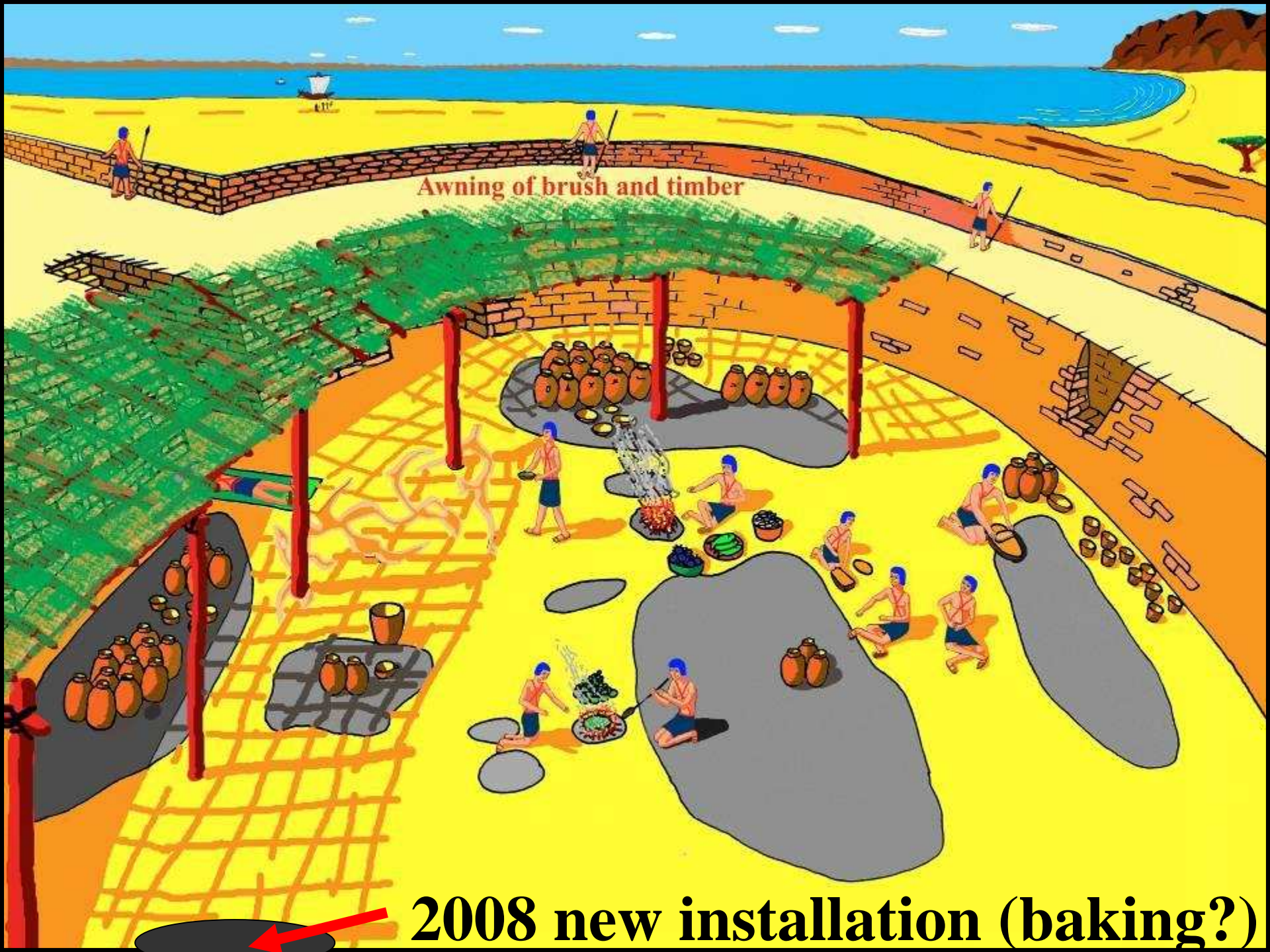




**Answering more questions: →**

**2008 excavations outside door & to east**





Awning of brush and timber

2008 new installation (baking?)

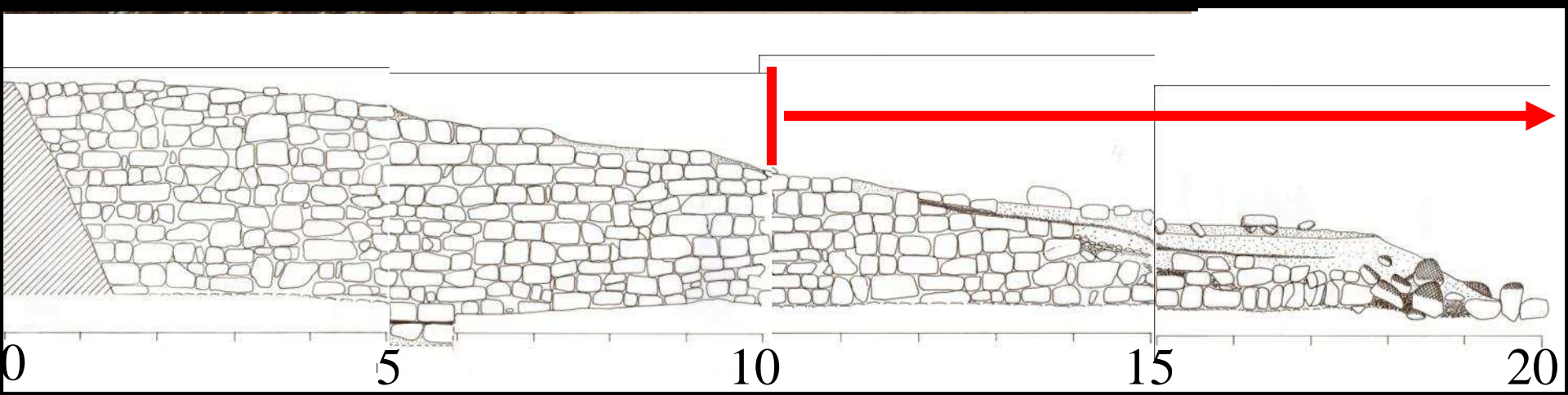
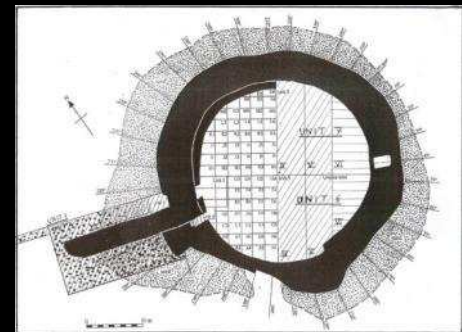
**Western projection = 22+ m.**

**- Function?**

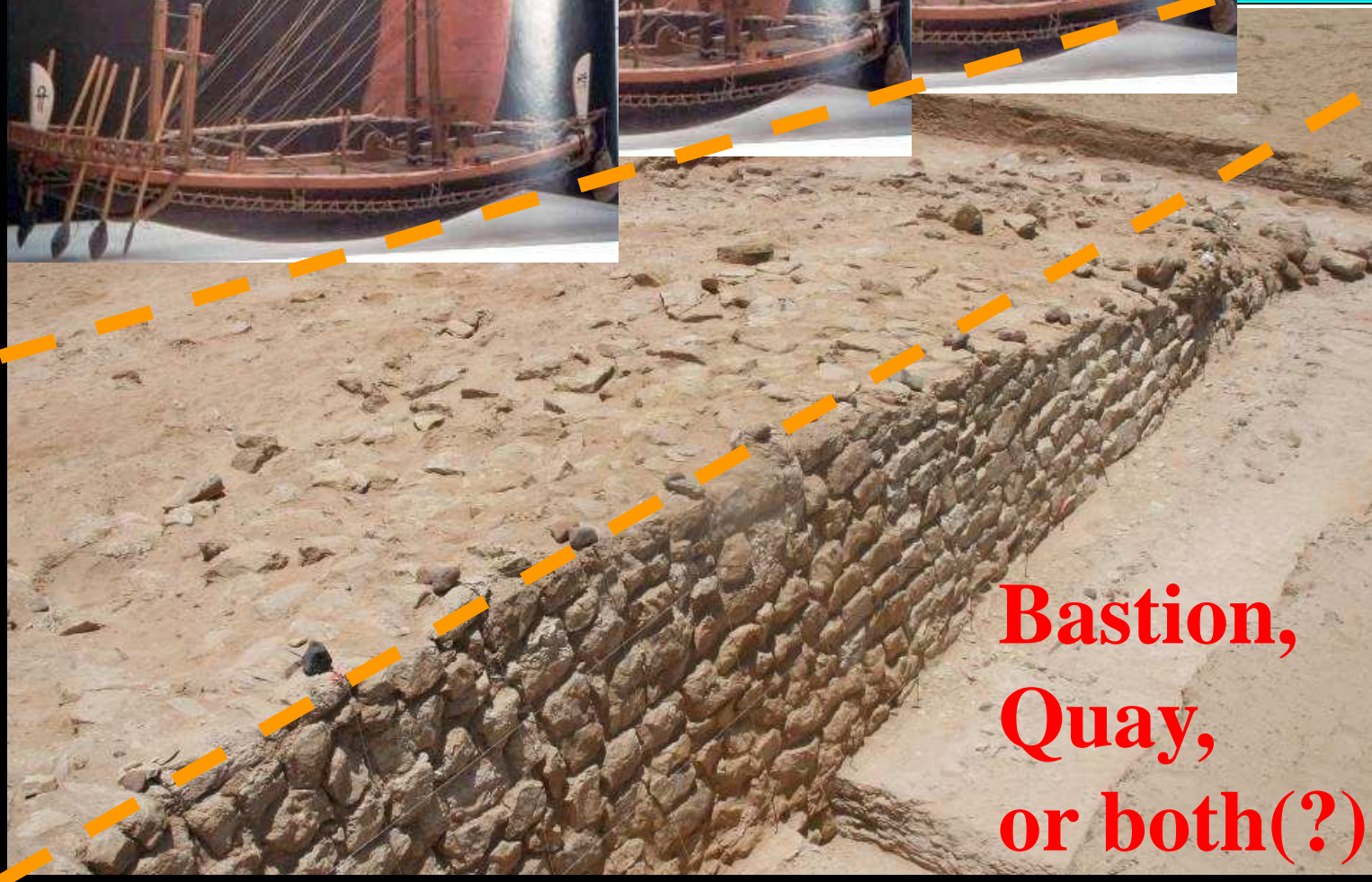
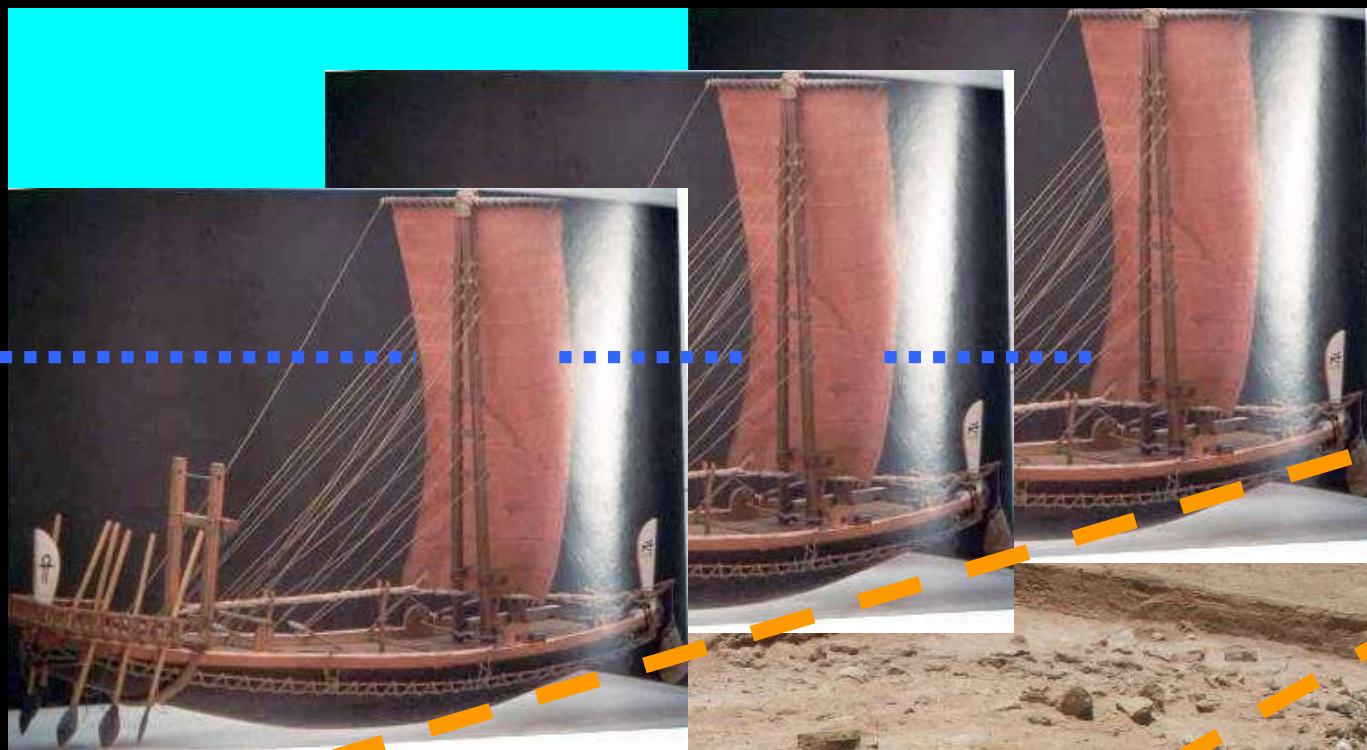


**Summer 2008 excavation of west "bastion":**

- now = **22+ m** (vs. 10 m.)
- "Quay/wharf"?







**Bastion,  
Quay,  
or both(?)**

**“Bastion”(?)**  
versus/and a  
**protective  
wall/wharf?**  
for beached  
ships against  
storms, winds  
etc.

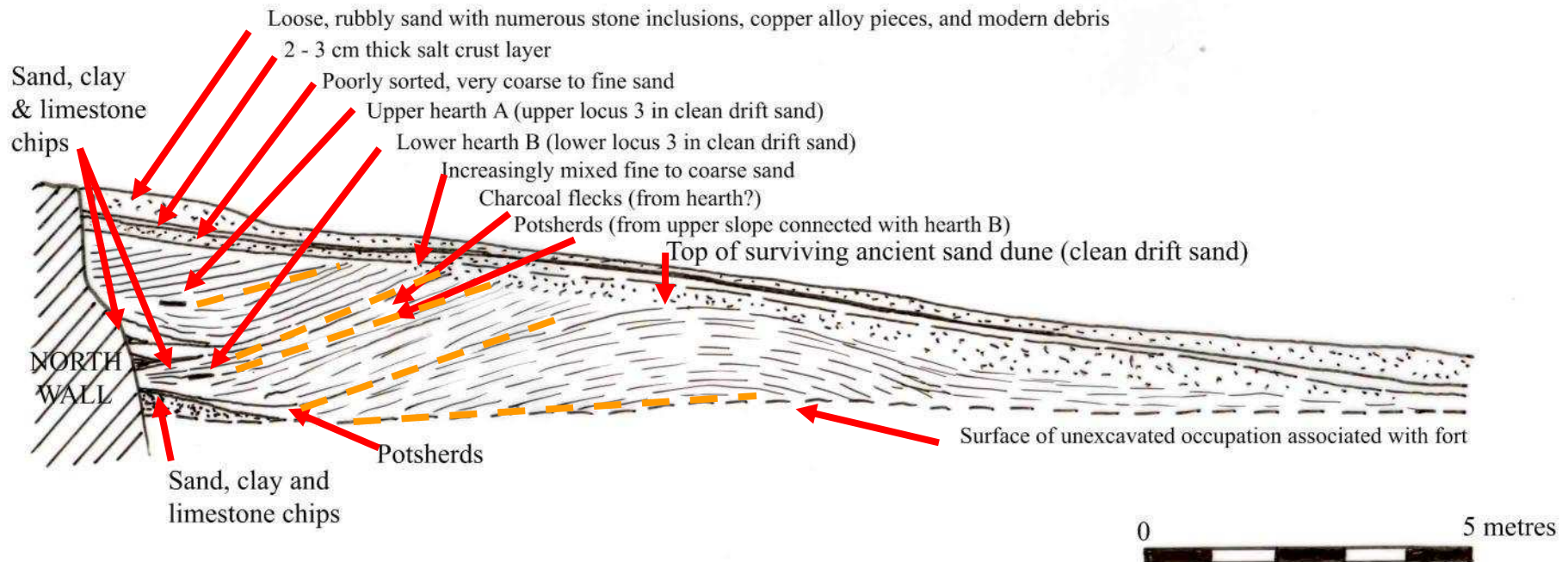
→ Need to  
trace wall  
foundations  
further west

→ Find OK  
shoreline

→ Explore  
south side of  
“bastion”

## Post-floor occupation:

- Four later levels with potsherds and other debris.
  - Two layers with hearths near north wall: Cu-working
- At least four expeditions visiting abandoned fort camping on drift sand prior to 'wave' destruction

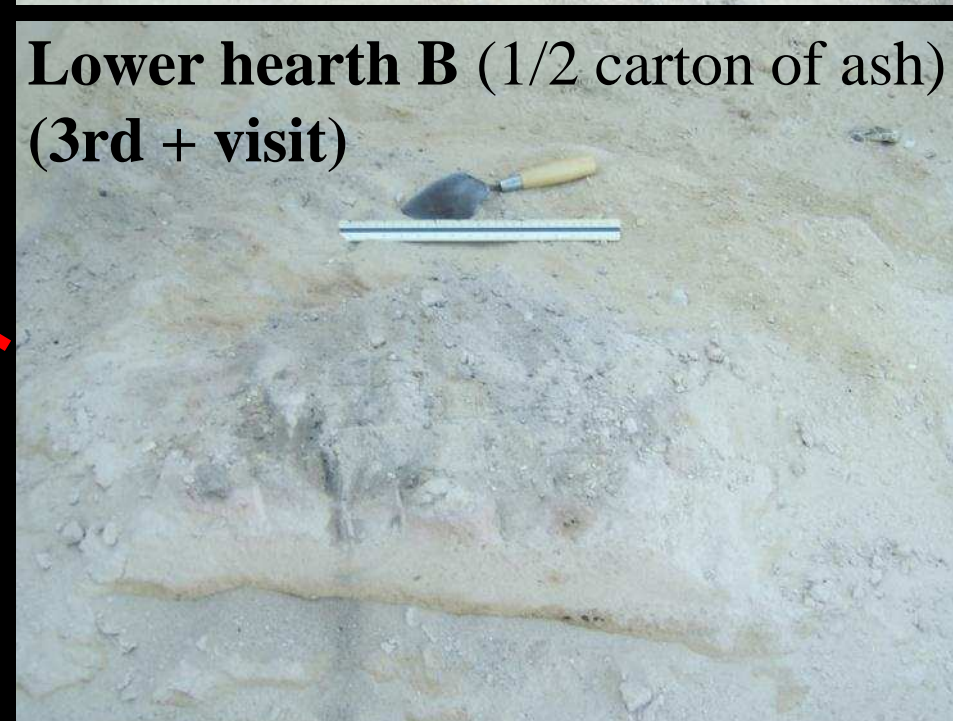




**Upper hearth A (1 carton of ash)  
(5<sup>th</sup> + visit)**



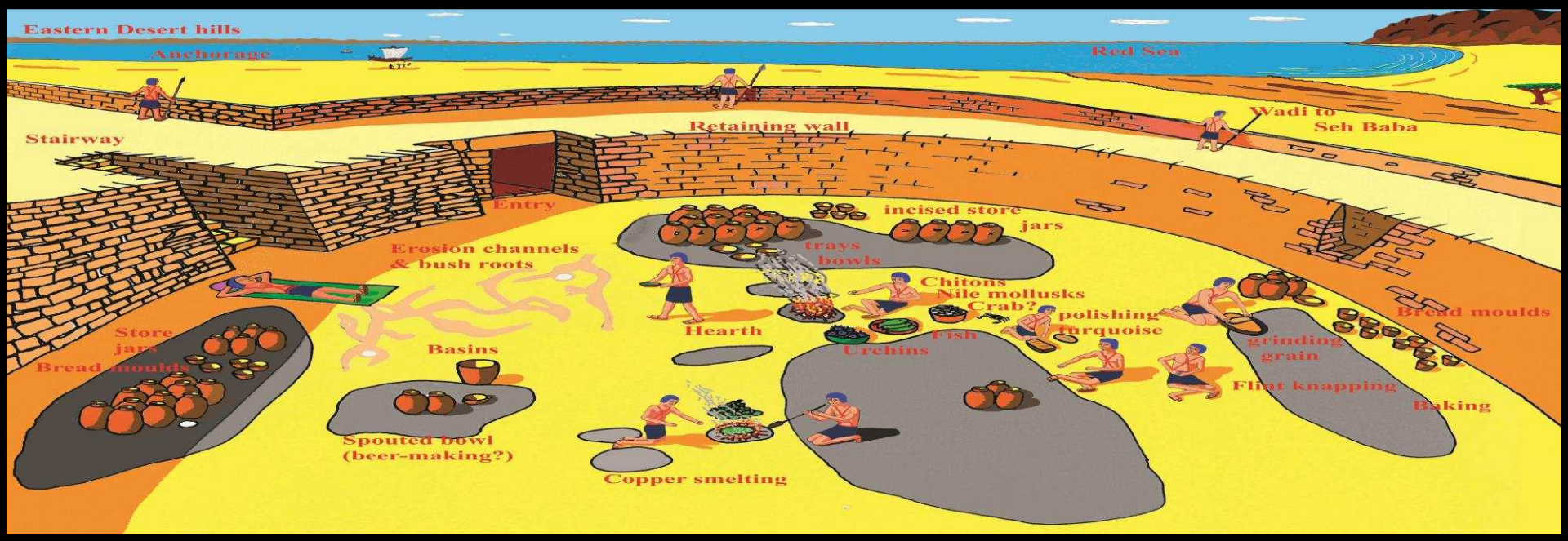
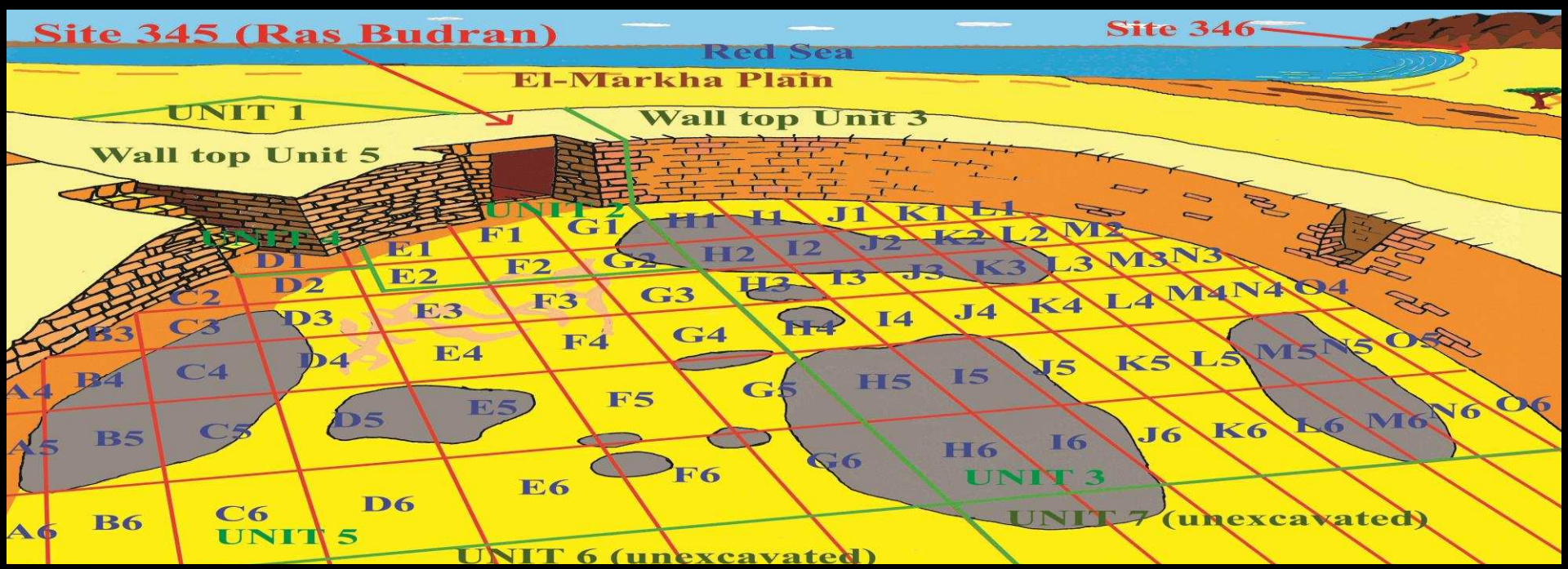
**Lower hearth B (1/2 carton of ash)  
(3<sup>rd</sup> + visit)**



**Recording system:**

**Initial, existing, and  
modifications for  
“2010”/future.**

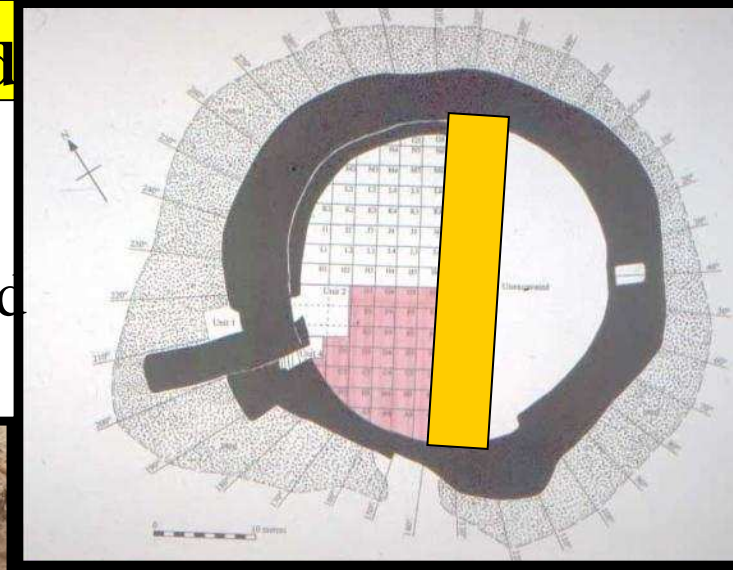
# Reconstructing activity areas: surface grid, total sieving and flotation.





## 2008 season at Ras Budran: extending grid

- Refining grid system in the Eastern half of fort's interior during 2008, and 2010+
- 2008+: 2 x 2 m grid squares now subdivided into **four 1 x 1 m quadrants**: NW, NE, SW, SE.



## Improved recording techniques:

### Same grid, but finer subdivision:

- **Floor surface:** each **2 x 2 m grid** = now subdivided into **four 1 x1 m quadrants:** NW, NE, SW, SE.

- **All artefacts & materials** provided a unique material culture number in registration by locus, grid quadrant, grid square, etc.

- Artefacts **also** provided separate “small find number” for location on top plan.

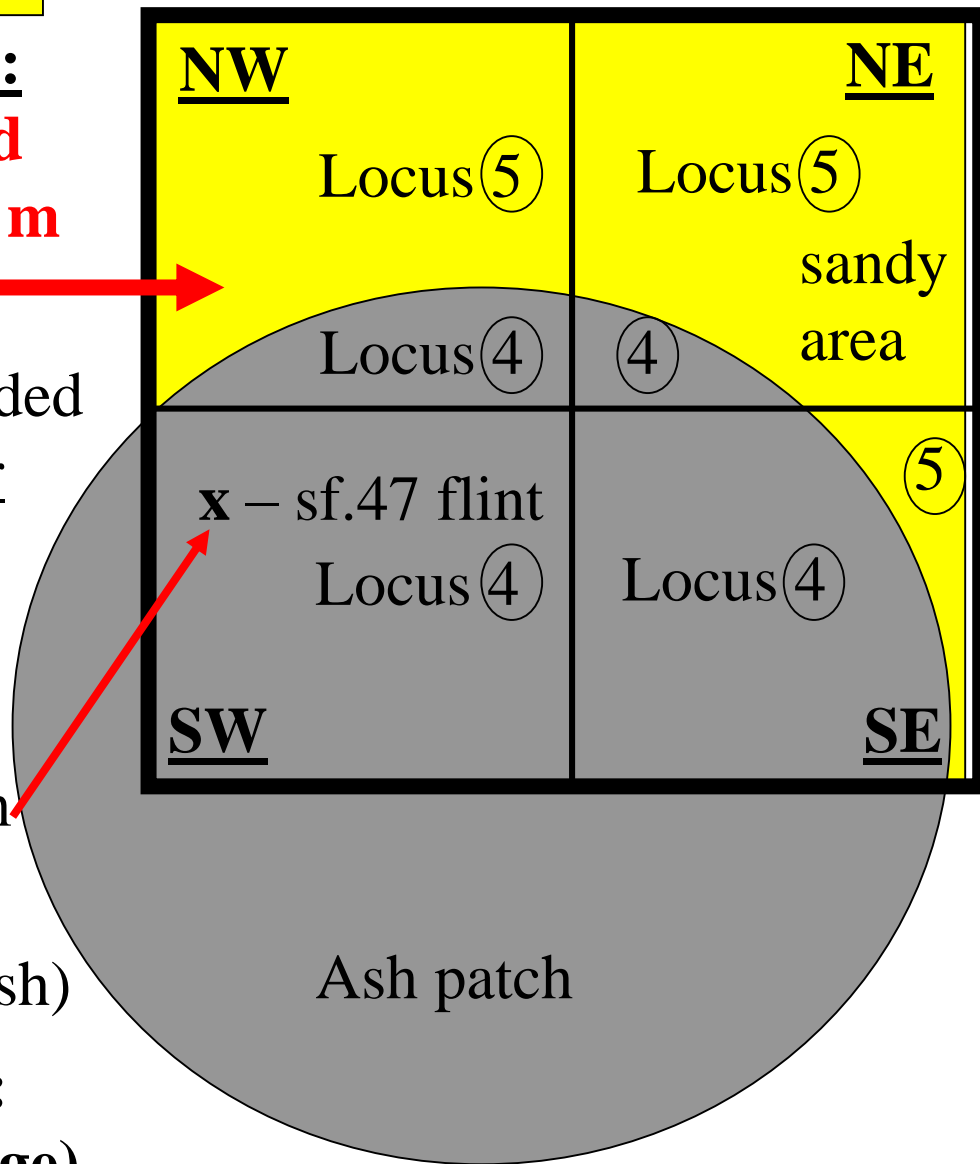
- Still full sieving floor (1 mm mesh)

- **Keeping & recording all items:** (improved registration & storage)

- Previous & current artifacts, materials, etc.

- Flotation samples per each grid square (bagged, labelled, boxed etc.)

E.g., Grid Square **B-8** (loci 4, 5, etc. ...)





**Full sieving: all materials & artifacts  
Floatation samples per 1 x 1 m quad.**



**Ras Budran 2008: using 1 x 1 m grid to plan;  
sieving floor matrix; collecting all materials.**



# Tell Ras Budran 2010:

- Sample of page-1 of 1 x 1 m quadrant recording sheet:
- i.e., Basic information on locus matrix ...
  - a. Specific designations
  - b. Spatial relations
  - c. Soil/loc. matrix data
  - d. Photograph(s)
  - e. Sampling strategy
  - f. Associated features
  - g. Boundaries
  - h. Dimensions +asl
  - i. Sections

TELL RAS BUDRAN (Site 345):

SINAI-2010 Site Supervisor(s): G. MUMFORD

EXCAV.-UNIT: 7

i.e., Interior/exterior quadrant and unit designation: (NE) Unit 3

TRENCH: IV

i.e., N-S trenches I, II, III, IV, V, VI inside structure; sometimes not applicable

GRID-SQUARE: J-7

i.e., usually only applicable to occupation surface: e.g., A-1, K-9, etc. (2 x 2 m)

GRID-SQ.-QUADRANT: NE

i.e., 2008+ season floor grid extended with 4 subdivisions: NE, SE, SW, NW.

LOCUS No.: (4)

i.e., Generally applied to distinct 3-dimensional area within excavation boundaries

AREA: Lg 1 m x Wd 1 m x Dp 0.09 m

i.e., Dimensions of locus within unit (expressed via minimum to maximum)

OVERLAIN BY: 3 wind blown sand

i.e., All locus numbers above locus currently being excavated (= on this form)

CONTIGUOUS: J-7 NW(3), SW(3), SE(4)

i.e., All locus numbers at the same horizontal level beside currently excav. locus

CONTEMPORARY: J-7 SE(4)

i.e., All continuous units/loci beside the locus currently being excavated

UNDERLAIN BY: unexcav. hard sand

i.e., All locus number immediately below locus currently being excavated

LOCUS TYPE: ash patch on occupation surface

i.e., Floor, pit, wall, wind-laid sand, water-laid sediment, ash deposit, etc.

- LOCUS MATRIX: mixed ash and other materials

i.e., homogenous (same) versus mixed (poorly sorted; various inclusions), etc.

- COLOUR: gray-brown

i.e., General description: e.g., light/medium/dark yellow, brown, reddish-brown

- MUNSELL: -

i.e., Std. colour reading, ideally in early light & slightly damp: e.g., 10YR 5/4

- TEXTURE: powdery ash; some sand inclusions

i.e., Feel of soil: smooth & fine; coarse/rough; sharp; water/wind-laid; artificial

- GRAIN (mm): fine to coarse grains + ash

i.e., Granules 2-4; very coarse sand 1/2-1; coarse sand 1/4-1/2; medium sand 1/8-1/2; fine sand 1/8-1/4; very fine sand 1/16-1/8; silt less than 1/16; clay less than 1/256

- STRUCTURE: chunks of powdery ash + sand / clumps

i.e., During matrix being picked/dug/cut into, is it: chunky, rubbery; loose? Other?

- CONSISTENCY: dry

i.e., dry; damp; wet; saturated; compact; hard; firm; sticky; binds when rolled (i.e., malleable clay content)

- STONES (plan/assess all): cobble sized stone

i.e., Boulders 26+cm; cobbles 25-6cm; pebbles 6-0.5cm; chips; AMT: none; some; common; many; numerous

- PATCHES (plan/assess all): gray-brown ash patch

i.e., TYPES: describe (e.g., ash; clay; burning; salt); AMT: none; rare; some; common; many; numerous

- OTHER INCLUSIONS: flecks of charcoal etc

i.e., TYPES: describe matrix; DISTR: random/cluster; AMT: none; rare; some; common; many; numerous

- OTHER NOTES: -

DATE: 15 / 06 / 08

i.e., Day / month / year

PHOTOGRAPHED: yes / no

i.e., circle one; provide details if need be (IN-SITU!!!)

VIEWS: → East

e.g., Facing N (north), NE (northeast), detail view of ...

stone + artefact 113

i.e., Feature(s) or item(s) being photographed

SIEVED: All

i.e., (1x1 mm mesh): All (floors); 1/5; 1/10; sample; No

ASSOC. FEATURES: sand-filled gully

i.e., within a locus: e.g., small pit, oven, post hole, etc.

LOCUS BOUNDARIES definitions

WELL-DEFINED E.g., walls, pavement, sharp edge

BLURRED E.g., not a sharp boundary

MERGES E.g., soils merging at a boundary

SEALED E.g., Paving, plaster, floor, etc.

ARBITRARY E.g., artificial levels in deep fill

OVERLYING locus: (3)

Sealed; well-def.; blurred; merges; arbitrary boundary

“NORTH” side of locus: gully

Sealed; well-def.; blurred; merges; arbitrary boundary

“EAST” side of locus: J8

Sealed; well-def.; blurred; merges; arbitrary boundary

“SOUTH” side of locus: J7 SE(4)

Sealed; well-def.; blurred; merges; arbitrary boundary

“WEST” side of locus: J7 NW(4)

Sealed; well-def.; blurred; merges; arbitrary boundary

UNDERLYING locus: Unexcav.

Sealed; well-def.; blurred; merges; arbitrary boundary

LOCUS LOCATIONAL DATA:

i.e., Should have sufficient data via top plans, sections, and measurements to reconstruct locus 3-dimensionally

NE CORNER: Depth 7 cm

TOP ASL: - BASE ASL: -

SE CORNER: Depth 11 cm

TOP ASL: - BASE ASL: -

SW CORNER: Depth 8 cm

TOP ASL: - BASE ASL: -

NW CORNER: Depth 7 cm

TOP ASL: - BASE ASL: -

CENTRE: Depth 8 cm

TOP ASL: - BASE ASL: -

SECTION/BAULKS: NO

# Tell Ras Budran 2010:

- Sample of page-2 of 1 x 1 m quadrant recording sheet:
- After planning/drawing sieve, collect samples, and add to top plan.
- i.e., Collected samples (aim for 100% coll.)
  - Collect each type of material within its own bag (+ticket)
  - Record clusters (a,+)
  - Record data/sample

EXCAV-UNIT: 7; TRENCH: IV; GRID-SQ.: J7; GS-QUAD: NE; LOCUS: (4)

100% DRY-SIEVING FLOOR (1 x 1 mm mesh): → extract and assess all items for retention versus dumping  
AFTER SIEVING → Retain 1 small bag from each grid-square quadrant (label bag exterior + ticket) → registrar

SAMPLES: For collection in their entirety from floor surfaces according to grid-square, quadrant & locus no:  
Ensure every separate collection bag has a ticket with all information labelled correctly.  
If in doubt, collect it!; registrar can always discard something (may ID samples on top plan: a, b)

CIRCLE EVERYTHING FOUND IN GRID-SQ.-QUAD LOCUS (registrar will record in further detail):

FLORA (e.g., twigs): Yes / No      Approx. amt: None; some; moderate; common; many; numerous ID:   

CHARCOAL: Yes / No      Approx. amt: None; some; moderate; common; many; numerous ID: a

SHELLS (all): Yes / No      Approx. amt: None; some; moderate; common; many; numerous ID: b

BONE (detritus): Yes / No      Approx. amt: None; some; moderate; common; many; numerous ID:   

COPPER ALLOY: Yes / No      Approx. amt: None; some; moderate; common; many; numerous ID: e

FERRUGINOUS: Yes / No      Approx. amt: None; some; moderate; common; many; numerous ID: d

TURQUOISE: Yes / No      Approx. amt: None; some; moderate; common; many; numerous ID:   

OCHRE: Yes / No      Approx. amt: None; some; moderate; common; many; numerous ID:   

LITHICS/STONE: Yes / No      Approx. amt: None; some; moderate; common; many; numerous ID: e

Soil sample: Yes / No      Approx. amt: None; some; moderate; common; many; numerous ID: f

\_\_\_\_\_ : Yes / No      Approx. amt: None; some; moderate; common; many; numerous ID:   

\_\_\_\_\_ : Yes / No      Approx. amt: None; some; moderate; common; many; numerous ID:   

\_\_\_\_\_ : Yes / No      Approx. amt: None; some; moderate; common; many; numerous ID:   

POTTERY: Leave intact/virtually intact vessels in-situ; draw on top plan; photograph it/them in context +detail view; ASL-readings  
REMINDER: collect all potsherds by grid-square quadrant & locus no. (e.g., Unit 3, Grid-sq. H-7, quad.-NW, locus 7a)

Yes / No      Approx. amt: None; some; moderate; common; many; numerous ID below

Nature: Mostly flat-lying; all angles; worn edges; sharp breaks; burnt/soot-coated

Sherd sizes: Tiny frags.; small; medium; large; large portions of vessel(s); mixed sizes

Intact pots: Sequential nos./pot: \_\_\_\_\_ ; \_\_\_\_\_ ; \_\_\_\_\_ ; \_\_\_\_\_ ; \_\_\_\_\_ ; \_\_\_\_\_ ; \_\_\_\_\_ ; \_\_\_\_\_

ARTIFACTS: Provide a unique small find (SF) number in the site book & on a top plan (see registrar for avail. numbers)  
Obtain the registrar's MC-number (part of registration sequence for all items registered from entire site)

SF-113 MC: -      Type: hand-polisher      Material: stone/gneiss      Colour: red

SF-\_\_\_\_\_ MC: \_\_\_\_\_      Type: \_\_\_\_\_      Material: \_\_\_\_\_      Colour: \_\_\_\_\_

SF-\_\_\_\_\_ MC: \_\_\_\_\_      Type: \_\_\_\_\_      Material: \_\_\_\_\_      Colour: \_\_\_\_\_

SF-\_\_\_\_\_ MC: \_\_\_\_\_      Type: \_\_\_\_\_      Material: \_\_\_\_\_      Colour: \_\_\_\_\_

SF-\_\_\_\_\_ MC: \_\_\_\_\_      Type: \_\_\_\_\_      Material: \_\_\_\_\_      Colour: \_\_\_\_\_

SF-\_\_\_\_\_ MC: \_\_\_\_\_      Type: \_\_\_\_\_      Material: \_\_\_\_\_      Colour: \_\_\_\_\_

## Tell Ras Budran 2010:

- Sample of ticket to accompany each sample/etc. bag per grid-sq. quad.-locus
- i.e., Write in black ink from a sharpie marker (permanent marker) ONLY(!)
- Pencil & pen ink will FADE → identifying data will be lost from sample bags making them useless for future analysis.

Ras Budran 2010

UNIT: J-7

Gr-Sq.: J-7

Quad.: NE

Locus: (4)

Date: 3 July/10

Charcoal Flora

Shell Bone

Copper Turquoise

Iron/red Ochre

Lithics Pottery

Other/SF#: (113)

# Tell Ras Budran 2010:

- Sample of page-3 of 1 x 1 m quadrant recording sheet:
- i.e., Provide a narrative description of all your observations (print), including all details on composition of the loc., spatial relations, types of items within it, any speculations on its significance/function, etc. (add sheets if need be).

EXCAV-UNIT: 7 ; TRENCH: IV ; GRID-SQ.: J7 ; GS-QUAD: NE ; LOCUS: (4)

NARRATIVE OBSERVATIONS: Please write very clearly/legibly, or print, and use a dark pencil or ink pen (i.e., a light pencil fades over time)

Locus (4) represents a 9 cm +/- deep layer of grey-ashy material below a distinct wind-blown layer of sand (3). It continues to the east, south, and a bit to the west in quadrants SE4(4), SW(4), NW(4), and is bounded along the north by a sand-filled gully (i.e., water erosion had cut the ash patch in the past, and had been sand-filled later). Another E-W sand-filling gully lay 5-30 cm to the south. This ash patch faded out 5-10 cm west of NE(4) - within NW quadrant. J7 NW(4) was actually included in J7 NE(4) since very little material extended into the NW quadrant. A non-descriptive stone (approx 7x7cm) lay in the east/centre of quad-NE. About 20 cm to the SW lay a stone artifact (SF-113), which appears to be a stone hand-polisher; i.e., a small stone exhibiting wear marks on one side - possibly used in grinding grain, or another usage. During the excavation of J7 NE(4) the ash patch appears to be fairly mixed, with various streaks/bands of colours within it, suggesting an accumulation of ash and other organic material over time. As in other units, the pottery clustered in the ash patch, whilst other materials included many bits of charcoal, charcoal flecks, various shell types, some stones (non-lithic debitage), and some copper alloy pieces. The main activity in this unit appears to be associated with secondary deposits from baking and/or other industrial activities (copper smelting?).

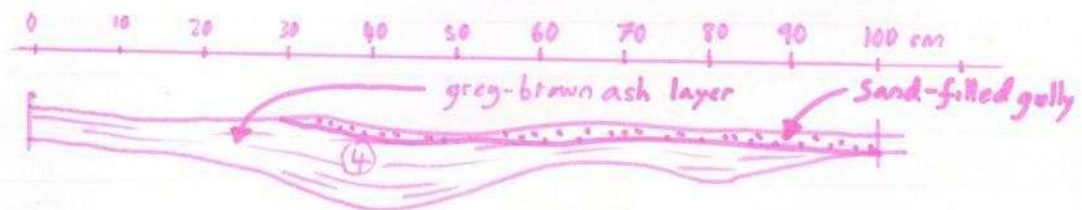
# Tell Ras Budran 2010:

- Sample of page-4 of 1 x 1 m quadrant recording sheet:
- i.e., To-scale section drawings are helpful and often essential to reveal topography (in addition to top plans and photographs).
- Sketches of 3-D data on unit and environs with labeling is quick and invaluable.

EXCAV-UNIT: 7 ; TRENCH: IV ; GRID-SQ.: J7 ; GS-QUAD: NE ; LOCUS: (4)

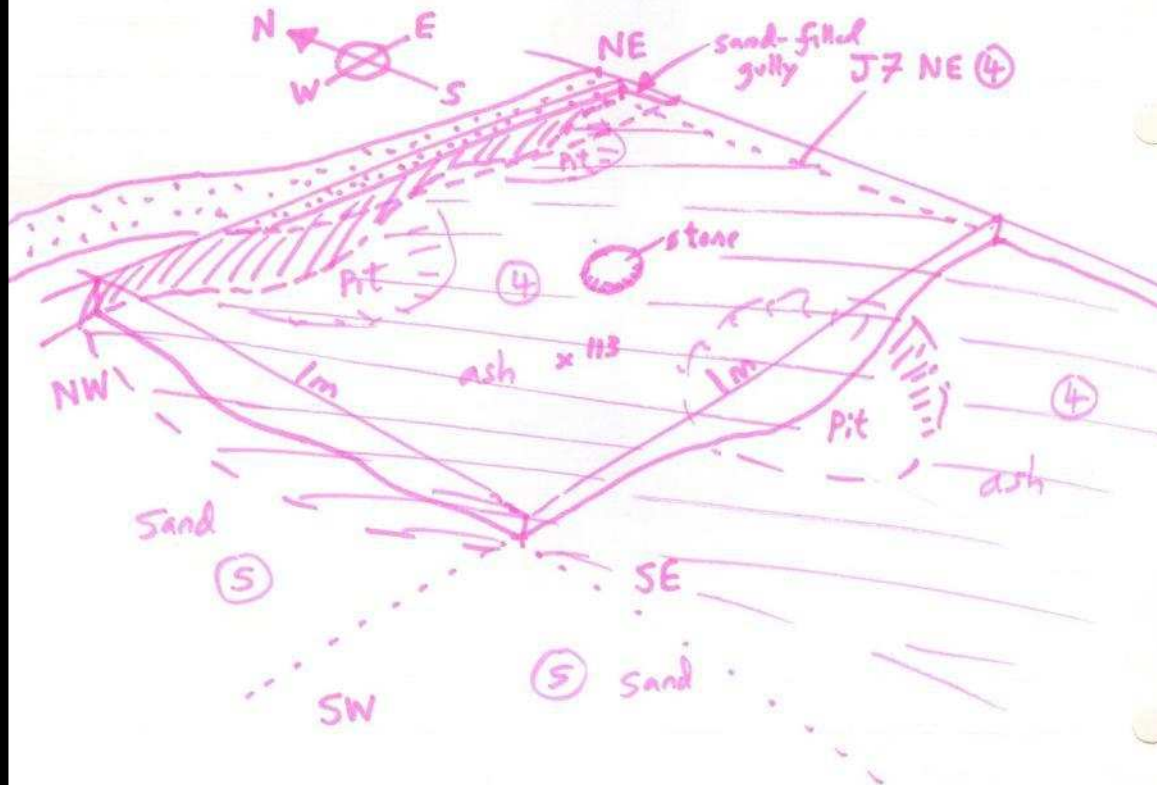
SKETCH-SHEET FOR OBSERVATIONS: e.g., 3-D view of Grid-Sq. quadrants, loci, features, artifacts, patterns, etc.

## 1. Section



North section of NE(4) in J7. (Scale 1 1/2 cm = 10cm)

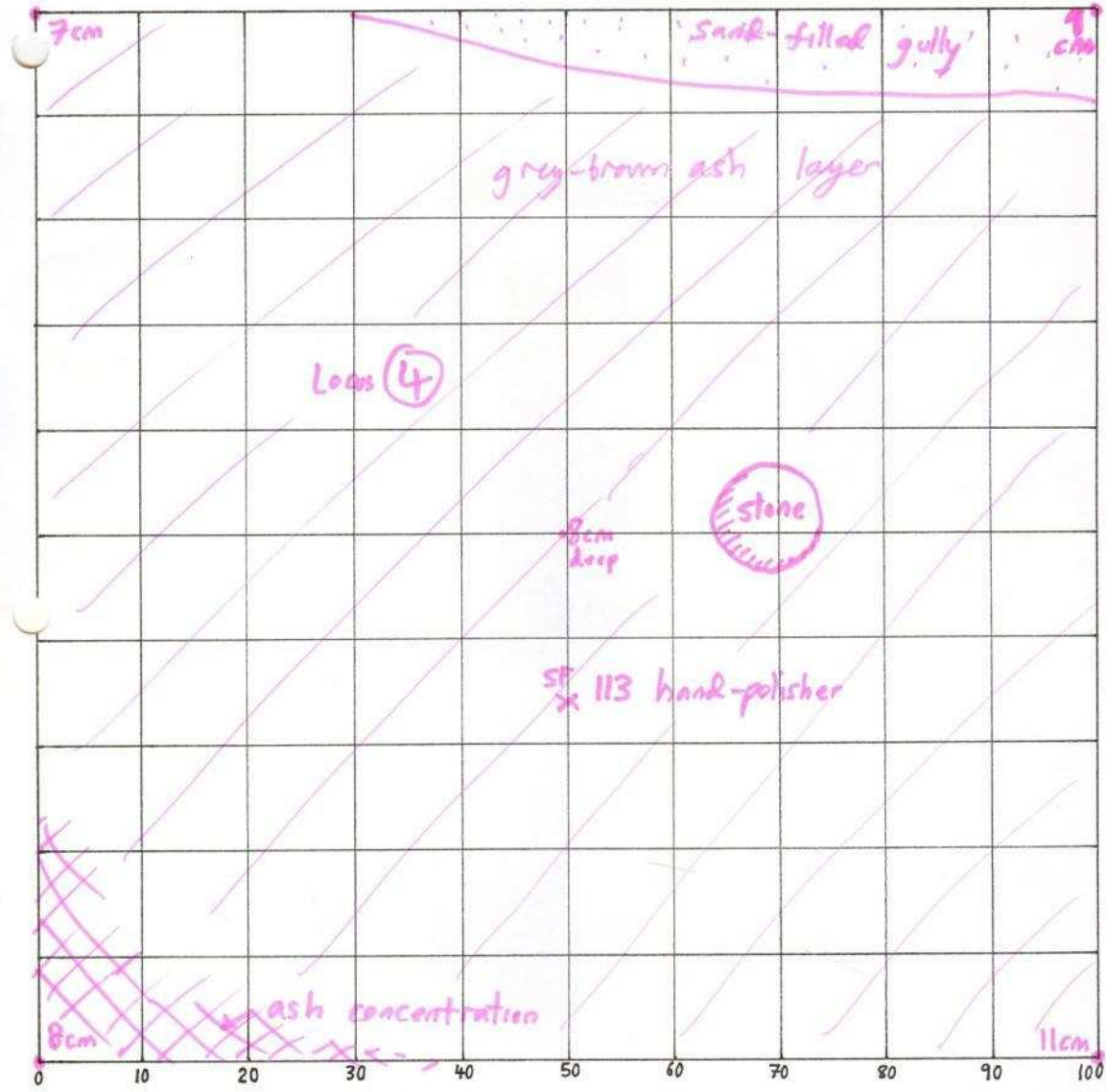
## 2. Schematic 3-D view of NE quad in J7 NE(4)



# Tell Ras Budran 2010:

- Sample of page-5 of 1 x 1 m quadrant recording sheet:
- i.e., A to-scale top plan is required for each quadrant per grid-sq.
- Remember to identify it at page top.
- Always place N at top
- Use string grid to eye basic features, etc..
- Measuring tapes will aid other planning.

EXCAV-UNIT: 7 ; TRENCH: IV ; GRID-SQ.: J7 ; GS-QUAD: NE ; LOCUS: (4)  
SURFACE & SUB-SURFACE TOP PLAN (using a string grid):  
Scale: 1:50 (1 cm = 5 cm; 2 cm = 10 cm) North (always at top of page) 4 asl-readings/depth of excav.



NW	<b>NE</b>
SW	SE

Circle the appropriate quadrant (within the above specified grid square) being planned on this top plan;  
Indicate the depth of any pits (below the base of the layer being planned and excavated: e.g., 15 cm deep);  
Excavate only distinct 3-dimensional deposits as a single locus; draw pit cross-sections separately.



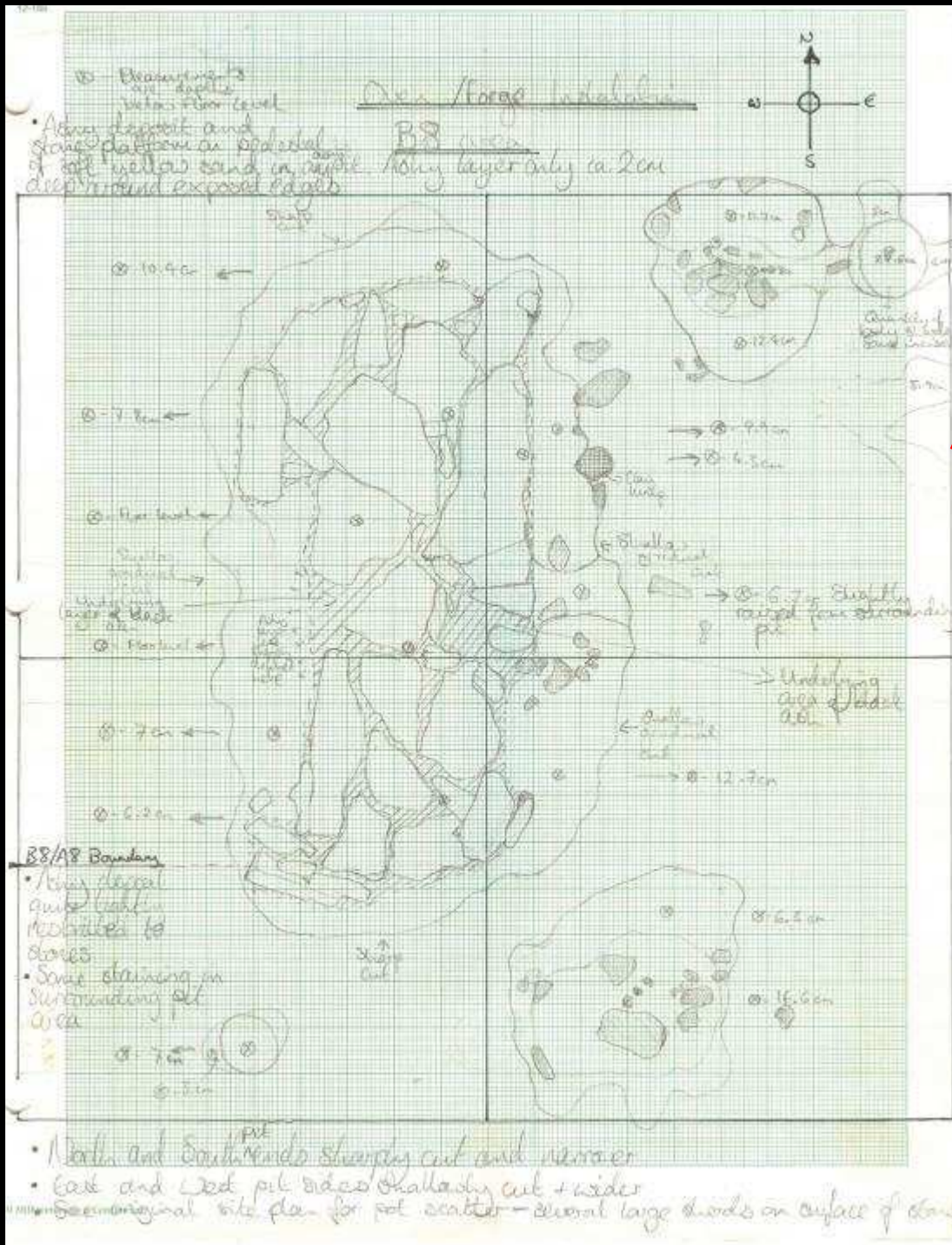
# Tell Ras Budran 2008:

**South side of courtyard: stone-paved baking installation (bread?; meat?).**



# Ras Budran 2008:

Detail plans for ea. grid square  
 SE Unit-6, Grid Sq. B8 (2 x 2 m)  
 NE quadrant (1 x 1 m)



## 2008 technical staff:

Ceramicist: R. Hummel

Registrar: Dr. F. Cahill

Photographer: P. Carstens

Artist: S. Christodoulou

## Refined recording system

- **Re-assessing** 2004 items  
E.g., shell typologies.
- **Augmenting details** recorded per item:  
E.g., Typology  
weight (copper etc.)  
volume  
quantifications
- **MC unique number** for all items/materials in registry → data base for spatial patterning (GIS)

Selection of artefacts & materials photographed & re-photographed from 2004 & 2008 seasons:



## **2010 summer study season:**

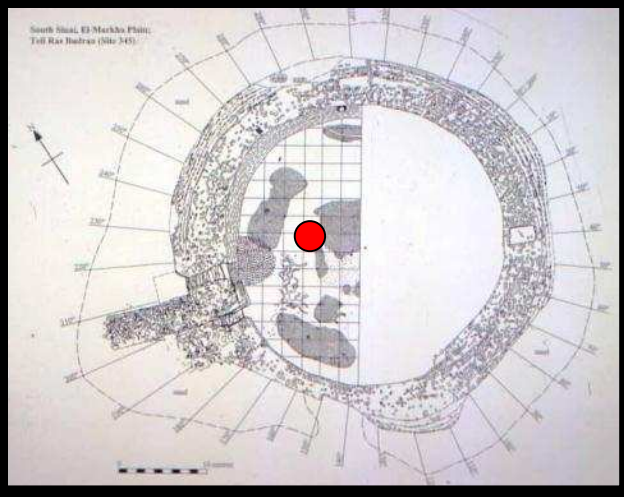
- Rexine Hummel: **Continuing assessment of pottery** from Ras Budran and compiling report for article in-progress.  
→ **Separate pottery database** to be integrated later with existing non-pottery database.
- Fran Cahill and Greg Mumford: **Overseeing data base entry** from hand-written registration sheets from 2004 & 2008 seasons.  
→ All non-pottery data now in MS Excel database.
- Fran Cahill & S. Christodoulou: **Shell identifications** from *Red Sea shell corpus* and communications with author/specialist.  
i.e., Various shells appear meaningful (see in part Sowada on Old Kingdom & Red Sea shell trade).
- Greg Mumford: **Fine-tuning labeling, sorting, and cataloguing of all digital photographs** of Ras Budran materials.
- Team: **Identified artifacts/materials** requiring further checking, drawing, photography, assessment, etc.
- Storeroom (equipment): Fully sorted, catalogued, organized, etc. (→ SUEZ)

**(f)-i. Initial results of excavation  
within the study site/area:**

**Micro-level analysis at Ras Budran:**  
i.e., grid squares; activity areas; etc.

**Looking at the small picture:**  
i.e., site specific assessment.

**NW Quadrant:** preliminary activity patterns near a stone-paved hearth for cooking.



Stairs

Entryway

Hearth

## Red Sea Molluscs:

- Chiton with 8 scale plates
- Some camp site hearths yielded 100s of Chiton plates.
- One hearth had remnants of at least 36 chitons (36 x 8 plates)
- 2 fish bones only (from sieving)
- No mammal bones whatsoever (possibly in an exterior midden)



Wind

Hearth

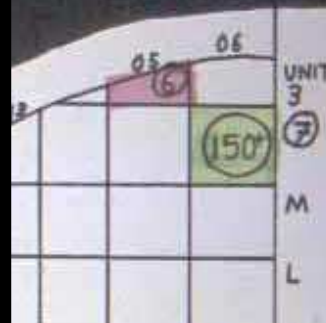


## NW Quad copper distribution:

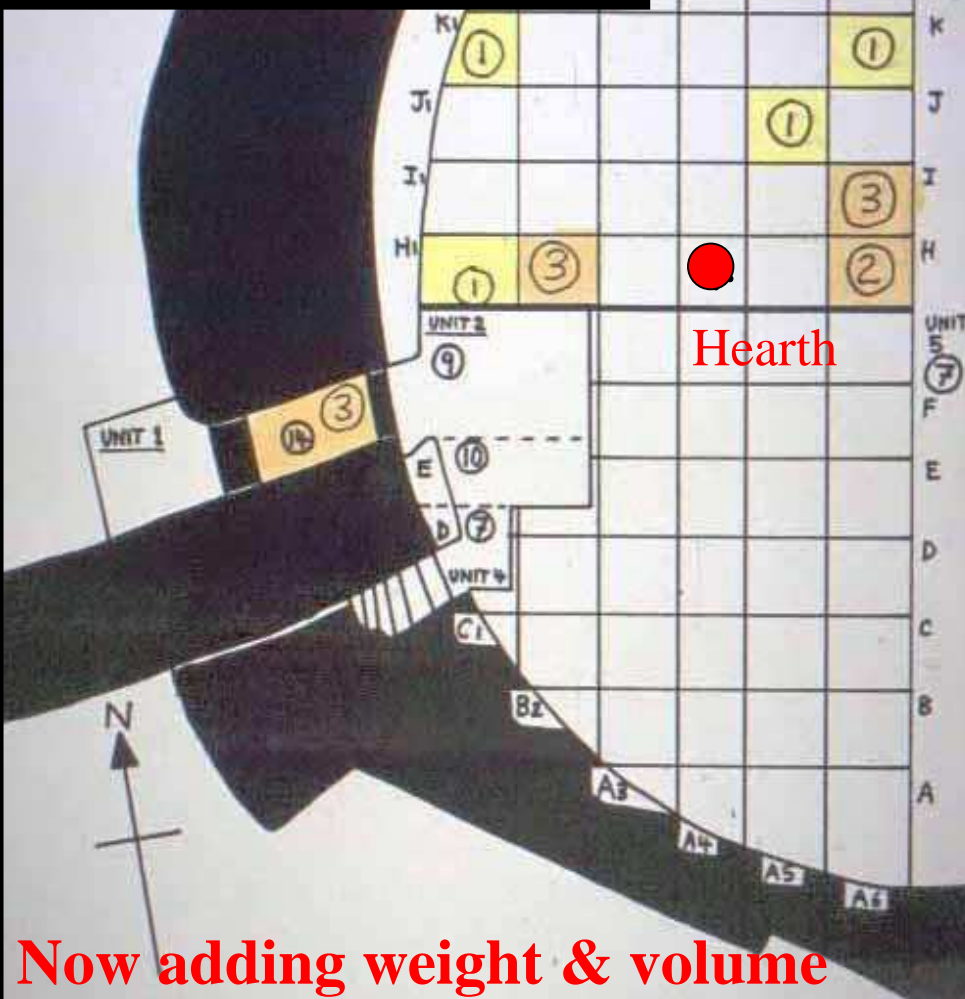
- Copper ore / slag (smelting) awaits analysis by C. Davey.
- Most copper clusters along north interior wall face in all levels.
- Two copper chisel fragments:
  - a. Fine mortise chisel (for sculpture & dressing stone)
  - b. Larger chisel tip: (for coarser stone working)



RB08 MC 1876



Hearth



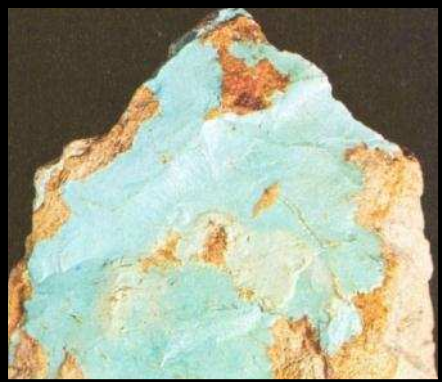
Now adding weight & volume



RB 04

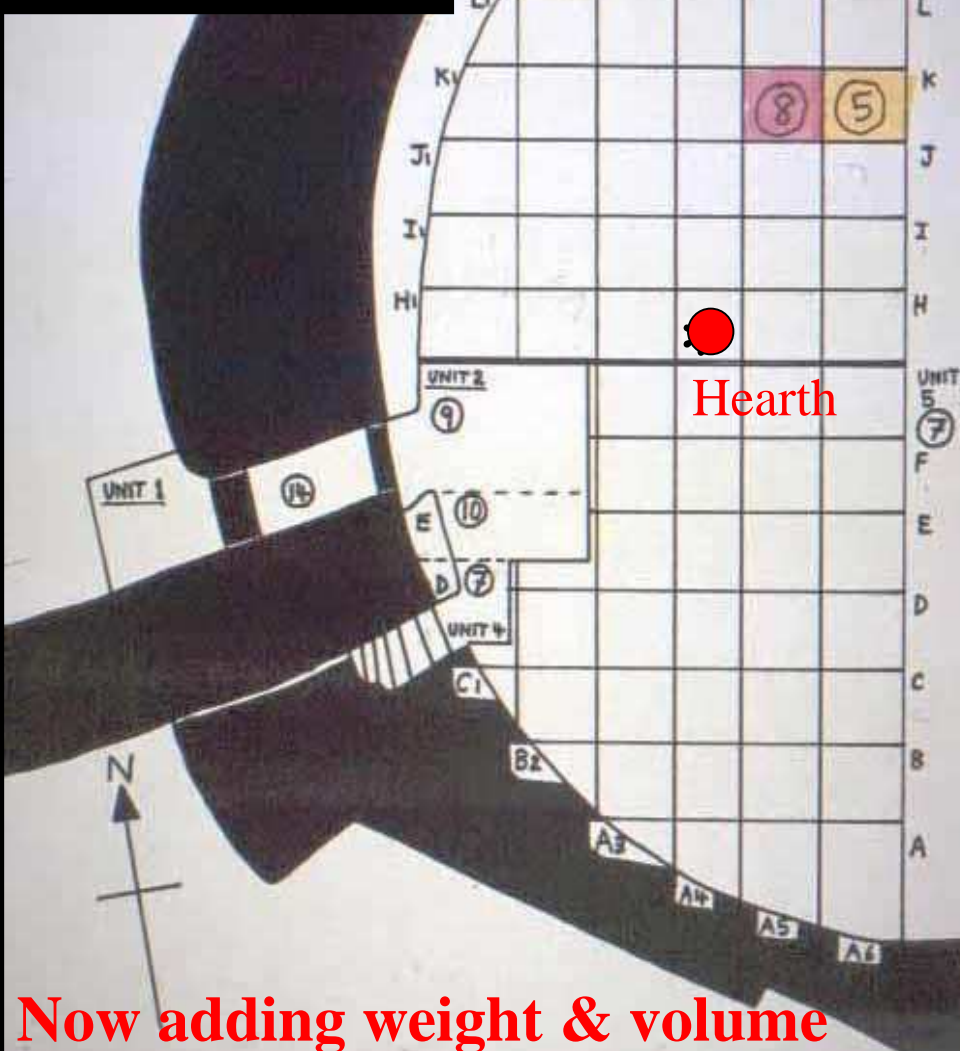
MC 9





## NW Quad. turquoise distribution

- Small light blue chips from the exterior of turquoise nodules.
- Processing byproducts from polishing turquoise nodules.
- Direct link with turquoise mines 25-30 km east (Maghara; Kharig)



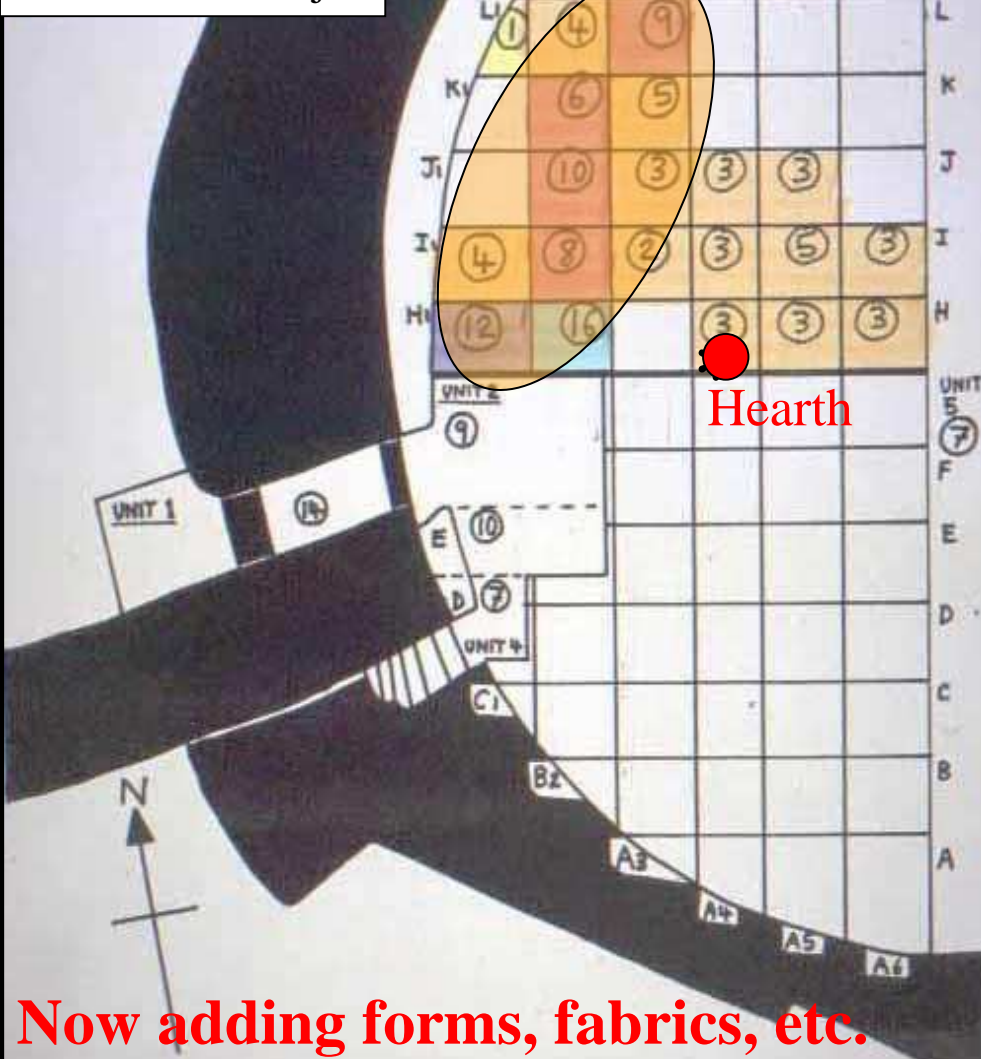
Ras Budran 08: MC.no.172



Now adding weight & volume



Mendes Late OK jars



Hearth

Now adding forms, fabrics, etc.

# NW Quad store jar distribution:

Distribution mostly under awning

- Concentration along west (78%)

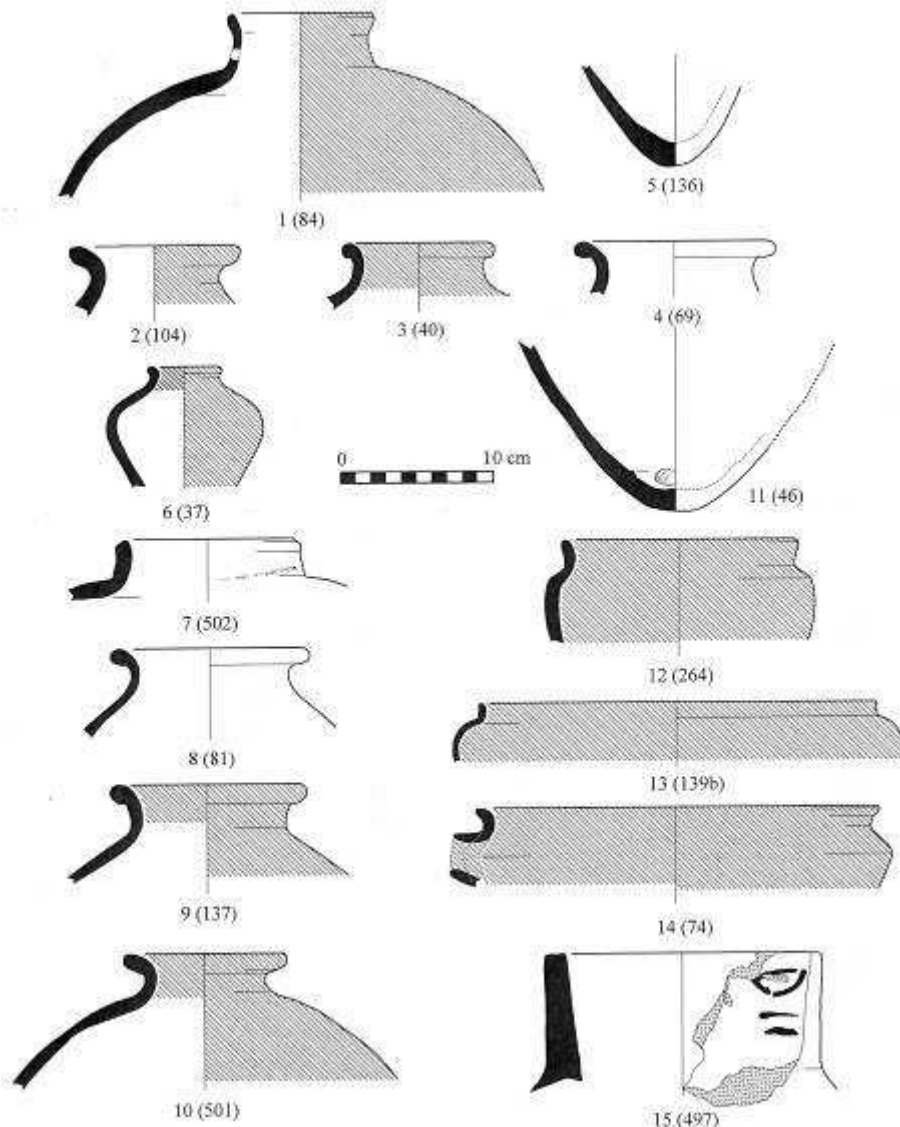
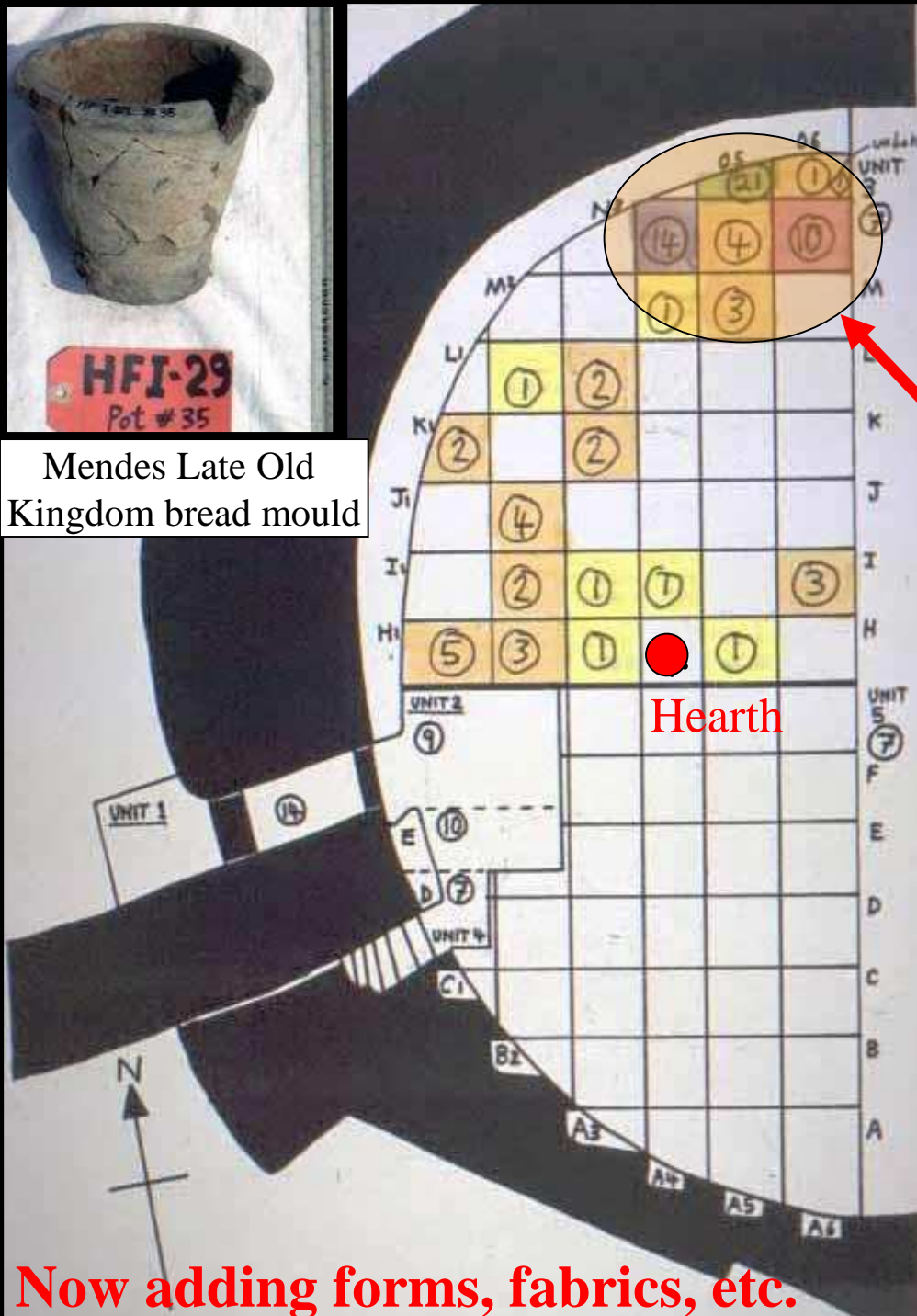


Fig.17. Selected Nile silt and marl vessels (drawn by S. Christodoulou, D. Donnelly, and R. Hummel).



Mendes Late Old Kingdom bread mould



**NW Quad. bread mould & basin distribution: in open area (no awning)**

- Concentration along North (81%)

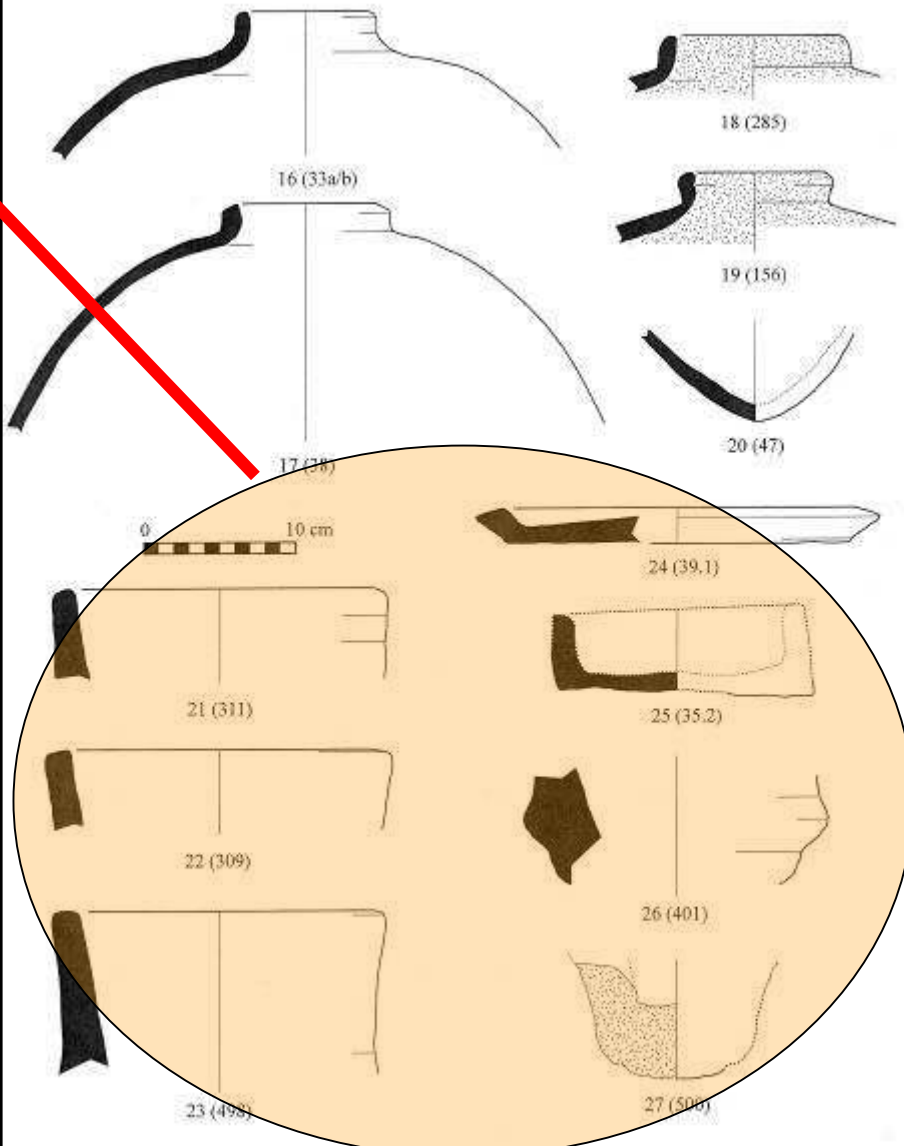
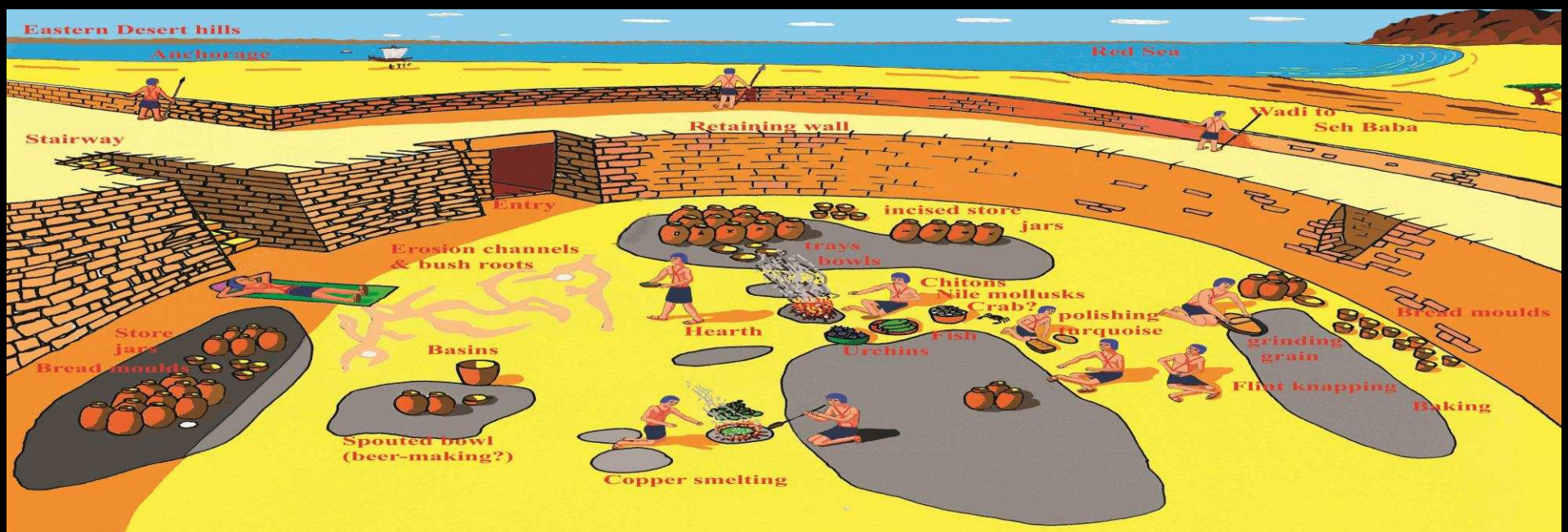
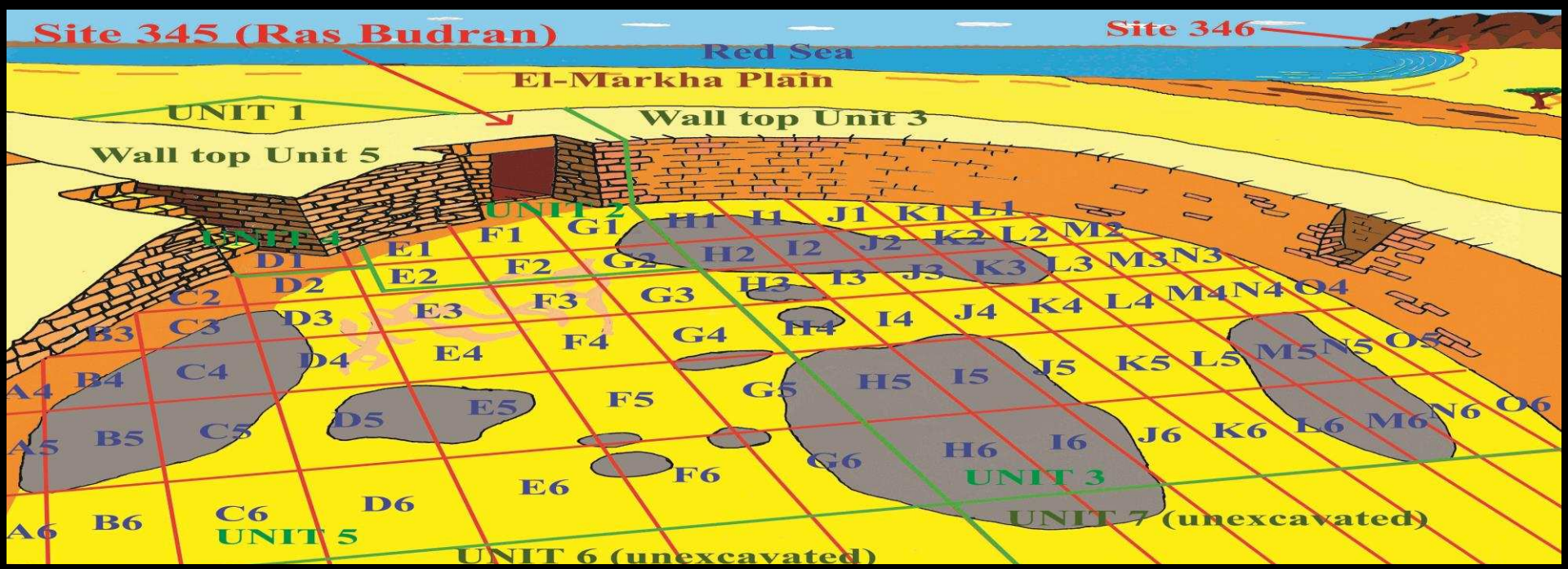


Fig.18. Selected Sinaitic ware vessels (drawn by S. Christodoulou, D. Donnelly, and R. Hummel).

**Now adding forms, fabrics, etc.**

# Reconstructing activity areas: surface grid, total sieving and flotation.



**Fort may have been occupied seasonally (twice) before abandonment**



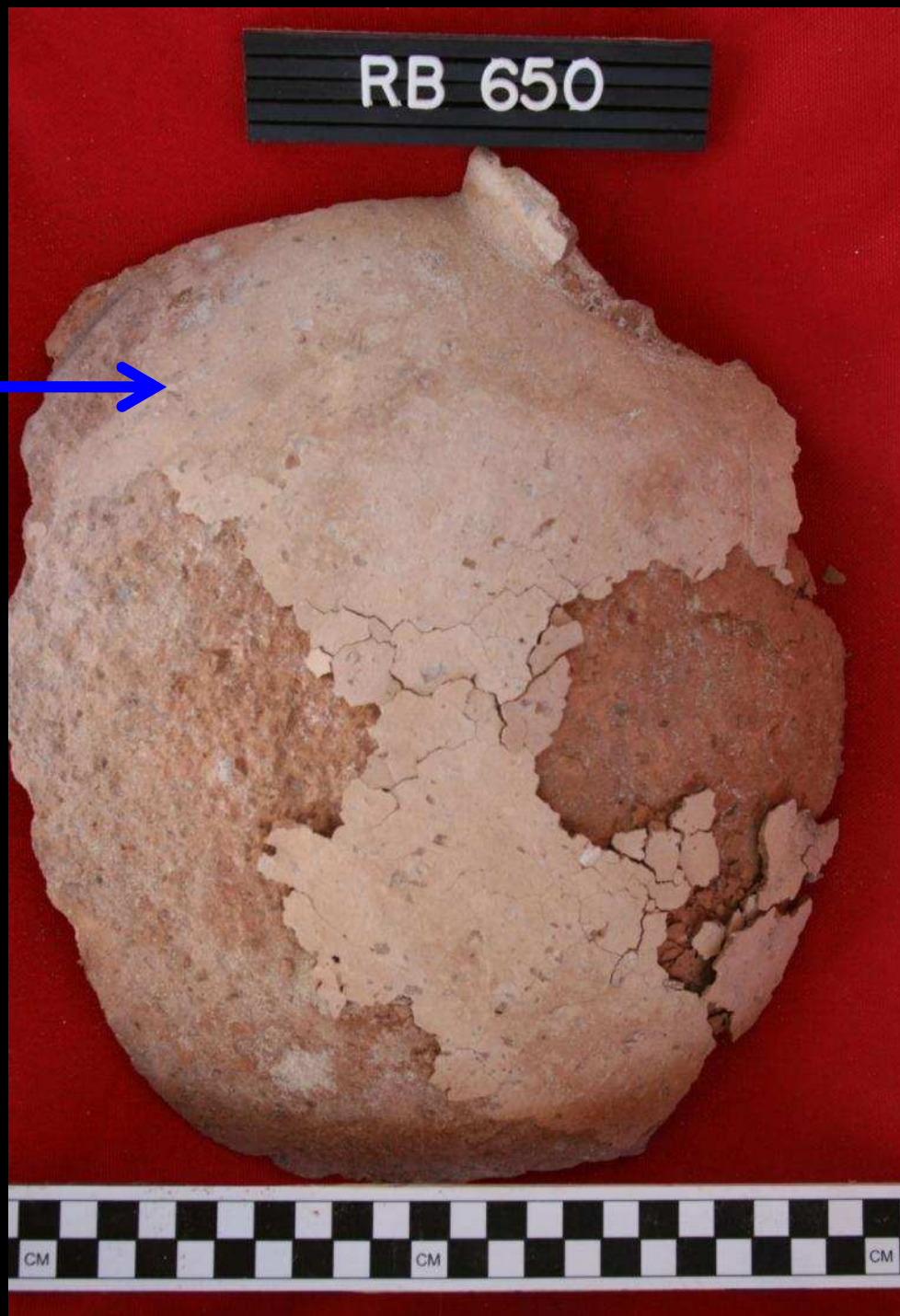
## Ras Budran pottery fabrics ('08):

● Rexine Hummel has classified **2 main types of Sinaitic fabrics** (forming **80-90%** of RB fabrics):

- **Sinai A** (*mostly for jars*):

- **Sinai B** (*for bread moulds*):

→ with 4 sub-types.



**Petrography:** 85%+ of pottery represents Sinaitic fabrics  
A few unbaked vessel pieces indicate local production.



## Ras Budran pottery fabrics ('08):

● She has determined **4 main Nile Valley fabrics** with subdivisions (forming **20-10%** of RB fabrics):

- **Nile Silt-1** (Vienna System B1) ... with a type 1a variant.
- Nile Silt-2 (Vienna System B2)
- Nile Silt-3 (V.-Sys. Nile C)
- **Fabric C** (like V.-Sys. Marl C)
- **Fabric D** (“mixed clay”; P60)
- **Fabric E** with 3 variants (E1-3)

### Petrographic analysis from thin sections:

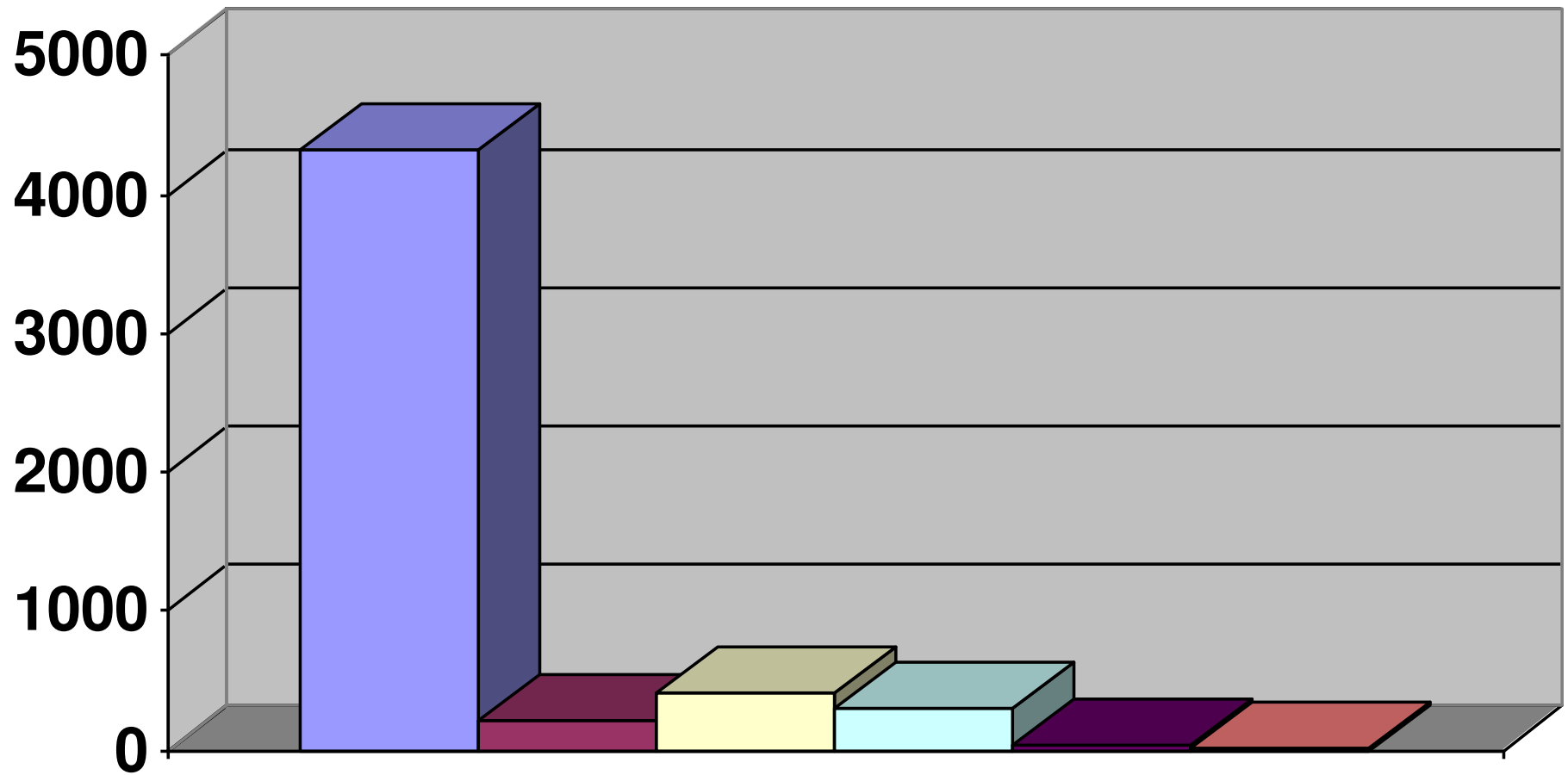
- Stanley Klassen (UT) is analyzing representative samples (on-going)



**Placing Ras Budran pottery fabrics within standard Vienna System (for Egyptian fabrics)**



**R. Hummel study on fabrics: 2 Sinai types (85%); 4 Nile types (15%)**



## Ras Budran pottery fabrics ('08):

● Total of potsherds & diagnostics from Ras Budran 2008 = 5,295.

● Sinai fabrics: = 4,324  
(81.7%)

Sinai A jars: 4,324

Sinai B bread moulds, trays: 205

● Imported Nile fabrics = 766  
(14.5%)

2008 primarily jars & some bowls.

Nile Silt: 409

**Fabric D: 305** →

Fabric E: 40

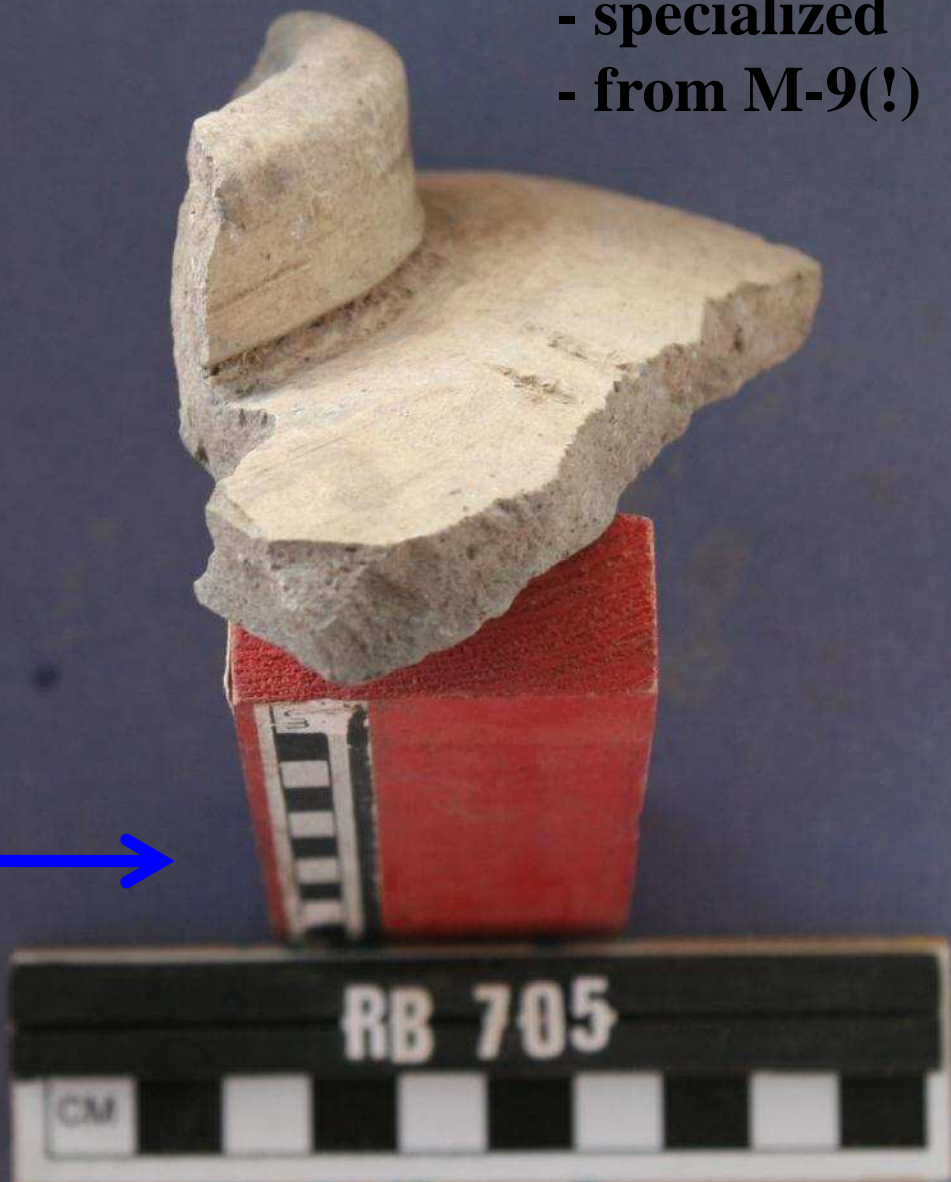
Fabric C: 12

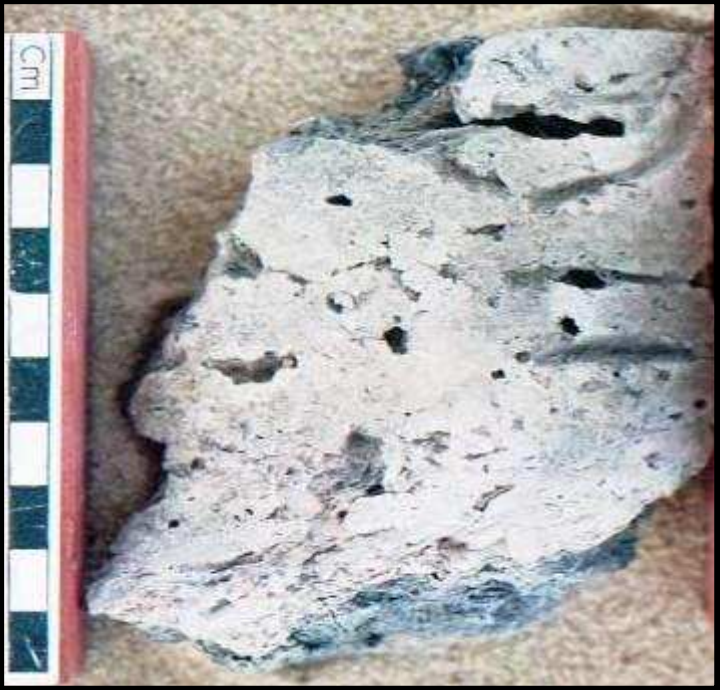
i.e., **FABRIC D** cluster in Grid-Sq.  
M-9 → one broken vessel(?)

Poorly preserved potsherds = **diff. recon.**

## Nile Fabric D:

- specialized
- from M-9(!)

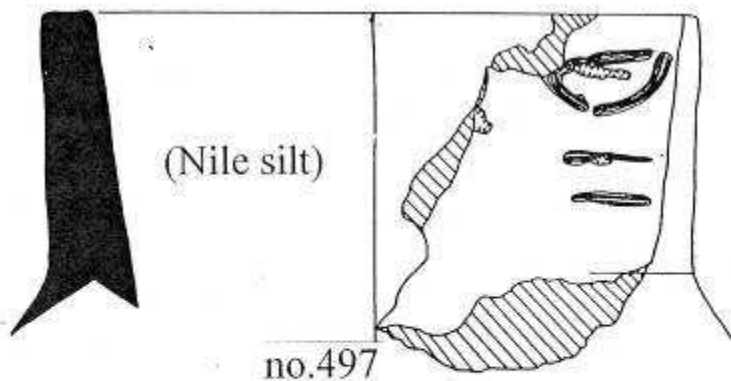
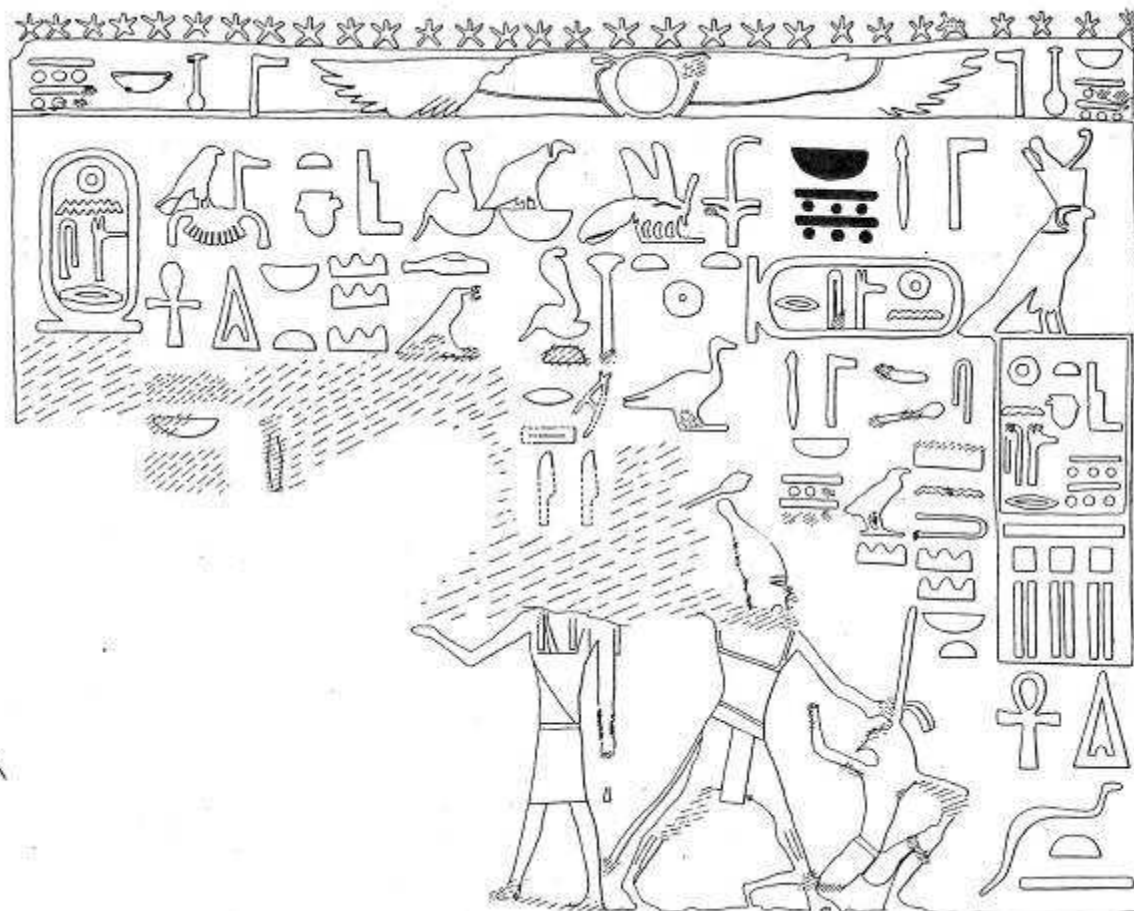




## Epithet Neb Tawy: “lord of the 2 lands”

- Incised on exterior rim fragment from **Dyn. 6-style bread mould**.
- Epithet know from Dyn. 5 onwards.
- Bread mould fabric = Nile silt.
- **Other incised markings = POST-FIRING**

Old Kingdom and later  
*E.g.*, Dyn.5 Ni-user-re-Ini  
 Text no.10 Wadi Maghara



Tell Ras Budran sherd no.497

## Ras Budran pottery corpus:

● Mostly jars & bread moulds:

NOTICABLY ABSENT / FEW:

● No beer jars or narrow jar types

● Relatively few bowls (1 spout).



## Ras Budran pottery contents, etc.:

### ● Function & diet at Ras Budran:

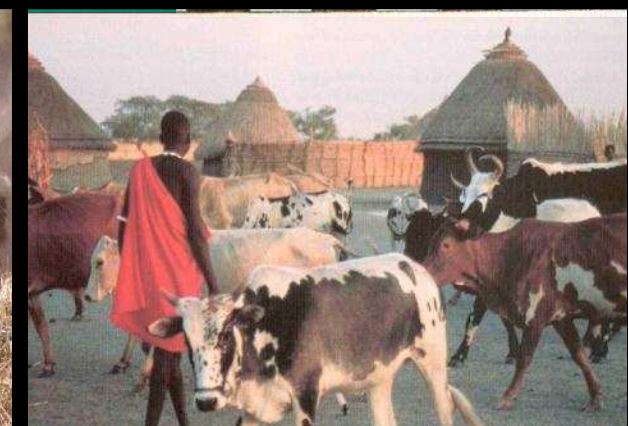
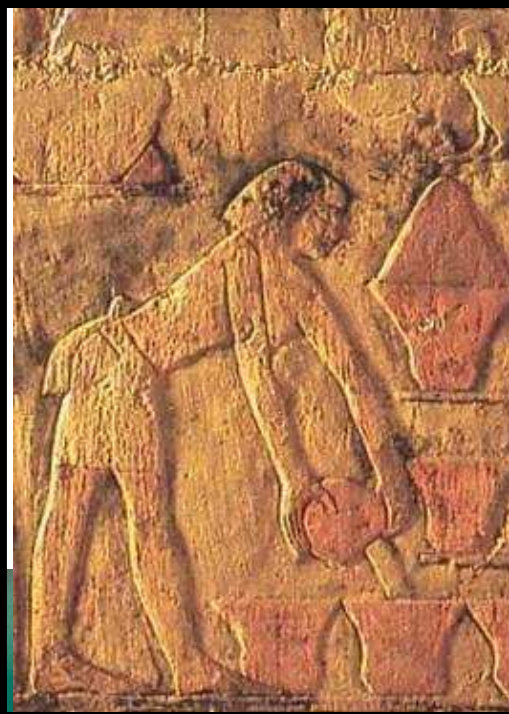
● Aside from pending floatation, the diet appears to be primarily:

- **Bread** (\**bd3* & *'prt* bread moulds)
- **Gruel or soups** (i.e., boiled)
- **Grilled fish** (i.e., 2+ fish bones)
- **Molluscs** (i.e., many chitons)
- **Meat(?)** (greasy sherds; meat smell)

● The uniform Sinaitic ware jars are porous & excellent for cooling: i.e., **ideal water containers.**  
(difficult for pouring; no dippers)

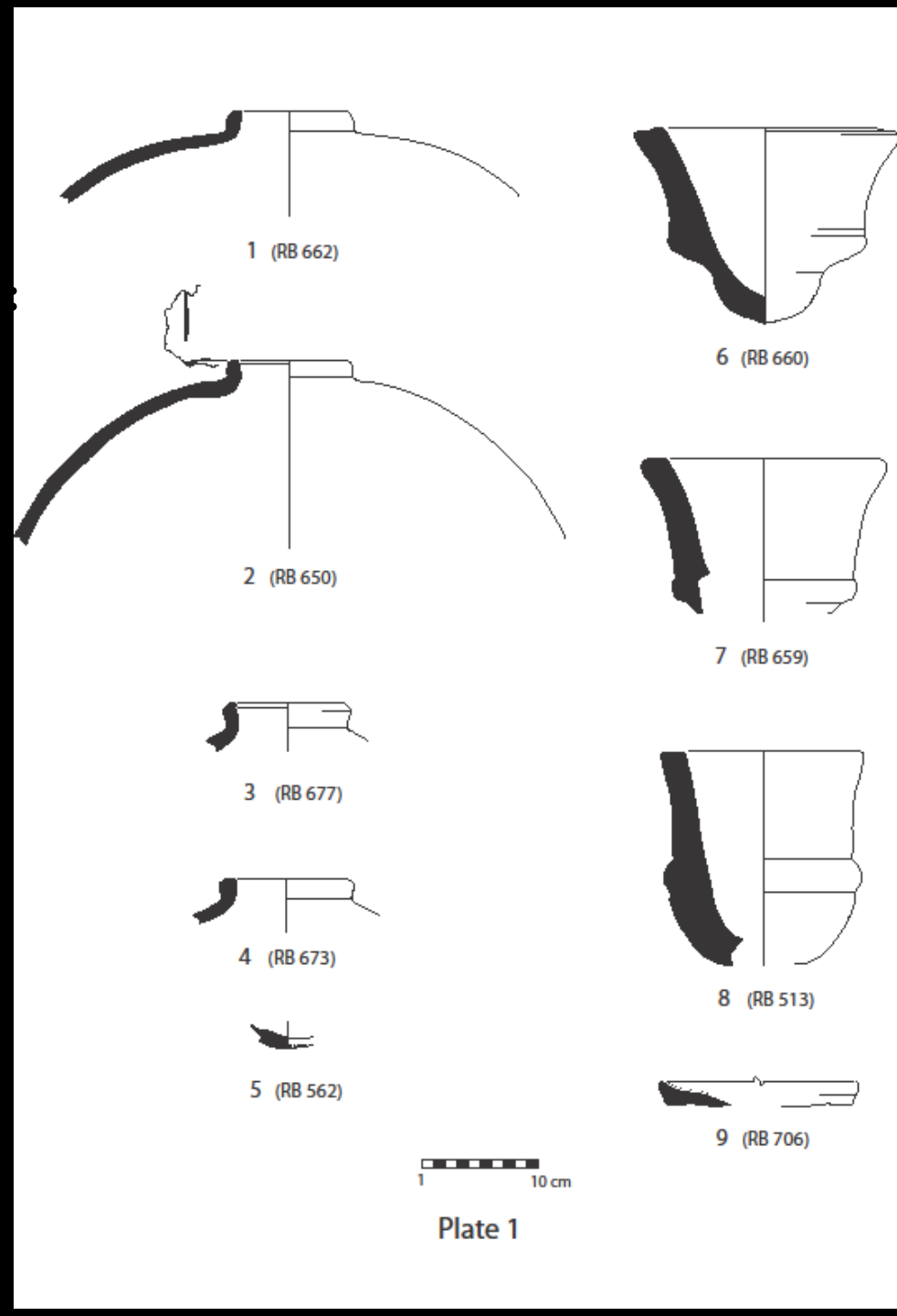
● Some Nile silt jars may have held:

- **Wine**
- **Beer**
- **Various oils**



## R. Budran pottery dating & implications

- R. Hummel found much of the pottery at RB contained **late Old Kingdom markers** (all = Egyptian):
  - esp. bell-shaped *bd3* moulds.
  - wide-shouldered jars.
  - one spouted vessel.
  - Fine red carinated bowls.
- To-date, **none** of the pottery from the fort's floor, or overlying camps, contradict a late Old Kingdom to early First Int. Period date. (equivalent to Early Bronze Age IV: 2300-2200+ BC)  
→ Late Old Kingdom / EB IV



# R.Budran pottery dating & implications:

- Derived from a **Memphite area pottery production tradition.**
- Dominance of Sinaitic fabrics and unfinished raw clay pottery forms implies **potters present at the site**



## Old Kingdom Egypt's poss./prob. role in the Red Sea trade in Levant

- The fort at Ras Budran has yielded **raw turquoise** and **many types of Red Sea shells**.
- Over 35 shell types with variants
- One apparent Nile mollusc (“*aspatharia rubens*” [to verify])
- A few shell types from the fort display **purposeful collection**.
- Did the O.K. turquoise & copper mining expeditions incorporate a **secondary focus**?
  - i.e., Red Sea shell trade
  - i.e., Ochre, malachite, etc.





**(f)-ii. Mid-level assessment of excavations at the study site/area:**

**Mid-level analysis at R. Budran:**

i.e., What does the site mean in its overall to regional context & period?

Looking at a wider picture:

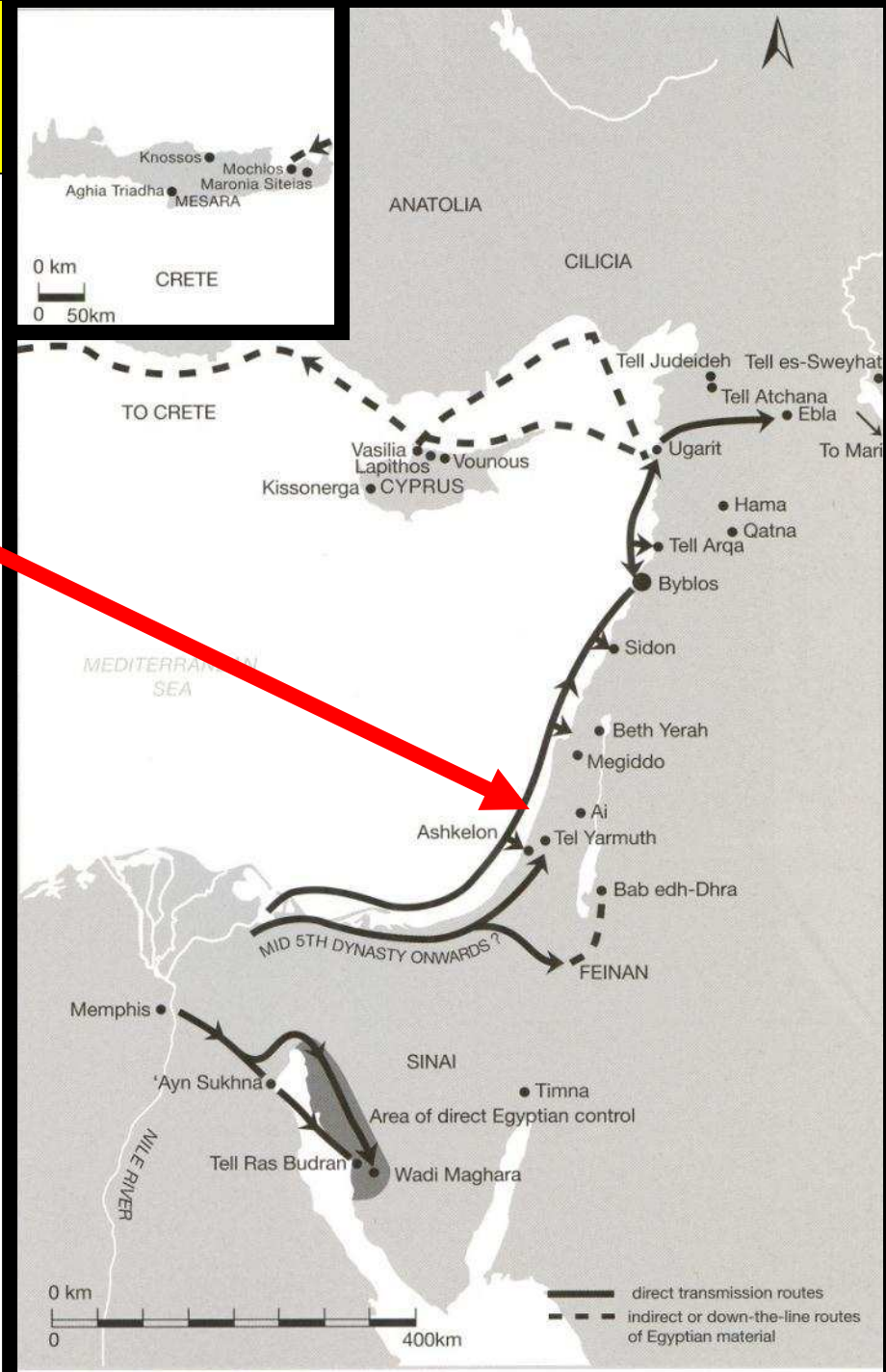
i.e., The overall site.

**What is its significance?**

# Old Kingdom Egypt's poss./prob. role in the Red Sea trade in Levant:

## In the Early Bronze Age Levant:

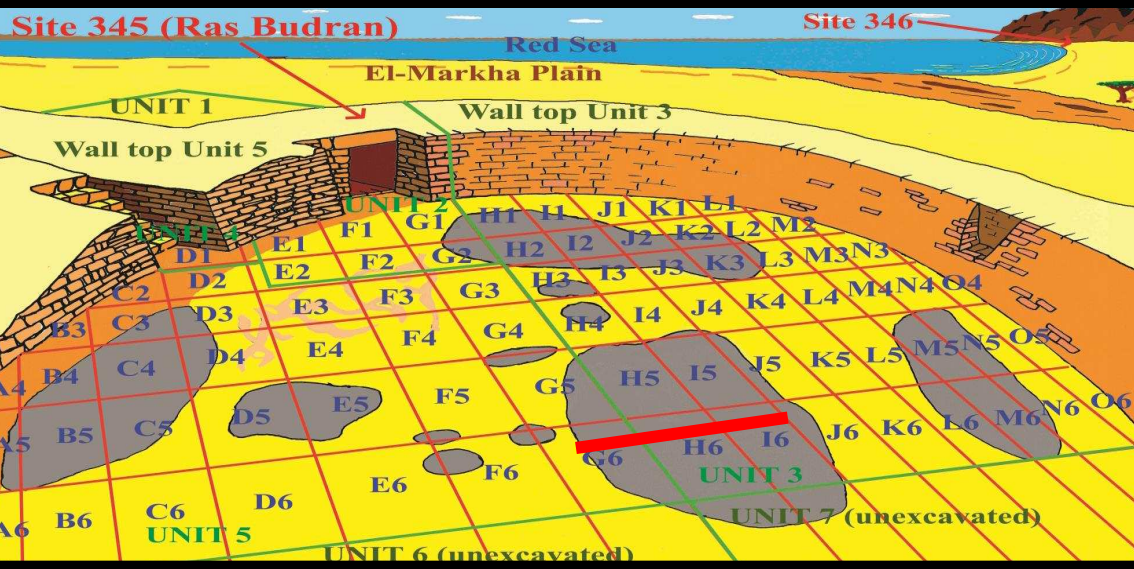
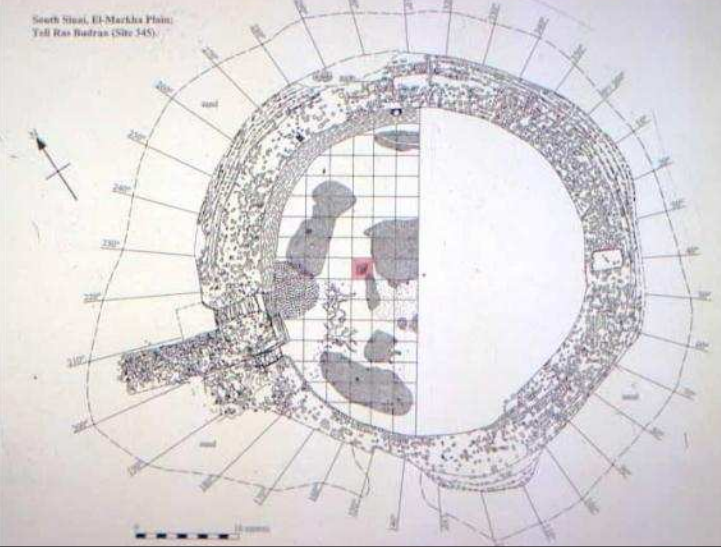
- EB III levels (i.e., Old Kingdom) at Tel Yarmuth has yielded some raw turquoise.
- Red Sea Shells also appear in various contexts in the Levant:  
For example ...
  - *dentalium*
  - mother-of-pearl
  - Red Sea Spider Conch (Scorpion shell)
- **Ras Budran** & other Old Kingdom expeditions may have played a role in such trade.



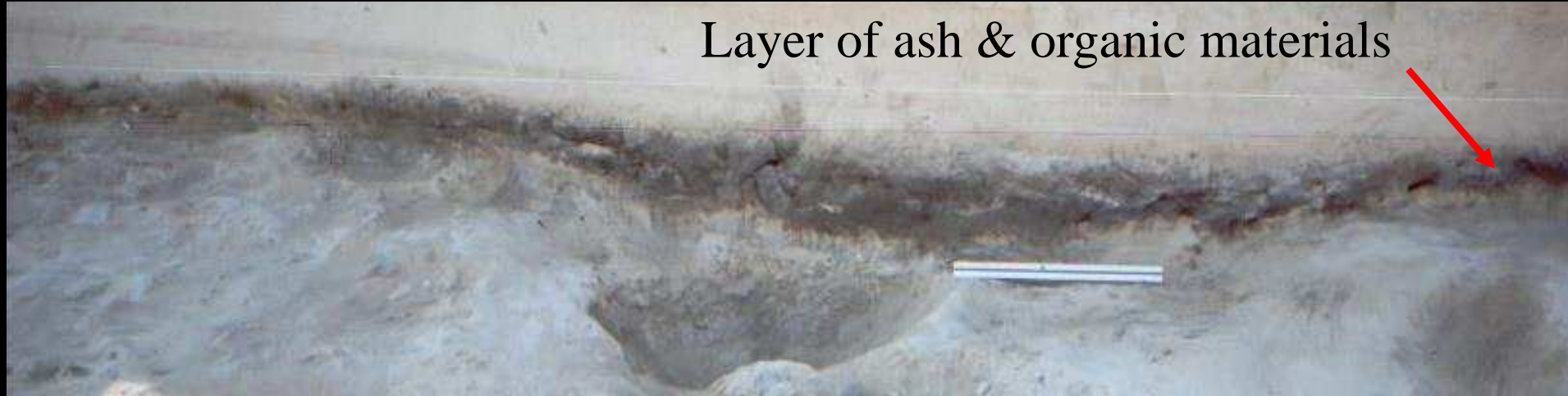
**Fort may have been occupied seasonally (twice) before abandonment**



South Sinai, El-Markha Plain:  
Tell Ras Budran (Site 345).



Layer of ash & organic materials

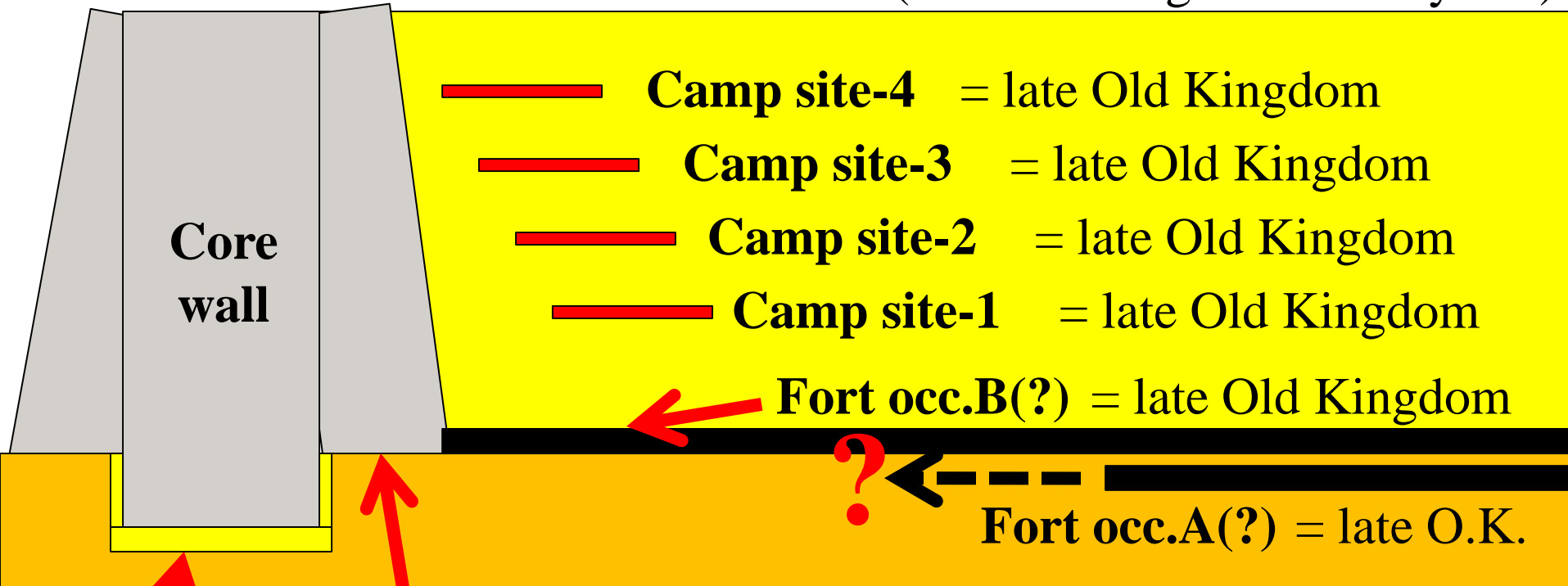


Two layers divided by hard-packed sand



**Ras Budran 2008:** Underlying layer –requires stratigraphic link to the fort’s foundation trench and wall: i.e., pre/post wall.

Wind-blown sand fill (accumulating over 40+? years)



Foundation  
trench for  
core wall

Retaining  
Walls cover  
F.-Trench

**Underlying layer:**

- Is it a pre-fort camp?  
i.e., an earlier OK expedition / construction
- Is it an earlier occupation level for fort?  
i.e., The fort had seasonal occupation

**Re-assessing destruction scenario:**

**Ash layer: Was RB attacked? Taken?**



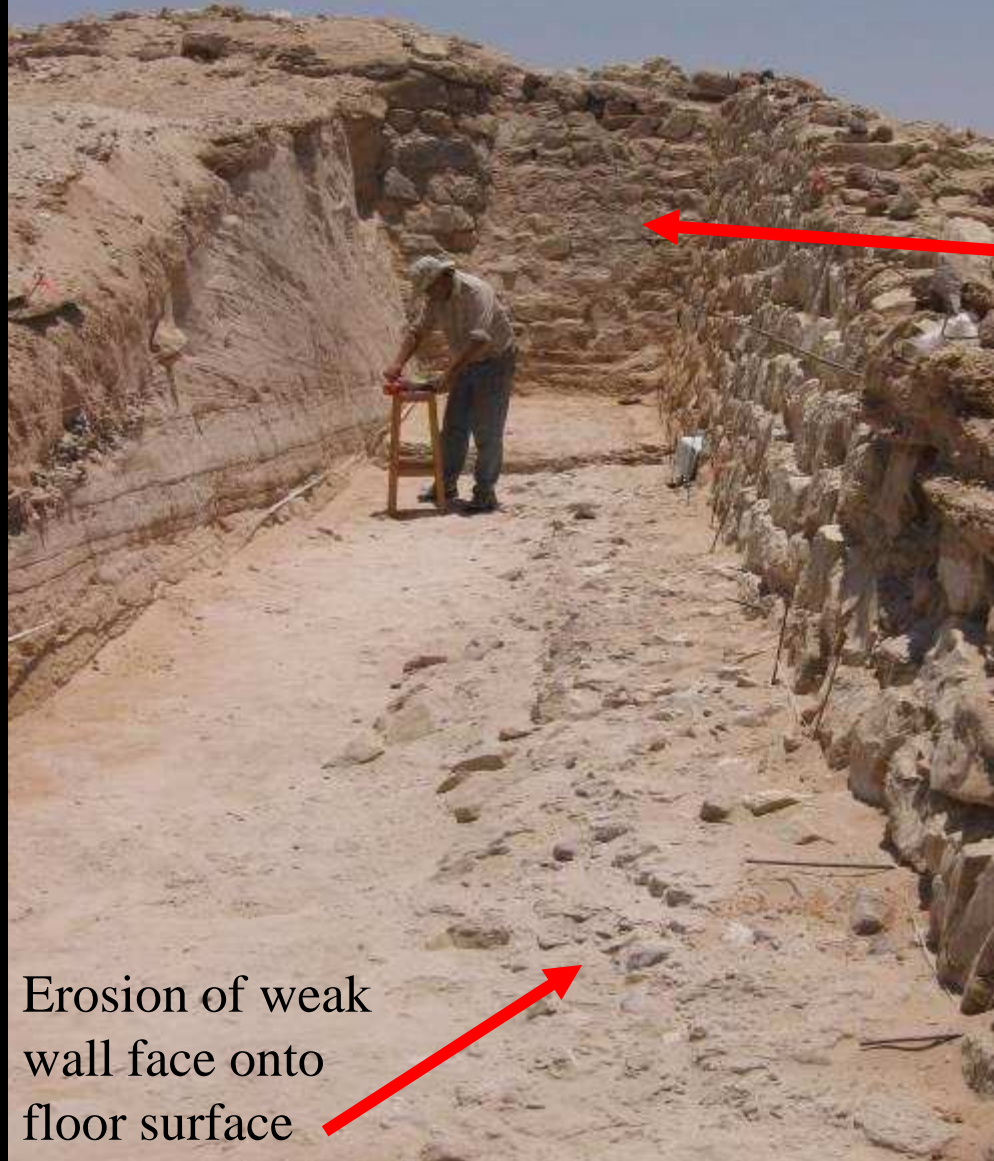
# Late Old Kingdom fort = abandoned! WHY?

- Not economical to maintain?
- Bedouin seize the fort?
- Bedouin threat diminished?
- **OTHER** reasons???



# Salt-encrustations on blocking revealing intense sea spray (i.e., storms)

- Did unanticipated severe storms encourage seaward door blocking?





# Drift sand accumulates & fort = dismantled late OK

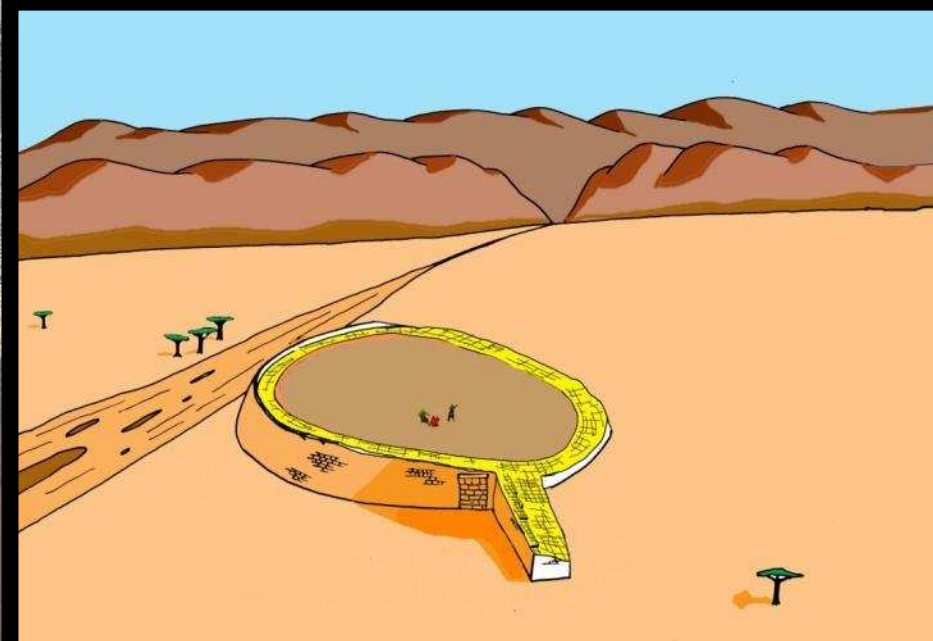
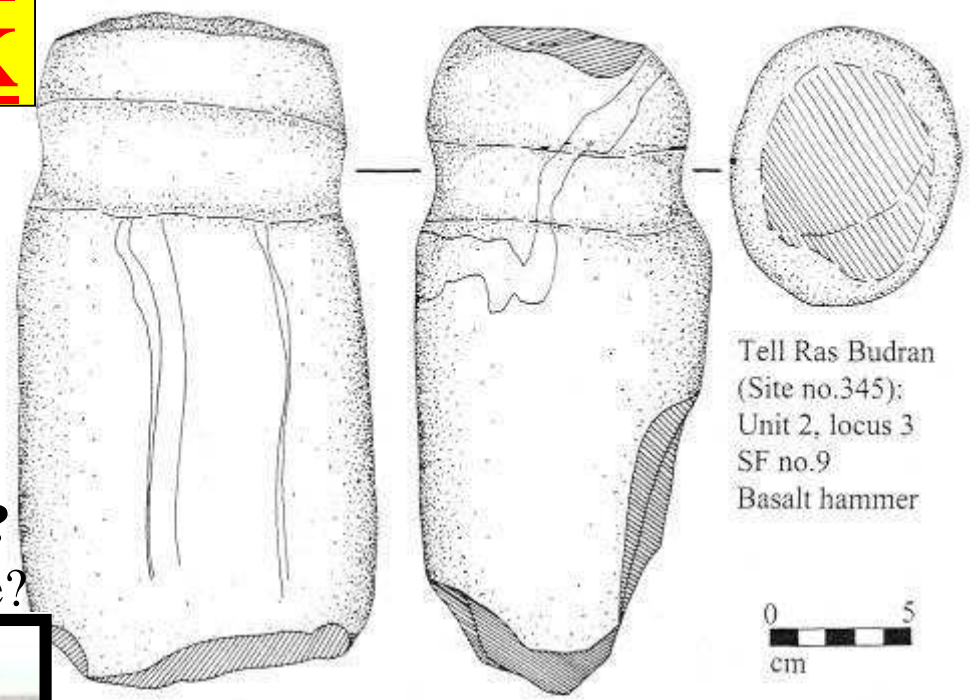
South Sinai: Tell Ras Budran (Site 345).

## Upper occupation:

- 0.22 – 1.30 m of drift sand, hearths, Egyptian late Old Kingdom pottery, hammer stones, & limestone chip debris

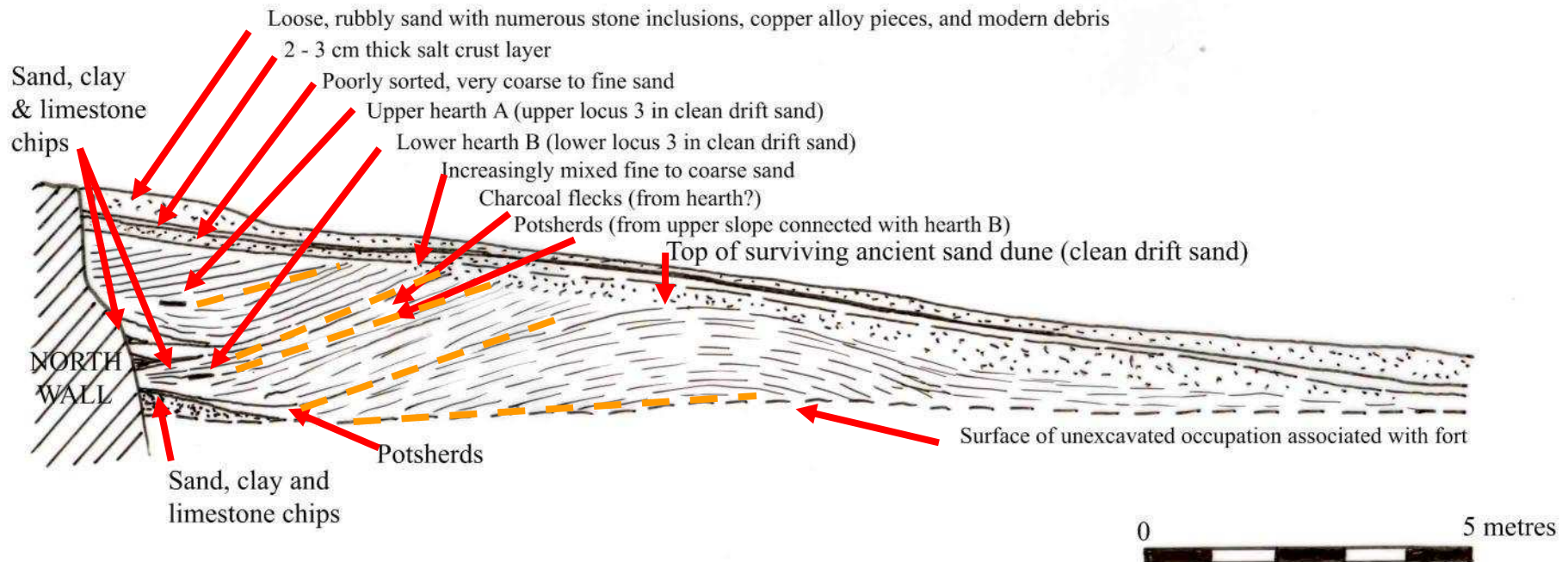
## Implications:

- Egypt dismantling fort wall, Making it **ineffectual for Bedouin reuse?** or **re-building** it further inland, elsewhere?



## Post-floor occupation:

- Four later levels with potsherds and other debris.
  - Two layers with hearths near north wall: Cu-working
- At least four expeditions visiting abandoned fort camping on drift sand prior to 'wave' destruction



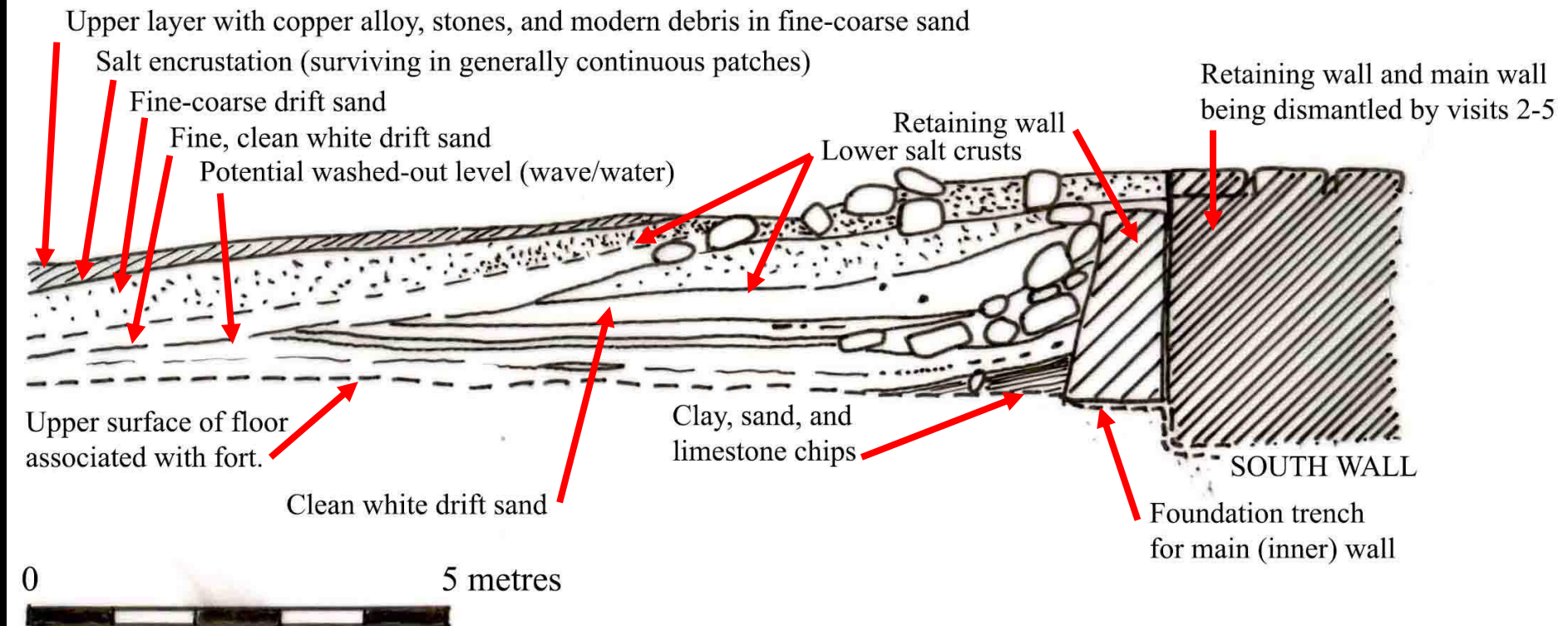
**R.Budran 2008:** 4 years of drift sand filling 10% of W-half of courtyard  
→ estimate in antiquity **40** years max. would have lapsed for this to occur.



**Drift sand** accumulated during-after OK dismantling (assoc. with camps)

# Successive dismantling of the fort's main wall core & inner retaining wall

- Visit-2 some evidence of dismantling, but bulk block removal occurs in visit-3
- Wave/water destruction of layers & later salt crusts **post-date** late Old Kingdom campsites.



- Drift sand forming below, around, and above dislodged blocks during dismantling procedure.

**Late Old Kingdom:**

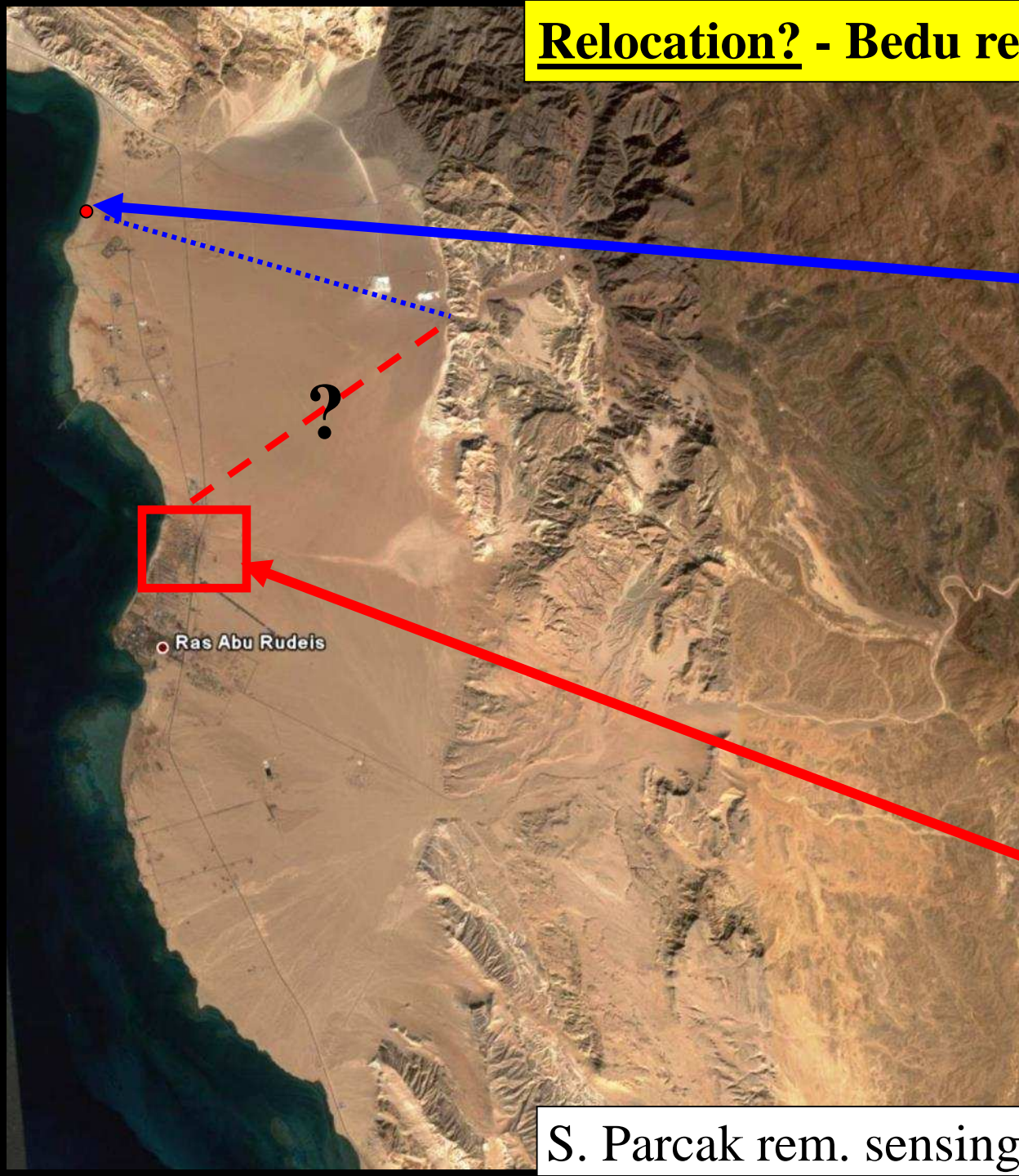
- Dismantling retaining wall



**Tell Ras Budran 2008:**

- Excavation reveals that the inner retaining wall along south side of fort was being dismantled before & during the clean drift sand accumulation

**Relocation? - Bedu report similar site to South**



**Tell Ras Budran: 2004**



**Potential site-1 (?)**



**Potential site-2 (?)**



**S. Parcak rem. sensing**

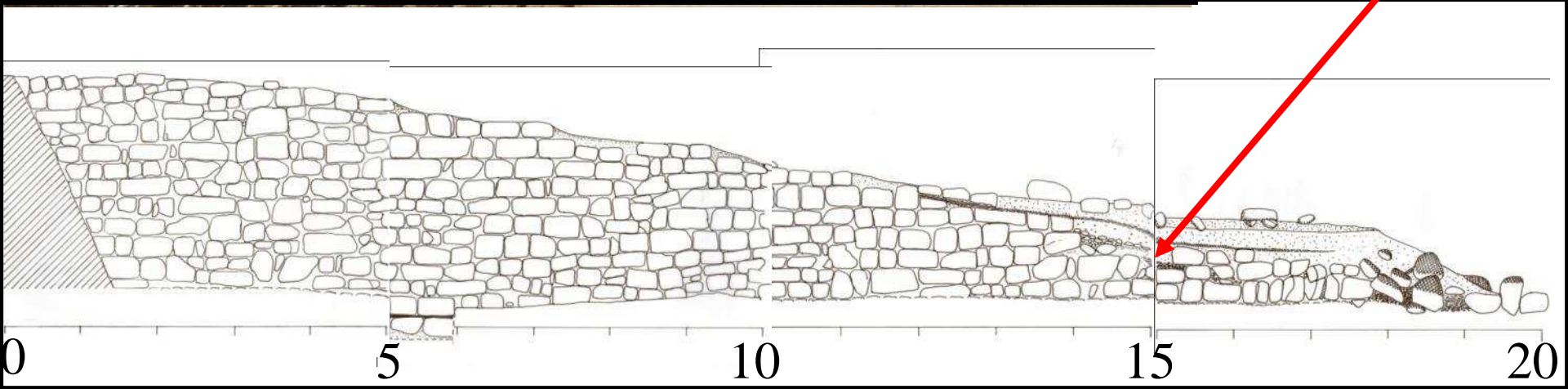
# POST-2200 BC



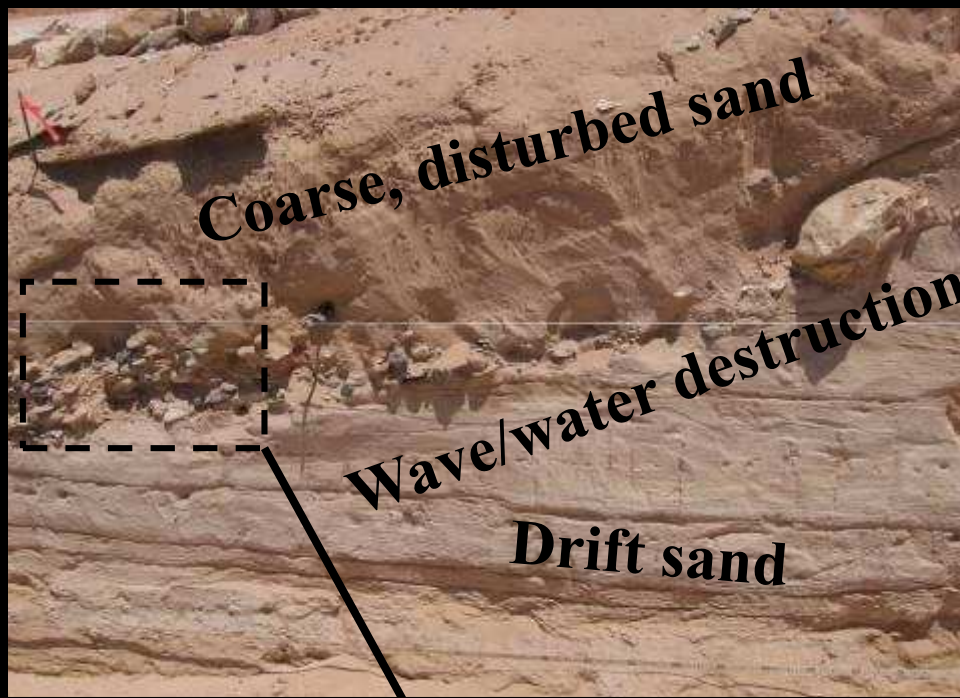
Eastward directed  
Destruction of the  
“bastion” / “quay”

- **Scouring**
- **Sea shells intro.**
- **Cobble/pebbles**

**Note:**  
massive wave  
destroys western  
bastion **after** the  
initial abandon-  
ment of the fort.



# Ras Budran cobbles & modern beach





**Sea spray:** upper portions of disturbed bastion blocks yield continuous salt encrustations above the top level of engulfing sand.



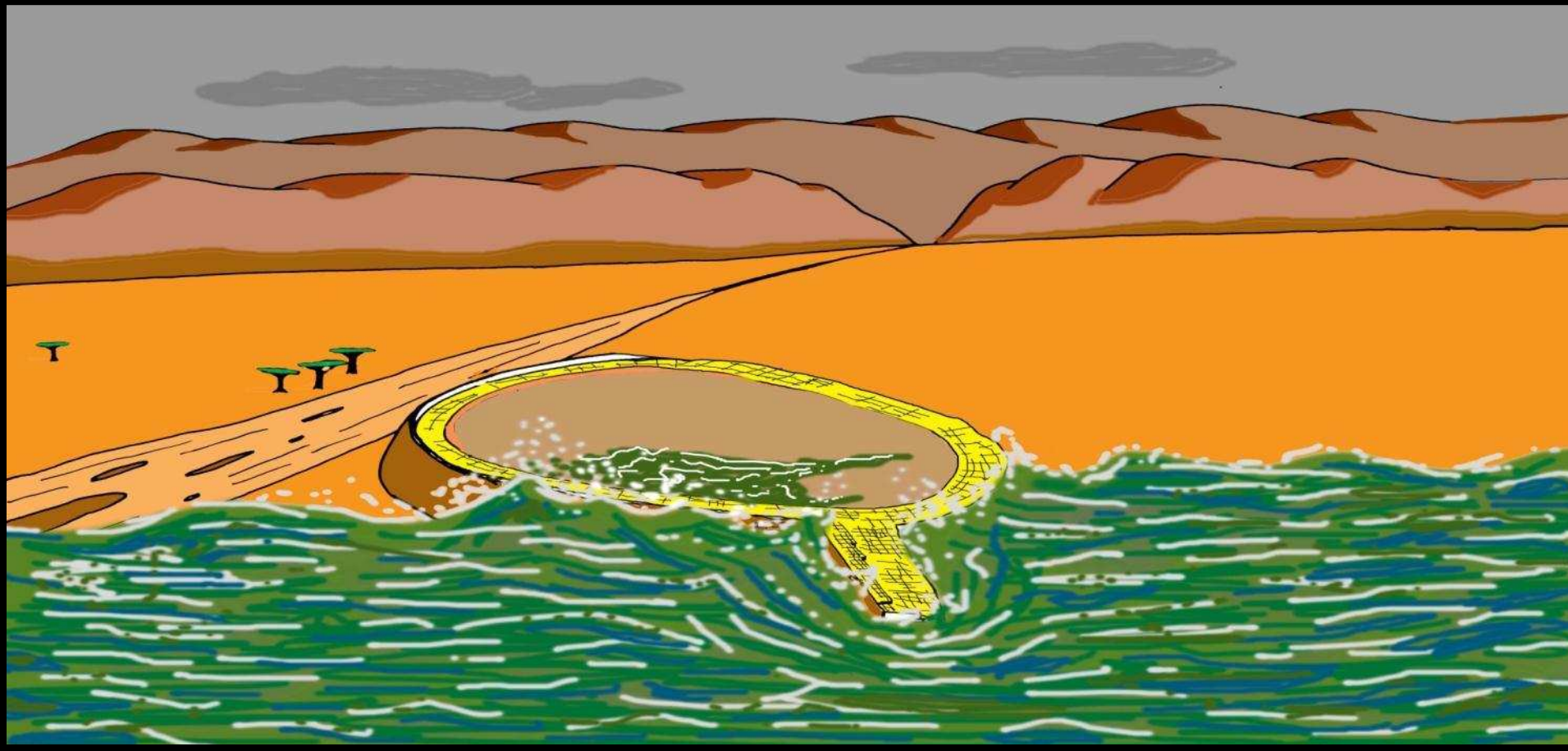
**Post-Dyn.6 salt crusts:** Heavy sea storm?; storm surge?; seismic tidal wave?; other?

**FIP Darkness & storms:** “The sun is obscured and gives no light that men may see.  
Men cannot live when storm clouds hover”

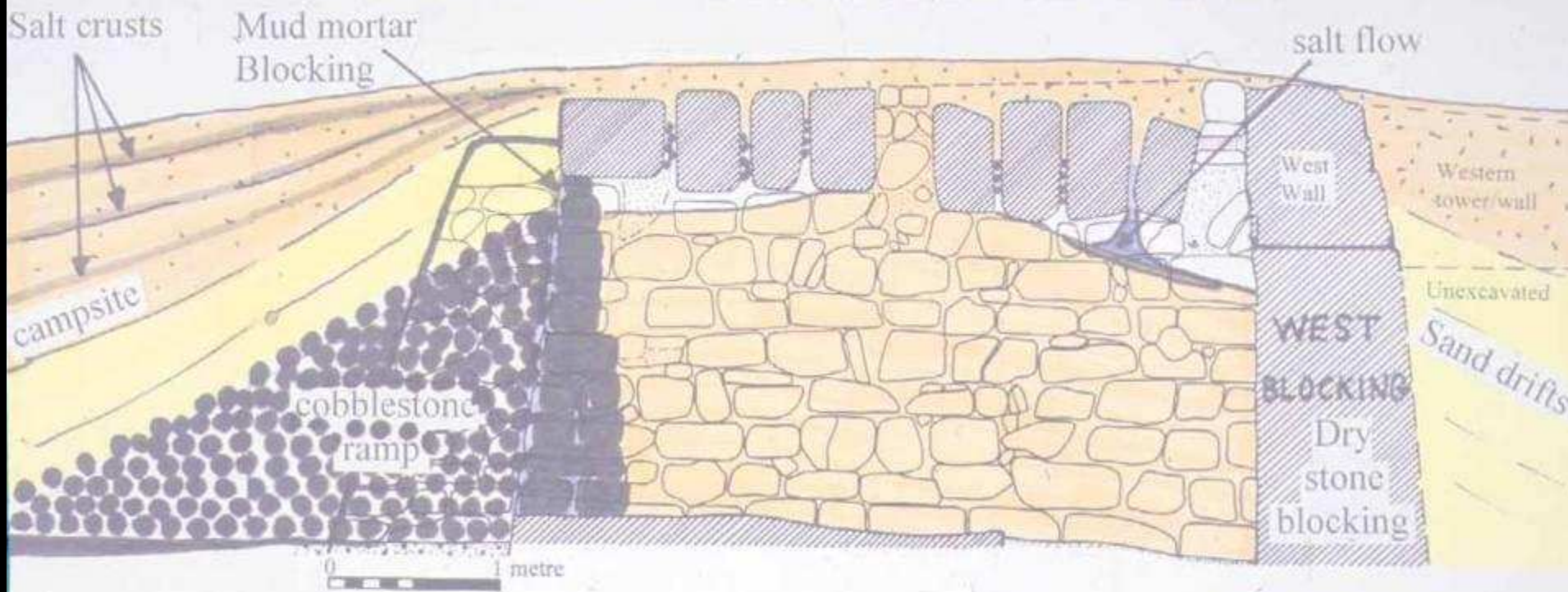
**FIP Chaotic winds:** “[S]outh wind will clash with north wind,  
and the sky will not be of a single breeze”

**FIP Low Niles/drought:** “The river of Egypt is empty,  
and the waters may be crossed on foot”

**FIP desertification:** “Verily, the desert pervades the land”



Tell Ras Budran (Site 345): South profile and cross-section of Chamber 1.



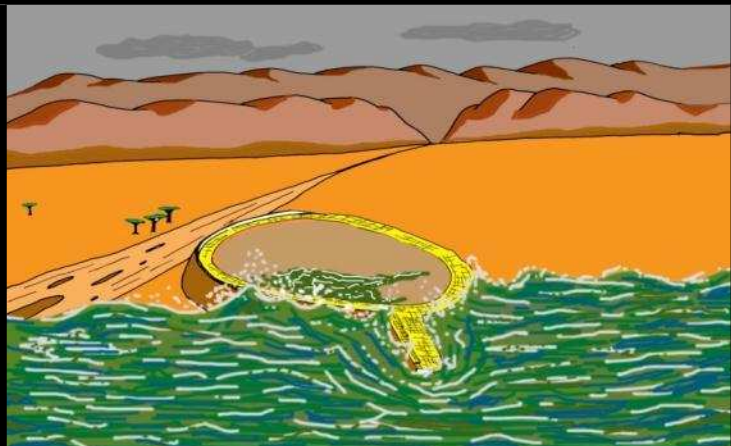
**Post-Dynasty 6 salt crusts:**

- Storm surge(?) / Seismic tidal wave(?)
- Natural salt crust accumulation(?).



Submarine earthquakes over 8 on Richter scale → Invariably cause a seismic sea wave.

Southern end of Red Sea Lies within a zone of abundant, shallow-focus earthquakes (7.9+ on the Richter scale)



**(f)-iii. Broader assessment of excavations at the study site/area:**

**Macro-level analysis at R. Budran:**

i.e., What does the site mean in its broader context & period?

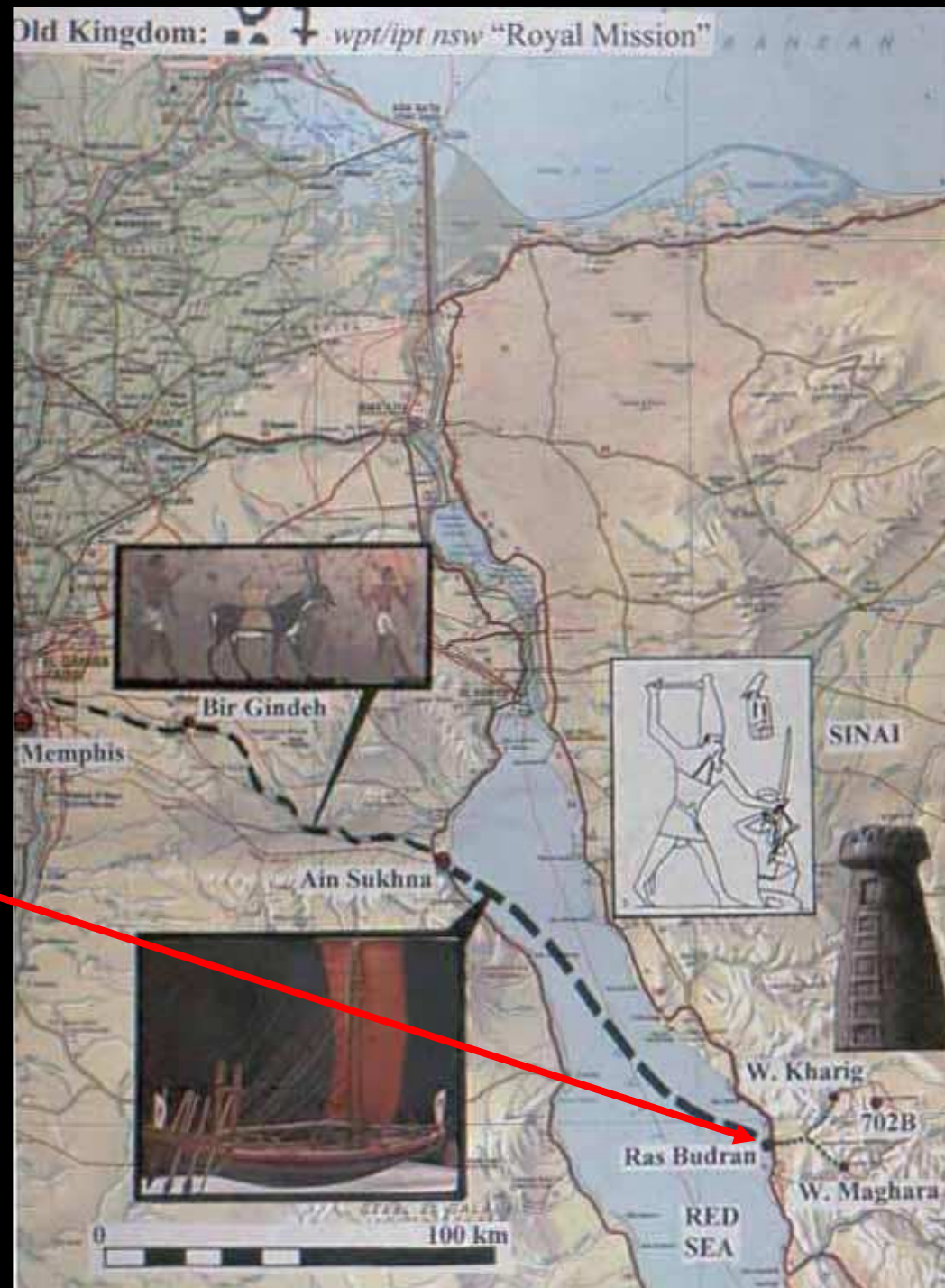
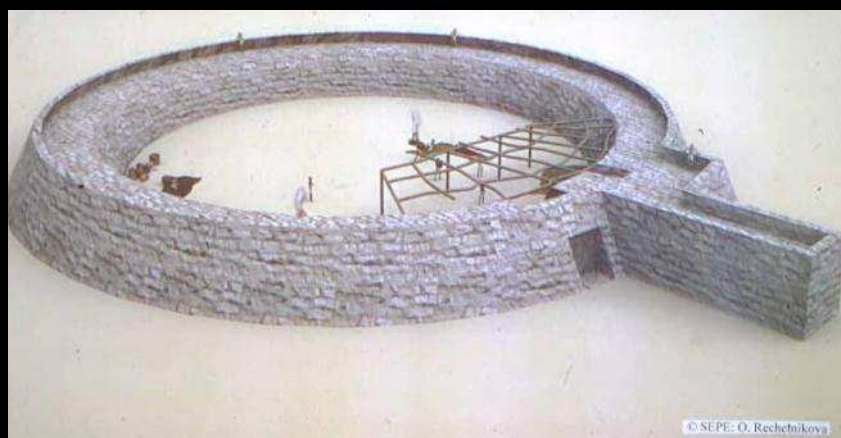
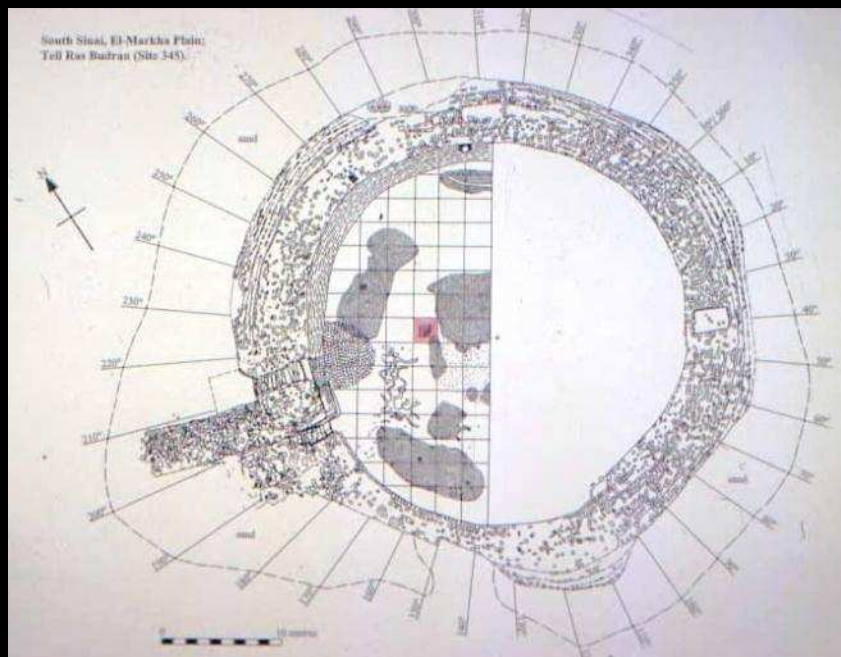
Looking at the big picture:

i.e., The broader context.

**Significance?**

# A late OK fort in S. Sinai?

- What is it doing here?
- Can we explain its odd use of stone?
- Can we explain its “unique” design?



**c.2200 BC global climatic event → var. effects**



**ca.**

**2,350**

**to 2,200**

**cal. years BC:**

**Possible change in**

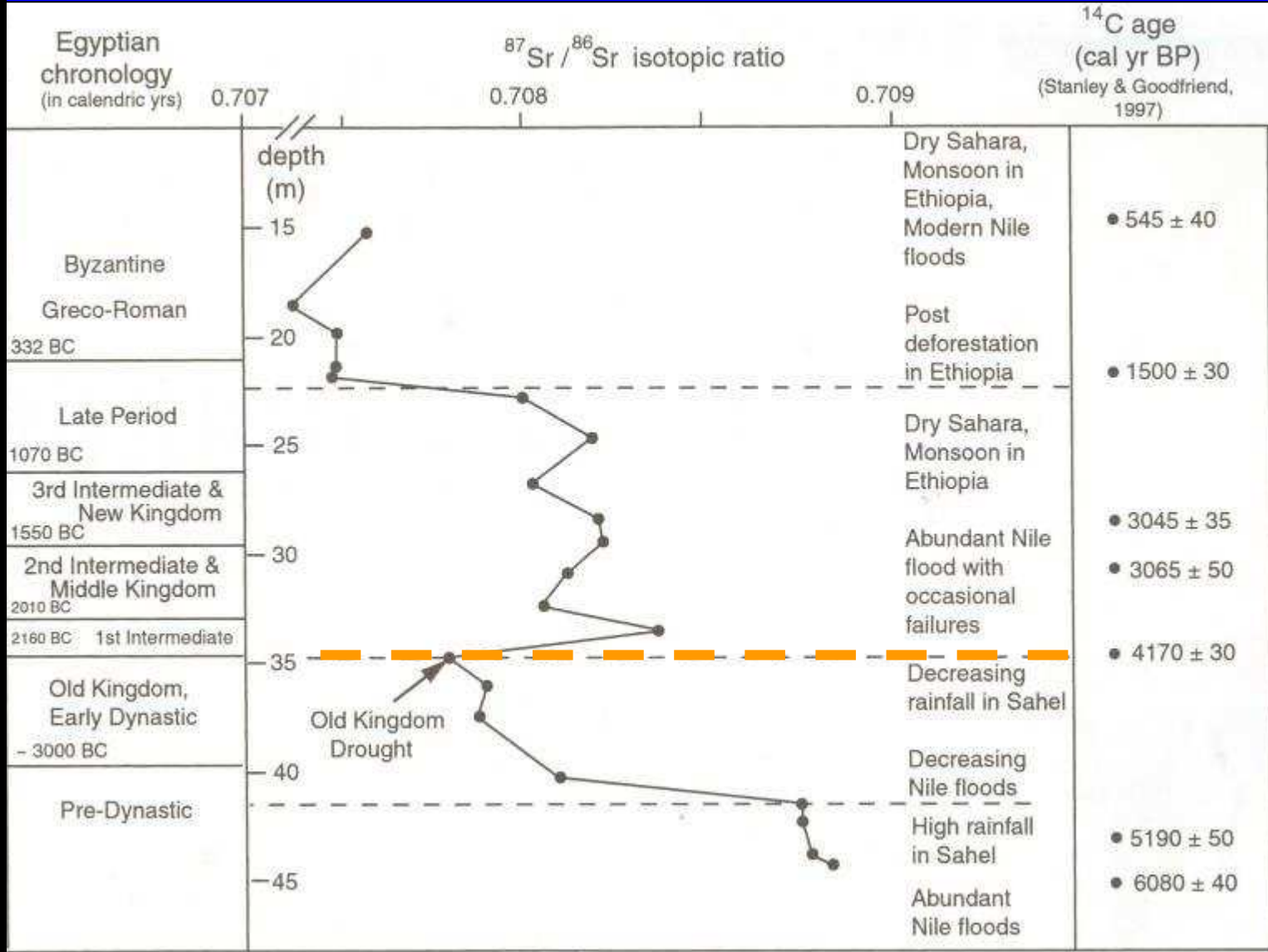
**circulation of Atlantic currents**

**may have induced weak monsoons**

**contributing to “decline”/”collapse” within**

**Egypt, Syria-Palestine, Turkey, Mesopotamia, etc.**

# Ca.3000-2200 BC: increasingly drier environment



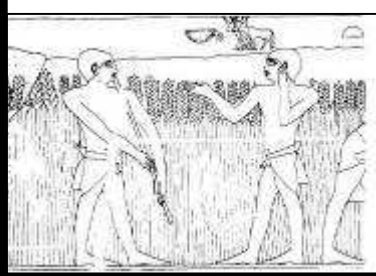
**Less rain in Ethiopia**



**Lower Niles**



**Fewer crops**



**Famine**



**Ca.2170 BC +/- 30 = late OK drought**

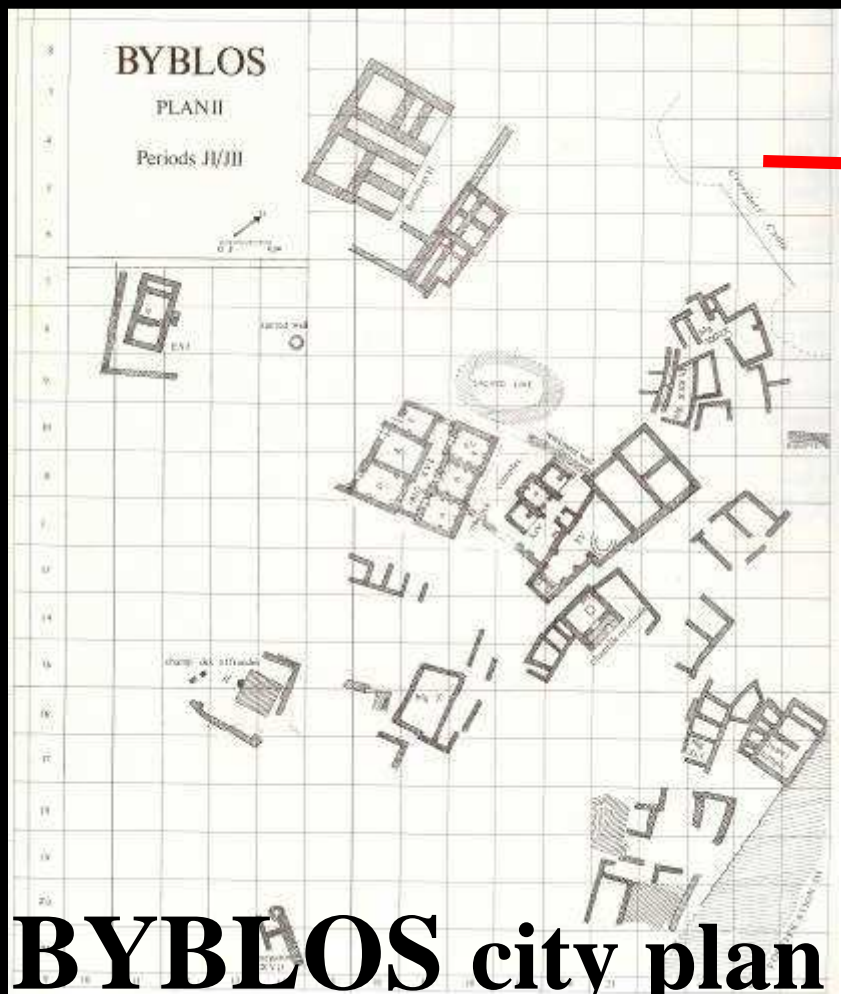
# SYRIA: ca. 2250-2000 BC

## Early Bronze Age IVB:

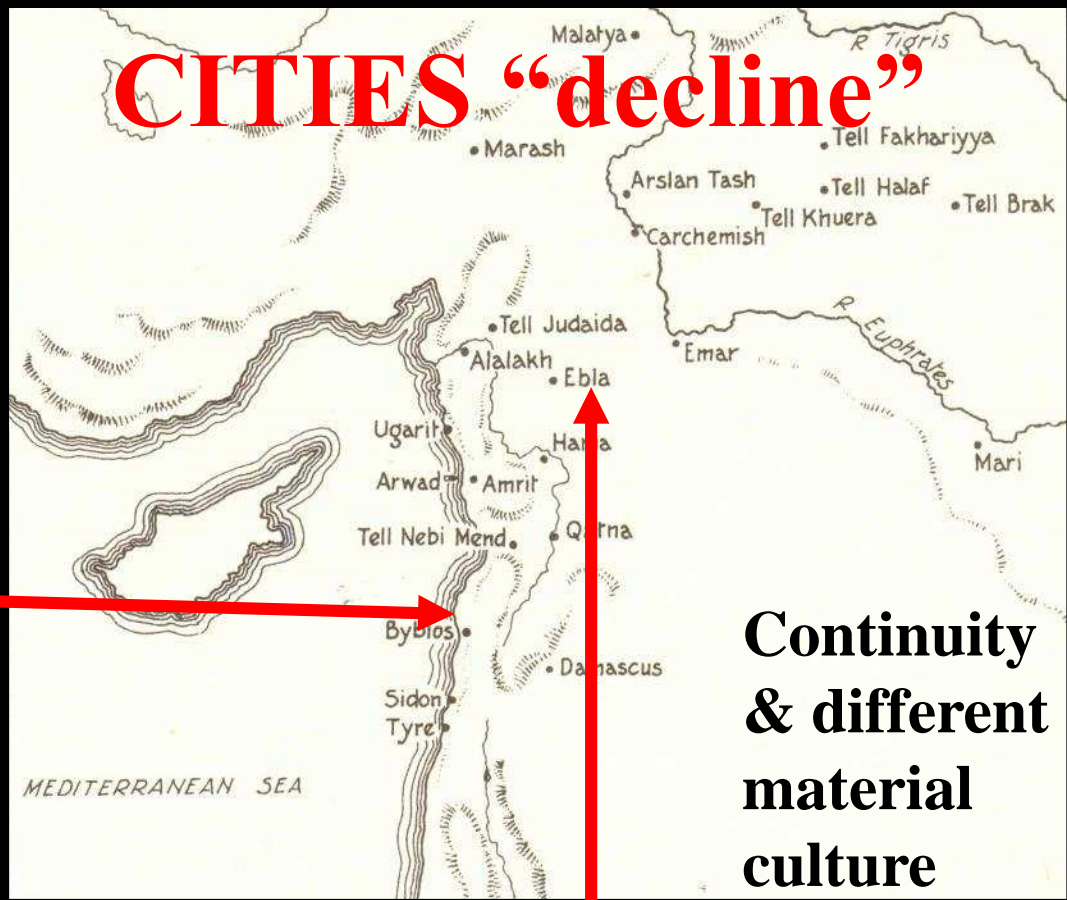
(Late Old Kingdom-FIP Egypt)

- **BYBLOS J1/2 & EBLA IIB2 cities**

Cities re-occupied (immediately),  
albeit less prosperous & some diff.

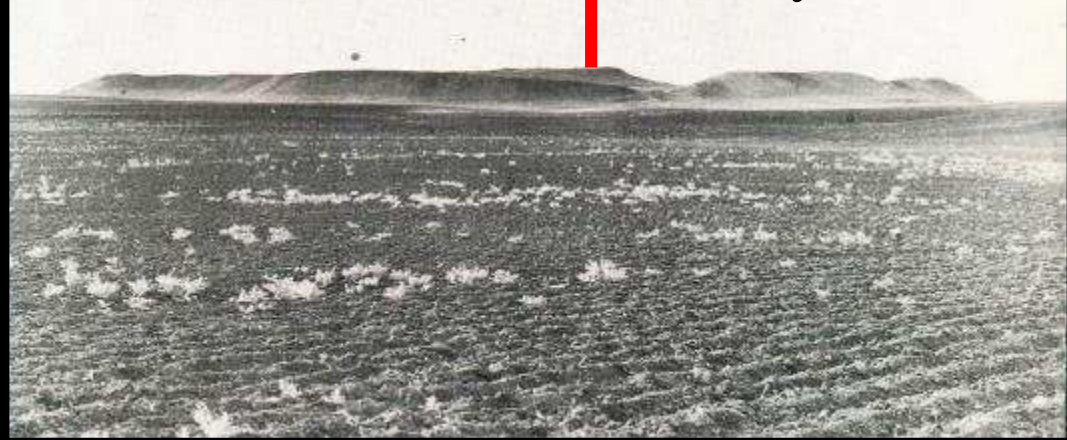


**BYBLOS city plan**



**Continuity  
& different  
material  
culture**

EBLA (Tell Mardikh) IIB2 city declines





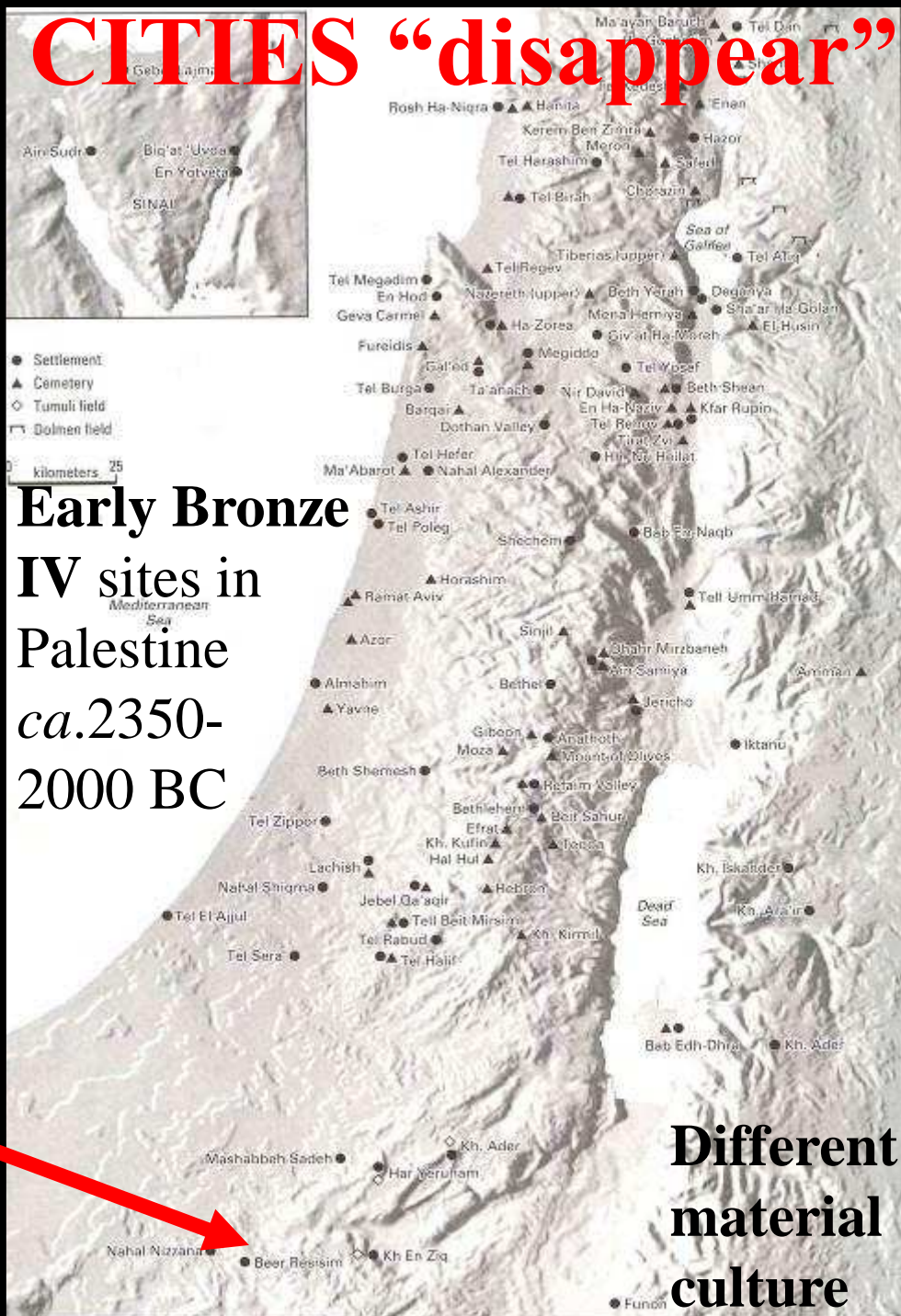
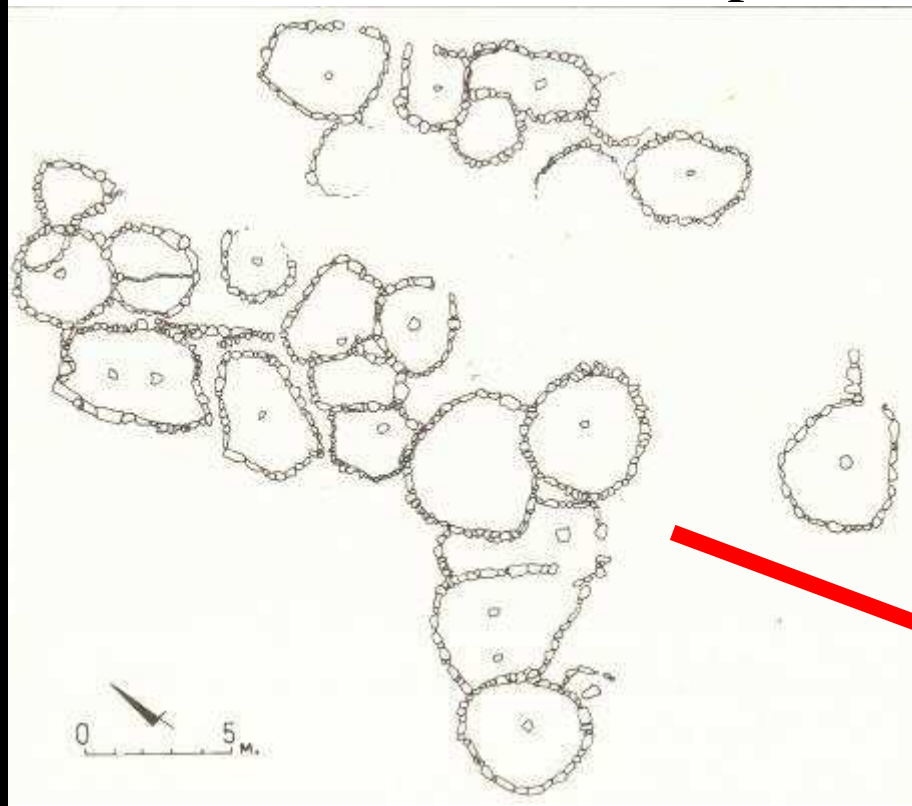
# **PALESTINE: ca.2350-2000 BC**

## **Early Bronze Age IV (“MB I”)**

(Late OK-FIP Egypt: Dyns.6-11)

- **Most settlements abandoned!**
  - Seasonal campsites, etc.
- **Nomadic / Pastoral existence:**
  - Different material culture.

### **Beer Resisim seasonal campsite**



### **Early Bronze IV sites in Palestine ca.2350-2000 BC**

**Different material culture**

# Late Old Kingdom: Troubles along E. Frontier

# Dyn.6 (advent of Early Bronze IV):

- 1,000+ Bedouin seasonal camps
- Some Asiatic settlements in Sinai
- Egyptian raids into Sinai-Palestine
- Massacres of Egyptian expeditions (e.g., Red Sea; Lower Nubia)
- E. Frontier forts (Km-wr L. Timsah)
- S. Sinai fort (Ras Budran)

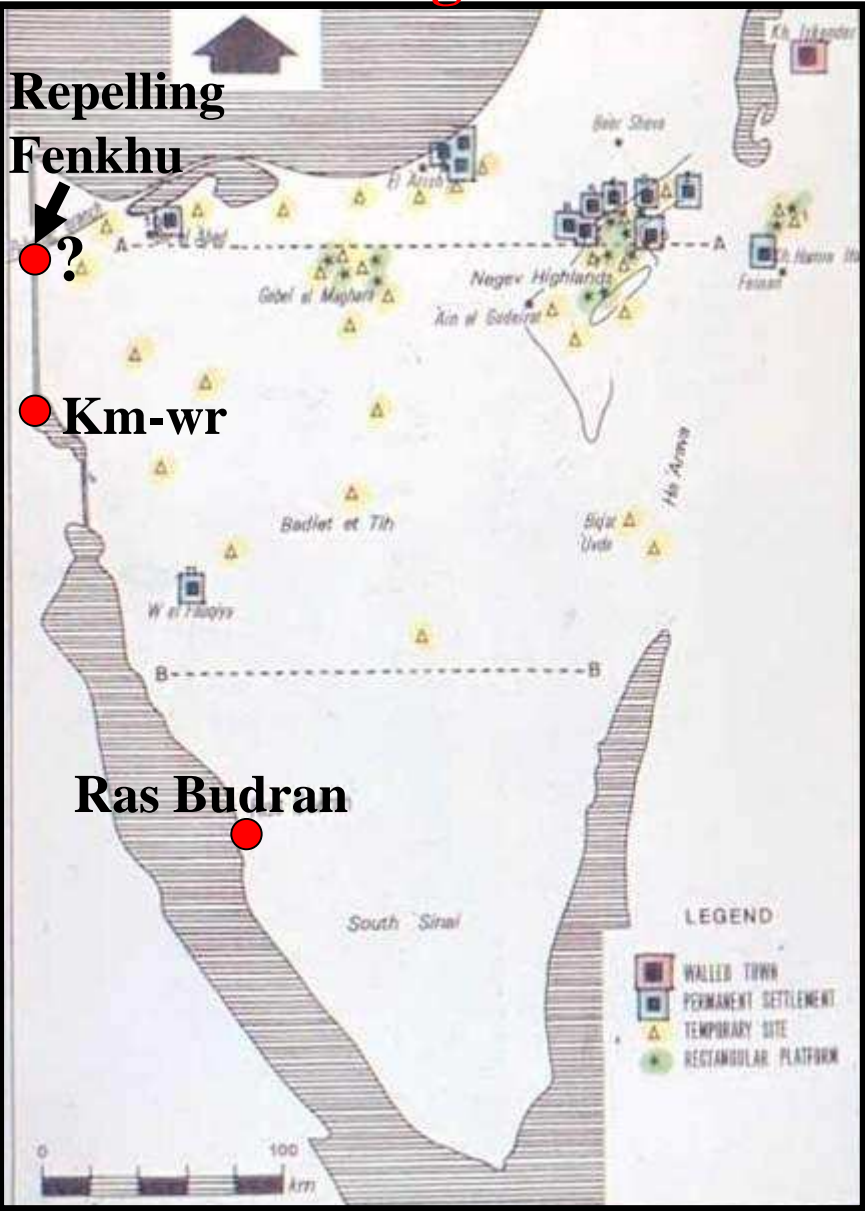
Repelling  
Fenkhu



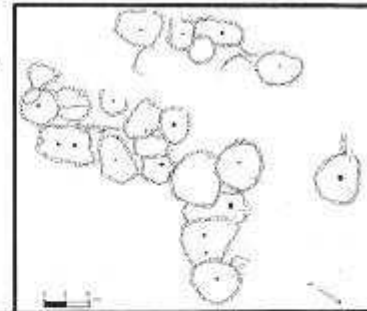
Km-wr



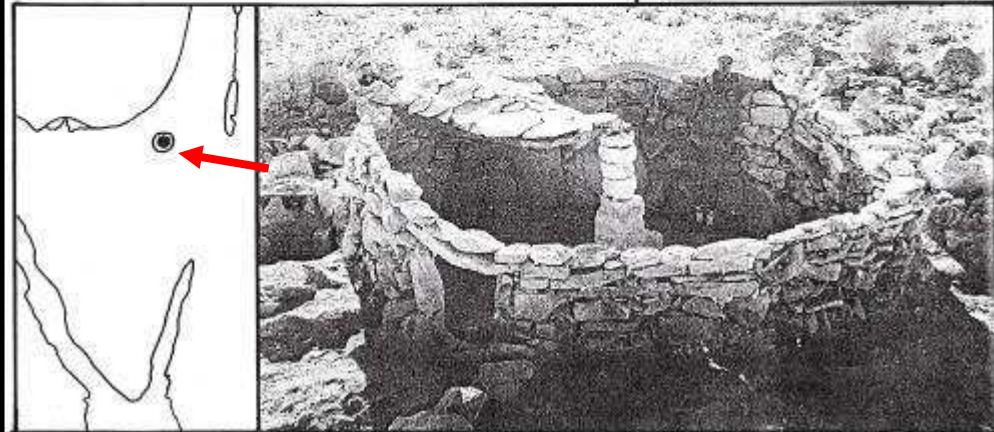
Ras Budran



SINAI-NEGEV: Be'er Resisim.  
Early Bronze IV settlement  
ca.2,200 - 2,000 B.C.



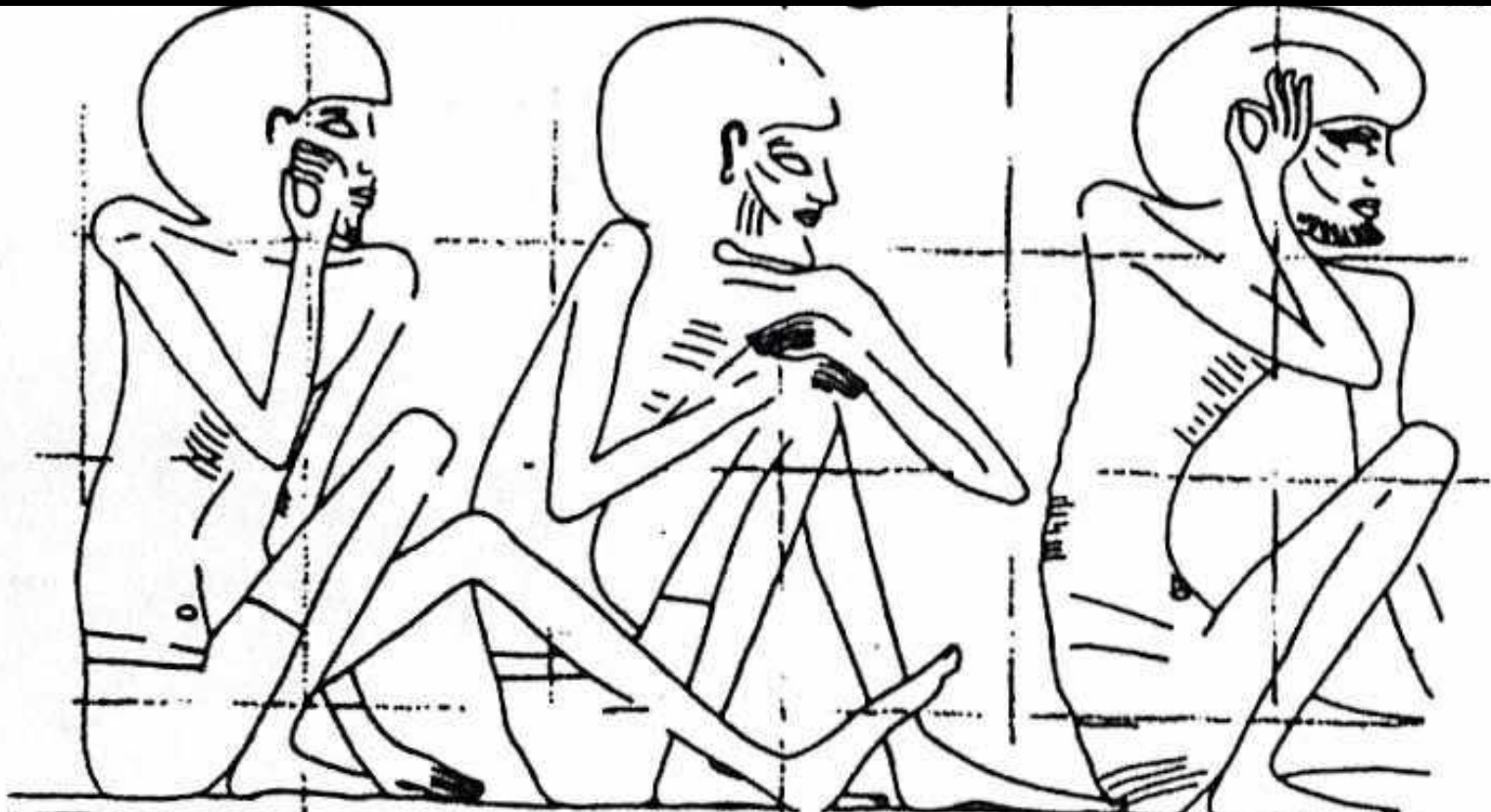
Circular houses



# Late Old Kingdom-First Intermediate Period views about Bedouin:

(Dyns. 6-10: ca. 2200 – 2040 BC)

**BEDU:** “He has never settled in one place,  
but plagued by want, he wanders the desert on foot,  
He has been fighting ever since the time of Horus,  
He neither conquers, nor can he be conquered,  
He does not announce the day of fighting,  
But is like a thief whom society has expelled.”



## The "Sand-Dwellers" (hryw-š'y)

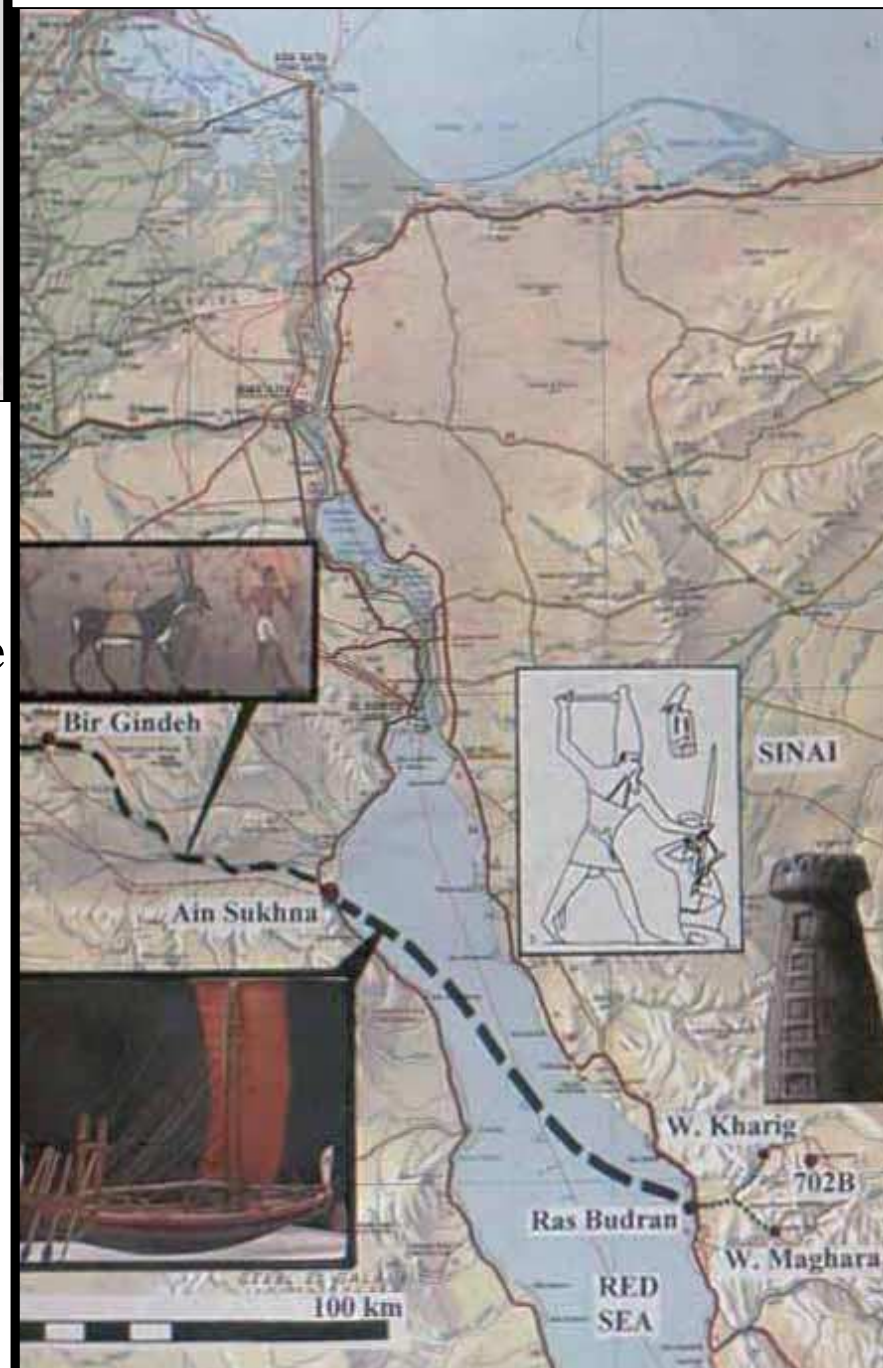
	= hryw-š'y	Weni (Dyn.6)
	= hryw-š'y	Weni (Dyn.6)
	= hryw-š'y	Pepynakht (Dyn.6)
	= hryw-š'y	Abydos stela of Montuhotep (MK)
	= hryw-š'y	Louvre Stela CI, Nessumontu (MK)

Location: Egypt's Northeast Desert, the Sinai Peninsula, and Southwest Palestine.

## Dyn.6: Pepy-nakht, governor of Elephantine

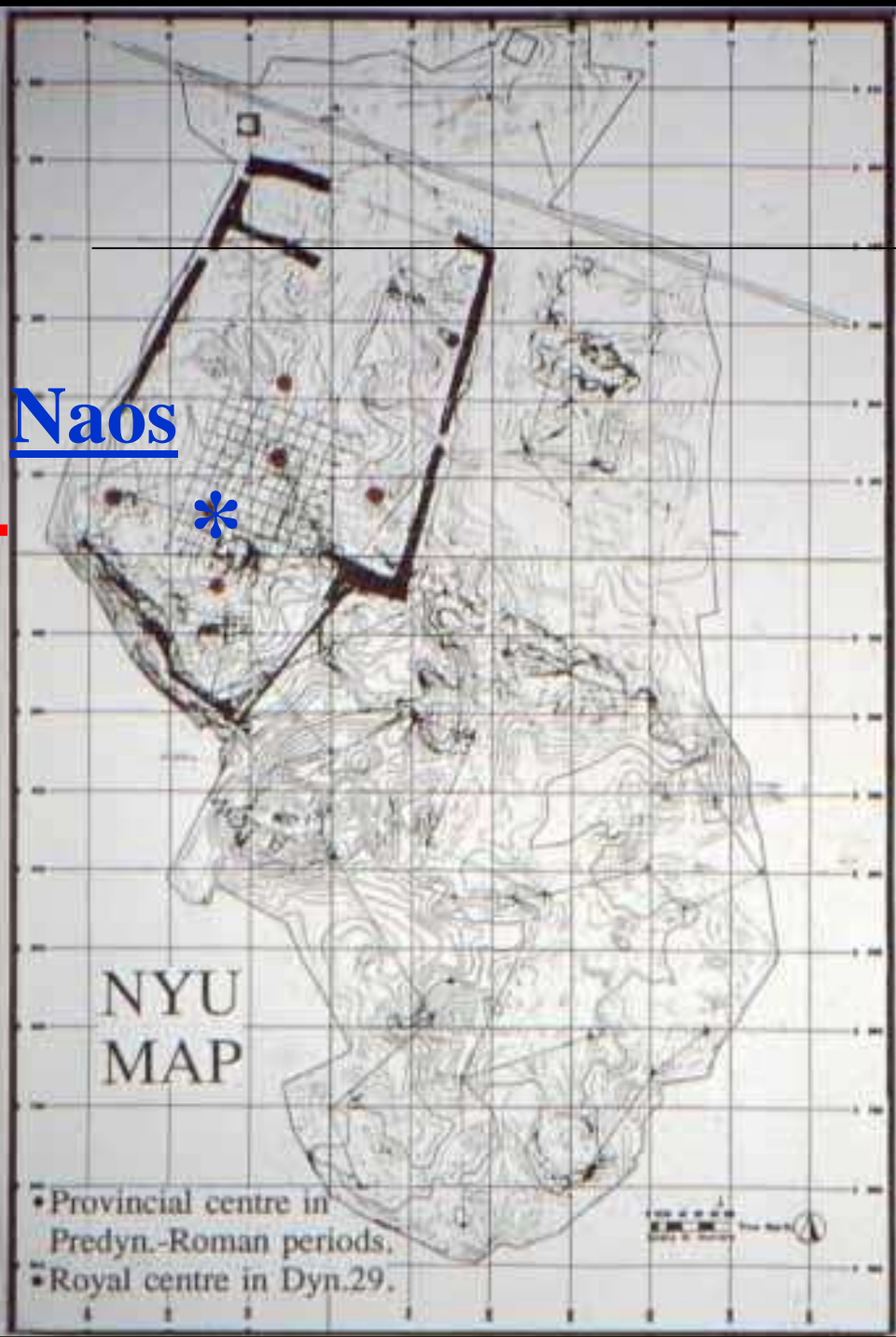
“The Majesty of my lord sent me to the land of the Asiatics, to retrieve for him (the body of) the unique friend, captain, and expedition leader, An-ankhti, who had been building a ship there, for (going to) Punt, when the Asiatics, who-dwell-upon-the-sand (Hryw-š'y), slew him along with the army-detachment that was with him.”

## Egyptian expeditions massacred!

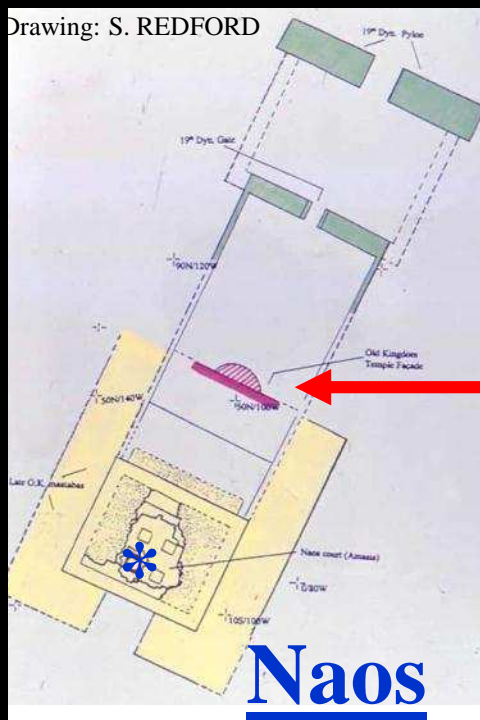




**D. Redford's excavations at Mendes reveal turmoil in a late OK Delta town  
Could this reflect Asiatic incursions?**



Drawing: S. REDFORD



## Tell Rub'a (Mendes): Old Kingdom temple platform

### **D. B. Redford excavations:**

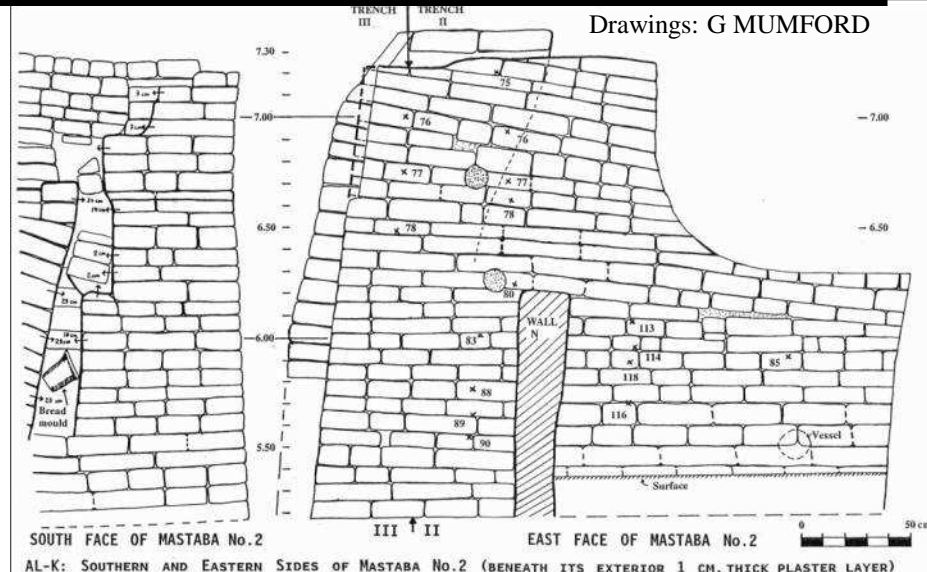
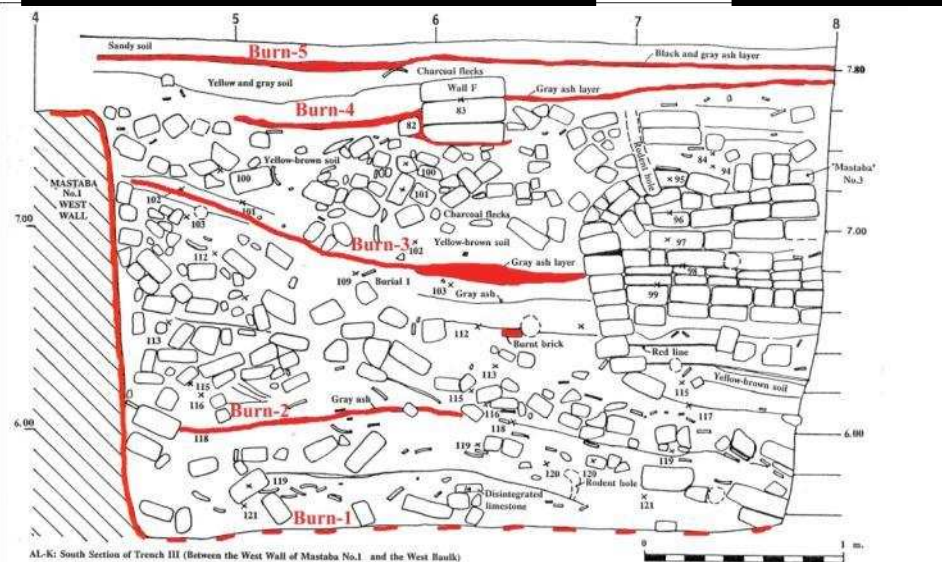
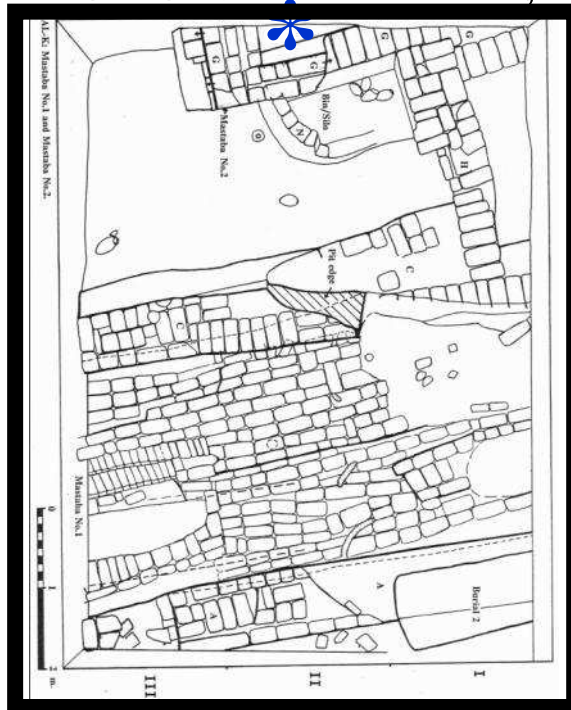
Multiple bodies dispersed at the base of a layer of burnt soil, brick and other debris.

- Plague pit?
- Victims of a massacre?



# Tell Rub'a (Mendes): Old Kingdom West "Mastaba" in Unit AL-K

**Interior:** 1 cm thick, black charred plaster; **later:** multiple burn layers

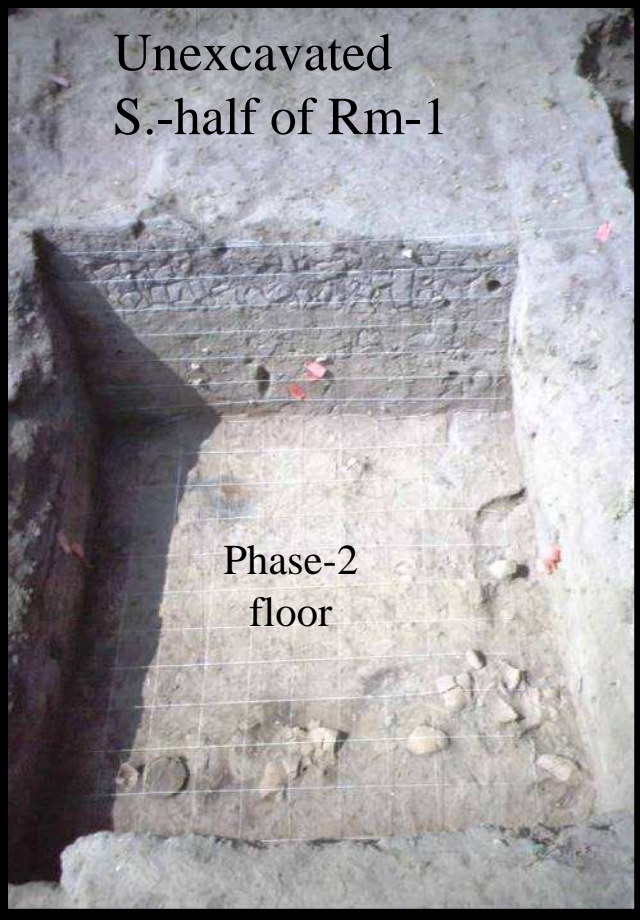


SOUTH FACE OF MASTABA No. 2 EAST FACE OF MASTABA No. 2

AL-K: SOUTHERN AND EASTERN SIDES OF MASTABA No. 2 (BENEATH ITS EXTERIOR 1 CM. THICK PLASTER LAYER)



Unexcavated  
S.-half of Rm-1



## Tell Rub'a (Mendes): Unit HF (1999).

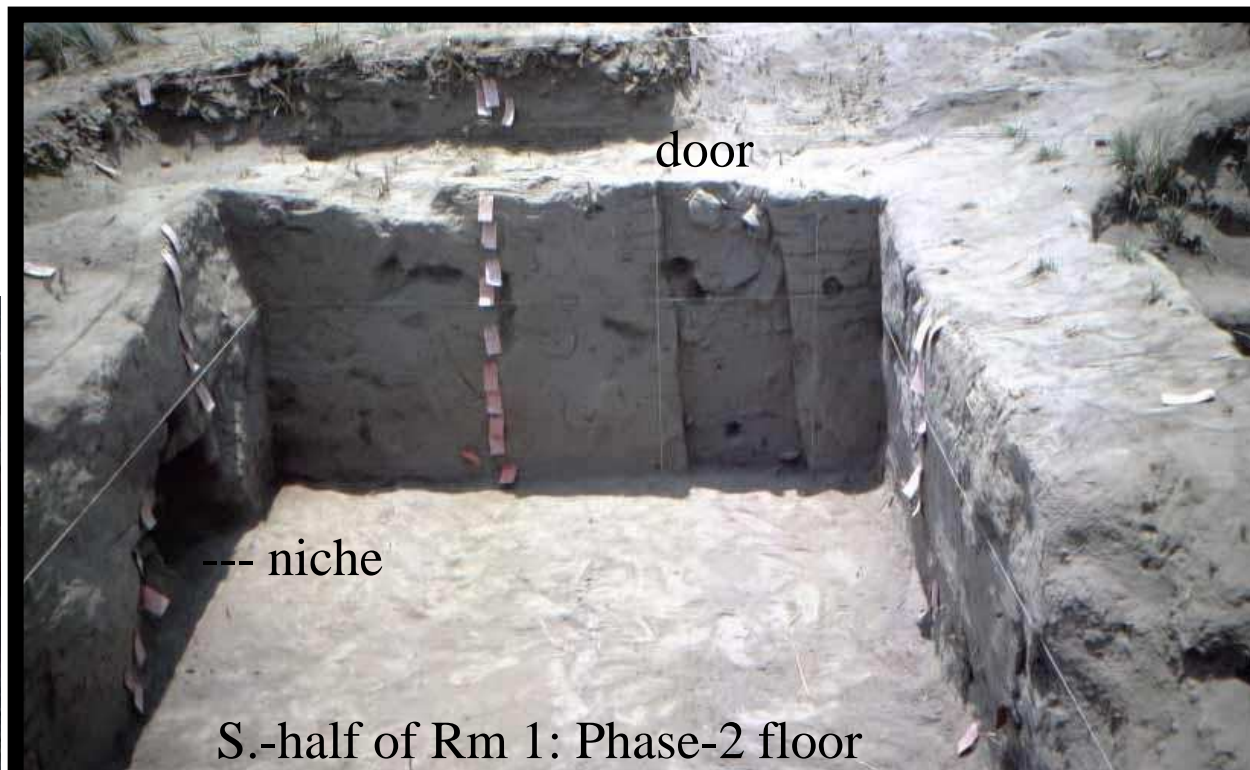
Site sup.: G. Mumford (postdoc. under D.B. Redford)

### Late Old Kingdom – FIP house: Phase-2 destruction.

- Ash covered floor and red-burnt wall faces
- Soot-coated & crushed pottery on floor
- Burnt wall-collapse debris filling room



niche



S.-half of Rm 1: Phase-2 floor

## Calibrated radiocarbon-dated charcoal samples (95.5% c.i.):

HF V-14: charcoal (branch/beam):	2,500 BC (2,625 – 2,455 BC)	mid-OK
HF I-23: charcoal (twig):	<u>2,145 BC</u> (2,350 – 2,025 BC)	early FIP
HF I-24: charcoal:	<u>2,035 BC</u> (2,205 – 1,880 BC)	late FIP

**End of Dynasty 6:** 2,250 – 2,150 BC range (var. scholars).  
**HF-STRUCTURE:** Spans late Old Kingdom to early FIP(+).

### INTERPRETATION: Area HF

- Elite/public structure with domestic activities
- Destroyed twice by fire during FIP:

- Accidental/natural fire(?)
- Early FIP "Asiatic" incursions(?)
- Dyn.9/10 Heracleopolitan delta invasion  
*E.g., Instruction of Khety to Merikare*
- Dyn.11 Theban reunification of Egypt  
*Ca.2,040 BC: Nebhepetre Montuhotep II*
- Late Dyn.11 civil strife (*ca.1,990 BC*)



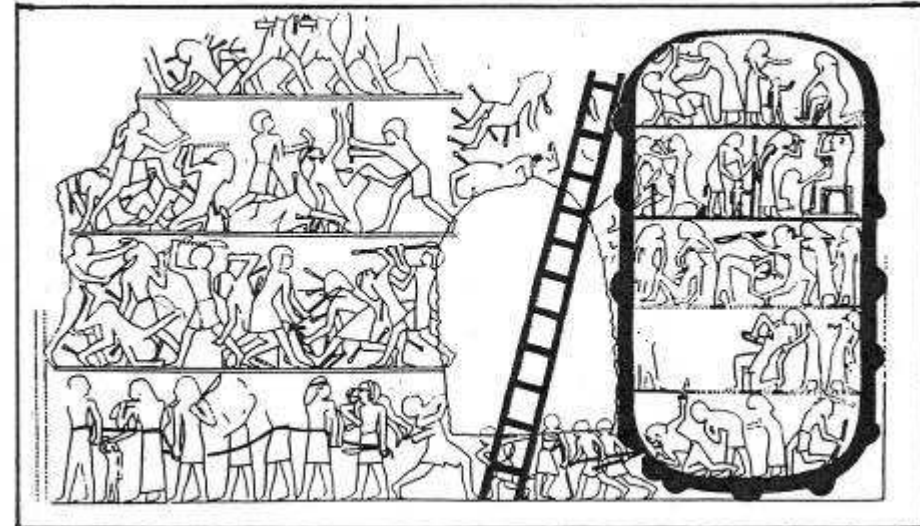
# Background to Old Kingdom (Dyns. 3-6) and EB III-IV Levant



Egypt's relations with Early Bronze II-III Canaan

## Dyns.5-6 texts:

- Increasing Egyptian attacks against Sinai-Palestine



Egyptian siege of Asiatic city; Dyn.5; Deshasheh



# S. Sinai Bedouin: Old Kingdom 2700-2200 BC



Djoser  
Dyn.3



Sekhemkhet  
Dyn.3



Sanakht  
Dyn.3



Sneferu  
Dyn.4



Sneferu  
Dyn.4



Khufu  
Dyn.4



Sahure  
Dyn.5



Niuserre  
Dyn.5



Djedkare-Isesi  
Dyn.5



Pepy I  
Dyn.6



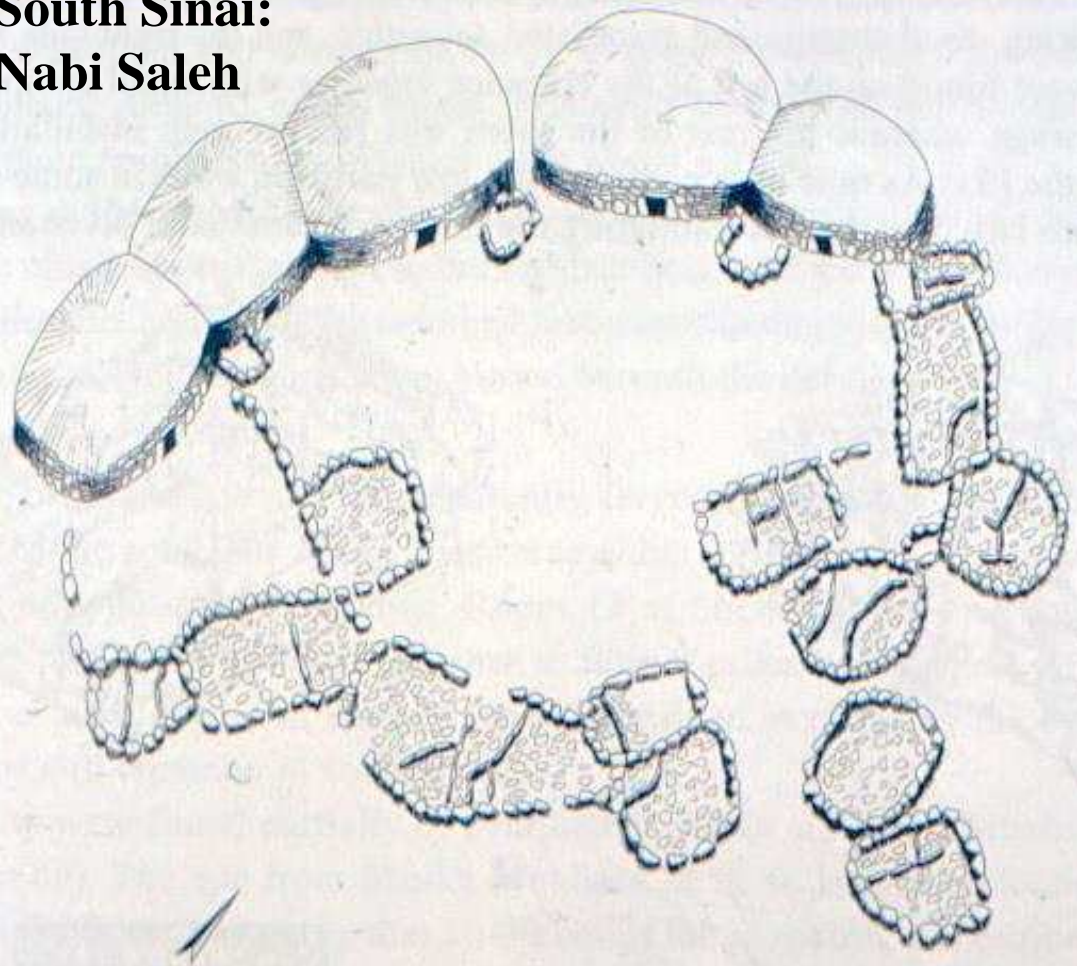
Fortified/defendable mining camps



# Old Kingdom Egypt's elusive Bedouin foes in South Sinai

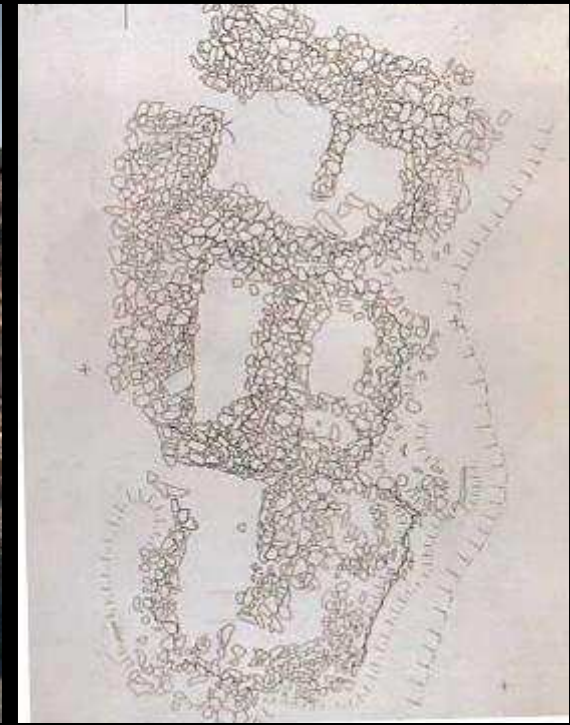
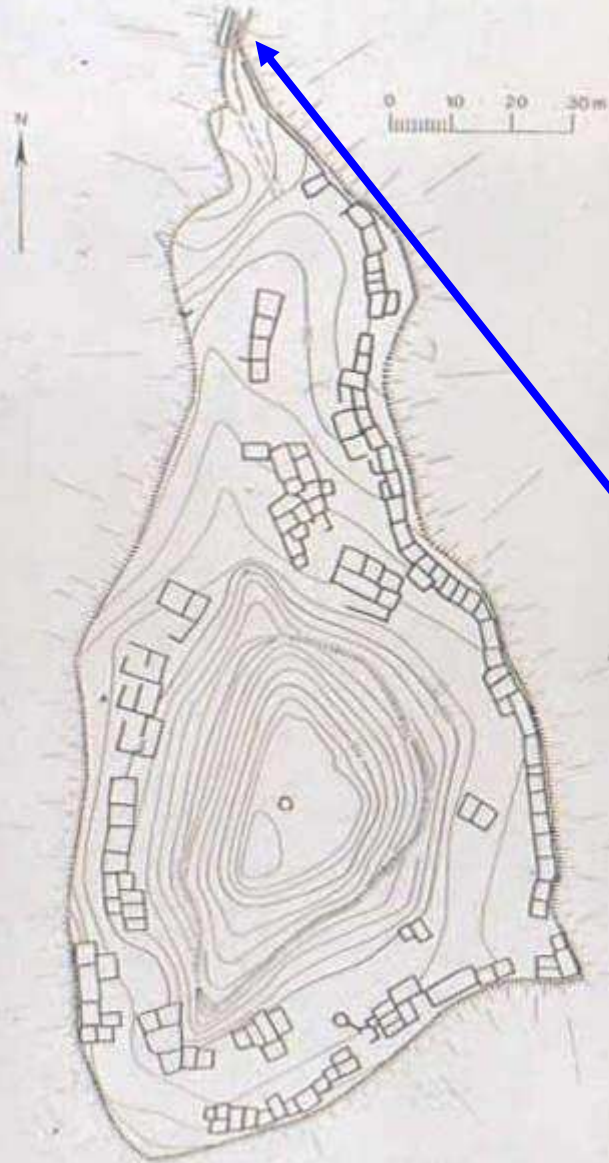
1907 census = 16,873 people in entire Sinai Peninsula (EB IV Sinai population =?)  
→ Average of 312 persons in 625 sq. mile area around Markha Plain

South Sinai:  
Nabi Saleh



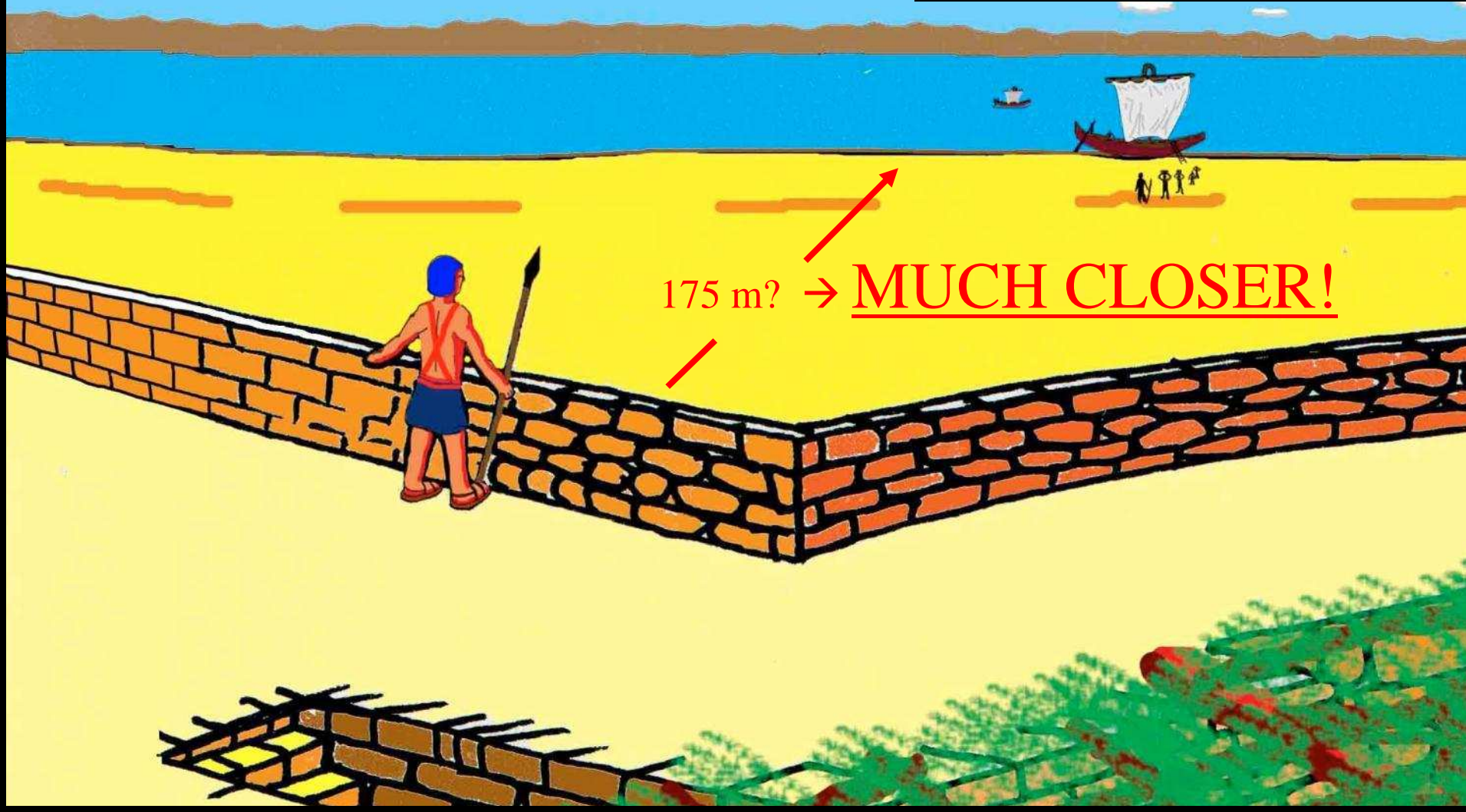
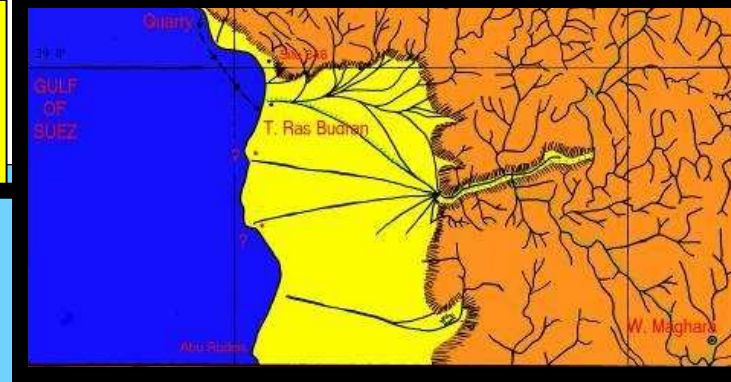
# Wadi Maghara (South Sinai) Old - Middle Kingdom Camp

(J.-M. Vincon 1994: 16 Plan 2)



**Function: securing Red Sea anchorage:**  
**• Late OK shoreline probably much closer.**

**2011: Claire Osion geological assessment.**



175 m? → **MUCH CLOSER!**



## Ras Budran:

- Unusual use of stone in non-elite structure (clay sources rare).
- Unusual design in pharaonic Egypt.

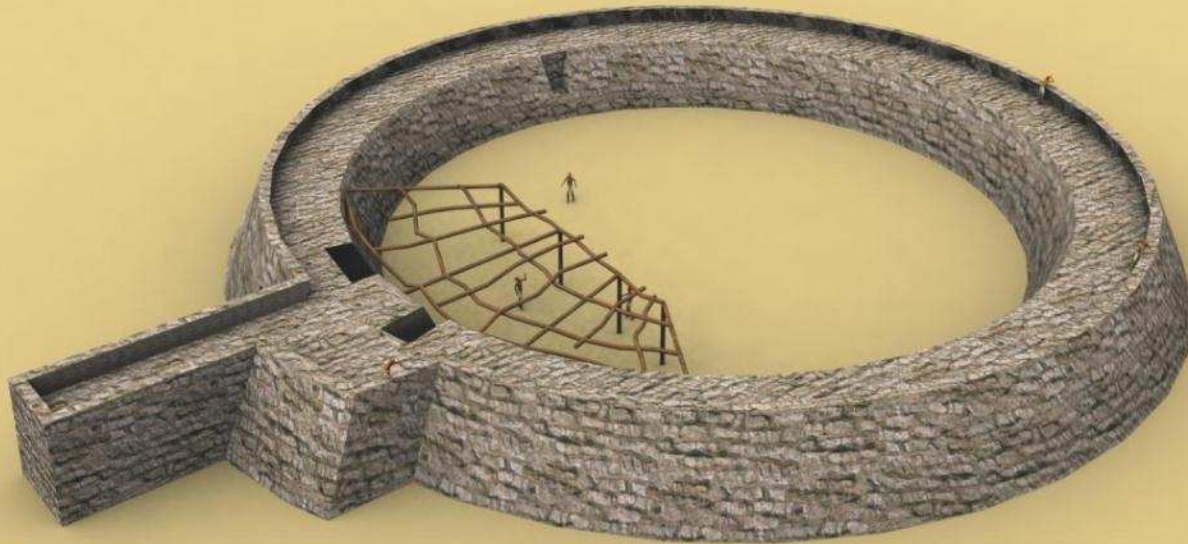
**Some Predyn.-O.K.+ stone structures (\*Pal.)**

**O.K. parallels:  
South Buhen (Kor)**

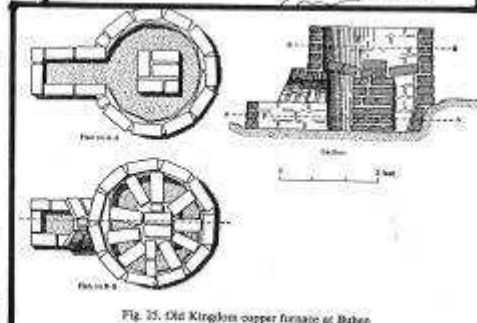
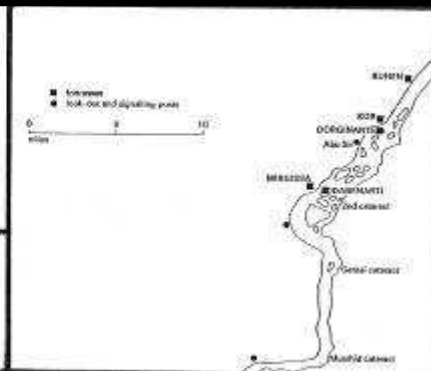
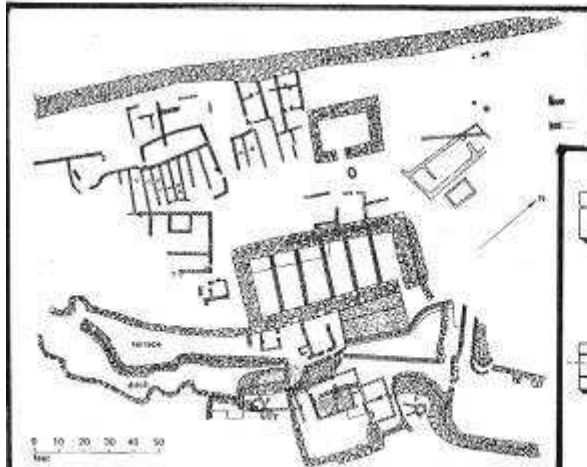
- Stone walls

**M.K. parallels:  
Wadi el-Hudi:**

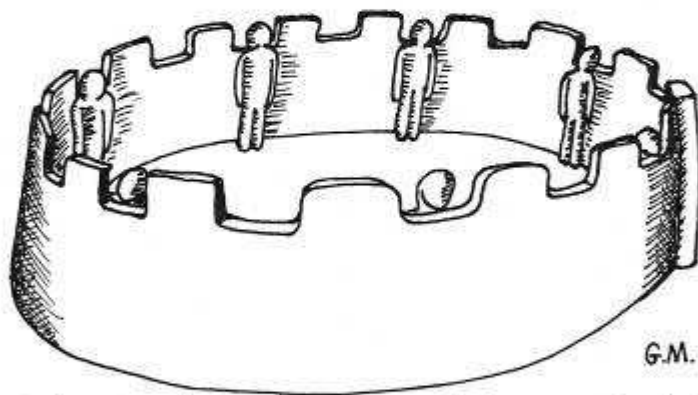
- Stone forts



**South Buhen (Kor):**  
Old Kingdom town  
-stone wall  
-mud brick and  
stone housing



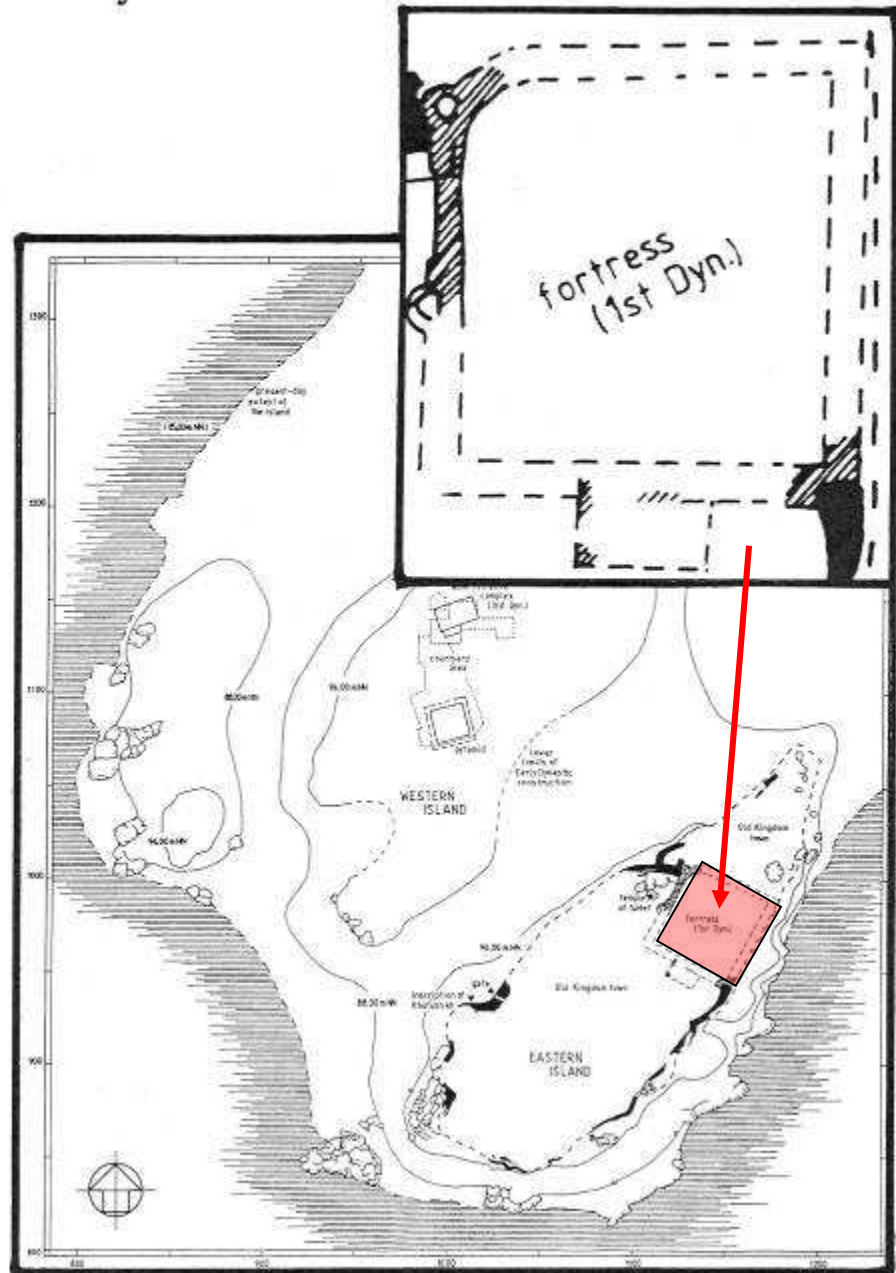
# Predynastic Period: Model fort from Abadiyeh



Ceramic model of town with men behind a crenellated wall (from Abadiyeh Grave B.83).

# Elephantine (Aswan):

Dyn.1 fort: 50 x 50 mudbrick wall



W.M.F. Petrie. *Diospolis Parva: The Cemeteries of Abadiyeh and Hu 1898-99*. London: 1901.

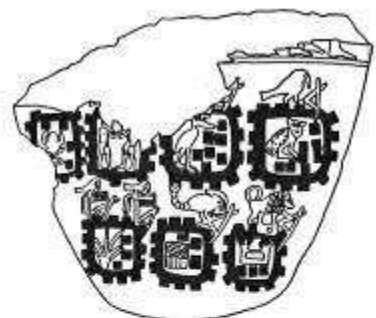
Note: pg.32 grave B83, pl.vi (upper left), pottery SD 33-48.

I. Shaw. *Egyptian Warfare and Weapons*. Shire Egyptology vol.16.Princes Risborough: 1991.

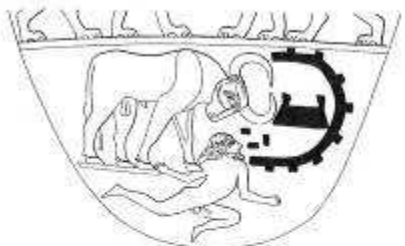
Note: pages 15 and 16 fig.8 (Ashmolean Museum E.3202).

# Circular parallels:

- Proto- to Early Dynastic glyphs depicting town enclosures
- Old Kingdom *niwt*-sign for “town”
- Early Dynastic – Old Kingdom models & glyphs of *swnw/mnnw* fort-tower.



The "Towns" palette



Narmer palette



Dyn. I docket (Den)



(Den)

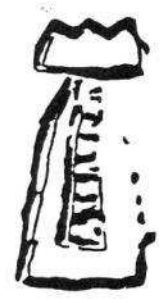


(Den)

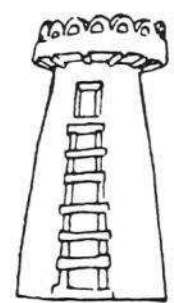


*niwt*: signs for "town"

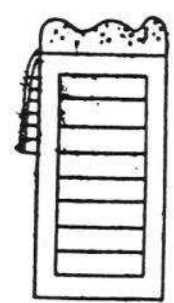
## Egyptian models & words for (fort)-tower.



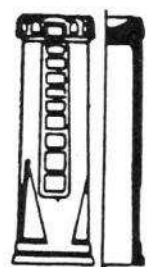
Dyn. I docket (Abydos)



Dyn. I model



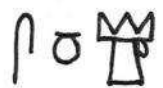
Old Kingdom drawings



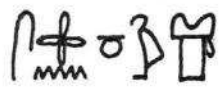
Dyn. III model



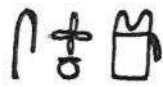
swnw = "tower"  
PT.719 swnw n h3t = "the tower of Khat"



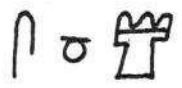
swnw = "tower"



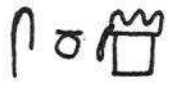
swnw = "tower"  
PT.1105 swnw n k3ti = "the tower of Qata"



swnw = "tower"



swnw = "tower"



swnw = "fortress"/"tower"



swnw = "fortress"/"tower"



swnw = "fortress"/"tower"

## Architectural style: Is it a *mnnw*?

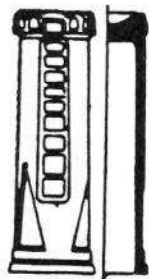
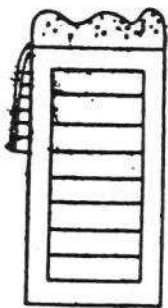
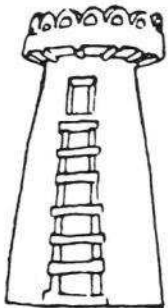
- ED-Old Kingdom *mnnw* fort-tower(?)
- New form of Egyptian fort(?)
- Hybrid Egyptian-Asiatic construction(?)



Entry blocked → ladder access!



# Egyptian models & words for (fort)-tower.



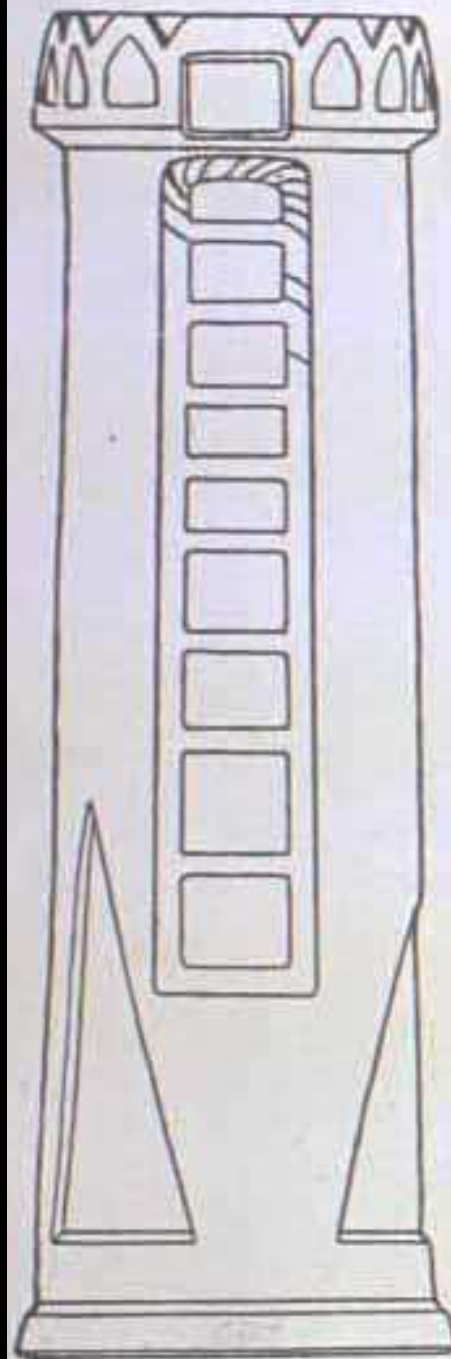
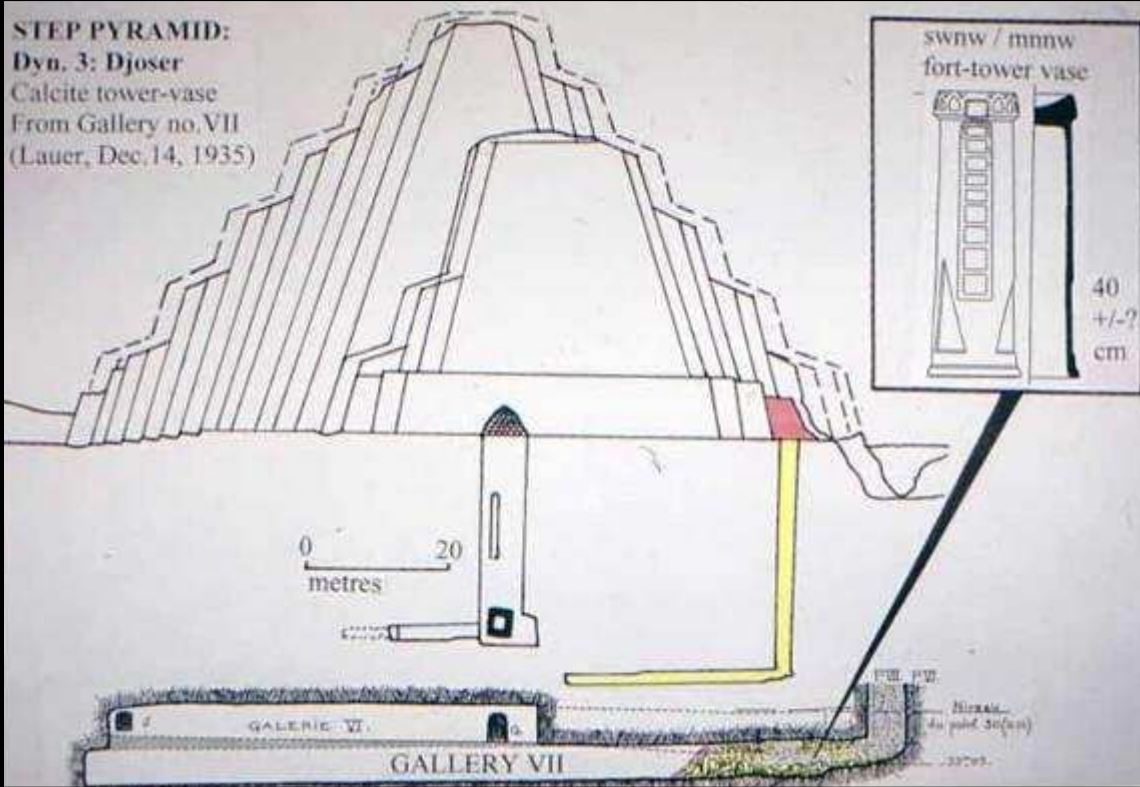
Dyn.1 docket  
(Abydos)

Dyn.1  
model

Old Kingdom  
drawings

Dyn.3  
model

**STEP PYRAMID:**  
Dyn. 3: Djoser  
Calcite tower-vase  
From Gallery no. VII  
(Lauer, Dec. 14, 1935)



**1798 AD parallels to fort-tower:  
Napoleonic Expedition to Egypt.**

**Continuity? in form and function**





## Grianan of Aileach (Ireland)

“Stone Palace of the Sun”

5<sup>th</sup> – 12<sup>th</sup> cent. AD

Fort diameter: 31.2 m

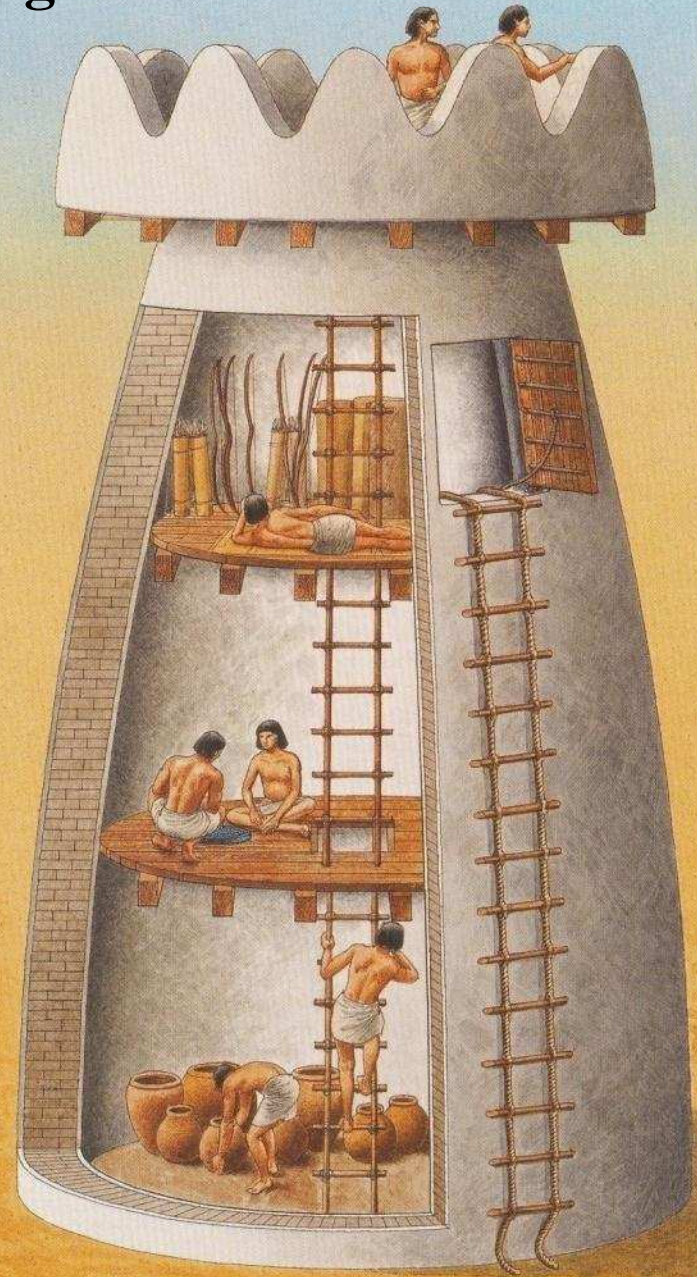
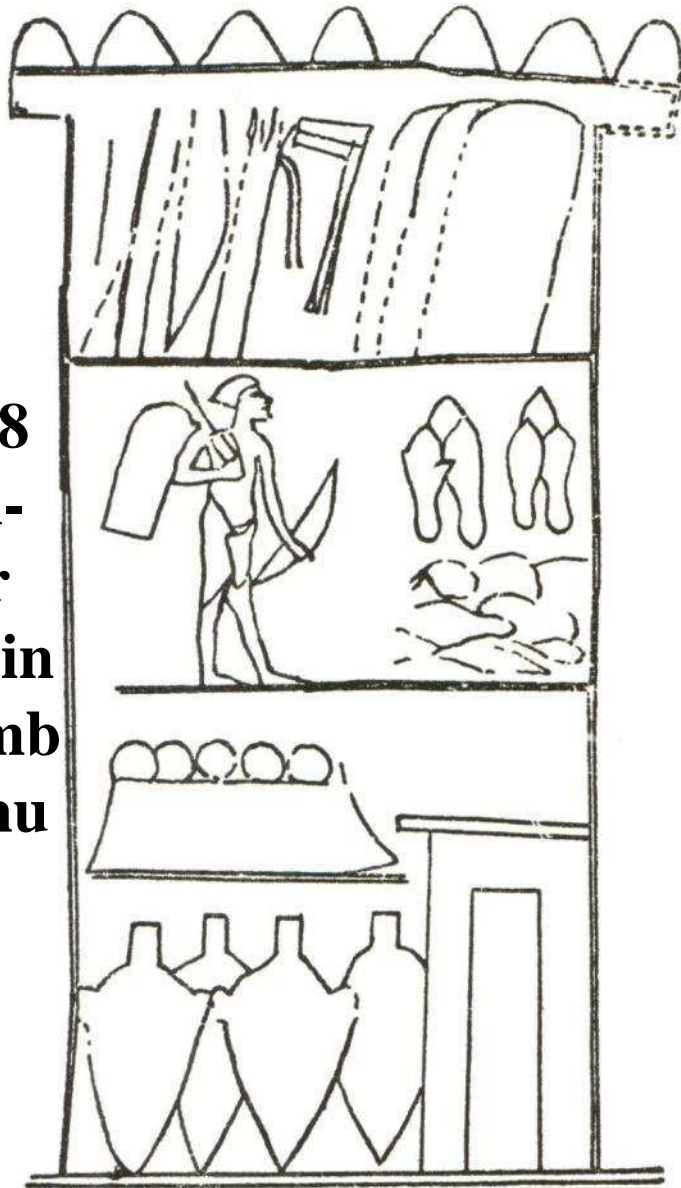
Wall width: 3.9 m; Height: 5 m



Perhaps a related, but different fortification is being portrayed?

© Vogel 2010

Dyn.18  
watch-  
tower  
shown in  
the Tomb  
of Mahu



Dyns.1-6 fort model & illustration



# OLD KINGDOM GARRISON COMMANDERS & FORTS:

## (A) OVERSEER OF GARRISONS / FORTS:

### L.E. NOME-13 FORTS:

Imy-r3 rthw Hk3-'ngw I3btt

"Overseer of the strongholds (in) L.E. nome 13"

(Jones 2000: 160 no. 616)



Imy-r3 mnnw nzwt Hk3-'ngw I3btt

"Overseer of royal fortresses in L.E. nome 13"

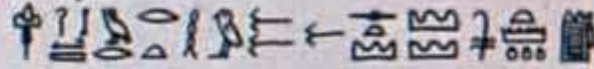
(Jones 2000: 138 no. 539)



Imy-r3 rthw, zmiwt, mnnw-nzwt Hk3-'ngw I3btt

"Overseer of strongholds, of desert places and of royal fortresses of L.E. nome 13"

(Jones 2000: 160-61 no. 617)



### U.E. NOME-10 FORTS:

Imy-r3 mnnw nzwt W3dt

"Overseer of ~~royal~~ fortresses (in) U.E. nome 10"

(Jones 2000: 139 no. 540-<b>)

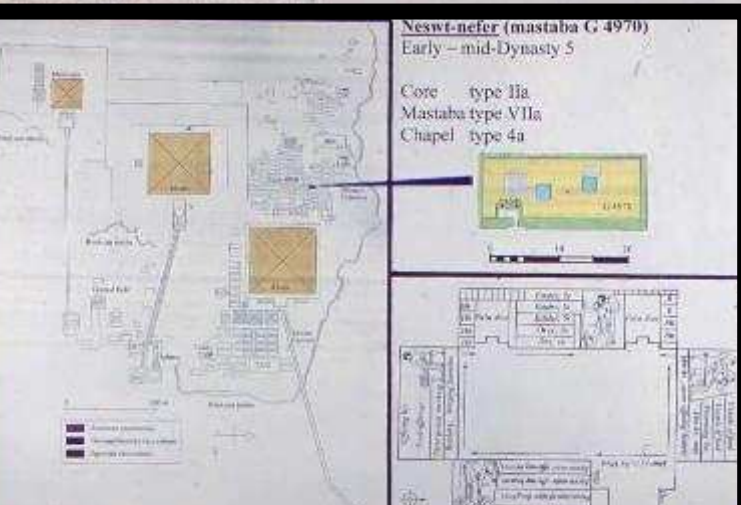
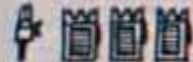


### U.E. NOME-8 FORTS:

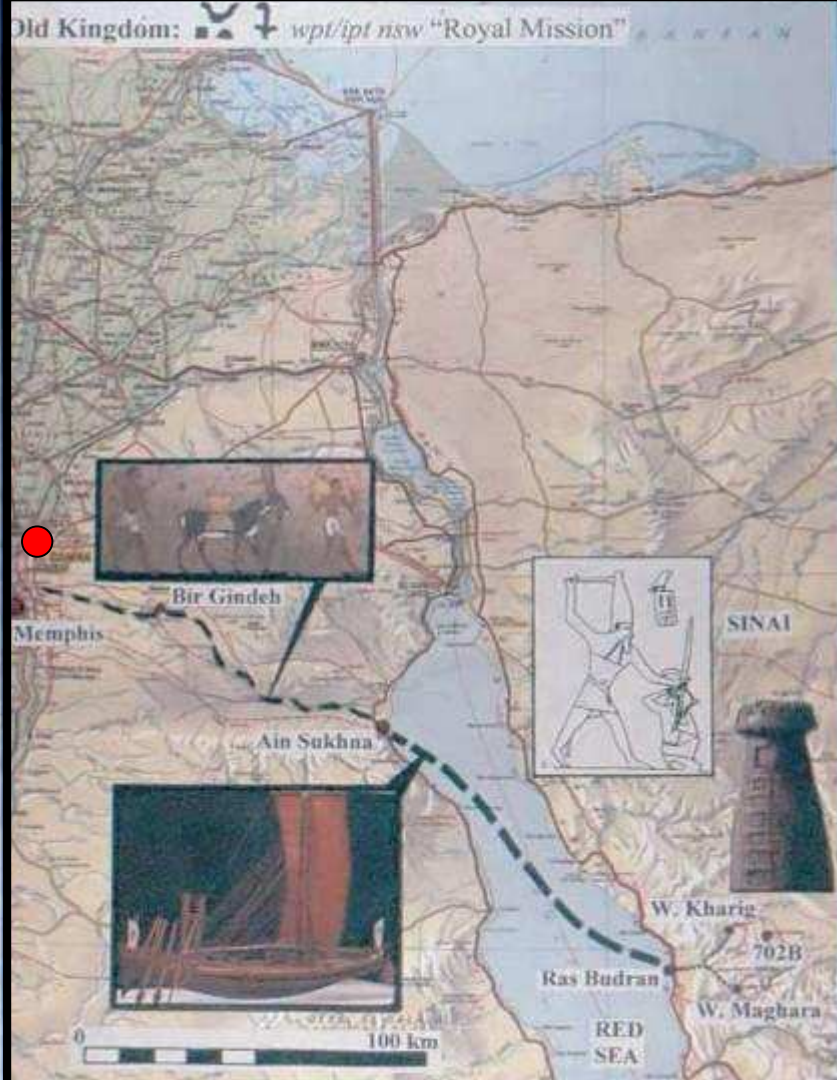
Imy-r3 mnnw nzwt T3-wr

"Overseer of ~~royal~~ fortresses (in) U.E. nome 8"

(Jones 2000: 139 no. 540-<a>)

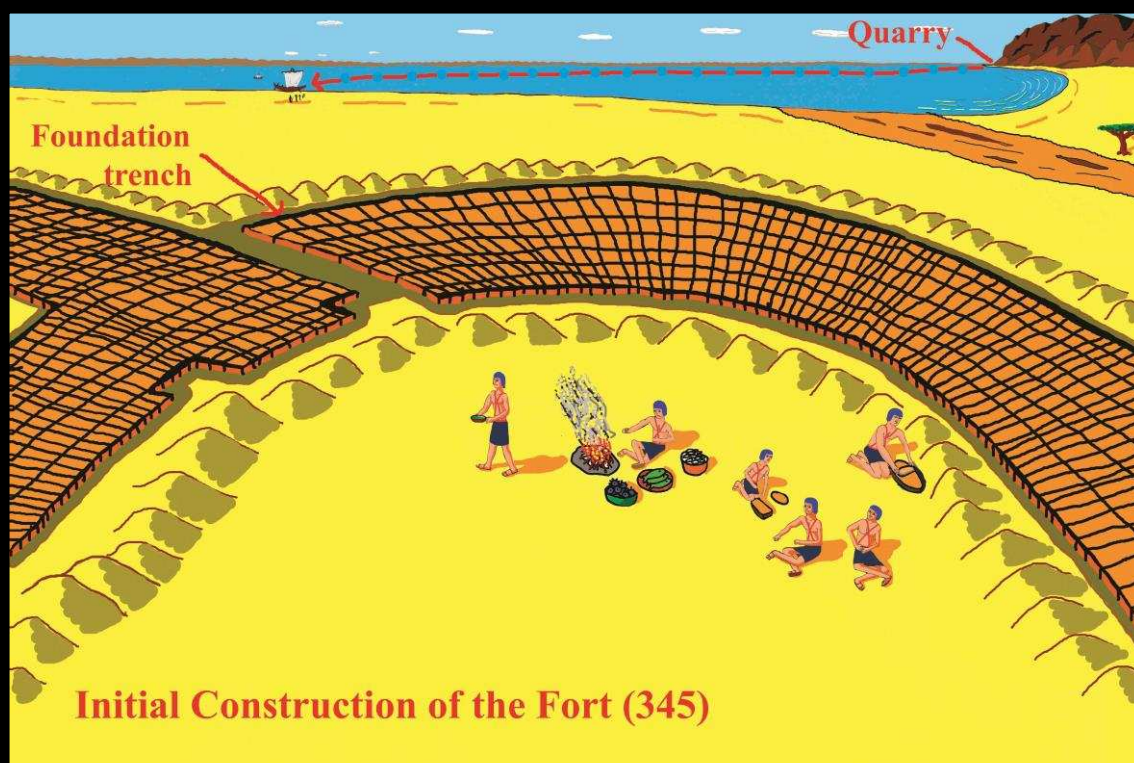
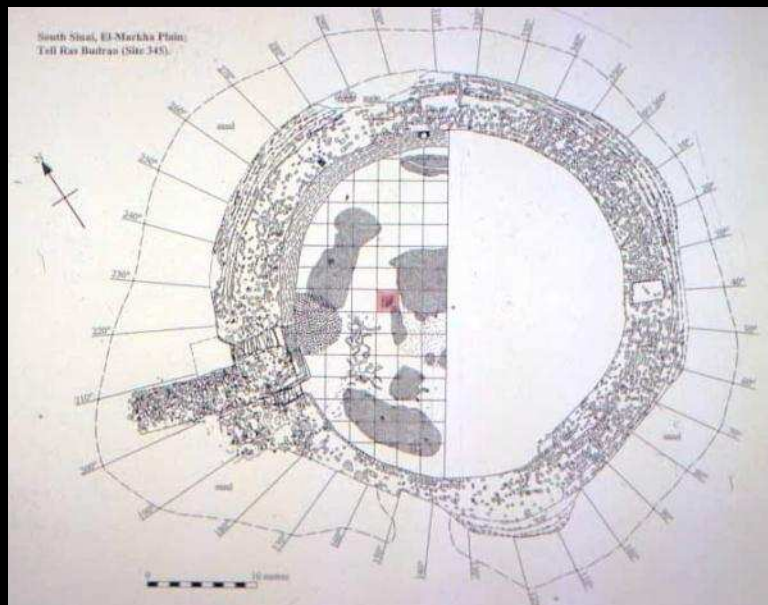
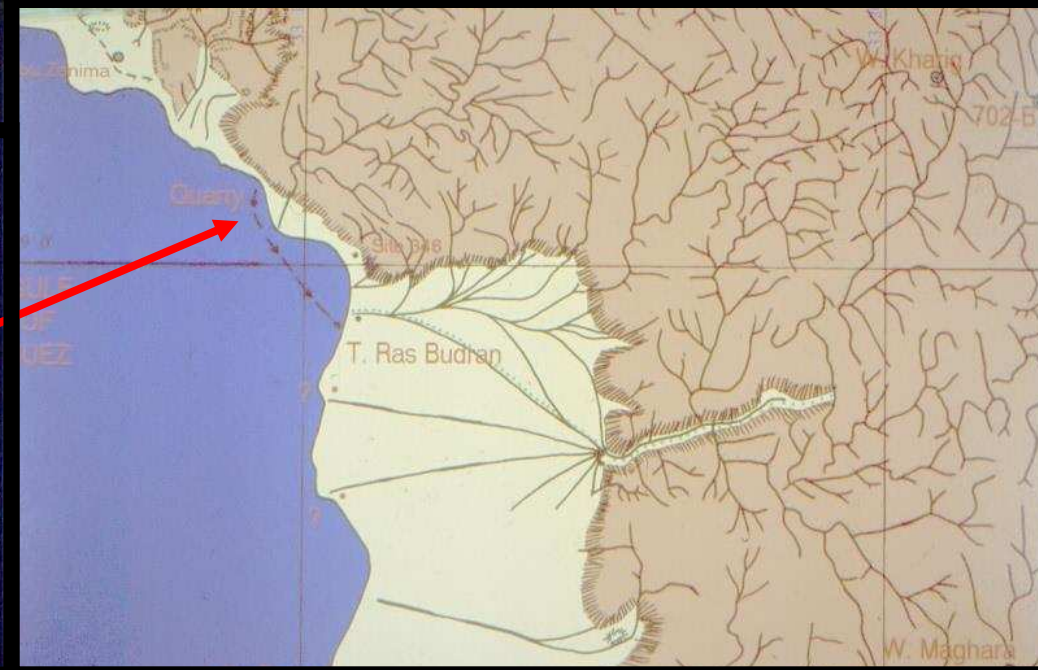


**Dyn. 5: High official, Nesu-nefer,**  
commanded desert mnnw/strongholds  
in Heliopolitan nome/province  
**OK fort at Ras Budran** may form  
one of these *mnnw/swnw* fort-towers.



**Geological reports on region note  
nearest limestone source 6 km north**

**Awaiting confirmation**



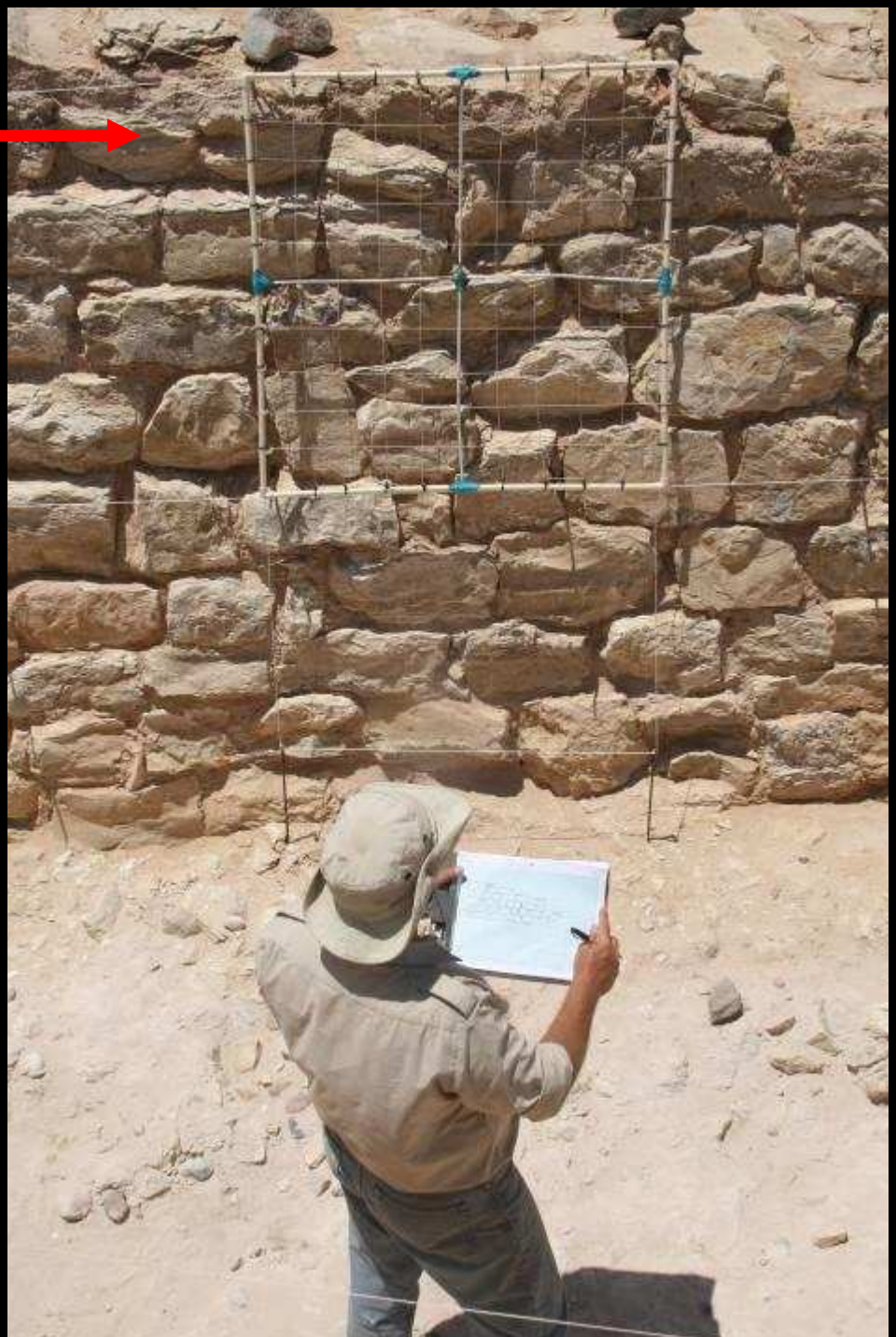
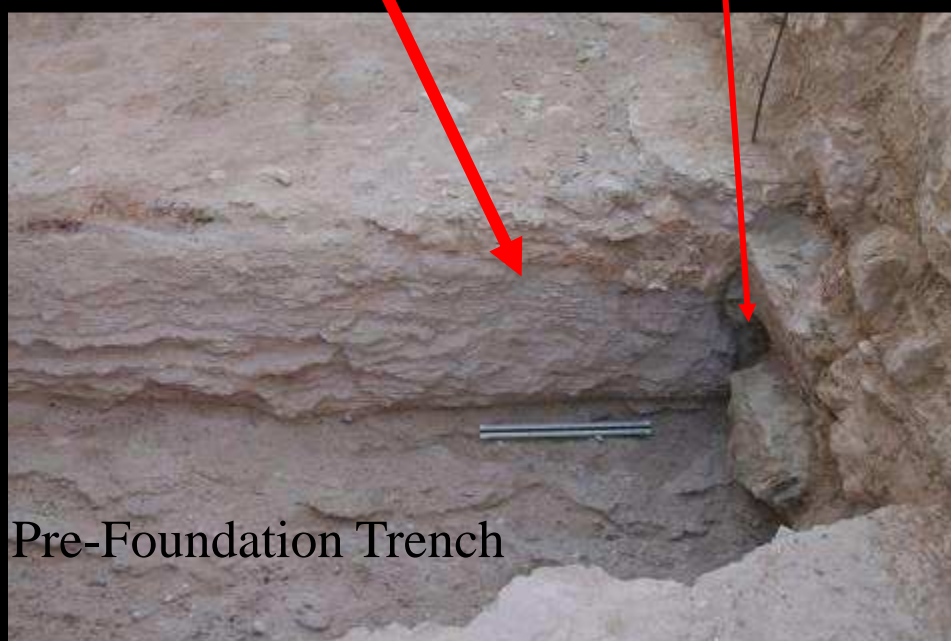
**6 km North:** Alternating fractured beds of limestone and harder stones.

• **still looking!**



# Tell Ras Budran 2008:

- Planning wall face with grid sq. →
- Bastion & main wall placed in 30 cm deep foundation trench.
- Softer sand backfilling F.T.
- Eroded wall debris & potsherds accumulate on surface.



# Estimated construction times for Ras Budran fort:

- **Fort volume estimate**
- **5 ships** (one OK account)  
15-20 tons per ship/barge/raft x 5
- **1,500 average expedition**
- Average m<sup>3</sup> / month to build Dyns.3-6 **completed pyramids** (22 rulers)
- Average m<sup>3</sup> / month to build Dyns.3-6 **uncompleted pyramids** (5 rulers)

ca. **2,800 m<sup>3</sup>**

ca. 75-100 tons per day

750 at quarry; 750 at fort

ca. **1,903 m<sup>3</sup>** / month

ca. **1,097 m<sup>3</sup>** / month

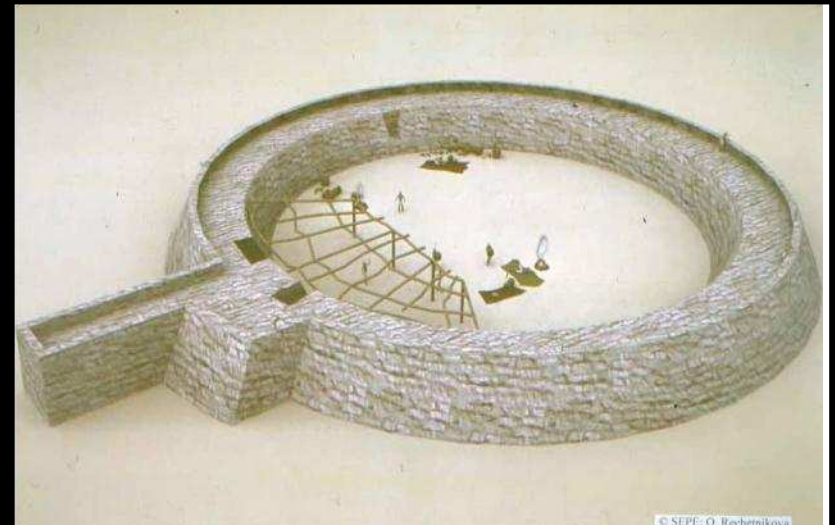
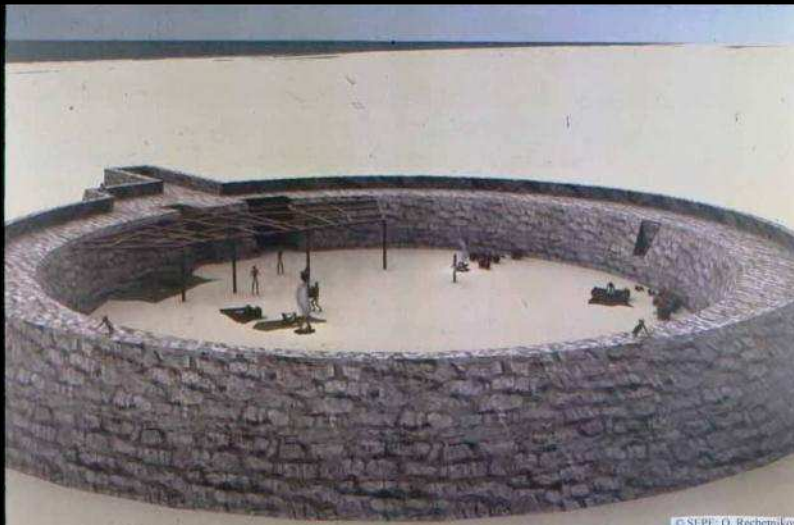
**ESTIMATE:**

**1 to 2 ½ months**



# Garrison size at Ras Budran fort:

- **Courtyard area:** 730 sq. metres (excludes battlements).
- **Maximum sleeping area:** 918 persons (1.57 m x 0.50 m)
- **Requires space for** equipment, supplies, donkeys(?), work areas
- **50 soldiers** (platoon) **more realistic** for long-term occupation.
- **250 soldiers** (company) = **possible**, but would be short-term.



# Parallels: Dyn.20 garrison at E. Desert gold mining camp.

## High Priest of Amun, Rameses-nakht (temp. Rameses XI; ca. 1100 BC)

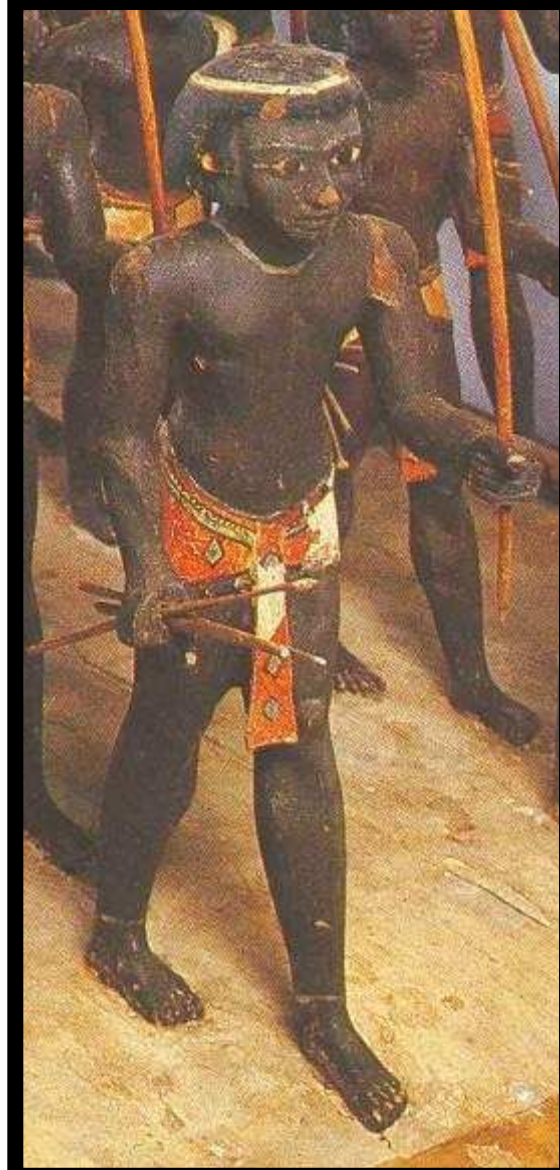
- Letter to **25** Nubian escort-troops assigned to Amun temple expedition

### • Duties:

1. Guard gold miners from Bedouin attacks
2. Ensure miners bring gold safely back to Egypt

### • Supplies:

- 25 kilts                      Thin cloth
- 25 tunics                     Smooth cloth
- 25 canteens                 Bronze
- 25 knives                    Copper
- 5 axes                         Copper
- 1000 loaves                 Normal (*kyllestis*-bread)
- 100 cakes                    Triangular (*kyllestis*-bread)
- 50 small cattle             Assorted (sheep & goats)
- 5 donkeys                    Pack animals
- 1 bushel                      condiments
- 1 bushel                      caraway seeds



## Some summary statements:

- Still propose that extant textual-pictorial sources and growing archaeological evidence suggest that
  - various internal & external factors (e.g., climate; Bedu; etc.) played a greater role in decline of Dyn.6.
- Now suggest that a *poorly conceived initial location* of the fort played a greater role in its abandonment with a *potential rebuilding elsewhere* (unproven!).
- The intensifying Asiatic activity in Sinai c.2300+BC
  - explains the perceived & actual need for a fort
  - clarifies the importance of turquoise & copper ...
- Both climate and geo-political factors seem to play more significant role in Old Kingdom's "collapse."



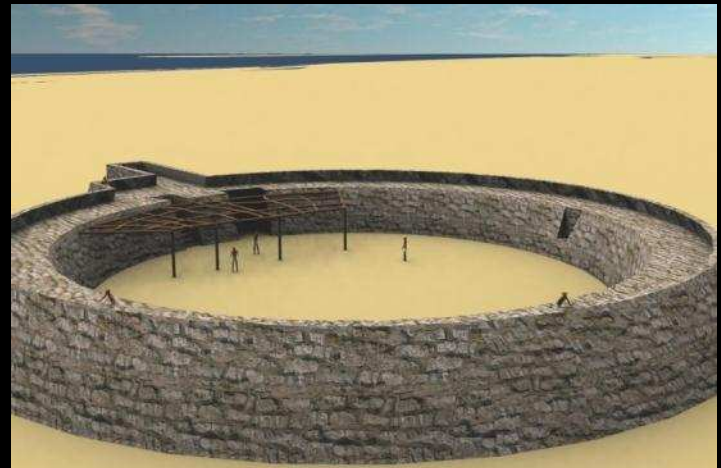
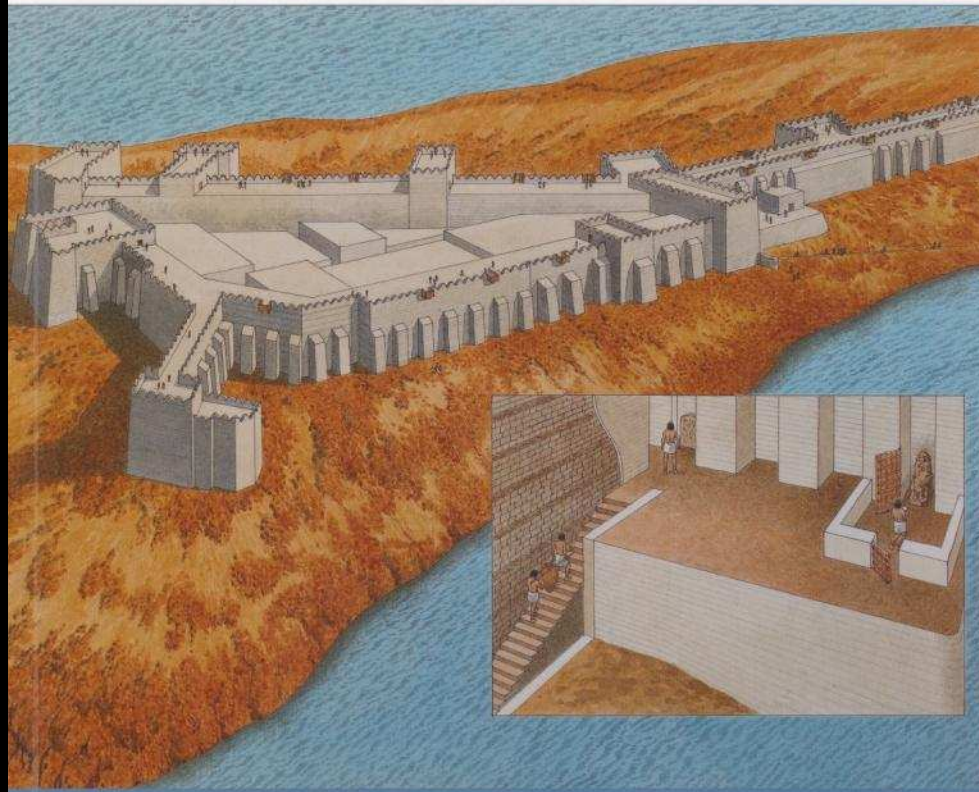
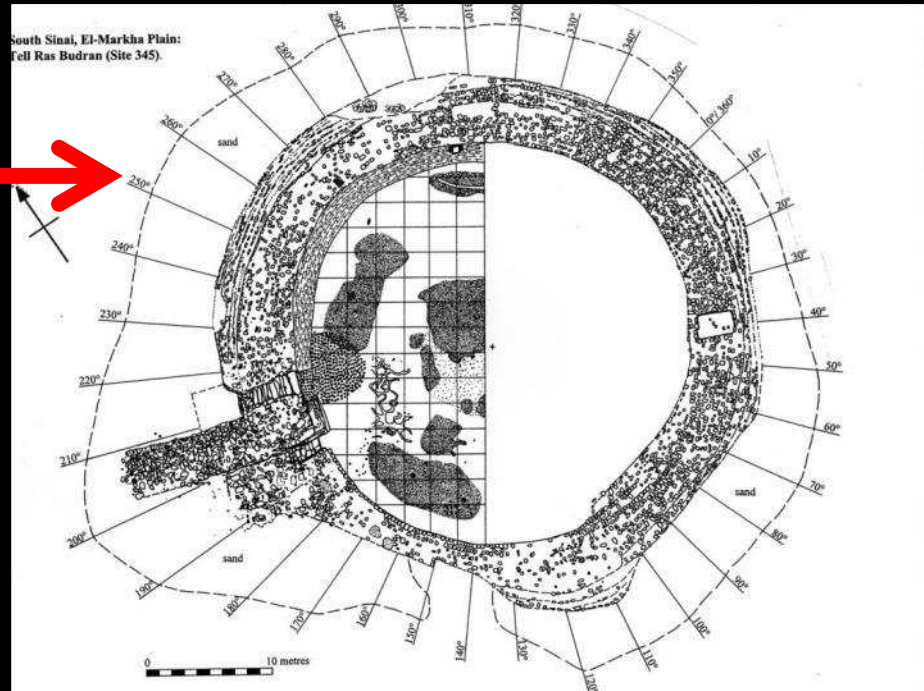
**Publication and  
aftermath ...**

**i.e., impact of  
project findings**

Ras Budran fort provides a new type of pharaonic fortification for military studies.

# THE FORTIFICATIONS OF ANCIENT EGYPT 3000-1780 BC

- 2010 study by Carola Vogel incorporating Ras Budran.



CAROLA VOGEL

ILLUSTRATED BY BRIAN DELF

# Studies placing Ras Budran in context of regional-national fortifications

- **2010 study incorporating Ras Budran**

## Les forteresses égyptiennes

Du Prédynastique au Nouvel Empire

Éditions Safran



Franck Monnier

# Ras Budran also being considered in EB Age international relations:

- 2009 study incorporating Ras Budran

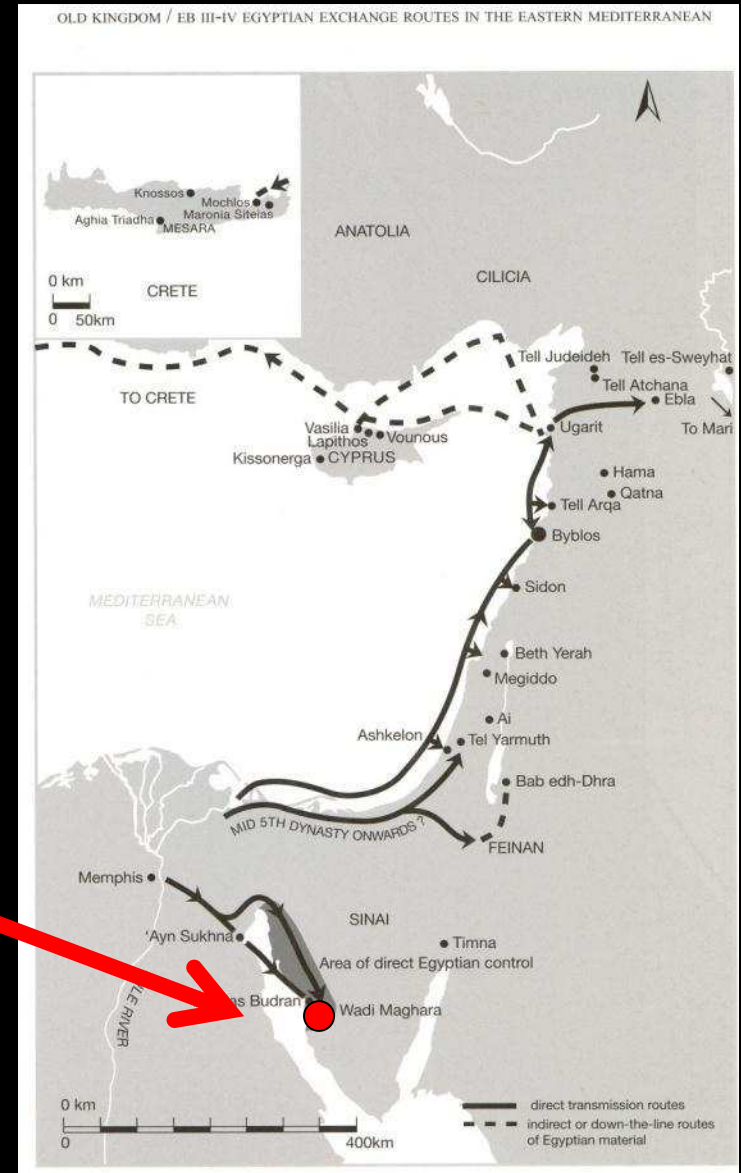
Orbis Biblicus et Orientalis 237

Karin N. Sowada

## Egypt in the Eastern Mediterranean during the Old Kingdom

An Archaeological Perspective

Academic Press Fribourg  
Vandenhoeck & Ruprecht Göttingen



**Future work ...**

**2012 season goals:**

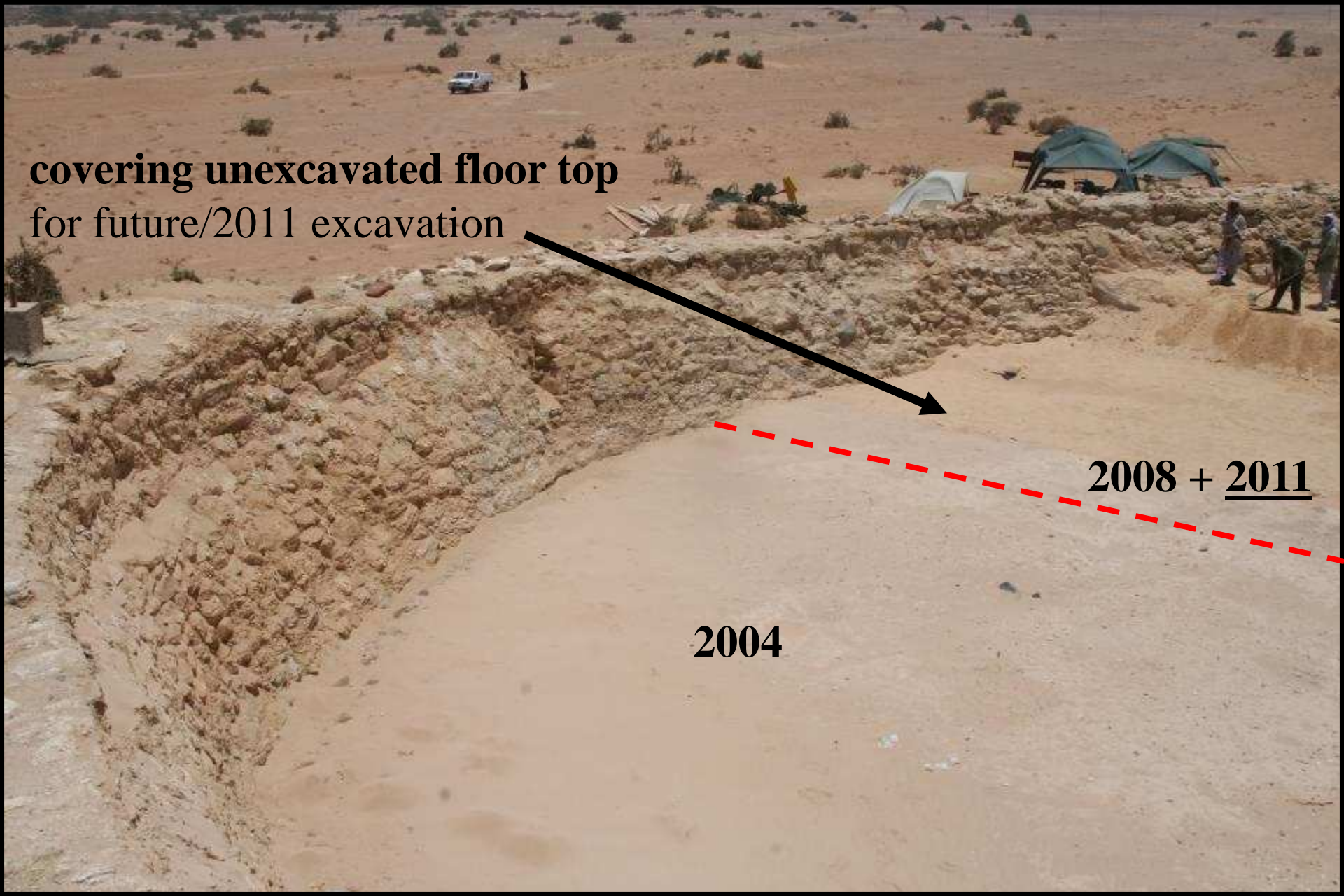
**Complete interior.**

**2013 Publication-1:**

**Fortress interior.**

**Plan to return to Sinai in Summer 2011 to answer more questions:  
2008 season: two-thirds of Eastern-half excavated to/near floor level**

**covering unexcavated floor top  
for future/2011 excavation**



**2004**

**2008 + 2011**

**LOGISTICS:**  
**SITE CAMP**

# Tell Ras Budran: typical camp set-up (2008)





**Tell Ras Budran: typical camp facilities –South of camp (2008)**

