Giza Plateau Mapping Project
Season 2005
Preliminary Report

Mark Lehner, Mohsen Kamel, and Ana Tavares

Giza Occasional Papers 2

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Mark Lehner, Mohsen Kamel, and Ana Tavares

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Cover photo: Field School Unit 3 excavating Enclosure 1. From right to left: Rabea Eissa Mohammed, Mohammed Hatem Aly, James Taylor, Ahmed Mohammed el-Lathiy, Amira Fawzy Ahmed.

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Acknowledgements

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We are especially grateful to Eng. Abd al-Hamid Kotb for assistance with mechanized equipment for clearing modern overburden from our site so that we could carry out the archaeology. Once again this season we are grateful for the services of loader operator, Mohammed Musilhi, who performed this task with skill and determination. Without this help we could not have done the work summarized above. Reis Ahmed Abd al-Basat did a remarkable job supervising our specialist workers and skilled excavators from Luxor.

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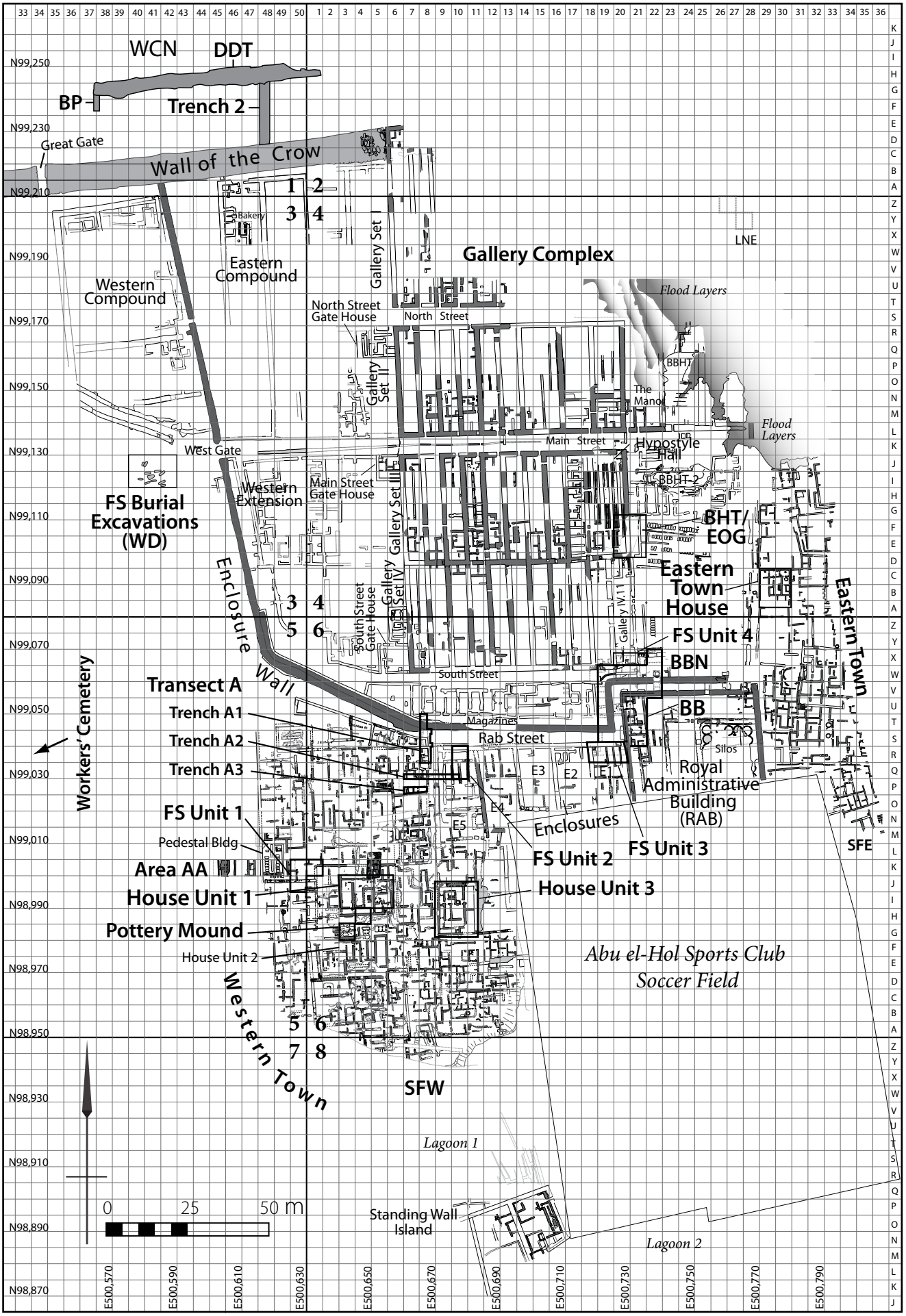

WCN
DDT
BP
Trench 2
Great Gate
Wall of the Crow
Bakery
Eastern Compound
Western Compound
Gallery Set I
Gallery Complex
LNE
North Street Gate House
North Street
Flood Layers
Gallery Set II
BBHT
The Manor
Flood Layers
West Gate
Main Street
Hypostyle Hall
Western Extension
Main Street Gate House
BBHT-2
FS Burial Excavations (WD)
Gallery Set III
BHT/ EOG
Eastern Town House
Enclosure Wall
Gallery Set IV
South Street Gate House
Gallery IV.11
FS Unit 4
Eastern Town
BBN
South Street
Transect A
Trench A1
Trench A2
Trench A3
Magazines
BB
Rab Street
Silos
Workers' Cemetery
E3
E2
E1
Royal Administrative Building (RAB)
FS Unit 1
E4
E5
Enclosures
Pedestal Bldg
FS Unit 2
FS Unit 3
SFE
Area AA
House Unit 1
House Unit 3
Pottery Mound
House Unit 2
Abu el-Hol Sports Club Soccer Field
Western Town
SFW
Lagoon 1
0
25
50 m
Standing Wall Island
Lagoon 2

1. Introduction

The 2005 season of the Giza Plateau Mapping Project at Giza, Egypt, took place over two periods: January 8th to May 31st and September 13th to December 13th. During the first period we carried out major clearing, mapping, and excavation. We worked on two Pyramid Age settlements, the extensive Worker's Settlement in Gebel Qibli, designated as Area A (the main focus of our work since 1988) and the Khentkawes Town. Between January 21st and March 17th, we conducted the Giza Field School for Supreme Council of Antiquities inspectors. We reopened the season in September and devoted this period to analysis and study of collections in our storeroom and to work on two areas of the Workers' Settlement: the conservation pilot work on the Eastern Town House (ETH) and limited excavations of House 3 in area Soccer Field West (SFW) (fig. 1).

Our work focused on four arenas: clearing and mapping, intensive excavation, mapping Late Period burials, and conservation. Since 1999 our excavation seasons in Area A have included large scale clearing of sandy overburden and mapping the ruins of an underlying ancient settlement over broad areas, as well as intensive, detailed excavations of selected, specific parts of the site. We carried out large-scale clearing in three major areas, which are shown in figures 1 and 2:

1. Khentkawes Town (KKT)
2. West of the soccer field (SFW)
3. North of the Wall of the Crow (WCN)

We conducted detailed excavations in the following locations (fig. 1):

1. North of the Wall of the Crow (WCN)
2. West Dump (WD), Osteo Field School Training
3. East of the Galleries (EOG)
4. North of the Royal Administrative Building (BBN), Field School Unit 4
5. Royal Administrative Building northwest corner (Area BB)
6. The Enclosures, E1 and E5, Field School Units 2 and 3
7. Transect A and the Western Roadway (WRW)
8. East of the Pedestal Building (Area AA), Field School Unit 1
9. Pottery Mound (PM) in the Western Town (SFW)
10. House Unit 3 in the Western Town (SFW)

We cleared our own back fill sand from previous seasons in order to map Late Period burial pits in every other 5-meter range north of Main Street and west of the Galley Sets I and II.

In the fall extension of our 2005 field season we worked on the conservation of Eastern Town House (fig. 1) as a pilot project to conserve the site by backfilling and to reconstruct select structures for presentation.

Figure 1. Facing page, plan of the GPMP site showing 2005 operations.

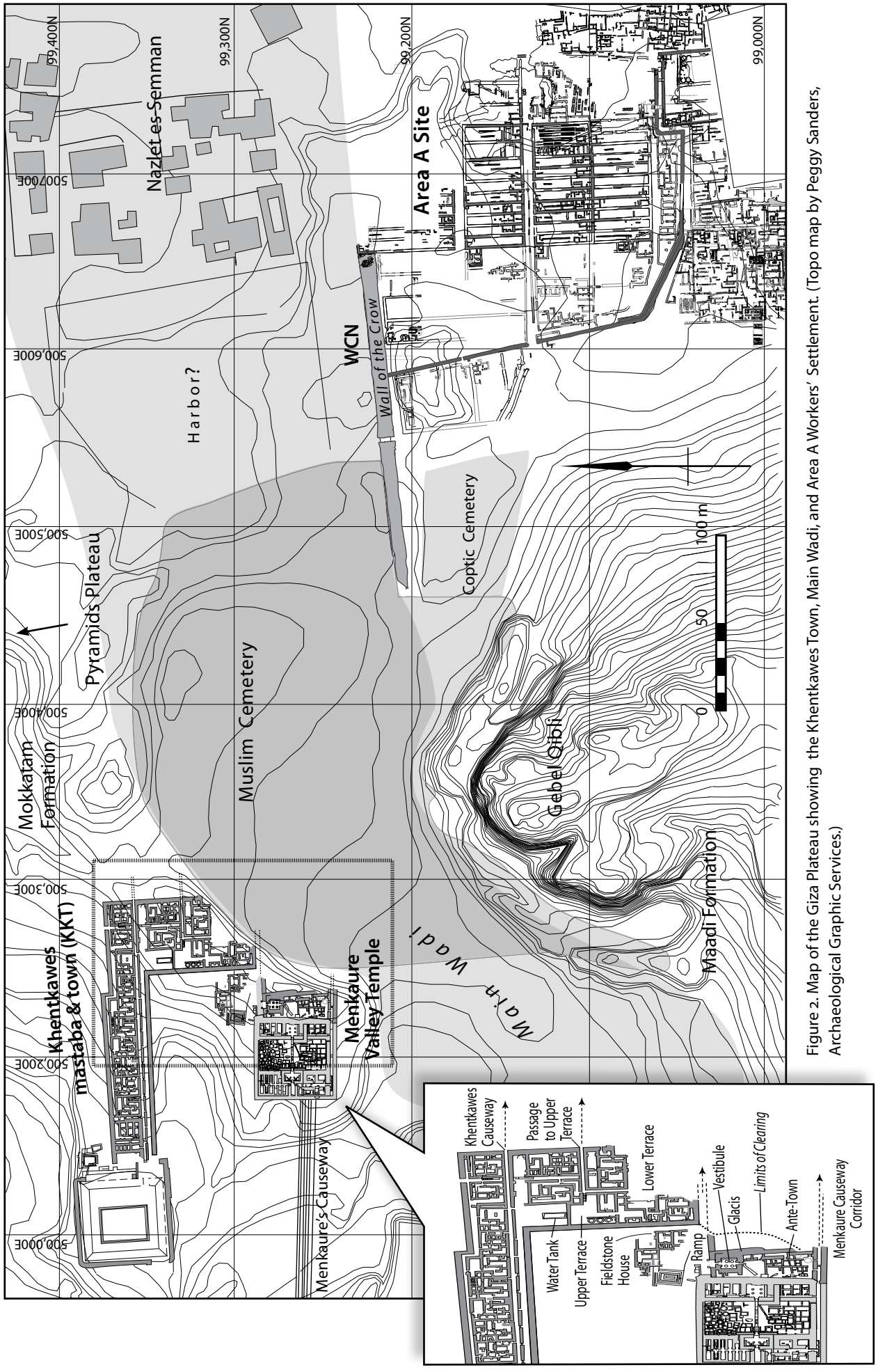


Figure 2. Map of the Giza Plateau showing the Khentkawes Town, Main Wadi, and Area A Workers' Settlement. (Topo map by Peggy Sanders, Archaeological Graphic Services.)

2. Area Clearing and Mapping

In our broad area clearing and mapping we removed an overburden of mostly modern sand and other modern material to map ancient structures that show on the surface of the ruins without detailed, deep excavation. In the case of the Khentkawes Town, the overburden was a mixture of sand and deteriorated mudbrick that had accumulated in the 73 years since Selim Hassan excavated the site.

The Khentkawes Town (KKT)

The expansive settlement that we have been mapping and excavating south of the Wall of the Crow did not exist in isolation. On the other side of the wall, across the wadi now covered by the Muslim cemetery, lay the urban conglomerate of the Khentkawes Town and, 30 m southwest, a dense little settlement in front of the valley temple of Menkaure's pyramid (fig. 2).

Khentkawes, a 4th dynasty queen, ruled for a short time after Menkaure. Her tomb looks like a giant mastaba or unfinished pyramid. Several courses of large masonry blocks sit atop a giant block of bedrock left over from the quarries where the 4th dynasty builders took most of the stone for the inner core, and major bulk, of the Giza Pyramids. Stripped of most of its finish masonry, the chapel opens wide like a garage door in the lower southern corner of the eastern façade. Locals call the monument "The Sphinx's Bread Oven" because the angular sides and the wide opening look like the ovens in traditional village houses.

At the beginning of his third excavation season in mid-November 1931, Selim Hassan dug test trenches in search of a place for his dumps from excavations in the Central Field cemeteries. East of the Khentkawes Monument, his workers found the "remains of brick buildings lying at a depth of three or four m below the surface of the ground" (Hassan 1943:1). He began to excavate around the Khentkawes complex on January 20, 1932. The mudbrick buildings turned out to be a town of modular houses arrayed east-west along a causeway leading to the Khentkawes Monument.

General Description of the KKT Town

KKT is an L-shaped mudbrick settlement. The "foot" of the L, the priority area of our 2005 season, points southward. The "leg" of the town extends about 150 m west to east along the southern side of the causeway leading to the entrance of the Khentkawes Monument. The western part of the leg is about 26.44 m wide, while, due to a southward jog of the northern wall, the eastern end is about 23.37 m wide. From the southern side of the leg, the foot of the town extends about 61.5 m south and is about 43 m wide. The town covers an area 6,402 m^2 (measurements from Selim Hassan's [1943: :35-61, fig. 1] published map and text).

The leg of the Khentkawes Town extends along a narrow causeway, 1.70 m wide, leading eastward from the chapel. Ten modular houses line the causeway. This planned community is set between thick enclosure walls. On the south an additional thinner wall forms the causeway to the queen's tomb. The southern extension (the foot) contains two, possibly three, much larger houses that might be comparable to the large houses we discovered in 2004 in the Western Town.

The Menkaure Valley Temple Town and Ante-town

The Valley Temple of the Third Pyramid of Menkaure (GIII.VT) lies just 30 m southwest of the end of the foot of the KKT. The GIII.VT is mostly buried. George Reisner (1931) excavated and back filled most of the Valley Temple more than a decade before Selim Hassan's work. Reisner and Selim

Hassan excavated houses and small bins and granaries that occupied the court of the Valley Temple and filled an ante-town that grew onto the eastern front of the GIII.VT. Reisner (1931:34-54) saw only a small part of the ante-town. Selim Hassan (1943:35-62) excavated the rest, an 18.45-meter-wide extension on the eastern front contained by a thick mudbrick wall with reinforcing accretions. He called this the Valley Temple of the Khentkawes Monument, but it is probably really an extension of the Menkaure Valley Temple town. The north end of the ante-town had its own columned vestibule and is separate from the KKT, but lies only 18 m from the southwest corner of the foot of the KKT. People occupied this temple town after the 4th dynasty for most of the rest of the Old Kingdom, a period of more than 300 years.

Roads Running East

Altogether four roads may have led east from the Khentkawes and Menkaure Towns, heading in the direction of our area WCN, north of the Wall of the Crow:

1. One road might have continued from the end of the Khentkawes causeway.
2. Another path might have run east from a stairway leading up to a terrace with granaries in the southern extension of the KKT.
3. The third road was a brick paved path up to the area between the southern foot of the Khentkawes town and the separate walled eastern addition—the ante-town—to the Menkaure Valley Temple Town.
4. The fourth road was the extension of the Menkaure causeway corridor south of the Menkaure Valley Temple. These roads might begin somewhere north of the Wall of the Crow, within range of our clearing in WCN.

Period of Occupation of the KKT

In spite of the close proximity to the GIII.VT town, which lasted through the Old Kingdom, we know little about the life span of the KKT. When Selim Hassan excavated the Khentkawes Town in 1932 he found the walls standing waist-high. The town was never backfilled nor in any way protected following excavation. Trodden by horse, camel, and cart riders, the walls have eroded down to the last few brick courses.

Selim Hassan (1943:49-50) thought that the KKT was inhabited through the Old Kingdom. He mentions that houses in the eastern part of the settlement show evidence of rebuilding, possibly in two phases, but there was little indication of "a second level of building" elsewhere. Since he did not systematically publish the pottery or other material culture from Khentkawes Town, we do not know much about life in this town, how long it lasted, or even when it was built.

The Environmental Setting of KKT

We are not certain how far the KKT or the GIII.VT settlements extended eastward. We have hypothesized that a harbor filled the wide mouth of the wadi, but with more insight from sedimentary geology, and the results of our work north of the Wall of the Crow, we are now aware that the wadi might have flushed out sandy and gravelly material that could have filled any depression and built up a fan of deposits. The Khentkawes Town fronts directly onto the broad area between the Wall of the Crow on the south, and the Khafre Valley Temple and Sphinx on the northeast. This area takes in the mouth of the wadi, more than 250 m wide, between the Mokkatam and Maadi limestone formations.

The KKT is on the opposite side of the wadi from our Area A, between the Gebel Qibli (the Maadi Formation knoll above our site on the northwest) and the Central Field quarries and cemeteries cut into the low southeastern slope of the Mokkatam Formation, the Pyramid Plateau proper. The modern Muslim cemetery has filled the wadi and expanded to the southeastern corner of the KKT. In aerial views and the 1:5,000 contour map of Giza, the KKT appears to fill the deep part of the wadi channel, about 125 m wide, where the cemetery clips its southeast corner.

Our WCN operations in 2004 and in the contractors' trench north of the Wall of the Crow in 2005 (see pages 17-20) are about 300 m due east of the GIII.VT. The contractors' trench, 90 m long x 5 m wide, shows sand, gravel, and clay layers that might have been washed out by wadi flooding.

These layers occur mostly underneath two compact Old Kingdom surfaces.

We have to wonder about the effect the active wadi had on KKT. Why does it turn 90° southward in the foot of the settlement? Did wadi flooding clip the southeast corners of both settlements? Where did the roads from the GIII.VT and KKT settlements end on the east?

Aims of the Fieldwork in the KKT

The principal aims for our 2005 fieldwork in the KKT were to

1. examine the state of preservation of the town;
2. gather information about the deposits on which the town is founded and the relationship of the settlement to the wadi channel between the Mokkatam and Maadi Formations;
3. learn about the period that people occupied the town;
4. compare architectural forms, particularly domestic structures, with structures in Area A (the Gallery Complex and the Eastern and Western Towns).

Fieldwork in KKT

At the beginning of the season, a wide horse and camel trail cut northeast to southwest across the foot of the KKT. Everyday innumerable tourists and their guides would cross upon loose sand, chaff, and modern material that barely covered what remained of the ancient town walls. In 2004-2005, the contractors who were building the new high security wall around the Muslim cemetery laid down a red *tafla*-gravel road, which covers more than 5 m of the southeast corner of the KKT foot. Much of this part of the town was already lost 73 years ago to the modern cemetery plots.

In collaboration with the Giza Inspectorate, we restricted the horse and camel traffic to this road by enclosing a wide area around the KKT and the GIII.VT with barbed wire fencing.

Ana Tavares surveyed in a grid of stakes at 10-meter intervals that Pieter Collet and Mark Lehner used for mapping the KKT remains at scale 1:20. Kathryn Piquette recorded features and surface finds. She excavated one shallow probe along the southern wall of the causeway just west of the corner between the leg and foot of the town.

The Upper Terrace

On January 15 the workmen began to clear the KKT foot, working in swaths about 20 m wide from west to east, across the western enclosure wall. They peeled off a thin layer of fine, dusty sand mixed with living and dead plants, mostly obnoxious camel thorn.

This material, laid down in the last 73 years, covered crushed limestone debris that forms a broad terrace along the western edge of the KKT foot. The crushed, marly, limestone debris is very similar to the "masons'" debris banked against the south side of the Wall of the Crow (WCS) that we exposed and mapped in 2001.

Pieter Collet and Mark Lehner mapped a series of 10 x 10 m squares from the causeway southward, taking in the upper terrace. These squares included the western enclosure wall. Our aim was to provide a detailed large-scale mapping at 1:20 to augment the only published map of the whole town at scale 1:200.

Western Enclosure Wall

The western enclosure wall of the town showed almost immediately as a wide, dark band of alluvial mudbrick that contrasted with the yellowish-white limestone debris. The enclosure wall, 2.40 m wide, runs north-south.

What remains of the wall is nearly flush with the surface of the terrace. For much of the wall, only millimeters remained of the bottom course of bricks. We had to re-clean and re-articulate the brickwork several times because of the windy, sand-blowing days. With every cleaning we lost more of the worn edges of the walls.

The bricks differ significantly from most of the brick types in the Area A settlement, south of the Wall of the Crow. They are much larger, 40 cm long and more. The mud is dark and crumbly. The workers call it "canal mud." The closest bricks in the Area A are what we loosely call, "bubble gum brick," dense, black, UTA (untempered alluvial) clay bricks used for the foundations of some, but not all, walls. The brickwork of the western enclosure wall of the KKT is very similar to that

in the foundations of the Menkaure causeway walls, allegedly finished by Menkaure's successor, Shepseskaf, that we saw when the Giza Inspectorate cleared parts of the causeway up the slope toward the third pyramid in 2004. Like the western KKT enclosure wall, the Menkaure causeway walls are also founded or flanked by a layer of compact limestone debris.

Water Tank Court

An open court immediately south of the corner between the KKT leg and foot contains a long, rectangular trench that Selim Hassan called the "Water Tank." During this season we cleared the tank down to sand and mud that probably accumulated since Selim Hassan's excavations. The tank is oriented slightly west of north like most of the mudbrick walls of the KKT. It is 2.40 m wide east-west and 7.80 m north-south.

The tank sinks a total of 1.89 m at the northern end from the top of the upper terrace to the bedrock bottom (measured at middle of tank floor). The thickness of the limestone debris layer forming the terrace is 96 cm here, so the tank drops 93 cm from its bedrock upper rim to the bottom (middle of floor). At the southern end the tank sinks a total of 2.60 m, 66 cm through the limestone debris and 1.94 m through bedrock.

It is interesting that the upper bedrock rim slopes down 84 cm from south, elevation 18.82 m above sea level (asl), to the north, elevation 17.98 m asl. This slope runs counter to the general slope of the surface and the Mokkatam limestone formation, which declines from north down to south (or northwest-southeast). We only cleared a little more than the southern half of the bottom of the tank down to the bedrock floor, which shows a slight slope in the opposite direction from the upper rim, from north (elevation 17.07 m asl) down to south (elevation 16.88 m asl).

The tank is situated in the open court to catch water running down the corridor parallel to, and south of, the Khentkawes causeway, and around the corner into the KKT foot where the court slopes markedly to the south-southeast, following the general slope of the limestone formation.

There remain scant traces of an east-west mudbrick wall to the south, separating the Water Tank Court from another court that once contained the bases of three round silos, probably granaries. Selim Hassan mapped this wall as solid, so it must have eroded badly since his time.

We mapped the remains of two round, brick-lined hearths or the bases of ovens between the southern end of the western side of the Water Tank and the Enclosure Wall. Selim Hassan mentioned the ovens, but does not show them on his map.

Court of Silos and Magazines

The bases of three round silos, probably granaries, which Selim Hassan found in a court against the western Enclosure Wall, have completely eroded away. In this area, erosion scoured the terrace down to the crushed limestone surface, except for dark patches here and there that remain from walls or other settlement deposits. East of the silos all that remains of two long rooms (possibly magazines) that Selim Hassan mapped and numbered 165 and 166 is the prominent Tura limestone slab marking the threshold to the northern room and traces of the mudbricks of the walls against the threshold slab and the southern wall of the southern chamber.

Farther south on the upper terrace more traces of the walls remain. We mapped the walls as far south as our square 101.v28, taking in the rooms that Selim Hassan numbered 175 and 184 and the northern edges of rooms 174 and 183.

The Lower Terrace

The limestone debris terrace slopes slightly to the east, and then drops suddenly along a north-south line to the lower level on which the walls of the large houses of the eastern part of the KKT foot are much better preserved, especially to the south southeast.

Our workers had to move limestone debris that tomb builders from the Muslim cemetery had dumped onto the lower terrace. The new high security wall has arrested the advance of modern tomb building, but the wall was unfinished along the KKT site during our work, existing only as a foundation and rebar framework. As of December 2005 the lower part of the wall was finished.

The same layer of fine, silty, dusty sand with dried camel thorn filled and covered what remains of the lower town. To the southeast, the workers took out concentrated modern trash, dead wood, and twisted branches of live evergreens. We exposed the top of the ancient mudbrick walls

of a large house at the southeastern limit of Selim Hassan's clearing and mapping. The walls on the lower level, a denser room structure, held up against erosion better than the walls that were isolated on the windswept and horse-trodden upper terrace. We exposed one of the long east-west walls forming the sides of the corridor and stairway leading from the wadi up to the upper terrace with the granaries and magazines.

Khentkawes Town - Menkaure Valley Temple Town Interface

Selim Hassan's map leaves blank the area between the southern end of the KKT foot and the Ante-town of the GIII.VT. In his report Selim Hassan called the Ante-town the Valley Temple of Khentkawes, which he described as lying "at the south-eastern corner of a vast open area bounded on the north and east by the girdle-wall of the city. Access to this courtyard is gained by means of a broad causeway running westwards from the valley and lying between a thick mudbrick wall attached to the Valley-Temple and the girdle-wall of the city" (Hassan 1943:53).

Selim Hassan (1943:54-55) mentions this causeway again in reference to the temple's entrance: "The main entrance is approached by means of a wide brick-paved causeway which runs up from the valley in a westerly direction. At some time after its original construction, this causeway had been repaved, and a thick layer of limestone rubble was laid down for the new paving."

During our Season 2005 the place in question was mostly covered by the new road used in constructing the high security wall. The road covers the little stretch of the southern wall of the Khentkawes foot that Selim Hassan mapped. The area in front of the east wall of the Ante-town, from its north end to the western wall of the KKT foot, has long been a depression choked with thick stands of reeds and modern trash.

In order to check the condition of this important interface between the two settlements we cleared a strip 50 m long, narrowing from 19 (north) to 3.5 (south) m running northeast to southwest along the curving embankment of the new road.

Fieldstone House

On the north of the cleared strip we exposed the southern end of the western wall of the KKT foot on the east, and to the west we exposed the fieldstone walls of a small building, possibly a house, in which Selim Hassan numbered the rooms 186-190. A corridor 2.60 m wide runs between the KKT enclosure wall and this house.

The house has been cut across east to west. The section appears to show that the house is founded upon layers of concentrated limestone gravel—the end of the upper, western terrace of the KKT foot—and gravely sand. These layers combined are nearly a meter thick. The section drops from 17.97 m to 16.97 m asl.

Ramp

A ramp paved with alluvial mud at the bottom of the cut section is Selim Hassan's "causeway." We exposed it for a width of only 9 m east-west. From Selim Hassan's map, a line that might represent the northern edge of the ramp extends to the limestone basin located off the northeast corner of the GIII.VT. In our exposure, the ramp is 8.2 m at its widest. It slopes markedly to the east, dropping from 17. 77 m asl to 16.97 m asl, 80 cm over the 9 m length of our exposure. The north side of the ramp ends at the cut through the house.

At the base of the cut on the western side, a trench, filled with gravelly sand, angles southeast-northwest, possibly left by a robber who pulled out the wall marking the northern shoulder of the ramp. The trench trends in the direction of the line on Selim Hassan's map that might represent the northern edge of the trench farther west near the basin. The stratigraphic relationships are not clear. The limestone gravel appears to be the fill of the upper KKT terrace and to overlay the gravelly sand. The ramp does not appear to extend north under the gravelly sand. Rather, the gravelly sand continues deeper and goes under the ramp. It is certain there was a drop between the floor level of the KKT foot, the fieldstone house, and the top of the ramp. The cut may have removed a thick, mudbrick retaining wall that held back the limestone gravel and gravelly sand on the north. Such terracing is indicated on the southern side of the ramp, a large mudbrick wall, 1.3 m wide, plastered on the northern face. We exposed the wall for a length of 8 m. On the west, the wall meets the northeast corner of the Ante-town

Ante-town Glacis

The southern side of the southern wall of the ramp drops precipitously from elevation 17.75 to 16.00 m asl over a distance of 2 m. It forms a somewhat acute corner with the eastern front wall of the Ante-town. In Selim Hassan's schematic map this wall appears to have been thickened in two or more phases. The rounded end of an accretion on the eastern side gives it the appearance of a fortification. We found this face of the wall eroded into a slope that drops from 19.25 to 16.00 m asl, 3.25 m over 5 to 6 m. The slope is covered by many alluvial mud lenses or layers caused by erosion, studded with the stumps of reeds that have long grown here. As indicated by the elevation at the top of the wall, it rises much higher than the southern wall of the ramp. This dramatic slope gives the wall the appearance of a glacis, a slope that runs down from a fortification.

As for the Ante-town interior, we found the thick marl plaster line of the eastern side of its four-columned vestibule embedded in the mud that had deteriorated from the walls since Selim Hassan's excavation. We also found where the plaster line turns the northeast and southeast corners of the vestibule—at the limit of our clearing of the overburden.

It is important to work out the stratigraphic relations between the KKT foot, the fieldstone house, the terrace on which they sit, the ramp, the Ante-town, and the GIII.VT. The stratigraphy would inform us about the chronological relationships between the KKT and the GIII.VT temple town. We know from historical sources, including inscriptions that Reisner found in GIII.VT., that people occupied the town over the course of the whole Old Kingdom.

As for the ramp and glacis, they seem to point to a dramatic drop in level between both the KKT and the GIII.VT and the wadi to the east. The ramp and glacis are approximately on line with our next major sphere of operations in 2005, the Wall of the Crow North, 300 m farther east.

Backfilling KKT

At the end of the season we placed clean sand over the area where we had removed the thin overburden. Horseback riders and other traffic remained restricted to the contractors' road along the new high security wall around the modern cemetery.

Area Clearing and Mapping in SFW (The Western Town)

During early February, Reis Ahmed Abd al-Basat and the workers removed our backfill from the Pedestal Building, which we had excavated in 1988-'89 and 1991 in our Area AA (see fig. 1). Mansour Bureik and Mohsen Kamel supervised Mohammed Musilhi as he used the loader to remove a series of long, linear, tall debris piles that ran north-south along the western limit of the southern part our site west of the soccer field (SFW). It is within the area of the ancient settlement that we call the Western Town.

We temporarily cut the road to our camp that crossed from south to north between the Workers' Cemetery and our site below. The road ran over a corner of Area AA, which we had backfilled in 1991. We exposed the surface of the settlement ruins from the Pedestal Building to the mastaba tomb that we had partially excavated in the squares designated A5 and A6 in 1988-'89 (Lehner 1992). The marl-lined walls of the settlement continue up to, under, and beyond the mastaba up the slope to the west. We quickly backfilled with a band of thick, clean sand to create a roadbed, so that vehicles could once again cross from the GPMP camp to the parking area below the Inspectors' rest house at the Workers' Cemetery excavations. Cement trucks had to come through here for work on the high security wall around the modern Muslim and Coptic cemeteries adjacent to the site on the northwest. This work continued throughout most of our 2005 winter-spring excavation season.

To the east of the road, we exposed more of the ruins of the settlement over an area about 15 to 20 m east-west (E500,615 to 635), and extending about 50 m north of the Pedestal Building (N99,015 to N99,060), and 55 m south of the Pedestal Building (N99,000 to N98,950).

Upper Town?

When we removed the sandy overburden that remained between the Western Town and Area AA, we found that the "mud mass" (the surface of the ancient settlement ruins) rises dramatically up

to the west toward the Pedestal Building. The preservation of the settlement along this western slope promises to be much better than in the rest of the Western Town. The dramatic change in elevation occurs almost exactly along our north-south grid line E500,630, between our Grids 5 and 6. There is much more of the Western Town on the upper slope of the ruins which continue, as I indicated above, west of the mastaba in our 1988 squares A5-6 (currently designated 5.K45-46). We might think of an upper and lower town.

Fieldstone Wall of the Pedestal Building

The western fieldstone wall of the Pedestal Building appears to have been a common wall for a much larger complex than just this structure. The wall, 75 cm thick, runs 30 m to the north where it thickens to 82 cm and merges into a stony mass. This mass is the tumbled ruins of a fieldstone structure, the "Stony Building" (see page 65), at the northwestern corner of the Western Town, below the first bend of the thick Enclosure Wall around the Gallery Complex. The major fieldstone walls of this complex are 65 cm wide and run east. The building is 15.20 m east-west by 20 m north-south. Lying just north of it, the "Trapezoid" (see page 65) complex forms the south wall of RAB Street, which runs along the outside of the Enclosure Wall. Adjacent to the Trapezoid, RAB Street widens and opens to the northwest. The Stony Building may be part of an entrance into the Western Town from a pathway along the southern side of the Enclosure Wall.

Area Clearing and Mapping at the Wall of the Crow North (WCN)

During our October 2004 visit to Cairo to interview applicants for the field school, we found a large, deep trench that the contractors for the new high security wall dug with a mechanized excavator. The trench was intended for the cement and steel walls of a corridor running from the town to the modern cemeteries. Work was suspended. In collaboration with the Giza Inspectorate of the SCA, we examined the archaeological layers in the cut. Recording the information in this trench became one of the main operations of the 2005 season.

The trench, 4.5 to 7 m wide and 90.5 m long, ran roughly parallel to the Wall of the Crow (WOC) (fig. 3). Located 19 to 24 m north of the Great Gate in the WOC it extended eastward to a point about 14.8 m shy of the east end of the wall. The west end of the trench turned and ran south to meet the east corner of the north side of the Great Gate. Here the trench was shallow. But, 13.50 m east of where the trench turned to run parallel to the WOC, it drops from 1.50 to more than 2 m below the ancient compact surface that we exposed in our 2004 operations WCN and WCGN to reveal layers below that surface.

Two Old Kingdom Horizons

The sections in the long, east-west part of the trench showed a deeper and older compact layer of the masons' debris that we had found in our previous operations. This older layer sloped down toward the east. A sand layer separated it from the masons' debris layer that forms the compact surface we mapped in 2004. The east end of the south side of the trench cut through, and nicely sectioned, a brick-lined hearth associated with the lower horizon about 37.2 m west of the east end of the WOC. We sketched and measured the hearth in October 2004. The upper and lower layers of compact stony debris merge together, due to the upward slope to the west of the lower layer, about 18 m west of the hearth. This is why Adel Kelany did not encounter the lower horizon in his WCGN trenches in our spring 2004 field season.

In 2005 we labeled the contractors' trench DDT. Derek Watson supervised work in the DDT trench with Ali Witsell. Ken Lajoie investigated the layers from his perspective as a geologist. Peter Collet drew the entire north and south sections at 1:20. Witsell and Watson drew selected patches of the sections at 1:10. Collet's 1:20 drawing of the entire south section, a total length of 64 m that penetrated below the Old Kingdom compact surface, is 3.2 m long. The team color-coded some 200 features, each requiring description on our recording forms. Altogether the team recorded more than 500 stratigraphic features from the contractors' trench.

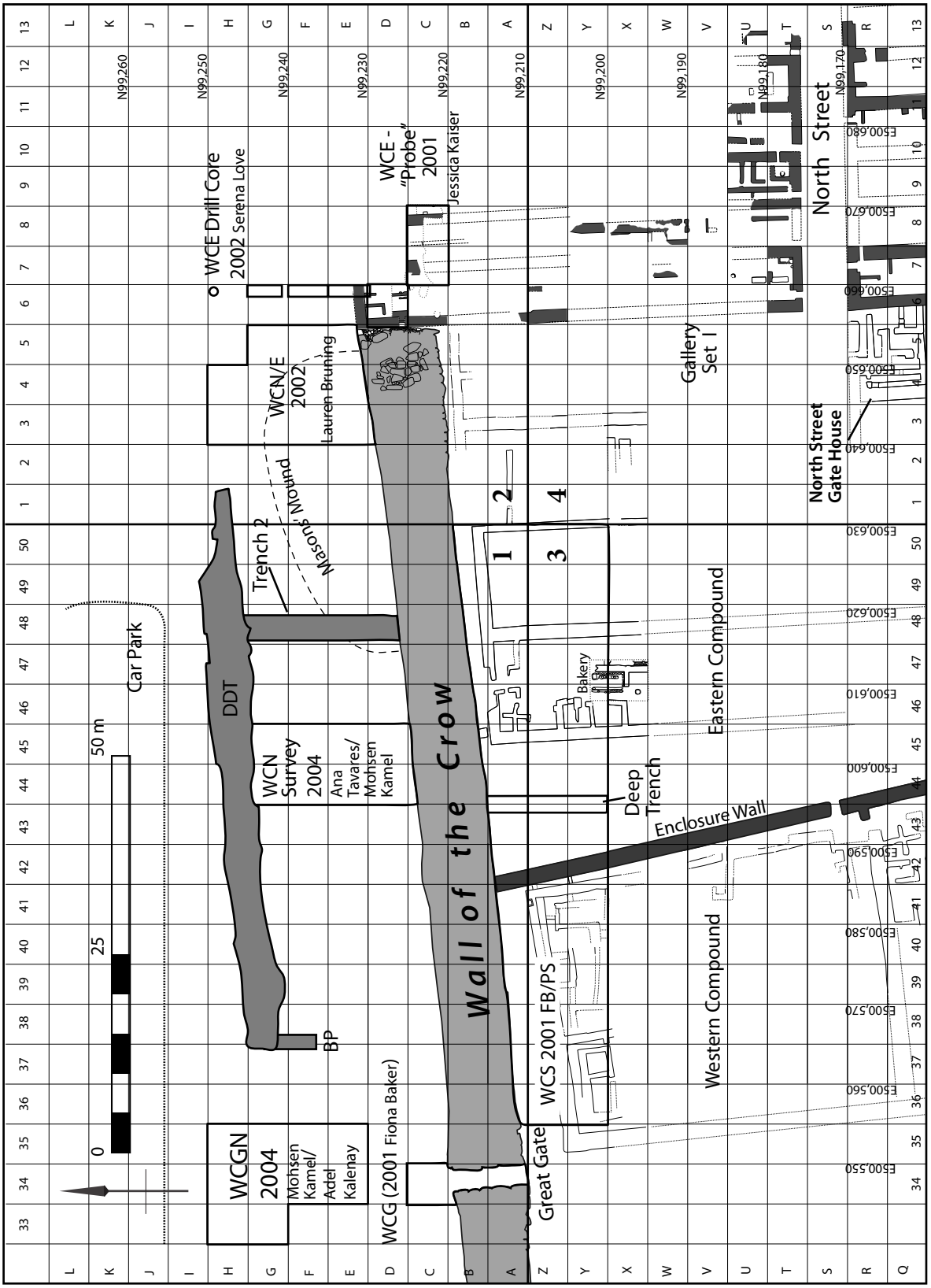


Figure 3. The WCN 2005 and related Wall of the Crow operations.

Trench (DDT) Clearing in 2005

By January 2005, a huge chunk of the south section collapsed, taking the hearth into the soggy bottom of the trench. The sides of the trench had sloped into the bottom, which was filled with standing water and trash blown in from the parking lot for tourist buses just above and to the north of the Old Kingdom surface we exposed north of the Wall.

The water table had risen markedly since the end of our previous season in May 2004. Our *Saidi* (Upper Egyptian) workmen cleaned the trench. They brought down the material that had collapsed from the sides of the trench and used it to fill the bottom and create a raised working platform or ridge running the length of the trench.

The contractors left large spoil heaps along the southern side of their trench, between the trench and the Wall of the Crow. The workmen cut the base of the spoil heaps back from the side of the trench to reduce the danger to those working in the bottom of the trench below. Then Mohammed Musilhi used the loader to remove the spoil heaps. He dumped the sandy material on the higher level to the north, along the southern side of the tourist bus parking lot. He also used the loader to clear a track down to the area off the eastern end of the Wall of the Crow and to widen our clearing there.

Ancient Channels in the Trench Sections

The contractors' trench cut through ancient pits or channels that we could see in the sections. Sand and fine gravel that might have been water-sorted filled the channels.

The north side of the trench cut through a prominent pit or channel, 4 m wide and 60 cm deep, about 29 to 33 m west of the east end of the trench. Mudbrick clumps, potsherds, limestone debris, coarse sand and other cultural material filled the channel, which is associated with the lower horizon of compact masons' debris. A layer of fine granite dust, 12 cm thick, caps the channel. This layer indicates that people were working granite nearby. Granite would have been brought from Aswan, 500 miles south of Giza. (We have found much granite dust in the masons' debris on the south side of the wall of the Crow, and in similar debris filling the floor of the passage through the Gate. We found a massive deposit of granite dust filling a deep cut through the remains of the galleries off the east end of the Wall of the Crow in our WCE operation in 2002.)

Another pit (BP, see below), which could be part of the same channel, shows in the southern section of the trench much farther to the west, near where the bottom of the trench stepped up before it turned toward the Gate, 60 m from the east end of the trench. Here a dark layer of black ash and/or alluvial mud, 18 cm thick, caps the channel, which is more than 4 m wide and 90 cm deep. The pottery we saw in the fill included a nearly complete, crude, red-ware jar. Black, muddy ash and coarse pebbly sand also filled the channel, which cut through natural layers of gravelly sand deposited and sorted by running water.

If the pits in the north and south sections are parts of the same continuous channel, this channel would have run longitudinally west-east, nearly but not quite parallel to the Wall of the Crow. That may be why it shows in the south and north sections at locations so far apart. The channel could have followed a sinuous, rather than straight, course from west to east.

Hearths

In addition to the hearth located 37.2 m west of the east end of the Wall of the Crow, we saw more hearths in the sections toward the central and eastern part of the trench. These are not as substantial as the one we sketched in October 2004, consisting of definite patches of burning and cultural material, located here and there, close to the cut of the channel in the northern section. There is also a bit of architecture in the form of a pan-shaped, shallow pit with a uniform lining of gray alluvial mud.

The layers and pits (possibly channels) that show in the sections of the trench might indicate that the mouth of the wadi between the Maadi and Mokkatam Formations occasionally flowed with water that cut the channels and distributed gritty and gravelly sand. It was, perhaps, during a hiatus in this hypothetical desert flooding that people camped in the area north of the Wall of the Crow, next to a narrow wadi channel, into which they dumped their debris. Were the campers there to build the Wall of the Crow and, if so, did they leave the lower limestone debris layer with which their hearths are associated?

The Sand Sandwich: An Interruption in Crow Wall Building?

The pits or channels occur in the sandy layer that separates the lower from the upper Old Kingdom horizons, two anthropogenic layers of what looks like masons' debris. One hypothesis is that water from wadi outwash cut these channels and deposited the sand between the two compact layers. The sandy fill contains limestone and alluvial mud fragments. According to the water flow hypothesis, these fragments rafted down with the wet, sandy ooze and filled the channels.

In the lower layer of masons' debris, we can see layers and lenses of variegated material that must have resulted from individual baskets that the ancient workers dumped and very deliberately spread out to make the lower compact surface. They may have created this surface around the same time that they built the Wall of the Crow, some 20 m south of the trench. Our datum line, running about center-height of the trench section, is at elevation 15.85 m asl. We found the very bottom of the south side of the Wall of the Crow in the 2001 WCS trench at 15.40 m asl, so the lower layer of masons' debris in the trench could well be the "floor" the builders laid down when they founded the wall. The thin hearths and mud-lined pit that the trench cut and sectioned may be evidence of the builders' camp.

The sandy layer implies some kind of interruption during which wind, water, or people deposited sand on the floor of masons' debris. The "channels" could be pits that people dug. The fill includes mudbrick and pottery. Or perhaps wadi floods carved channels that either people or flowing water filled with sand. The cultural material, including mudbrick, might have washed down from upstream. The sand layer, channels, and fill of the channels must reflect some kind of hiatus, and possibly problems, for the builders of the Crow Wall and their activity. When they resumed, they prepared a new, higher surface of limestone debris, the upper Old Kingdom horizon.

In 2001 Paul Sharman came to a similar hypothesis after studying the layers of the deep trench that we excavated up to the Wall of the Crow in WCS: an interruption in work that is reflected by layers of sandy, fluvial material.

The hypothesis is compelling for several reasons, not the least of which is the fact (ascertained by Reisner's excavation between 1908 and 1910) that desert wadi flooding destroyed the Menkaure Valley Temple and mudbrick town, located about 300 m due east of our operation WCN (Reisner 1931:44-45, 54). This would have been a flooding event of a much later period than the sandy layers between the two horizons in the contractors' trench. The Menkaure Valley Temple flood seems to have occurred in Dynasty 5 after the royal house had moved to Saqqara and Abu Sir for the location of the royal building projects, well after the time that the builders erected the Wall of the Crow, probably in the presence of the royal house at Giza.

For the team, ascertaining the distinction between sand deposited by wind, water, or people was not a facile task, and there was some difference of opinion between archaeologists and geologists. Would the gray mud fragments have held their shape, rather than simply dissolve, as they travelled down stream or as they oozed forward in wet, viscous sand?

3. Excavations in 2005

When we excavate we give every deposit, from walls to layers, feature numbers. When we remove archaeological deposits we intensively collect artifacts, pottery, animal bone, chipped stone (lithics), charcoal, and plant remains. We draw plans at a scale of 1:20 and sections at a scale of 1:10. We construct stratigraphic matrices to show chronological relationships within the excavated area. The following sections describe our 2005 excavation operations.

Excavations North of the Wall of the Crow (WCN)

The investigations that Derek Watson, Ali Witsell, and Ken Lajoie carried out in the DDT, along with Pieter Collet's 1:20 mapping, fell within the following objectives for work in WCN:

1. To record the depositional sequence within the DDT. This stage had priority as it was effectively a salvage operation.
2. To assess and reconstruct wadi hydrology, "natural" sedimentation processes, anthropogenic impacts, and the interplay between these depositional agents.
3. To excavate a trench extending from the DDT through the western side of the Masons' Mound to determine the internal structure of the mound and connect the DDT to the Wall of the Crow. This strategy provided a stratigraphic sequence for the whole WCN 2005 operation and a north-south composite cross-section of the Wall of the Crow foundations when combined with the profiles of WCS "Deep Trench" excavated in 2001.
4. To correlate these results with previous operations in the area in order to elucidate the wider archaeological sequence of the WCN.

Watson, assisted by Aneis Hassan, excavated Trench 2 (fig. 4) from the DDT to the north side of the Wall of the Crow. Banu Aydinoglugil excavated a trench across BP, the large pit or channel cut by the northern side of the DDT trench at its western end. Table 1 lists the three WCN operations.

Table 1. WCN Units

Unit	Squares	Dimensions	Orientation
Trench 2	1.D48-1.H48	18.54 m x 2.60 m x 3 m	North-South
DDT	1.G37-1.G47; 1.H37-1.H50-2.H1; 1.I46-1.I69		West-East
BP	1.F37-1.G37	4.5 m x 1.5 m x 1.3 m	North-South

Trench 2 Excavation

We wanted to investigate the relationships between features in the contractors' trench (DDT) and the Wall of the Crow and sample a portion of Masons' Mound, a mound of compact limestone debris on the north side of the Wall of the Crow near its east end, which might be the remains of a construction ramp (fig. 3). For this purpose Watson laid out a trench perpendicular to the contractors' trench (DDT) running from DDT to the Wall of the Crow, approximately 18.54 m in length x 3 m wide. Watson located Trench 2 toward the tail-end of the western slope of Masons'

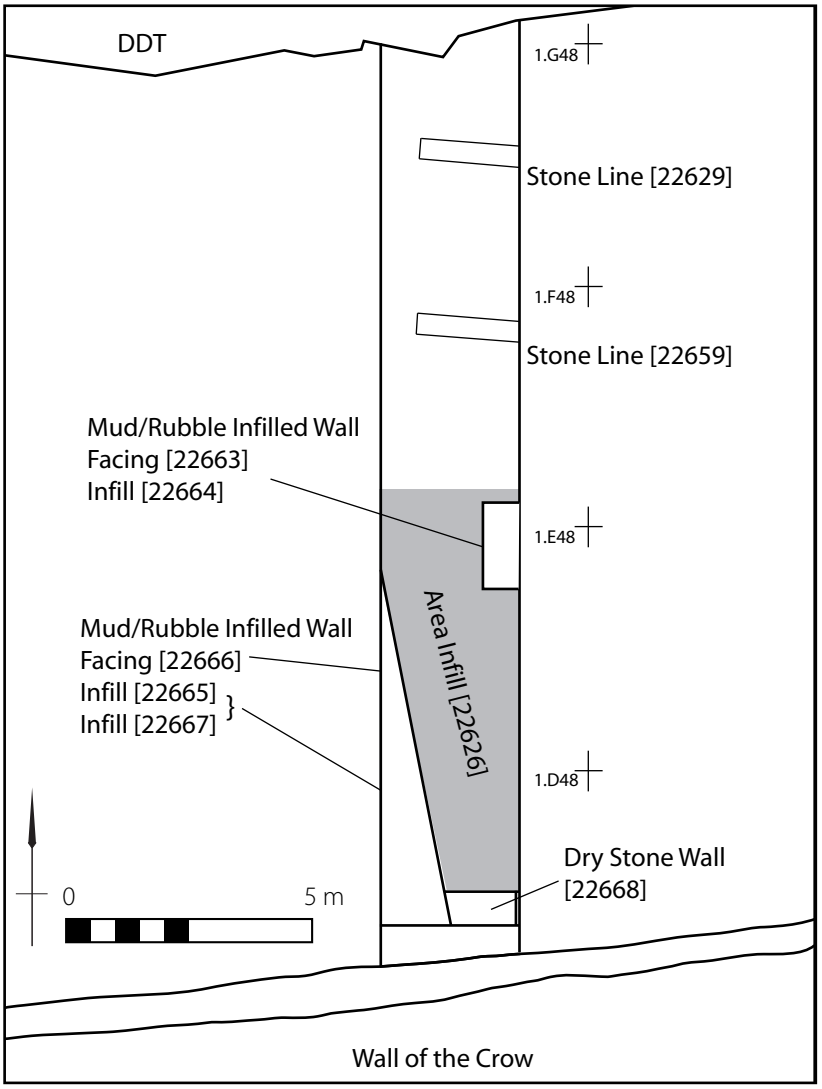


Figure 4. Mud/rubble in-filled and dry stone walls in Trench 2, schematic section (after Watson 2005:fig. 3).

Mound within grid squares 1.D48-1.H48, 1.50 m from the east line, and 50 cm from the west line of range 48 on our grid, between coordinate lines E500,610 and E500,615. The north end of Trench 2 took in the west side of the prominent channel or pit that showed in the south section, east end of the contractors' trench (DDT).

Watson found that the general reddish sand layer [22,882] (feature numbers are shown in brackets) between the two compact debris layers is the same as the fill [22,207 - 229] of the channel or pit. He interpreted the sandy layer as sediment dumped by people in order to prepare a level surface for building Masons' Mound. The darker striations within the sand result, in his view, from the tipping or dumping of baskets of the sandy material. These thin layers and lenses cover crude walls and fill (rubble fill, limestone and mud) that belong to the structure of Masons' Mound.

The uppermost layers of the mound (evident in DDT south section and the surface characteristics of the mound) appeared to comprise "construction debris." Close to the Wall of the Crow, Watson's team exposed a mass of mud and limestone fragments of very irregular, rounded shapes and sizes, somewhat yellow and marly, so they probably derive from the Maadi Formation above our site. The mass has structure. It appears to be a roughly linear, east-west oriented berm —about 3 to 3.5 m wide—that comprises the tail of Masons' Mound. The stone appears to be more concentrated along the southern edge, just 1.60 to 1.8 m from north base of the Wall of the Crow.

Most curious are the layers just above this hump or spine of loose but roughly articulated stone debris (fig. 5). The Trench 2 sections clearly show a series of slanted, thin, contrasting layers

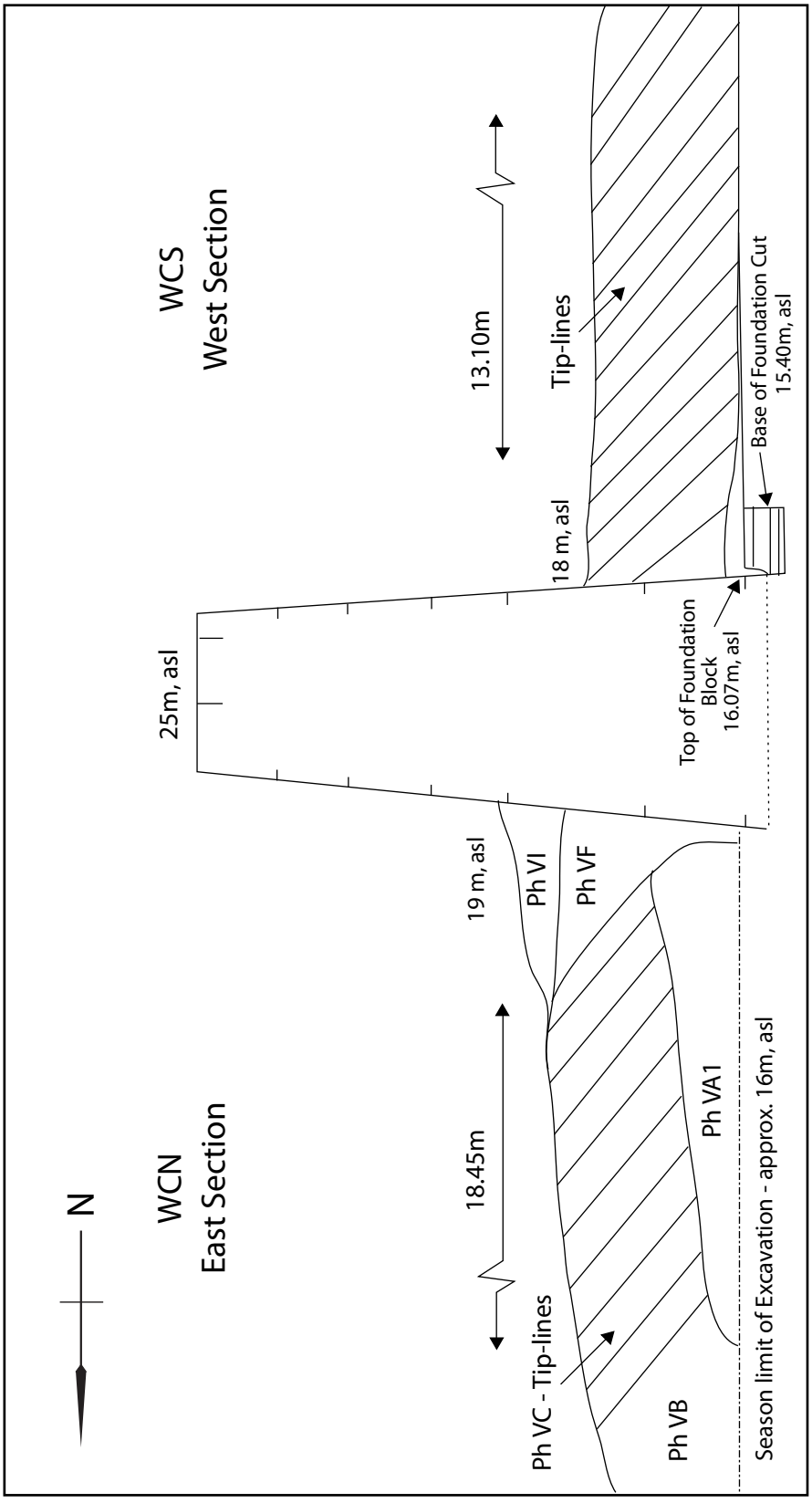


Figure 5. The Wall of the Crow schematic composite section. WCN 2005 Trench 2 and WCS 2001 "Deep Sondage" (after Watson 2005:fig. 2).

that are certainly "basket tip" lines, from dumping quantities that would just about fill an ancient worker's basket. The thin layers are somewhat intercalated, that is, they alternate between sandy or gravelly material and darker alluvial mud. The upper tip lines include many mudbrick fragments and generally show a high dark silt content in the matrix. The tip lines angle down to the south at about 40° toward the Wall of the Crow.

Watson (2005) points out in his Data Structure Report how different this is from the deep trench we excavated in 1991 and 2001 on the south side of the Wall of the Crow (WCS). There the tip lines sloped down away from the wall, because on the south side they are certainly waste from trimming the blocks of successive courses on the wall itself. On the north side the tip lines are of different material, and slope in toward the Wall, being located only 2.80 m from the Wall's northern face.

Within the stony structure of Masons' Mound, Watson's team found a plastered fieldstone wall with a sandy marl render, 73 to 43 cm from the west balk of Trench 2, running north-south slightly angled east of south. The plaster render goes up against the Wall of the Crow, where the face of the Wall of the Crow is dressed flat and the seams between blocks are plastered over, for a height of 20-30 cm above the height of the section, from 16.15 to 19 m asl.

The east section shows a gap, 90 cm deep, and 1.30 m wide, in the compact material up against the Wall of the Crow. Gritty sand layers [22,892 – 22,920] fill the gap.

Trench 2 revealed the following gross sequence of human and natural activity during the Old Kingdom, 4th dynasty:

1. People laid down the lower compact debris layer (Watson Phase III), probably commensurate with the building of the Wall of Crow. We did not positively ascertain this, because we came to the end of our excavation period before reaching the bottom of the wall, and were not able to trace the layers in the contractors' trench (DDT) to the foundation of the wall.
2. People made and used hearths, clay-lined pits and other pits and installations for some time on the surface of the lower compact layer. (Watson Phase III).
3. Wadi streams laid down sediments over the lower compact rubble layer (Watson 2005, Lajoie 2005). Wadi streams laid down foreset beds (Lajoie 2005), that further covered and leveled the sloping surface of the lower compact rubble layer, or people covered the lower layer to purposefully level it with basketfuls of sand (Watson 2005, Phase IV).
4. People built casemate retaining walls to hold debris (Watson Phase V.AI) upon which they created Masons' Mound (Phase V.AII) by building additional dry stone walls (Phase V.B) and dumping baskets of dark silty material (Phase V. C). They spread the material of the upper layers Masons' Mound to the north and west, creating the upper compact layer cut by the contractors' (DDT) trench (Phase V.D).
5. As people continued construction activity (on the Wall of the Crow?) in the vicinity, they made pits and cuts into the upper compact surface (Phase V.E) and deposited the upper layers that cap Masons' Mound (Phase V.F).

BP Excavation

After Reis Ahmed and the *Saidi* workers cleared out the western end of the contractors' trench and pushed back the overburden, we had a better look at the large pit or channel showing in section at the western end of the southern side of the trench. This is the pit (BP) or channel filled with cultural material, pottery, and mudbrick (see above).

The pit, located northeast of the Great Gate in the Wall of the Crow, is 6 m wide and 84 cm deep. A granite and limestone chip layer capped the top of the pit. A muddy layer that showed in the DDT section with nearly complete red-ware "beer" jars filled the bottom of the channel. Examining this layer closely, we noticed that the pieces of dense, dark gray mud took the form of the bottoms of jars and bread-baking pots. These mud pieces are unfired pots, or parts of vessels. In some of the pieces the gray mud phases into silt that is fired red; these are partially fired vessels. Someone discarded these incompletely fired, or unfired pots into the pit.

In the same pit we find that some of the upper layers look decidedly like gravel worn and washed by water: probably wadi floods.

Banu Aydinoglugil supervised the excavation of the BP trench, 4.5 x 1.5 x 1.3 m into the western side of the pit at the western end of the DDT, in an attempt to determine its north-south extent and its stratigraphic relationships to contiguous DDT layers. The excavations revealed no tip lines that would indicate basket dumping and intentional filling. All the layers that we saw filling BP in the southern section of the contractors' trench thin out to the south, so that the whole sequence of layers filling the pit or "channel" thin out from 1 m to only 34 cm thick. This indicates that the original pit is a fairly sharp cut in cross section from east to west, but very shallow and gradual to the south.

The pit or channel cut through older, underlying layers of gravel and sand, probably the edge of the wadi fan. This is the first phase of deposition north of the Wall of the Crow that we saw in the contractors' trench, and in the deep 2004 excavations of Adel Kelany in WCGN, north of the Gate.

Summary and Comments on the WCN Sequence

Watson (2005) summarized his phasing of the stratigraphic sequence from the contractor's trench (DDT), Trench 2 to the Wall of the Crow, and the excavation of the large pit (BP) at the western end of the contractors' trench 2 in table 2 (see below).

Phase I: Fluvial Sands

Watson (2005) noted that the uppermost elevation of this lower unit of sand and marl beds, his Phase I, is approximately 15 m asl. During the 2005 fieldwork, the local water table fluctuated around 14.75 m asl, which prevented deeper excavation. The lower layers were damp throughout the exposure of the contractors' trench, which prevented making finer distinctions.

Watson suggested that running water deposited the lower sand and marl clay layers:

> The bedding structures and features within these layers comprised relatively simple bed-sets with predominantly wavy parallel to wavy-to-even nonparallel bedding surfaces, frequent laminations within these layers, well-to-moderately sorted sands and normal graded beds suggesting sediment transport and deposition by turbidity currents most likely attributable to fluvial processes. Indeed, frequent deposits/lenses of levigated clay deposits indicate the presence of standing water in the area (Watson 2005:101).

The fluvial deposits of fine to coarse grains in sand layers, and the fine clay deposits, suggest "a prevailing, or perhaps more likely a localized, hydraulic regime characterized by low to moderate energy discharge by shallow streams" (Watson 2005:102). Citing Boggs (1995:306-317), Watson further hypothesized that the episodic streams may have constituted a sandy braided stream system: "if the WCN [area north of the Wall of the Crow] was situated adjacent to an active wadi system then it appears on the basis of Phase I data from the DDT that it may have been on the southern margins of its alluvial fan" (Watson 2005:104).

The first indication of human activity in the contractors' trench is a crescent-shaped ash and charcoal deposit, possibly from a hearth, in the southern section at the western end. Watson compares its elevation at 15 m asl with the earliest exposures of cultural material in the WCE 2001 and 2002 squares 2.H6 and 2.C8 at 14.87 and 15.21 m asl respectively.

Phase II: Gravel/Sands

The distinction between Phase I and II, while somewhat arbitrary, is a marked increase in gravel deposits consisting of fine to coarse pebbles and angular and platy limestone fragments that cross-bed the general trend of the bed-sets. Cross bedding refers to layers within a bed that dip at an angle to the orientation of the primary beds (Watson 2005: 27; Boggs 1995: 118-122). In lay terms, the gravel deposits look like pockets of limestone fragments, quartzite pebbles, and chert cobbles with the heavier fraction concentrated near the base, and the material becoming finer toward the top and east.

Watson designated as Phase II gravel/sand deposits that reach a maximum thickness of 1.10 m from 15 m asl to about 16.10 m asl in the western section of the contractors' trench. The layers declined eastwards to merge into the water table at about 14.75 m asl after which the team could not trace them further. This is part of a much wider slope of the ancient surfaces to the east and north in the northeast part of our site.

Watson (2005:105) interpreted Phase II layers as "the existence of a sandy/gravelly braided wadi river system, which appears to have been prograding." Used in reference to shorelines, "progradation" or "regression" refers to seaward movement (Boggs 1995:502-503). In WCN the idea is that the wadi fan was building out and extending gradually eastward. Watson (2005:105) observed that "combined with the notion that the WCN area was contiguous with the margins of the wadi alluvial fan, it seems probable that the Phase II deposits generally comprise lateral and/or longitudinal bars" that form between the braided streams of such a fan. The contractors' trench gave us cross-sectional views of the longitudinal bars.

Watson (2005:106-107) suggested that the "cross-bedding and lateral grading of the gravel sands within the Phase II deposits denote flow velocity fluctuations resulting in differential deposition of sediments (bedload)." Citing Lajoie (personal communication 2005) Watson (2005:106-107) suggested further that the "particle size differences evident between Phases I-II suggest that the wadi system was prograding eastward." He concluded that, "in terms of the environmental assessment of the WCN area this is perhaps the single most important interface or facies in the entire sequence" (Watson 2005:107).

Noting that the sequence (Watson's Phase I and II) slopes gently from west to east, Ken Lajoie (2005) characterized these layers as typical scour and fill from wadi flash floods. He suggested that the quartzite and chert inclusions probably washed from the high desert, while the more abundant limestone chips, which he saw as tabular and imbricated, may have derived from quarrying stone for the pyramids and other monuments in quarries along the northern side of the wadi up slope. Lajoie agreed that lenses of levigated yellow clay (marl) in this lower sequence might represent water that stood in shallow pools on the surface of the wadi fan (Lajoie 2005).

To sum up the picture given by the lower layers in the contractors' trench, before people built the Wall of the Crow or did much else in the area just north of the wall, intermittent rains sent water down the wadi between the Mokkatam and Maadi Formations, and out to the east, building up an alluvial fan from the sandy sediments left by braided shallow streams. At some point the velocity of the streams increased, carrying coarser gravels that inter-bedded with finer sands, building the wadi fan higher and carrying it farther east. Watson (2005:107) cites as possible causes drier conditions, which resulted in a loss of plant cover and increased soil erosion, increased precipitation and changes in the local landscape caused by people.

It is certain that during the time people laid down the Phase III deposits (the lower rubble layer) directly upon the Phase I and II wadi deposits, quarry work had been underway for some time along the lower southern slope of the Mokkatam Formation, upstream along northern bank of the wadi. Probably the first thing the quarrymen did was remove the absorbent sand cover from the limestone bedrock, which would have increased the flow of any rainfall across the bedrock. It is likely they removed and used as fuel any wood and plant cover near the wadi mouth. This may have contributed to the more forceful activity of the wadi streams lower and to the east, in the area north of the Wall of the Crow.

That pyramid building was a major, if indirect, cause for changes in force, duration, and frequency of wadi streams seems a reasonable inference. We can possibly investigate this hypothesis by exposing the Old Kingdom wadi bed upstream. This would help interpret the data from the 2005 contractors' trench:

> The major problems associated with interpreting the WCN data are that the seasonal/cyclical incidence of rainfall and Central Wadi flooding and/or discharge, its duration, intensity and the reliability of these putative spate events (e.g. the impact on propagation due to slope gradient and bed infiltration) are entirely unknown. The contemporary geomorphology of the area suggests that the 'drainage channel' of the wadi slopes from about 95 m, above sea level, in the west to about 20 m asl in its known eastern extent, with the water discharge flowing from west to east. Yet, we have no data concerning morphology of this purported wadi network during the Old Kingdom or the impact of hydraulic interventions (e.g. dams, canals), which may have been constructed by the Pyramid makers in order to secure the local area against possible spate events (Watson 2005:103).

Table 2. Summary of stratigraphic phases identified in area WCN 2005

Phase VII - Modern Disturbance	Modern Disturbance, GPMP 2004 dumps, and Selim Hassan's dumps	
Phase VI - Dune Activity	Post 4500 BP (?) and 'modern sand bank'	
Phase V - The Upper Rubble Layer and the "Masons' Mound"	Sub-phase F	'Surface layers and completion of "Masons' Mound"'
	Sub-phase east	Construction activities: Pits/cuts
	Sub-phase D	'Surface preparation' in the DDT area
	Sub-phase C	Tip-line deposits - Building the Mound
	Sub-phase B	Burying the rubble/mud in-filled and dry stone walls
	Sub-phase AII	Early deposition/construction of Masons' Mound
	Sub-phase AI	Construction of rubbled in-filled/retaining walls
Phase IV - The Interplay of Fluvial and Human Activity	Sub-phase C	Marl plastered/mudbrick structure (Provisional sub-phase as based on season "End of Excavation" from Trench 2)
	Sub-phase B	Make-up/levelling activity (Provisionally included in Phase V as based on 1.F48 test trench)
	Sub-phase A	Fluvial event(s)
Phase III - Lower Rubble Layer	Sub-phase B	Lower rubble layer: exposure, activity and further construction
	Sub-phase A	The lower rubble layer: construction - 'bucket dumps'
Phase II - Gravel/Sands	Gravel/sands: DDT - changing hydrodynamics and human activity	
Phase I - Lower Sands	Lower sand deposits: low level hydrodynamics and the first indications of human activity in the WCN 2005 sequence	

Phase IIIA-B: The Lower Rubble Layer

The Lower Rubble Layer consisted predominantly of fine to coarse sand (10%-70%), angular limestone and marl fragments (30%-90%) with pebbles, chert, occasional charcoal and gray alluvial mud fragments. The material of Phase IIIA was compacted forming a "mass-like" quality that "may have occurred as a result of inundation in the area, with the subsequent calcification of the limestone and/or solidification of the marl elements. Alternatively, water may have been added as bonding agent prior to deposition in order to deliberately 'cement' the constituents and so construct a 'hardened' or metalled surface" (Watson 2005:38).

The contractors' trench exposed approximately 48 m of this layer in the north and south sections, beginning about 20 m from the west end of the trench. The layer slopes gently to the east to disappear below the extent of excavation. The approximate top elevations of the Lower Rubble Layer are 16.13 m asl (north section), and 16.23 m asl (south section), on the west to 15.29 m asl, and 15.35 m, asl at the eastern end of the trench. Additionally, a similar "surface" was exposed at the base of the Trench 2 test trench.

People purposefully created the "Lower Rubble Layer," as indicated by "bucket dumps" (more likely basket dumps) that show in section. The dimensions of these dumps ranged from 20 cm to 40 cm thick x 15 cm to 90 cm wide, roughly 1.35 m^3. This dumping created a surface that was intentionally "metalled," a British term for a road covered with small or crushed stones.

Watson (2005: 37-53, 109) designated two sub-phases: "A) the initial construction phase and B) a period of further construction and related activities, including incidental aeolian deposits."

People left many features across the Lower Rubble Layer indicating fires: fire scrapes, ash, and charcoal dumps, and a brick-built hearth. Additionally a clay-lined mixing pit, a large pit, and variable quantities of lithics (chipped stone), bone, charcoal, and miscellaneous "objects" were also left. Watson (2005:109) noted, "These remains indicate various activities associated with construction and manufacturing activities as well as food consumption and, possibly, preparation." People covered some of the features, such as the mixing pit, with the material of the Lower Rubble Layer, as sand drifted onto the surface around the given feature.

Watson (2005:110) noted of the creation of the metalled surface: "It also appears that this construction project may have been overcome by a flood event. This is indicated by the Phase IIIB 'mud pit' which was in-filled by overlying Phase IVB deposits that are ascribed to an infill/make-up phase subsequent to an ostensible flood (Phase IVA) in the immediate area."

In sum people laid down the artificial layers of Phase IIIA and B soon after a period when wadi streams began to flow with increased energy, extending the wadi fan to the east. The lower end of the artificial surface, at the eastern end of the contractors' trench (DDT) is around 15.30 m asl, while the base of the Wall of the Crow in the 2001 WCS deep trench is 15.40 m asl. Watson (2005: 110) suggests that the builders may have laid down the layer "in order to provide a stable working surface over sand and gravel in an area situated at the margins of an alluvial fan or braided stream. Such a surface may have been necessary for initial construction of the foundations of the Wall of the Crow and/or transportation of its constituent limestone blocks."

Phase IV A-B: Flooding and Make-up

Watson designated as Phase IV the sand layers that separate the Upper and Lower Rubble Layers (Phases III and V). The separation begins 43 to 43.50 m from the east end of the contractors' trench. Like the Lower Rubble Layer, the sandy layers slope gently to the east where they disappear below the limits of the trench at square 1.H50. The sand separation layers thicken from a mere 3 cm on the west (north section) to 1 m on the east (south section). It thins to the west because the Phase V layer slopes up to become the leg of the "Y." It meets the later, higher compact layer, the surface we exposed in 2004, the upper arm of the Y. Both arms of the Y and the leg slope to the east.

Sub-Phase IV A

Watson (2005:110-11) interpreted three U-shaped pits or depressions about 6 m from the eastern end of the trench as belonging to a channel cut by a meandering stream "with sufficient flow velocity to cut or more likely gradually erode a channel through the Phase III 'metalled' surface."

He suggests that his interpretation implies "a distinct change in the local hydrological regime, i.e. the morphology and orientation of the wadi system" from the shallow braided streams, which "tend to have high gradients and develop in the distal reaches of river systems, and which may grade or merge down slope in to a meandering river as gradient and bed load decrease… Meandering channels form where streams are flowing over a relatively flat landscape such as a broad floodplain. Channels in these streams are characteristically U-shaped and actively migrate over floodplains" (Watson 2005:111 cites Boggs 1995:307).

He notes again that quarry activity upstream "may have widened the mouth of the wadi and altered its direction, flow velocity and/or drainage pattern. Equally, potential water diversion and/or management techniques (e.g. the emplacement of dams) in the upstream reaches of the wadi system may have fundamentally altered the capacity and orientation of the wadi system with concomitant changes in the local environment and ecology (e.g. wadi morphology and drainage)" (Watson 2005:111, 6.4.1).

Excavation Trench 2 cut the prominent channel [22, 232] that showed in the south section at the east end of the contractors' trench. Watson noted,

> the precise orientation and axis of the Phase IVA channel is at present unknown as the Trench 2 excavation remains unfinished, though it appears from its position in the DDT [contractors trench] sections to be approximately North to South. However, assessment is complicated by the limited exposure and the presence in the DDT North Section of a possible ridge and swale (levee) or an abrupt and sinuous bend in the meander (2005: 111).

By the end of the 2005 excavations, the channel in Watson's deeper probe at the north end of Trench 2 appeared to be a semi-circular pit that extends 1.3 to 1.4 m out from the east side of the trench. A slightly raised shoulder lined the north and south sides of the depression, which was 2.60 m across.

Watson (2005) and Lajoie (2005) agree that flowing water brought the sand that filled the channel. According to Watson, when the flow that carved the channel slowed, the running water brought fine sand that filled the channel.

> The potential foreset beds (or tip-lines) in the Trench 2 test trench were sloping from the north/northwest to south/southeast which may indicate the direction of "spate" flow. Consequently, it is possible that the channel evident in section, or a contiguous meandering channel, over-spilled its banks during a period of spate. It is difficult to accurately assess the extent and impact of this "flood", especially as is currently unknown whether it pre- or post-dates the construction of the Wall of the Crow, or even occurred during its construction (Watson 2005: 112).

Sub-Phase IVB

Lajoie (2005) maintained that running water deposited three sand layers above the lower rubble layer. All channels that cut through the lower rubble layer are filled with fluvial sediments and sandy sludge deposits in three phases:

1. Yellowish brown sands with limestone debris,
2. Reddish sand with some gray striations,
3. Gray sandy sludge with common mudbrick clasts.

All three units are flood deposits (Lajoie 2005).

Watson (2005:113), on the other hand, suggested that people purposefully laid the middle sand layer, his Phase IVB, directly over the "flood" sands: "These layers are muddy in appearance and contrast starkly with the underlying sub-Phase IVA sand layers in colour, texture and inclusions." Watson (2005:113) cites Boggs (1995: 75) to say that

> mud flows are relatively common in arid and semi-arid environments, usually after heavy precipitation, and are composed of "mud sized grains" that have enough cohesive strength to prevent settling of coarser fractions but not enough to inhibit flow. These deposits are characteristically poorly sorted and lack sedimentary structures, except possible reverse grading (i.e. coarser particles at the top) (Boggs 1995: 75, 301-302). Essentially, they behave like a viscous plastic and generally solidify after flowing over relatively short distances. I, however, do not support this theory…Phase IV consists of a ca. 40-cm-thick, well-defined layers and lenses with inclusions comprising relatively large angular mudbricks, some with mortar/plaster still attached and distinct and undistorted lenses of granite dust. Evident stratigraphic layering/lensing, normal grading within the layers and the improbability of these inclusions, especially the granite dust lenses, surviving within a mudflow precludes this as an explanation..

Lajoie (2005:113) understood thin, darker, slightly reddish layers and lenses as foreset beds, markers of water flows that built up and extended the sand deposit eastward. Watson took these thin layers as basket dumps deposited by people intentionally building up the surface in preparation for renewed building activity and to "stabilize the area after the sub-Phase IVA flood event and prepare it for Phase V construction activities."

Comments on Phase V in WCN

Watson believes that the builders filled in the BP pit that Banu Aydinoglugil excavated, as well as other pits and irregularities in the surface extending north of the Wall of the Crow.

Stratigraphically it appears that the general throughput of surface deposition was approximately west-east, i.e. as Masons' Mound was under construction the Upper Rubble Layer surface was being laid in adjacent "construction zones," which gradually expanded towards the mound area until its internal structure was completed.

In Watson's Sub-Phase F, after they completed the upper part of Masons' Mound (Sub-Phase D-E), the builders finished spreading the Upper Rubble Layer, the "compact Old Kingdom surface" that we exposed in our 2004 WCN trench.

> This sub-phase comprises the completion of the Upper Rubble Layer and "Masons' Mound". The Upper Rubble Layer surface appears to be 'continuous' across the entire WCN, as it appears similar in its attributes to surfaces described in previous archaeological operations in the area…extending from at least the western side of the mound to the great Gate of the Wall of the Crow (Watson 2005:118).

By capping the sand layers above the Lower Rubble Layer and conjoining the compact surface Upper Rubble Layer to the Lower Rubble Layer on the west, the builders leveled out the eastwards slope west. The result was an indurated, terrace-like surface extending for some unknown distance north of the WOC, from the Masons' Mound to the Gate and possibly farther west.

The Reasons for Masons' Mound and the Wall of the Crow

Watson (2005:119-120) reviewed the general sequence of building: 1) Gallery Set I, followed by 2) the Wall of the Crow, and finally 3) the "Masons' Mound (fig. 6). He cited the reasons for concluding that "all three of these structures were likely to have been in 'use' simultaneously." He then evaluated the following hypotheses for the function of the Wall of the Crow (WOC) and Masons' Mound (MM):

1. Barrier to protect the town from the floodwaters of the contiguous Central Wadi (WOC).
2. Symbolic separation of the sacred Giza Necropolis from the secular "City of the Pyramid Builders" (WOC).
3. Remains of a construction ramp for the wall of the Crow (MM).

Watson (2005:119-120) cites a "3-m difference in the topmost elevations of the mound (ca. 21 m asl) and the wall (ca. 24 m asl)." He assumed that the putative ramp would have facilitated transporting stone to the highest course. "Combine this with the lack of any indication for truncation of the upper levels of the mound or any of its slope faces and the ramp hypothesis seems unlikely" (Watson 2005:119-120).

He also rejects the flood-barrier hypothesis, given that "available evidence for "floods" predate the construction of Gallery Set I.1 or post-date its abandonment or predate the mound itself (i.e. Phase VA)" (Watson 2005:119-120). He is not the first to cite "an additional problem with this hypothesis…the location and dimensions of the gate, which seems an unlikely contrivance for a flood barrier" (Watson 2005:119-120). Perhaps so, but we must keep in mind that the path through the gate slopes up some 2.5 to 3 m from the compact surface on the north to the surface of the debris banked along the south side. In any case, the wall seems more massive and taller than required for protection from wadi flooding.

As for the hypothesis that Masons' Mound was an auxiliary flood barrier to direct wadi flow out north and east away from the juncture between the east end of the stone Wall of the Crow and the mudbrick walls of Gallery Set I, Watson (2005:120) sees "no data available to indicate that it ever served this function." He concluded his 2005 report: "Despite my 'negative' assessment of these hypotheses, I tend towards the notion that the mound was indeed a (prematurely) 'obsolete' construction ramp for the wall given its internal structure, which appears designed for vertical load-bearing rather than withstanding lateral forces" (Watson 2005:120).

We might suggest another hypothesis for the functions of the Masons' Mound, the Upper and Lower Rubble Layers on the north side of the Wall of the Crow (WCN), and the masons' debris embankment that exists on the south side (WCS) from the east end to the Gate. The 2001 WCS deep trench indicated that the wall is founded upon desert sand and gravel. The builders might have left the compact debris gravel to the north and south sides as to keep the wall being undermined. We hope to continue excavation in Trench 2 in 2006 to complete the profile down to the base of the Wall of the Crow and obtain further information to test our hypotheses about the purpose of this mysterious, huge stone structure.

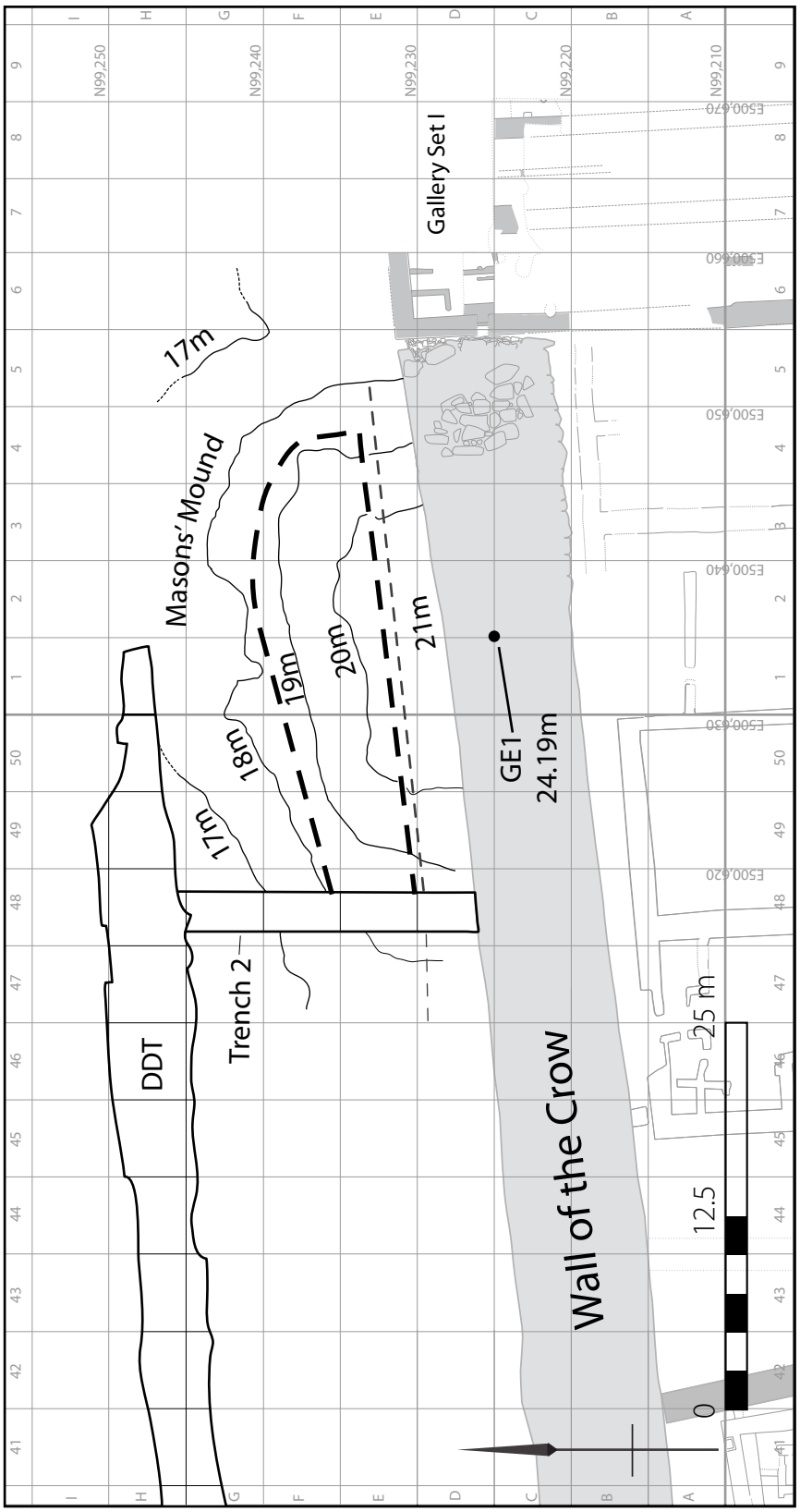


Figure 6. Schematic map of Masons' Mound, Trench 2, and the Wall of the Crow (after Watson 2005:fig. 5, 32).

West Dump (WD) – Osteo Field School Training

In order to teach the field school students how to excavate and document human remains, Jessica Kaiser and Tom Westlin inaugurated excavations of Late Period burials at the high western edge of the site, in what we had taken to be the dumps from the Old Kingdom settlement up against the slope. We expected to find skeletons in relatively good condition in this relatively undisturbed context.

The site of the 2005 Late Period burial excavations is slightly north of the West Dump (WD) trench that Lauren Burning and Adel Kelany excavated in 2004, about 90 m south-southwest of the gate in the Wall of the Crow (fig. 7). The team excavated in four 5 x 5 m squares (3.J40, 3.J41, 3.I40, and 3.I41) (fig. 8). They later extended excavations into squares 3.J39 and 3.I39. They examined an area 10 x 12 m at the foot of the escarpment on a ridge that sloped down 2.5 m from 20.4 m asl. Contractors working on the new high security wall around the modern cemeteries northwest of the site laid down a broken limestone and *tafla* roadbed in 2004 that bordered the foot of the escarpment burial excavations on the west.

The team excavated 11 burial pits cut into layers of dense Old Kingdom pottery and sand.

Burial 398

Field school student group FS1 began, and FS2 continued, the excavation of Burial 398, which was comparatively deep. The painted mud coffin, which appeared 1 m below the surface, retained a winged scarab headdress with an inscription: *Inpu, htp di nsw Pth-Skr-Wsir, nb…*"A gift that Anubis (god of embalming), the king, and Ptah-Sokar-Osiris (a compound deity at Giza and Saqqara in the Late Period), Lord….give." Kaiser and Westlin (2005:12) report that Burial 398 was of "an older female (45+ years) with slight arthritic changes in the feet, severe attrition on all teeth, premortem tooth loss, medium to severe periodontal disease, and pathological thickening of the skull vault, which could be the result of sickle-cell anemia." The team found a large, torpedo-shaped pottery jar, either a Persian import or a copy of such, at the eastern end of the grave.

Burial 399

The same teams that dug Burial 398, FS1 followed by FS2, excavated Burial 399, a double burial. A child skeleton, about four years old, lay on the left side facing north. Under the child the team found a wooden coffin and an amulet of the cat-goddess, Bastet, in the area of the neck. The adult was female (25-35 years old). Traces of wood and textile imprints remained near the skeleton at the eastern end of the grave.

There were five additional burials designated 401, 402, 404, 405, and 406. The instructors selected 401, 405, and 406 for FS3 to excavate.

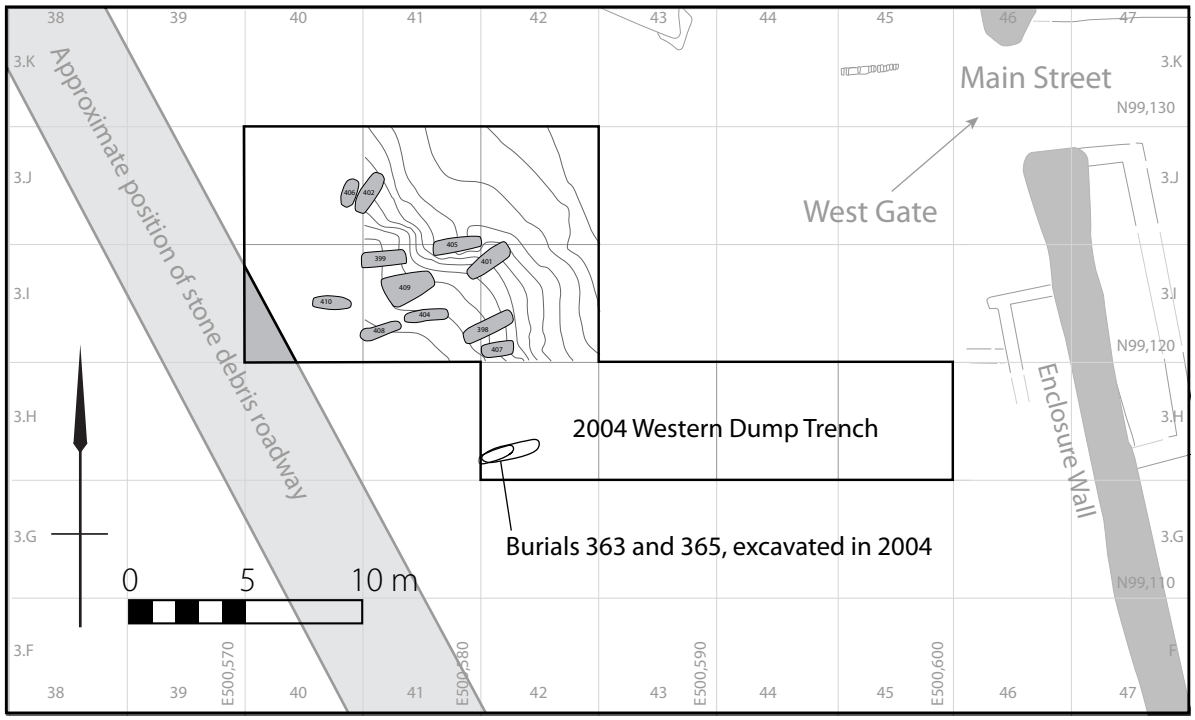
Burial 401

A painted plastered mud coffin included a molded mask with a reddish brown face and a black wig. There remained the beginning of an inscription, *htp di nsw Pth-Skr-Wsir…* , which is similar to the that of the coffin in Burial 398 but with different pattern and colors. The skeleton was that of an older male 45+ years. "His spine was severely afflicted by osteophytic growths, especially in the cervical vertebrae and DISH-like (Diffuse Idiopathic Skeletal Hyperostosis) 'melted' early bone formations in the lumbar vertebrae" (Kaiser and Westlin 2005:13).

Burial 402

FS4 excavated burials 402 and 404. Burial 402 in squares 3.J39-40, contained

> an anthropoid plastered mud coffin with badly fragmented drawing of an anthropoid deity on the chest and a hieroglyphic inscription: *R'-st3w…*"a gift that Osiris... Ra-Setau." The wig of the coffin mask was striped blue and yellow with red dots along the inner margin. The facial features were damaged. The throat area had transverse fields of yellow, red and blue with black outlines. Fragments of wood were preserved. The skeleton of burial 402 was that of an elderly male, 45+ years old, with a pathological spine consisting of both fused thoracic vertebrae and compressed lumbar vertebrae with extensive osteophytic growth (grade III). Loose osteophytic bone plates were found on the ventral intervertebral



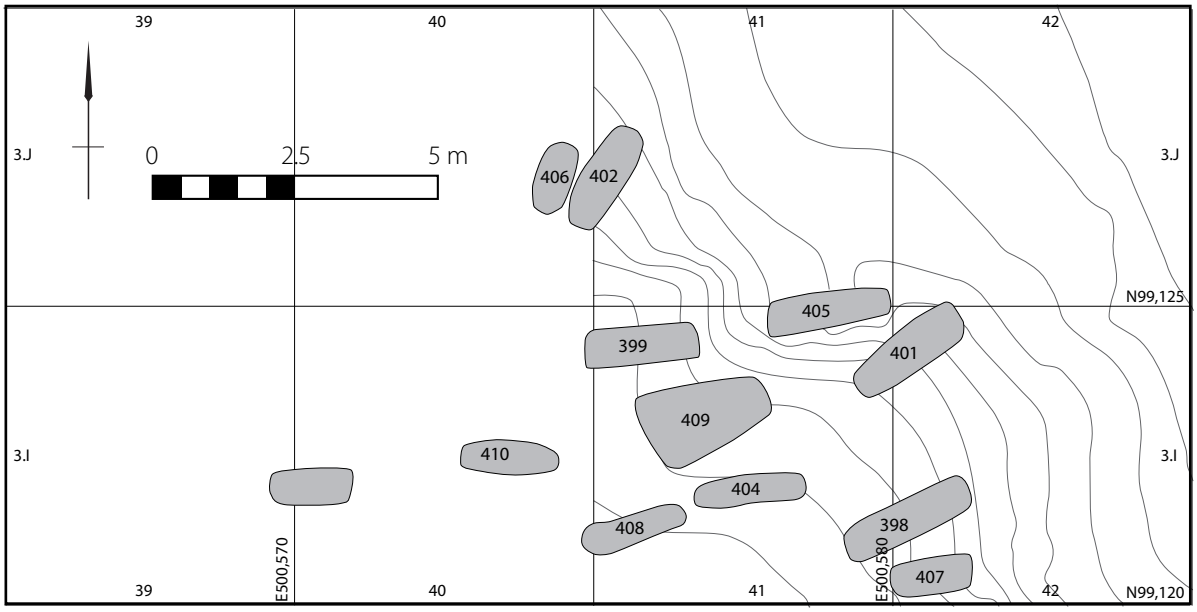


Figure 7. Top. Location of 2005 Field School burial excavations.

Figure 8. Bottom. Burials excavated during the 2005 Field School.

aspect of the lumbar vertebrae as well. Teeth attrition was severe. While lifting the tibiae of burial 402 we found a large fragment of the coffin bottom with yellow paint on both interior and exterior aspects. On the exterior, deep rounded incisions were found, possibly from the chaffing of a thin rope (Kaiser and Westlin 2005:14).

Burial 405

Burial 405 in square 3.I-J40 contained an anthropoid plastered mud coffin in a poor state of preservation. The skeleton was that of a woman approximately 45 years or older. The age was hard to assess because of very unequal tooth wear due to premortem tooth loss of most maxillary

molars. She had two dental abscesses (one maxillary and one mandibulary), arthritic changes in the cervical vertebrae and a possible healed Colles´ fracture on the distal left radius with complementary bone remodelling of the styloid process on the left distal ulna (Kaiser and Westlin 2005:4).

Burial 404

Burial 404 in square 3.I40 contained an anthropoid, plastered and painted (white and yellow) mud coffin that was badly preserved. The skeleton was that of an elderly woman 50+ years. "She had very unequal tooth wear and arthritic changes on the cranio-dorsal aspect of caput mandibula. Periostitic lesions were found on the distal fibula, proximal ulna dx (left) and sin (right). There was also a healed fracture on costae sin (left rib) nr 9. The spine was generally healthy for such an old woman except for some minor osteophytic growths (grade 0-1)" (Kaiser and Westlin 2005:15).

Burial 406

Burial 406 in square 3.J39 held the remains of a child-sized, rectangular wood coffin [23737] with no surviving evidence of decoration. The skeleton of a child 3-4 years old "had cribra orbitalia (grade 1)" (Westlin in Kaiser 2005:4). Cowrie-shell bracelets adorned the wrists, and the burial included the remains of a bead necklace and four metal earrings.

Burial 407

FS4 began, and FS2 completed the excavation of Burial 407 in square 3.I41, Burial 407 contained an anthropoid coffin of mud that was plastered and painted completely yellow with no decoration. "The skeleton is that of a young woman, 16-20 years old, richly decorated with beads and amulets. Post-mortem displacement of the body had shifted its position within the coffin but it is very probable that most of the trinkets were parts of a necklace and bracelets from both wrists, as most of them were found at these locations of the body. The largest amulet (from the cervical region) was a seated Isis figurine with an inscription on the backpillar of the throne" (Kaiser and Westlin 2005: 15).

Burial 408

FS2 excavated Burials 408, 409, and 410. Burial 408 in square 3.I39-40 contained a anthropoid coffin [23749] of painted plastered mud, "partially preserved with spots of textile imprints on the outside of the coffin. The coffin mask once had a delicately molded face that unfortunately had deteriorated. The skeleton was that of a young male, 13-16 years old, with cribra orbitalia (grade 1) and a possible ear infection (porotic auditory meatus). There were also enamel hypoplasias and dental calculus" (Kaiser and Westlin 2005:15).

Burial 409

This burial was in a very large pit that contained two anthropoid coffins of painted and plastered mud. People digging sand had cut away most of the western parts of the coffins except some fragments at the western edge of the burial pit. The northern coffin contained a truncated skeleton of an adult male preserved from the waist down. The southern coffin contained an even more damaged adult skeleton. Fragments of wood were preserved in the coffin. At the bottom of the fill of the burial pit the team found a flat limestone piece. Incised with a crude picture of figures facing each others and the inscription, *kki* ("Keki"). According to Mansour Bureik, the SCA team of Dr. Zahi Hawass excavated a small Old Kingdom tomb of a man called Keki about 50 m upslope to the west of our Area WD burial excavations (Kaiser and Westlin 2005:16).

Burial 410

Burial 410 in square 3.I39 contained no coffin. A lump of deteriorated wood that was found next to the cranium of the skeleton probably originated from some kind of burial object, rather than a coffin. The skeleton is that of a juvenile boy, age 13-19. Three copper or bronze pendants in the shape of Amun-Min with loopholes were found at the medial aspect on the proximal diaphysis of the left humerus (Kaiser and Westlin 2005:16).

Burials in the Settlement Area

Tove Björk and Petter Nyberg excavated the following burials outside the 2005 excavations of Late Period burials in Area WD.

Burial 397

A frame of stones surrounded the skeleton of Burial 397 in square 6.Q7 in our operation Transect A. "The skeleton was in a tightly flexed position, which indicates an Old Kingdom date. Preservation was not very good which made sexing impossible in the field although the age was assessed to 33-45 by teeth attrition" (Kaiser and Westlin 2005:16).

"Burial" 400

Burial 400, in square 6.R10, was in the area of the FS2 excavations inside Enclosure 5. The pit turned out to be an oval cut left by people robbing the wall. No skeletal remains were found.

Burial 403

Burial 403 was also in the FS2 excavation inside Enclosure 5 in square 6.R10. The skeleton, which was very badly preserved, was that of an adult female. The excavators found the skeleton under Old Kingdom limestone tumble. "She was buried in a tightly flexed position that together with the stratigraphy suggests an Old Kingdom date. The only pathology noted was a very thick skull vault 1-1.3 cm thick" (Kaiser and Westlin 2005:17).

East of the Galleries (EOG)

Tim Stevens, with Ashraf Abd al-Aziz, Amelia Fairman, and Banu Aydinoglugil supervised our EOG work in 2005. This work brought us back to one of the first places that we excavated in the site: the backhoe trench (BHT) in squares 4.E-F20-21. The BHT narrowly missed the northwest corner of the western of two bakeries that we excavated in 1991. That season we also excavated small trenches into a massive, thick, deposit of pottery, mostly bread mold sherds, and other material to the east of BHT. To the west of BHT we found the first troughs, benches, and column bases of the Hypostyle Hall during our 1995 and 2000 seasons.

In 2001 we cleared and mapped a patch of ancient deposits that survived between two deep bites of the backhoe in the northern end of the BHT. These layers are older than the bakeries. They belong to a general lower phase of the settlement. The patch contained parts of mudbrick walls and deposits of what might be Egypt's oldest known facility for producing faience, the distinctively Egyptian blue-glaze material. The walls and deposits of this phase pass under the Hypostyle Hall on the west and north of BHT, and under the thick layer of bread mold sherds and other waste on the east.

During our 2004 season, Angela Milward Jones and Brian Hunt began excavating to the east of the BHT through the massive, thick layer of discarded pottery, composed mostly of bread mold fragments. They came down on a thick and extensive layer of speckled, pinkish, burnt, slag-like material, which we dubbed the "pink stuff" (PS). The PS of the lower phase looks like fine pink slag, speckled with lighter grayish green particles. We found similar pinkish material in the patch of lower phase deposits in direct association with pieces of faience of various shapes.

This material resembles waste from faience production at other sites of later periods. The University of Pennsylvania excavators, Steve Harvey and Matthew Adams, found just such pinkish slag-like stuff in a faience production area at Abydos in Upper Egypt. The faience production was associated with a series of hearths in sunken pits (Nicholson and Peltenburg 2000).

It appears that the inhabitants dumped the substantial, thick layer of pinkish slag-like material (PS) from some kind of pyrotechnic production that took place in an interior space west of a north-south mudbrick wall that Angela Milward Jones exposed in 2004 between the pinkish material and the faience deposit in the bottom of the BHT. This lower phase dumping was superseded by the major phase of pyrotechnic activity of a very different sort—bread baking, with the discarded material changing from pinkish slag to massive quantities of pottery sherds. According to our ceramicist, Anna Wodzińska, the pottery mass is 70% fragments of bread pots.

During the 2005 season, Tim Stevens, Amelia Edwards, and Ashraf Abd al-Aziz continued excavation at points around the BHT. They incorporated their probes into a wider study that ties together the stratigraphic relationships revealed by their digging and all previous excavations on all sides of the BHT. The sides of the BHT trench cut through the older layers of the earlier phase under the Hypostyle Hall on the west, the south end of the Hypostyle enclosure, the "bread mold gravel" dumps east of the galleries (EOG), the 1991 bakeries on the south, and more bakeries off the north end of the BHT.

The 2005 team exposed the surface of the pinkish stuff over a much broader area by removing much more of the bread mold sherd layer to the south. The question is whether the pinkish material relates to activities that could include and subsume faience work.

Bread Mold Gravel, Pits, Troughs, and Pedestals

Already in 1991 we removed a massive quantity of the upper (younger) phase "bread mold gravel" in our A7/16 at the southern end of the east side of the BHT, up against the eastern of the two bakeries we excavated that year. This deposit [21,383 and 21,384] consisted "of very frequent bread mould ceramics within a grayish-brown silty-sand matrix. Other occasional inclusions included bone, lithics, small limestone and sandstone fragments, exotic stone fragments (dolerite, pink granite, alabaster), and two sandstone abrader fragments" (Stevens 2005:3.5.2).

In 2004 Milward-Jones and Hunt removed more of the heavy, sherd-discard layer, stopping at the surface of the lower layer of pink stuff (PS). The lower layer is evidently waste from production of a different sort than bread baking. In 2005 the EOG team excavated more of the massive, thick, layer of bread mold sherd dumps. A single day of excavation produced more than 80 large sand bags of material.

In 2002 and 2004 we found and partially cleared several rows of fieldstone pedestals (fig. 9) embedded within the "bread mold gravel" in EOG. The pedestals are about 60 cm wide, and about 1.25 m long, separated one from the other by spaces about 10 to 20 cm wide. Thin lines of single fieldstones, 25 to 35 cm wide, run down the center aisle between the rows, dividing the aisles into 90 cm-wide corridors. Narrow troughs or channels run along the outside bases of the pedestals. The channels appear to be associated with a series of pits dug into the underlying layer of pink stuff (PS) at the bottom of the bread mold layer.

The removal in 2005 of more of the upper layer of bread mold fragments and other sherds left three of the pedestals, each at the end of a series running east, projecting from the west-facing excavation section. Now we see very clearly that the inhabitants built the pedestals nearly upon the surface of the lower horizon. Tim Stevens (2005:6.5) pointed out that "this eastern area was repeatedly surfaced, and new pits and channels excavated, until the area was turned over wholesale for the dumping of bakery debris."

The surface under the heavy bakery debris consists of gray silty floors in the northern part of the exposure, and the pinkish, slag-like stuff (PS) at the southern part of the exposure. The inhabitants formed little channels or troughs into this surface along the bases of the pedestals. The trough along the southern side of the southern of the three pedestals is lined with stones where it extends westward beyond the pedestal. This trough ends in a deep bag-shaped pit.

This is one of six pits, a little less than a m in diameter, scattered about the surface of the lower horizon, which is, again, the pinkish, slag-like material (PS) on the south and gray silty floors to the north. In addition to the channels running along the bases of the pedestals, there are other channels, including one [222,284], 26 cm wide and 7 cm deep, that curves in an arc, that seem to connect the pits, which are much deeper than the channels.

In excavating these pits the team removed the same "bread mold gravel"—the thick layer of dumped sherds—that accumulated all around the pedestals, engulfing them right up to their upper rims. What is the relationship of this fill to the functions of the pedestals, troughs and pits? What is the function of the pedestals? There are three possibilities:

1. The inhabitants used the pits and troughs in such a way that they left them unfilled with any material until the time they began to discard the bread mold waste. Or, they may have completely cleaned out the pits and channels of any material that might have accumulated from their use, which is unlikely.

2. The pedestals are unrelated to the bakeries and bread mold gravel. The inhabitants began to dump the ceramic waste after they had stopped using the pedestals. This would imply three major phases of industry: a) faience production and whatever left the pinkish material; b) "pedestal production" (as Tim Stevens put it); and c) bread production.
3. The inhabitants created the pits and channels to dispose of the waste from their production in the bakeries and from the activity they carried out on the pedestals.

On the last hypothesis, Ashraf Abd el-Aziz found a cache of animal bone next to one of the pedestals in one of the squares he excavated in 2004. We also found a fair amount of animal bone in and around one of the pits that we excavated in 1991, in the spot labeled A7h that season. Could the pedestals have been used for butchering? Were the troughs to conduct fluids to the pits where they also disposed of organic soft tissue?

Also on the last hypothesis, the pits in our current EOG operation may be similar in function to pits filled with ceramic waste that Ana Tavares excavated in the sandy area just in front of the entrance to the Royal Building in 2002 (in Area ZAC). In the 2005 season, Aneis Hassan excavated more pits filled with waste in the area north-northwest off the Royal Administrative Building (RAB), the area designated BB-N. We also found more fieldstone pedestals in this area.

Areas BB-N and EOG are part of a large rectangular zone that extends about 75 m north south, from Main Street to the RAB, and 40 m east west, from the Gallery Complex to the Eastern Town. The inhabitants used this zone for industry and waste disposal. The thin and shallow fieldstone "walls" that ran north-south along the western part of this zone may have been walkways. These walls, one of which we removed in the 2004 EOG excavation, are only a single course of flat fieldstone over the ceramic dump. They may have been easier on bare feet (and most feet were probably bare, though leathery tough) than the sharp, angular texture of the bread mold gravel.

The inhabitants may have initially dug the pits to dispose of this ceramic and other waste in the early stages of bread baking and pedestal production, and to maintain the smooth floor upon the lower layers. As they intensified production, they could not keep pace with trash pits, and they stopped maintaining the area. Instead they simply allowed the waste to accumulate around them. We see in the 1991 A7/16 trench how, at one point, they built a fieldstone wall to retain the trash away from a row of pedestals. Also, the fieldstone walls of the pair of bakeries that we excavated in 1991 are themselves built upon a layer of ceramic waste, while more ceramic waste accumulated against the eastern wall of the eastern bakery. We have found at least one pedestal that is founded not upon the smooth surface of the older, lower phase, but on ceramic waste.

It may seem unlikely that the inhabitants would allow the waste from their production to rise like a flood that slowly engulfed the structures that they used in their production. But there are good parallels for this. In the nearby bakeries, they allowed the rooms to fill with black ash. The ash accumulated and was homogenized by being churned as the bakers removed and re-planted bread pots into the egg-carton-shaped baking pits, and they continually brought in new fuel and charcoal to surround the pots of each batch with more glowing embers.

At the island town of Elephantine in Aswan our German colleagues excavated a bakery attached to the governor's palace of the late Old Kingdom and First Intermediate Period in which the bakers allowed the ash to accumulate nearly to the roof, which was supported by wood columns built in sections to a height of 3.20 m. The accumulated ash preserved the columns, about 28 cm in diameter, to their total height, as well as some of the thin wood lattice screens that ran between the columns near their base.

Pink Stuff, Faience, and Other Older Phase Deposits

This 2005 EOG excavations removed more of the thick bread-pot sherd gravel, exposing older layers over an area about 11.20 m north-south x 3 m east-west forming a kind of terrace above the patch of older phase deposits with evidence of faience production in the northern end of BHT. These excavations also revealed more of the mudbrick wall of the older lower phase running north-south along the east side of the BHT and separating the faience production deposits from the pink material (PS).

The pink stuff (PS) lay under the bread mold gravel layer on the north end of the terraced older phase. Truncated patches of brown-gray sandy silts are possibly remnants of floors that people

laid over the PS. To the south other layers intervene. These layers show in the east (west-facing) section of the backhoe trench (BHT). This section was the very first exposure of ancient layers that we saw in this part of the site. When they trimmed back the section in the spring of 1991, Nicholas Conard and John Nolan assigned to these layers the very first feature (or context) numbers of our running sequence, now up to 24,000.

Hearth 11

The most prominent feature of the BHT section is a large hearth, consisting of black ash (feature number 11) in a pit, 2.10 m wide and 30 cm deep. Late in our 2005 excavation period, our sixth season of examining the original BHT section and its surroundings, we wondered if this hearth held a clue to the meaning of the pink stuff (PS), and possibly to the faience production of the lower phase. It appeared as though the top of the hearth on its southern edge is commensurate with a floor level upon which the PS was dumped. There are some marl bricks that appear to line the hearth just here. We mapped some of these in the 1991 section as feature 63. Here the PS shows in section and not on the surface, because here to the south there are other layers that intervene between the bread mold gravel, now removed, and the PS.

We perceived a line from high in the PS down to the top of the hearth, as though people used the hearth, as they allowed the PS to build up around it, just as later people allowed the bread mold trash to build up around the exterior of the bakeries and around the pedestals of the higher layers of this area (EOG). They seem to have kept the hearth open at the bottom as a pit through the rising PS layer and possibly through layers above the PS.

To the north of the hearth, the intervening layers thin out over the PS like the end of a triangular piece of pie. We decided to take out the intervening layers of this pie piece to the south, excavating up to a line that became an east-west stratigraphic section cutting through the intervening layers and through the center of the hearth. Our idea was to reveal the relationship of the PS layer with the hearth.

The excavation on the north of the 11 x 3 m terrace, up to the east-west section that cut the hearth, exposed the top of the ash fill (feature 11), 70 cm x 1.15 east-west where the section cut through. The top was slightly pinkish, slag-like, granular, burnt material.

The north-south wall of the lower phase, running along the eastern side of the BHT, now showed a thick *tafla* (marl clay) render on the eastern face. The plaster stood alone, 11 cm high, apparently because someone had robbed the mudbricks from the wall, along the western side of the plaster, just where the wall would contact Hearth 11. The wall was originally 90 cm wide. Where the backhoe cut the wall next to Hearth 11 in the east section of the BHT the bricks at first appeared to partially overlay the hearth pit, which would make the hearth earlier than the wall. The modern backhoe and the ancient wall robbing disturbed the relationships.

So we were not certain if the hearth is older than the wall or lowest deposit that filled a bigger and broader pit. On the last possibility, the BHT section and the north-facing east-west section of our 2005 excavations might have shown that Hearth 11 is the epicenter and absolute bottom of a broad and shallow pit, 7.5 m wide, which was dug through the PS layer, and through the wall. This was excavator Tim Steven's assessment at the end of the 2005 excavations:

> The black pit had been visible in section since 1991 as feature [11] and it was uncertain whether this was an early pit sealed by later deposits, a later pit cut through from much higher up, or a pit whose sides were maintained until a higher elevation had been reached. It seems from the 2005 season that the pit was early, and that the congruence with the later cut (Group 64) was purely coincidental. This hypothesis does remain unproven, as there remains a baulk in the southern part of square 4E21. Excavation of this baulk may resolve this issue (Stevens 2005: 5.4.2).

The excavations on the north of the 11 x 3 m area of the east-west section took out the ash in the northern half of Hearth 11, which was 21 cm deep.

Faience in the Pink Stuff

Because of limited time, we could not excavate the entire northern part of the 11 x 3 m excavation area to the east-west section through the PS layer. So the team excavated a trench 1.5 m wide north-

south alongside the east-west section. The cut into the PS showed this deposit is yellow mottled with pink, the colors possibly reflecting basket dumps of slightly different material.

Aside from the similarity of the pinkish, slag-like material to waste from faience production at other sites and periods, white material, possibly residual of faience production, lined the rims of some of the pits. It is important to keep in mind that the pits are later than the PS layer, and cut down into it.

From the excavations of pink material (PS) [22,764] or dumped deposits intercalated with PS dumps to the north, as well as in the trench along the east-west section, the team recovered a number of faience pieces. Two of the pieces are rectangular, 2 x 4 cm and 1.6 x 4.5 cm. The excavators found seven fragments of beads on the surface of the PS layer around the rim of one of the pits sunk into the PS layer. "At least thirteen cylindrical faience beads were also recovered, along with several fragments and a larger semi-circular tabular piece" (Stevens 2005:4.12.1). The semi-circular piece was the largest at 3.7 cm long, 2 cm wide, and 6 mm thick (Stevens 2005:3.63.45). The excavators retrieved it from a dark brown-gray, silty sand [22,727] within the dump layers that included the PS.

Pending analysis of the "pink stuff" (PS), Stevens summed up the evidence for faience production in the vicinity:

> The recovery from the dump deposits of at least 11 cylindrical beads and several fragments, plus two rectangular and one large semi-circular inlay piece, constitutes the largest assemblage of faience pieces at the site, and does provide corroborative evidence of faience production in the vicinity. It is unlikely to have been within the confines of the current trench, as all of the rooms/spaces identified were either filled with possible faience-related dumps, rather than in situ material, or had no indications of faience-related activity at all. It is therefore unlikely that in situ faience manufacturing occurred within the trench, even in the unexcavated areas (Stevens 2005:7.2).

We should not expect the discarded, dumped waste from faience production—if that is what the PS material is—to have been very far from the actual site of production. It is still a possibility that this was located in the spaces evidenced by patches of floor and walls that the backhoe missed to the west.

The Floor Under the Pink Stuff

Excavating 15 to 30 cm down into the PS layer in the trench to the east-west section, the team found an alluvial mud floor [22,781] that comes up against the plaster of the north-south wall [20,647]. Burnt bricks and upside down bread molds are embedded in this floor near the east section of this 1.5 meter-wide trench.

> This surface was unexcavated, but appeared to be composed of a dark brown and black sandy-silt. Set into the top of this were at least three bread moulds against the eastern limit of excavation, with their upper surfaces protruding up to 50 mm above the floor.…A further vessel was removed accidentally by workmen along the southern section of the slot trench, and it appears that there may have been two rows of vessels aligned north-south in this part of the floor.
>
> Visible on the upper surface were ring marks caused either by vessel emplacements that had later been removed, or by extant vessels beneath or embedded in this floor. Much of the visible surface was comprised of burnt mudbrick, and in the southern part of the slot trench a row of five burnt mudbricks was elevated to a maximum elevation of 16.01 m asl. These were laid as headers, and extended into the eastern baulk, and may represent an installation at this, or a lower, floor level (Stevens 2005:3.75.1).

North of the Royal Administrative Building (BBN) and Field School Unit 4

In our 2005 season we continued our study of the stratigraphic sequence, site history, and the older, lower phase in square 6.w19 and the surrounding area. Just outside the northwest corner of the Royal Administrative Building, this area is the link to stratigraphic relations across much of the site. Square 6.w19 takes in the bottleneck of a passageway that splits into three ways running from the area between the Royal Administrative Building and EOG. The paths lead from the Eastern Town to the Gallery Complex, South Street Magazines, Enclosures and the Western Town.

Ana Tavares, Banu Aydinoglugil, and Aneis Hassan supervised excavations outside the northwest corner of the RAB. Field School Unit 4, under the supervision of Ana Tavares and Afifi Rahim, excavated to the north of the area outside the northwest corner of the Royal Administrative Building (RAB). The FS4 team included Mohammed Abd al-Basat, El-Tayeb Mohammed Khudary, Mohammed Aly Abd el-Hakeem, Hoda Abdallah Bakry, and Amani Abd al-Hamid. The FS4 team excavated an area of stony walls and pedestals north of the RAB (Tavares et al. 2005).

RAB Street Excavations

Banu Aydinoglugil supervised excavations in RAB Street between the two thick, parallel, fieldstone walls: the Enclosure Wall and the perimeter wall of the Royal Administrative Building (RAB; we formerly called this enclosure the Buttress Building, so we still call the area BB in our excavation records.) Aneis Hassan excavated a trench through the Enclosure Wall, to establish the stratigraphic link with RAB Street and the fieldstone wall around the RAB enclosure.

RAB Street Road Bed

Aydinoglugil's excavations established that RAB Street was very well traveled. Traffic must have consisted of people on foot, possibly on donkey, or even small herds of sheep and goat. When people and animals rounded the northwest corner, they hugged the inside of the turn. This pedestrian traffic wore down the roadbed, street surface [20,877], which is contemporary with the walls, creating a deeper pathway just at the base of the outer corner of the RAB wall, the interior of the two parallel walls. At the same time, more refuse accumulated along the outside of the turn, around the base of the interior corner of the outer Enclosure west wall. The result was a roadbed that sloped down from northwest to southeast, into the corner.

Stratigraphic Link Across RAB Street: North

In square 6.v22 and 6.w22 Aneis Hassan excavated a trench, 2 m east-west by 6 m north-south, through the Enclosure Wall [5432], which we once took as the outer wall of two parallel fieldstone walls of the Royal Building, and across the silty surface [20.877] of RAB Street. The street surface lay above another street surface [21,766], which lay above a sandy bed [21,745] that was in turn laid over a layer of gray sandy silt [21,749], which ran under the Enclosure Wall [5432] but up against the RAB wall [5433]. As Hassan and Aydinoglugil (2005:12) summarized: "There are a series of floor surfaces that abut wall [5433] and are at a level beneath wall [5432]."

We now have no doubt that the outer wall [5432] is later than the inner wall [5433]. The outer wall is actually a continuation of the Enclosure Wall around the site as it jogs north to get around the RAB. In the section of the trench, the layers that run under the Enclosure Wall [5432] and across the street between the two walls "lip up" to, or respect, the RAB wall [5433]. This shows that the RAB inner wall existed before the Enclosure Wall was built. The foundation of the Enclosure Wall is shallower, and preserved only 10 to 40 cm thick, whereas the RAB fieldstone wall runs more than 55 cm lower and is founded at a lower level.

Hassan removed the section of the Enclosure Wall [5432] within his 2-meter-wide trench and a make-up layer of sandy silt [21,753].

> At this point it became apparent that there was a general difference between the deposits in the street area and those in the area underlying the wall. Those in the street were obviously a series of compact/concreted surfaces and those underlying the wall appeared to more like dumps and/or make-up deposits (Hassan and Aydinoglugil 2005:7).

After he removed the make-up and dumps under the Enclosure Wall and its bed, Hassan found an older surface [21,776] and patches of articulated mudbricks that remained of a mudbrick wall [21,785], which corresponded in alignment to the southern edge of the Enclosure Wall [5432]. An older street surface [21,776], covered an older marl surface [21,777] another line of bricks, and yet another, older silt surface [21,787]. These are probably older street surfaces up against an older enclosure wall [21,785=21,788] of mudbrick replaced by the fieldstone Enclosure Wall [5432], just as the western RAB fieldstone wall is a thickening and capping of an older and thinner mudbrick wall (see below). It is possible the inhabitants almost completely removed the hypothetical earlier mudbrick wall when they built the Enclosure Wall.

It is worth recalling that in 2002 Fiona Baker found remnants of an older mudbrick wall that ran around the sunken court of silos at the eastern side of the RAB. The builders replaced the mudbrick wall with one of fieldstone, which later toppled down onto the decommissioned silos, filling the sunken court like a fieldstone platform. Later, people removed the western side of this toppled fill, and trenched out most of what remained of the fieldstone of the wall itself, leaving only the very regular and prominent trench of the wall's foundation, with just traces of both its mudbrick and fieldstone incarnations.

The older mudbrick wall [21,785=21,788] in Hassan's BBN trench sat on layers that ran under the RAB fieldstone wall [5433], so they may have been contemporary with the older RAB mudbrick wall. These deposits consisted of dumps and leveling, or fill of pits, upon clean sand [21,801].

Within his north-south trench across RAB street, Hassan excavated a smaller probe trench into the basal sand [21,801] and was surprised to find "clear silty tip lines running downward from east to west and slightly down from north to south" (Hassan and Aydinoglugil 2005:9). Cultural material included mudbrick and mudbrick fragments, pottery, sealings, faience beads, animal bone, and chipped stone.

This probe is significant for its similarities to a deep probe into a basal layer of clean sand that Stephanie Durning excavated alongside the eastern RAB fieldstone wall in 2002. Durning's trench, measuring 1.50 x 1.90 m, showed that the fieldstone wall survives for a height of 70 cm. Narrowing her probe to 90 cm x 1.0 m, she reached a depth of 2.40 m, elevation 14.48 m asl. She stopped, for safety reasons, about 8 cm above the water table. The two probes show that below the RAB there is a consistent series of layers of dark, sandy silt intercalated with clean sand that slope radically down to the south by more than 45°, all the way to the bottom of the probes.

These are probably also tip lines, that is, episodes of intentional dumping, like the tip lines in Hassan's 2005 probe into the basal clean sand [21,801]. The two probes suggest that the area of the RAB was intentionally filled with sand and silt, dumped from the north and east. We know that the surface of the ruins of the Eastern Town slopes dramatically to the south, just beyond the north boundary of the modern sports club, which is the southern boundary of our clearing of the RAB. The ancient inhabitants must have filled up a large depression, extending the surface to the south, perhaps to build the RAB enclosure, while leaving a sunken court into which they placed their storage silos.

Stratigraphic Link Across RAB Street: West

Our team recorded another section between the Enclosure Wall and the RAB wall on the west side of the RAB where, in 2004, Astrid Huser and Ana Tavares regularized and documented the section of an intrusive pit. They gave feature number [20,877] to the alluvial mud paving of RAB Street that functioned in phase with the fieldstone wall of the RAB and the Enclosure Wall. The paving rests upon layer [20,869], a sandy bedding for the street. Below this, a surface [20,870] functioned with an older mudbrick wall that the builders enlarged and capped as the thick fieldstone RAB wall.

A layer above the surface [20,870] and below the mud paving [20, 869] runs up against the RAB fieldstone wall but under the Enclosure Wall. This indicates again that the inhabitants built the Enclosure Wall after the RAB wall. The builders jogged the Enclosure Wall around the RAB, which they had built earlier, in order to segregate the RAB on the south from the Gallery Complex to the north.

During the 2005 season Aneis Hassan supervised excavations in squares 6.U19 and 6.U20 that took the 2004 section through the western RAB fieldstone wall [5435] to establish the relationship

of the extramural layers to the older mudbrick wall embedded within the thicker fieldstone wall and to link up with the structures of the earlier phase that Freya Sadarangani excavated within the northwest corner of the RAB (see below). Hassan removed what remained (after the intrusive pit) of the limestone of the western RAB wall [5435] and the preparation or bedding layer [21,795] directly underlying it. The builders had mortared together the east-facing and west-facing facing stones of the RAB wall [5435]. They filled the void between the casings and the older mudbrick "core" wall with limestone cobbles and loose sand. The excavations made it clear that the RAB fieldstone wall, [5433] on the north and [5435] on the west, was constructed before the Enclosure Wall [5432] on the north and [5434] on the west.

Big Pits in BBN

Aneis Hassan found a series of large pits in the in lower surfaces of his excavations on the north of the RAB. The pits are as large as 2 m in diameter and filled with sherd-laden debris. The pits filled with trash and dumped "make up" layers began soon after the inhabitants seem to have artificially built up and leveled the site with sand.

> Once the area had been leveled there was a pitting episode where [21,743] and [21,799] were created. It seems that the pits were probably first filled with burnt/ashy material and then filled with general refuse, including a relatively high proportion of sealings. It then seems that the quantity of refuse became too much for the pits to hold and/or the area used as a general dumping location (for refuse rich in ceramic material and mud-brick fragments), which also helped to build up and level the area on which some kind of building was set (i.e. mudbrick walls [21,785] and [21,788]). It is also highly probable that this building is directly related to the first phase of architecture in RAB. After a period of use this building was demolished and the RAB wall [5433] (north) and [5435] (west) were constructed (Hassan and Aydinoglugil 2005:12).

We may see in the large pits here an early attempt to dispose and conceal trash. The chain of inference is that the inhabitants disposed of trash in large pits until the trash became so voluminous that this proved impractical. They then spread trash over a general area, and thereby raised the level. This is similar to the inferences we made about the pits and "bread mould gravel" trash in area EOG.

Pedestal Installations: FS4

The FS4 team excavated up to a section line 3 m north of the south side of squares 6.X21-22 just east of the narrow restriction, 90 cm wide, at the eastern end of South Street beside the northwest corner of the Royal Administrative Building (RAB).

The FS4 excavation took in the southern end of the long rectangular enclosure that we count as Gallery IV.11 (Tavares et al. 2005). The two bakeries that we found in 1991 occupy the full width of the northern end of Gallery IV.11. This is the last gallery on the east in Set IV, and probably the last gallery to be built. The excavation also extended across the southern end of a kind of mini-gallery east of Gallery IV.11. Both long enclosures nearly match the length and appear to be in sequence with the galleries of Set IV (the mini gallery is a little shorter). But they are of odd widths, 6.0 and 2.26 m respectively. The FS4 excavations have revealed that these "galleries" are very late additions.

A curved fieldstone wall swings into Gallery IV.11, like an open gate from the street, on the western side of the southern boundary of the gallery. It ends at a thin wall that divides the southern end of the gallery into spaces, 2.20 m wide on the west and 3.75 m wide on the east. The curved wall is a continuation of the north side of the narrow corridor at the eastern end of South Street. The southern side of the narrow corridor is the fieldstone Division Wall and the curved mudbrick wall around the northwest corner of the RAB.

The FS4 excavators revealed that smaller fieldstone walls compartmentalize the southern ends of these late, anomalous galleries (Tavares et al. 2005; Kamel, Lehner, and Tavares 2005). These walls are founded upon the youngest street and floor levels in this area. We now know that the Division Wall, running down the center of South Street and forming the southern side of the restricted corridor, is later than the Enclosure Wall (which is later than the RAB wall). All the walls that compartmentalize the southern end of Gallery IV.11 are later than the Division Wall.

The compartments contained more of the pedestals so ubiquitous across the site. The pedestal structures were the "last hurrah," of building in this area, and maybe much of the site. Only the lowest parts of the foundations remain. Yet, there is enough that we can see a familiar pedestal-and-slot arrangement (fig. 9). Mohammed Aly Abd el-Hakeem excavated one of these arrangements at the end of the mini-gallery, inside a little chamber that measures 2.10 m east-west and 3.70 m north-south. There was a space just wide enough (1.80 m) for someone to stand in front of the pedestals against a wall, 55 cm wide, at the north side of the chamber. This wall completely closed off the end of the mini-gallery.

The set consists of one center pedestal, 70 cm wide, and two half pedestals, 30 cm wide, projecting from the sidewalls. This arrangement leaves two slots or notches. Again, we have clear evidence from the Pedestal Building in the Western Town and from a set of pedestals in Transect A2 (see below), that a thin partition wall on the center of the middle pedestal formed two compartments that stood above the slots or notches. As with storage systems attested elsewhere in the ancient world, the idea was to have some air underneath the compartments or containers.

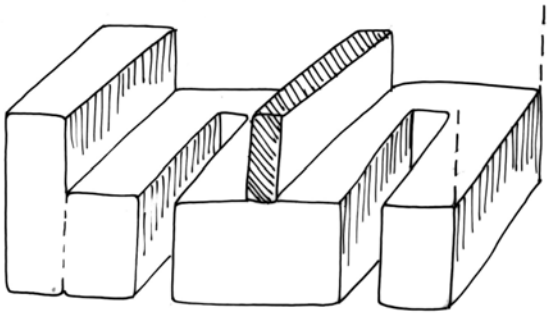


Figure 9. Reconstruction of compartments formed by slots over pedestals.

Royal Administrative Building (RAB) Northwest Corner (Area BB)

We first saw what we thought were the double walls of the northwest corner of the RAB in 2001. Embedded in the level mud mass, the patches of stone that had collapsed from the walls looked like buttresses, hence our original designation, BB, for "Buttress Building."

History of GPMP Excavations and Names of the RAB

During the 2002 field season, Bob Will and Susan Bain began excavations in the northwest corner of the complex, while Fiona Baker supervised excavations to the east in the sunken court of silos (see fig. 1). Paul Sharman excavated around the entrance in the northeast corner of the RAB. Many of the deposits that we excavated that season came from pits and other features of a period after the RAB had been abandoned. The excavations in the northwest corner yielded an impressive number of clay sealings, and material related to sealing. Archaeologists who work with ancient Near Eastern civilizations have thought of sealings as an index of administration. Fiona Baker discovered the large centralized storage facility—the sunken court of silos, which certainly appear to be royal in size and character. This led Lehner to dub the whole enclosure the Royal Administrative Building (Lehner 2002).

The RAB/BB complex covers a large area, at least 48 x 32 m. It continues south 10 to 15 m into "mud mass" that we have not yet excavated and then further south under the modern sports club. Rather than a discrete building under a single roof, it is a large enclosure, within a two-meter-thick fieldstone wall that contained complexes of smaller structures, courtyards, and pathways. Five narrower enclosures, E1-5, each about 10.20 m wide, extend west of the RAB.

In 2004 Freya Sadarangani's team found a lower lying, older architectural complex under the northwest corner of the RAB. It became awkward to use our colloquial names for this complex and its acronyms, BB and RAB. Sadarangani (2005:4) wrote "The earlier structural complex

directly underlies the later complex. The exact limits of this older earlier complex are currently unknown…the later complex (also known as BB or RAB) will be referred to as Structural Complex 1. The earlier building or complex will be referred to as Structural Complex 2."

In the 2004 winter-spring season, within six grid squares in the northwestern corner of the complex, Freya Sadarangani and James Taylor excavated all features and exposed all the walls pertaining to the upper occupation and structural phases of the RAB.

In 2005 Sadarangani resumed the excavations inside the northwest corner of the RAB. She excavated within the six grid squares down to a level of architecture that existed before the inhabitants built the RAB. Early in Season 2005 the thick, double, outer fieldstone walls of the RAB, and the mudbrick walls forming the courts and chambers of the younger phase inside the RAB, ran like trestles over and across mudbrick walls of the lower, older phase.

Dismantling and Recording Walls of Structural Complex 1

In order to understand the history of this part of the site it was necessary to remove parts of the younger walls that are in phase with the outer fieldstone wall of the RAB. In February Henan Mahmoud and Banu Aydinoglugil drew elevations of the walls of Structural Complex 1, the higher, later phase, in anticipation of taking them down to fully expose the lower phase walls of Structural Complex 2.

By late February 2005 the team members were well along in the process of dismantling the walls of Structural Complex 1. They began by systematically shaving off the eroded tops of the walls down to the highest continuous course. This showed every brick in the wall, giving a clear picture of the structure.

For the big walls, 72 cm wide, the ancient bricklayers placed headers on one side and stretchers on the other (headers are bricks laid perpendicular to the face of the wall, stretchers are placed lengthwise along the face of the wall). In between, the masons laid more headers, albeit somewhat more haphazardly, in a mud fill. The pattern alternates: the side that has headers in one course has stretchers in the next up, and vice versa. In the thinner walls, 60 cm wide, they laid two outside rows of stretchers, with headers in between for the core.

Pieter Collet drew detailed 1:20 plans of the uppermost continuous course. Henan Mahmoud measured and drew detailed sketches of the courses below. Collet mapped the foundation course of each wall at 1:20. As part of his pan-site brick study, Ashraf Abd el-Aziz sent some of the bricks for flotation to recover ancient plant remains. He dissolved other bricks and wet sieved the material to pick out micro-fauna (small animal bone), ceramics, sealings, and other material. All these classes of material culture had gotten molded into the brick because the ancient brick workers used settlement mud for their products. Abd el-Aziz saved many bricks whole and stacked, sorted, and examined the best of the complete specimens for his evolving brick typology at Giza.

Summary of 15 Phases

In her analysis of the 2002, 2004, and 2005 excavations, Sadarangani identified at least 15 phases of discrete activity in the BB area. She tabulated these phases from oldest to latest (table 3).

It should be noted that there are certainly earlier phases than Sadarangani's Phase 1, which is really the last phase of Structural Complex 2. This layout had its own phases of development, like the successive structural and occupational phases of Structural Complex 1. There are likely phases preceding the earlier architectural layout. We may gain information about these earlier phases in subsequent excavation, which will then change our phasing.

Phases 2 through 4 represent the most dramatic change. This is when the inhabitants demolished Structural Complex 2 and built the first walls and chambers of Structural Complex 1. In this report we draw on Sadarangani's Data Structure Report (2005) to summarize Structural Complex 1 at the end of its development, followed by Structural Complex 2 as we found it at the end of its development.

Structural Complex 1

When the builders constructed the main fieldstone wall [5433/5435] that borders and defines Structural Complex 1 (RAB), they orientated the western wall about 6° west of north and the northern wall a lesser degree north of east. They were probably following the orientation that

Table 3. List of phases for Area BB

Phase 01	Earliest – (Structural Complex 2)
Phase 02	Demolition – (Interface between Structural Complexes 1 and 2)
Phase 03	Structural – A (Limestone Wall, Structural Complex 1)
Phase 04	Structural – B (Mudbrick wall construction, Structural Complex 1)
Phase 05	Structural – C (Mudbrick wall Construction, including Annex, Structural Complex 1)
Phase 06	Leveling and Preparation - (Structural Complex 1)
Phase 07	Occupation – A (Structural Complex 1)
Phase 08	Structural – D (Leveling, Consolidation and Minor Structural Remodeling, Structural Complex 1)
Phase 09	Occupation – B (Structural Complex 1)
Phase 10	Structural – E (Minor Remodeling, Structural Complex 1)
Phase 11	Occupation – C (Structural Complex 1)
Phase 12	Occupation – D (Abandonment Interface)
Phase 13	Post-Abandonment – A (Primary Tumble/Demolition)
Phase 14	Post-Abandonment – B (Mud Mass/Degradation and Erosion)
Phase 15	Post-Abandonment – C (Modern Truncation/Disturbance)

they, or other builders, followed when they constructed the western mudbrick wall of Structural Complex 2, for it appears that the earlier mudbrick wall is embedded within the later wall, running along the western side of its foundation. (All the major walls of this settlement, including the Gallery Complex and the Wall of the Crow, follow the slight orientation west of north or north of east. This whole city was turned slightly counter clockwise with respect to the cardinal directions.)

We see the western wall of the RAB Wall [5435] running north to south for approximately 32 m before it dives under the soccer field. From the RAB northwest corner, the northern wall [5433] runs 48 m to a major doorway near the Eastern Town area. The eastern wall runs south where it also runs underneath the soccer field.

Embedding the Older Mudbrick Wall

At least at the west side of the building where Sadarangani excavated, the builders seem not to have cut a foundation trench for the thick fieldstone wall (Paul Sharman and Stephanie Durning found a construction cut for the eastern fieldstone wall on the northeast part of the RAB in 2002). They built the western and northern limestone walls, [5433] and [5435], directly upon the western mudbrick wall [22,822] of Structural Complex 2 and upon the demolition and leveling layer that covered the remains of the earlier complex.

Aneis Hassan's 2005 trench, 2.30 m wide through the western RAB wall [5435], showed that the builders erected the newer limestone wall against the eastern side and then over the top of the earlier mudbrick wall [22,822], thereby utilizing it as part foundation and part internal core for a new limestone wall. They did not even attempt to level wall [22,822] to a uniform height. Consequently the base of the newer wall is 23 cm higher on the west than on its eastern side, where there was no wall to act as a deeper foundation.

We have seen a similar embedding of older mudbrick walls in thick fieldstone walls in the large south-facing enclosures of Standing Wall Island that we cleared in 2004 off the southeast corner of the modern soccer field (see fig. 1).

RAB Internal Mudbrick Walls

The outer RAB fieldstone wall was the first of three phases of structural remodeling. Sadarangani (2005:71) stated, "It seems that the chronology of Structural Complex 1's remodeling spans a fairly short time period; perhaps even being contiguous blocks of work, separated only by the order of construction. Of note, both the [outer] limestone and mudbrick walls seal the same primary demolition deposits."

The masons set up the main internal mudbrick walls of Structural Complex 1, creating six spatial units or rooms of varying size and to the east, the courtyard, a much larger, open space.

Orientations and Alignments

The builders kept to the alignment and orientation of the older walls of Structural Complex 2, and in some cases they built the new walls directly over the Phase 1 walls. One case in point: the common eastern wall [5587=5639] in the new complex followed the common eastern wall in the old complex. The newer eastern wall created a 10-cubit-wide (5.25 m) band or strip between it and the RAB western wall. The same strip in the earlier complex was about 1 m wider because of the narrower western mudbrick wall. Rooms 1, 2, 4, 5, 6, and 7 of Structural Complex 1 (fig. 10) are all within this band, just as were all the rooms A-N in the older Structural Complex 2 (fig. 11).

Rooms of Structural Complex 1

The general layout of Structural Complex 1 is a long strip, 10 cubits wide, between the western fieldstone wall of the RAB, and the eastern mudbrick boundary wall [5587] and [5639]. At 75 cm wide, this eastern wall was thicker than the other internal walls. It abutted the northern RAB fieldstone wall [5433] and continued south for 10 m where it was interrupted by the main doorway

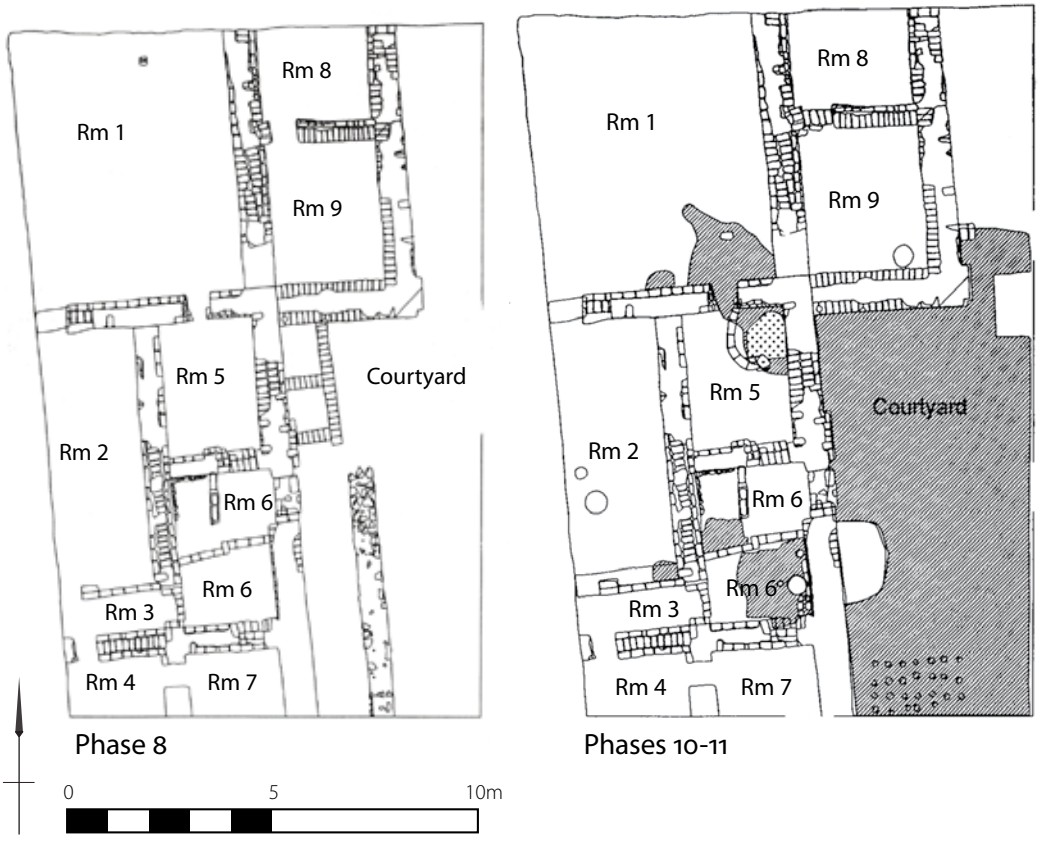


Figure 10. Structural Complex 1 in northwest corner of RAB. Floors are shown as hatched areas.

into the complex, and then it continued south as [5639] for a further 4.67 m before disappearing into the southern limit of excavation. We can see it continuing farther south embedded in the mud mass, which is to say that the entire 10-cubit strip continues south.

Room 1

An east-west cross wall [5554] closed off Room 1, which takes up the entire width at the north end of the 10-cubit strip, measuring, 5.80 m (north-south) by 5.20 m (east-west).

Three openings or doorways gave access to Room 1. One, 80 cm wide, opened between the western fieldstone wall and the south wall of Room 1 and led into Room 2. Another, 56 cm wide, opened south into Room 5. The third opening, 50 cm wide, led through the eastern wall [5587] in the southeastern corner of Room 1 to Room 9.

South of Room 1 another north-south wall [5555=5640], 60 cm thick and 45 cm high, divided the 10-cubit strip in half longitudinally. While we have excavated this wall for 10 m north to south, we can see it continuing south in the mud mass well beyond the present limit of our excavation. Shorter cross walls formed five additional spatial units or rooms of variable sizes.

Room 2, one long space, took up the western half-strip. A cross wall divided the corresponding space on the eastern half of the strip into two smaller spaces, Rooms 5 and 6. The east-west division continues south, where we have only a portion of the north ends of Rooms 4 and 7.

Room 2

Room 2 was a long rectangular space, 6.80 m north-south, against the RAB western fieldstone wall on the western side of the 10-cubit strip. A doorway, 60 cm wide with a mudbrick threshold, opened at the southern end of its eastern wall to Room 6. Another doorway, 50 cm wide, opened through the southern wall into Room 4.

Room 3

Room 3 was corridor 3, 96 cm wide running west from the doorway to Room 6. Someone added a thin east-west partition wall [485], 2.10 m long, from regular courses of large mudbricks, one course thick (12 cm), across the southern end of the Room 2 to create this corridor. The thin wall survived two courses high (23 cm). The thickened western end provided support for a small entrance between Rooms 2 and 3. At a later time (Sadarangani's Phase 9), the occupants added a small posthole or door socket, [494], 12 cm diameter, to the eastern side of the doorway between Rooms 2 and 3, which indicates a door that swung open southward into Room 3. The occupants eventually (in Sadarangani's Occupation C) blocked the doorway between Room 3 and 4 with six bricks [20,019] that they laid as headers along the northern edge of the threshold.

Room 4

Room 4, 2.30 m wide (east-west), continues south beyond our current limit of excavation. In addition to the doorway from Room 2, another doorway, 50 cm wide, opened through the eastern wall over a mudbrick threshold into Room 7, which also continues south beyond our excavations.

Room 5

Room 5, south of Room 1 and north of Room 6, measured 3 m (north-south) by 2.3 m (east-west). A doorway gave access from Room 6. Another doorway opened in the center of the northern wall into Room 1.

Room 6: Complex 1 Central

Room 6 measured 3.40 m (north-south) by 2.40 m (east-west). Four doorways opened into Room 6, one in its southwestern corner to Room 2, another south into Room 7, and one in the northern wall into Room 5. A fourth doorway through the north end of the eastern wall opened to the courtyard. This doorway, 1 m wide with a formal mudbrick threshold [21,675], was the major access into Structural Complex 1 from the open courtyard to the east. A limestone door socket indicates that a wooden door for this entrance/exit swung open into Room 6. This wider doorway, and the other doorways into the adjacent rooms, makes Room 6 a kind of foyer.

Sadarangani (2005:74, 5.4.6) reported that all entryways in Room 6 had evidence of doors:

> The presence of structural indents and/or small wall returns in the termini of these access spaces were specific to Room 6. It is possible that the function of these indents and small returns was to house doorjambs. As such, each of the access spaces associated with Room 6 contained a door. Further, the location of these indents in the adjacent rooms (Rooms 2, 5, and 7) would suggest that any door would have swung outwards into the adjacent room, and not into Room 6. The exception to this is the internal to external access route, where the indents and a limestone door socket were located inside the room, thereby indicating that the door would have swung inwards.

The question of doorways is crucial for other evidence, such as sealings and their distributions. The ancient Egyptians were very keen on the practical and magical significance of doorways, and locked some doorways with sealings of string and mud impressed with texts that, when broken and the doorway opened, would fragment into the "sealings."

The main access into Complex 1 via Room 6 and its other three doorways make it a kind of Complex 1 Central. In fact, just here, in the main juncture, is where most of the living activity is evidenced, as we shall see.

In a later period, the occupants laid a mudbrick threshold across the doorway between Room 6 and 7 and added a mudbrick barrier [2954] to enclose the eastern side of the hearth in the northwest corner of the room. The barrier, consisting of one heavily degraded mudbrick and two 'ghost' (robbed) mudbricks [2954], measured 1.16 m (north-south) by 20 cm (east-west) and 4 cm (high).

The occupants also added a dog-leg mudbrick partition [4057] that divided Room 6 into northern and southern halves. Two courses of mudbrick remained of the partition wall [4057] (with the upper course being significantly degraded). The partition ran 1.06 m west from the eastern wall of the room, turned south for 10 cm, and then continued west 1.12 m, on a alignment slightly south of west. The dog-leg wall divided hearth-related activities in the northern half of the room from activities in the southern half. The purpose of the jog southward appears to have been to allow for continued use of a spouted vat sunk in the floor south of the hearth.

Room 7

Room 7, which lies south of Room 6, measured 1.30 m (east-west). A doorway, 58 m wide, in the northern wall opened into Room 6.

The Annex: Rooms 8 and 9

At a later stage, the builders added Rooms 8 and 9 up against the east face of the eastern wall [5587]. Together the two rooms of this Annex seem to form a unit. This phase also includes the construction of two bins into the corner between the Annex and the main eastern wall of Rooms 5 and 6.

The southern wall [5466] of the Annex was 98 cm thick, the eastern wall [21,299], 76 cm thick. A thin mudbrick partition wall [5566], 43 m wide, separated Rooms 8 and 9. Room 8, the northern room of the annex, measured 2.10 m (north-south) x 2.70 m (east-west). Room 9, the southern room of the annex, measured 3.16 m (north-south) x 2.66 m (east-west).

A doorway, 66 cm wide, opened between Rooms 8 and 9 through the partition wall. The occupants cut a gap through the western wall [5587] of Room 9 to make a passage, 60 cm wide, into Room 1. At a later time they blocked it with mudbricks, two courses high [21,303], 15 cm high over the floor [21,114]. They cut through the eastern wall [5565] to make another access, 44 cm wide, in the northeast corner of Room 8 to the Courtyard, leaving the lower courses as a threshold.

Rooms 8 and 9 completed the main structural footprint of Structural Complex 1. The area to the east and south, measuring at least 15.50 m (north-south) x 5 m (east-west), seems to have functioned as an open courtyard.

Courtyard Bins

The occupants built two square compartments enclosed by thin mudbrick walls nestled into the corner formed by the east wall of the main complex and the south wall of the Annex. We found that only a single course of brick headers remained of the common exterior wall. A cross wall

divided the rectangular enclosure into two compartments. The southern compartment was 1 m (north-south) by 90 cm (east-west); the northern compartment was 1.16 m (north-south) by 94 cm (east-west).

Courtyard: Corridor, Access Restricted

Builders later (Sadarangani Phase 8) added a north-south wall of mud and limestone [5357], 58 cm wide, east of Rooms 6 and 7. This wall formed a corridor with the main eastern mudbrick wall [5639] of Structural Complex 1. The wall runs from the southern limits of our excavation north for 5.62 m (north-south) and is preserved between 12 and 24 cm high.

This wall must have drastically restricted the entrance to Room 6, the main access to Structural Complex 1. The entrance was now off-view from the courtyard. The new limestone wall [5357] may have turned west to run along the southern side of the bins and to attach to the eastern wall [5465] of Rooms 5 and 6. This would have left the bins in a recess, the north side of which was the southern wall of Room 9.

Sadarangani (2005:90) noted that the occupants used the limestone wall [5357] and the corridor it created for only one phase or period: "The courtyard's limestone wall …had a one phase use—constructed within Phase 8, used within Phase 9, and dismantled within Phase 10."

Observations on Structural Complex 1

As far as we know, the walls and rooms of Complex 1 were all within the 10-cubit-wide (5.25 m) strip along the western RAB fieldstone wall. It may seem odd to us to have such a thick enclosure wall, and then have the rooms up against it, leaving empty spaces in toward the center of the RAB enclosure. But Abd al-Aziz Saleh (1974) of Cairo University found this same kind of pattern in the 4th dynasty industrial settlement southeast of the Menkaure Pyramid, and Günter Dreyer and Horst Jaritz found similar patterns in field stone compounds near the Old Kingdom dam at Wadi Gerawi, across the Nile Valley from Dahshur (Dreyer and Jaritz 1983).

One pattern that repeats from the older Structural Complex 2 (see below) is the room complex with a narrow north-south zone against a western perimeter wall, with an open space or broad court to the east.

Room 1, measuring, 5.80 by 5.20 m and without any pillars or columns, must have been an internal open court. Closed off by Rooms 2 and 5 to the south and just inside the thick fieldstone walls making the northwest corner of the RAB, this court must have been very sheltered and private. We might consider this as an increased concern for security on the part of the planners. The thickening of all the walls, especially the perimeter RAB walls reinforced with compacted broken stone, also indicates an increased concern for security, a concern reflected as well in the Enclosure Wall which was built slightly later around the Gallery Complex, segregating it from the Eastern and Western Towns, and from the RAB.

Occupation in Structural Complex 1

Here we simplify and summarize principal features left by people living in the rooms of Complex 1 over the several major occupation phases that Sadarangani (2005) identified.

Use of Room 1 for Dumping

Throughout the occupation of Complex 1, Room 1 was less a functioning room or courtyard than dead space where the inhabitants left heaps and layers of debris from the demolition of Structural Unit 2, and then discarded ash and pottery. "Certainly it is notable that there was no evidence for the complex occupation sequences identified in Room 6 for example" (Sadarangani (2005:81). Room 1 appears to have remained relatively dead space for dumping.

Occupation in Room 2

Eventually (in Sadarangani's Phase 9, Occupation B), people cut two pot emplacements through the floor [7117] of Room 2. The one in the southern part of the room, close to the southern wall, was a small straight-sided cut [4107], 44 cm in diameter. People packed 15 cm of the bottom of the hole with firm, brown, clayey silt with frequent charcoal flecks and occasional lenses of sand [21,608]. A small, fragmented bowl [21,607] sat directly on this fill. The bowl displayed clear

signs of in situ burning. Loose, dark grayish-brown, sandy and ashy silt with frequent charcoal flecks and bright red burnt mudbrick fragments [4079] covered the vessel and sealed the pit. The occupants seem to have reused this pot emplacement as a hearth. Then the hearth fell out of use and the occupants filled the hole with loose, dark colored, ash-rich soil, bringing the depression left by their disused installation level with the floor.

Another pot emplacement [7100] in the northeastern corner of the room was 54 cm in diameter and 52 cm deep. People removed the pot and backfilled the hole leaving only the clay lining [7197] that had kept the pot firmly in place.

After the earlier installations fell out of use in Room 2 (Sadarangani's Occupation C), the residents set into the floor a large vat [4104] that we found still within its pit [21, 618]. The vat, 50 cm in diameter and 41 cm deep, was located in the western half of Room 2. This type of vat is associated with beer and bread-making in tomb scenes. The sides and base of the pit were lined with a compact clay-silt [21,617]. Just to the north of the vat, two shallow depressions [4102] and [4103] were filled with black, ashy silt.

Occupation in Room 4: Ash-Rich Features

In Room 4 the inhabitants laid down a distinct, very compact, pale yellow-brown floor surface [5669] (Sadarangani's Occupation B). In the southwest corner of the room they made a large rectangular pit, 16 cm deep, that was filled with quantities of dense, finely laminated, black ash deposits and charcoal [7087].

A shallow depression [5670], filled with fine, grey-brown silt on the north side of the room against the wall [5567], belongs to this period. Another shallow depression [5671] in the southeast corner was also filled with fine, grey-brown silt. A dark brown-black deposit [5666], 14 cm deep, sealed this depression and most of the southern half of the room. A second ash-rich deposit [5641] sealed [5666] in the northeast corner, however, was a much lighter grey with frequent charcoal flecks.

Occupation in Room 5: Two Troughs

In the northeast and northwest corners of Room 5, the occupants made two parallel, shallow, rectangular troughs, after the initial occupation period (Sadarangani's Occupation B). The northeast trough [20,151] was 1.54 m (north-south) by 95 cm (east-west) and 12 cm deep, with a relatively flat base. The northwest trough [20,981] had similar dimensions, 1.50 m (north-south) by 80 cm (east-west) and 10 cm deep, with a gentle slope from south to north. These troughs are cut features, gaps in the floor [20,977].

Two layers of ash, the first with many pottery sherds [20,174] and the second without sherds [20,151] filled the northeast trough. The northwest trough [20,981] similarly contained two fills: first, moderately compact, grey, sandy silt mixed with dark brown, silty clay with frequent charcoal flecks and occasional limestone pieces [20,982]. The second fill [20,980] consisted of dark gray-brown mudbricks in a loose matrix of silty sand.

A shallow circular hole [20,992], 43 cm in diameter, was sunk 9 cm deep in the floor in the approximate center of the room south of the two troughs. The base of the hole was relatively flat, its break of slope gradual. This may have been the receptacle for a bowl, plate, or one of the small vats with diameters approximately 42 cm such as we have found sunk into floors elsewhere on the site. An additional depression [20,988] was cut into the floor [20,992] in the southwest corner of the room in the form of a shallow quarter-circle 33 cm (north-south) by 30 cm (east-west) and 7 cm deep. This may have also been a pot emplacement.

Room 5: Curved Structure

Late in the occupation (Sadarangani's Phase 11, Occupation C) of the room, upon a floor of which a large remnant [20,020] was confined to the northeast corner of Room 5, the residents built a semicircular mudbrick partition [5637] that swings south then east into the northeast corner of Room 5 from the east side of the doorway to Room 1. Our excavators found two courses of mudbrick, 20 cm high, that abutted the end of the east side of this doorway. The curved wall [5637] ended with an irregular piece of limestone, leaving a gap of 40 cm between it and the eastern wall [5465] of Room 5. Mudbrick stretchers formed the lower course and a random mixture of headers and footers comprised the upper course of the curved partition.

At the end of the partition, near the limestone piece, the internal, northern face of the upper course of bricks was stepped back, which left a small ledge, 12 cm (north-south) by 30 cm (east-west). At this level, the end of the wall [5554] forming the western side of the doorway between Rooms 1 and 5 was uneven, and appeared to have been almost hacked, suggesting that the occupants had, in a rather crude fashion, widened this access between Room 1 and Room 5, to facilitate movement around the curved partition [5637] and between the rooms.

The primary deposit within, and up against, the curved partition [5637] was loose, dark gray sandy ash, rich in charcoal with moderate pottery sherds [20,014/7131], 12 cm thick. This deposit was sealed by grayish-brown sandy silt containing frequent bones and pottery sherds, and moderate amounts of charcoal [5632]. The rounded enclosure formed by the curved wall [5637] might have had something to do with ash that spread from Room 1, through the threshold and into Room 5.

A 40-cm gap existed between the eastern end of the curved wall and the east wall of Room 5. It is possible that the curved wall rose up and bridged the gap, which was open only at the bottom. The space inside the partition might have been roofed or otherwise closed at the top. This would make the enclosed space and curved wall similar to ovens or granaries, which had openings at floor level to insert fuel or to let out grain respectively.

The space enclosed by the curved wall contained ash overlain by a layer that contained much animal bone. There was no evidence of in situ burning. This might preclude the structure functioning as an oven. It might have been for storage, possibly serving as a crude granary. The narrow ledge built into its internal north face may have received a removable cover of wood or wicker. Sadarangani (2005:92) suggests that a small door or hatch may have closed the lower space, "thus allowing material to remain contained within the structure." The limestone piece at the end of the curved wall may have helped fit some kind of hatch.

Room 6 Pottery Installation

Successive surface layers, three pot emplacements, the construction of a limestone-bordered hearth, and the other deposits remained from the earliest use of Room 6 (Sadarangani's Occupation A). The earliest floor, composed of compact, dark brown, silty clay [5304], survived only in the southern half of Room 6 and continued south into Room 7.

A pottery jar ("beer jar") [5353] occupied a clay-lined [21,602] hole that had been cut [21,603] into the floor. Dark grey, ashy sand with lots of pottery fragments [21,601] filled the jar. Another pot emplacement, a circular hole 32 cm deep and 42 cm in diameter [5352], cut through this ashy fill [21,601]. This was the receptacle for a large spouted vessel [4072] with a 32-centimeter-diameter. Northwest of this vessel, a thin, circular clay deposit [4073] with sloping sides and 36-centimeter-diameter probably served as an emplacement for a shallow bowl or plate. A patch of dark brown clay comprised a 2-centimeter thick floor or occupation surface [3196] that covered the rim of the spouted vessel [4072]. This patch of floor was 1.28 m (north-south) by 1.35 m (east-west) and 2 cm thick. The way it lapped over the rim of the vessel suggests that this patch [3196] was a surface that functioned with the use of the vessel.

Room 6 Hearth

A single course of irregular limestone pieces [20,143] lined the walls in the northwest corner of the Room 6. The limestone fragments rested on mudbricks. Two of the east facing stones had been discolored red, indicating in situ burning. This limestone installation defined a hearth, 90 cm (east-west) by 90 cm (north-south) and 16 cm high. Thin intercalated ash and sand layers, with some burnt red and orange spots, charcoal flecks, topped by 3 cm of dark gray ash, filled the area of the hearth.

In later periods (Sadarangani's Occupation B and C) the occupants of Room 6 laid down more floors over accumulations of sand with charcoal and ash. Eventually the occupants laid down 2 cm of greasy clay [4050] over the accumulated debris [4051] in the eastern half of the room. This new floor [4050] featured a large circular pot emplacement [21,612], 66 cm in diameter and 40 cm deep, with a sharp break of slope, a flat base, and vertical sides. Compact mudbrick material [21,620] that lined the emplacement was 8 cm thick on the sides and 20 cm thick at the base, which had a circular concave depression. A secondary layer of compact, dark brown, sandy silt

[21,611] lined both the fill [21620] and the base of the emplacement. Soil [21,610] eventually filled the emplacement making a patch 38 cm in diameter. An almost complete beer jar came to sit on the surface of the fill, snuggled into the corner, abutting the dog leg partition wall [4057] and the eastern wall of Room 6 [5639].

Room 6: Beer Jars and Bread Molds

Late in the occupation (Phase 11) of Room 6, the residents laid down the bedding [21,127] and surface [20,031] of a new floor south of the dog-leg wall [4057]. Pressed into this floor, were the bottoms of two beer jars [20,027 and 20,028] and a bread mold [20,028] that formed a triangle. A shallow circular depression, 40 cm x 9 cm deep [20,030], in the center of the triangle, may have been an emplacement for a bowl or platter. North of the dog-leg wall [4057], in the northwest corner of Room 6, the occupants laid down a bedding [20,040] for a new floor [20,035] adjacent to thick ash [20,142] enclosed within the limestone and mudbrick border of the hearth.

Occupation in Room 7

Two holes that might have been pot emplacements and a floor remained in Room 7. One pot emplacement [21,633] was 58 cm in diameter and 57 cm deep, so it was possibly for a small vat. Three courses of mudbricks lined the emplacement, and clay [21,632] covered the bricks and lined the base of the emplacement. To the northeast a shallow circular depression [21,615] with a diameter of 23 cm must be the emplacement for a ceramic bowl.

Occupation in Rooms 8 and 9

Room 8, the threshold connecting Room 8 to the 'courtyard' area, and Room 9 contained several superimposed floors. A floor [21,124], 5 cm thick, covered the entire area of Room 9. A shallow circular depression [21,124], 8 cm deep and 52 cm in diameter, was cut through the floor in the southeast corner of Room 9 near the eastern wall. It may have held some sort of shallow ceramic vessel. A limestone mortar lay on the floor near the depression.

In a later period (Sadarangani's Phase 9) the occupants laid down a pale gray, compact silt floor [7107] that sealed earlier floors and extended over most of the area within Room 8. In the northwest corner of Room 8 the excavators found a thin north-south line of mudbricks [7227] that could have been the eastern border of a hearth, evidenced by a scorched red ash deposit in this corner, burnt discoloration on the south face of the northern RAB wall, on the east face of the western mudbrick wall, and on the west face of the mudbrick border. Two circular depressions [7190] and [7191] in the floor nearby may have been sockets for ceramic vessels that were removed. In the southwest corner of the room, a larger circular depression [7233] cut through the floor [7107]. A black ash deposit [5667], 12 cm thick, later spread throughout the room, covering the red ash deposit in the northwestern corner.

Sadarangani (2005) points out that similar pot settings were adjacent to the hearth in the northwest corner of Room 6. Positioned within the northwest corner of Room 8, the hearth would have been directly visible from the courtyard, occupying the transitional space between external spaces and the internal room. The configuration is similar to Room 6. The similarities may suggest that Room 8 functioned as a unit with Room 9 in a way similar to Room 6 with Room 5, or possibly with Room 7 to the south.

About the same time, in Room 9 the occupants laid down a 4-centimeter-thick floor, made an emplacement for a large pot, and left behind a series of deposits from their activity. They covered the entire area of Room 9 with a floor made of compact, brownish-gray, sandy silt with potsherds [20,135], laid over a bedding [21,119]. They spread the floor into the threshold connecting Rooms 8 and 9, and through the threshold into Room 1.

In the northeast corner of Room 9 they made a large circular pot-emplacement [20,974] with a diameter of 60 cm. The primary fill comprised a dense clay UTA (untempered alluvial) mudbrick [20,978], which may have served as packing for a large pot that was removed. Late in the use of Room 9 (Phase 11), the residents cut another emplacement [21,117] for a pot through the gray sandy silt floor [5643] in the southeast corner. The emplacement was 50 cm in diameter and 21 cm deep. Our excavators found the vessel itself [7102] in place and intact, measuring 39 cm in diameter and 24 cm deep.

Occupation in the Courtyard

During Sadarangani's (2005) Occupation A, people dug pits and dumped within the courtyard. Sterile black ash [4099] filled one nearly square pit [4098], 1.68 m (north-south) by 1.28 m (east-west), and 27 cm deep. A thin layer of sterile yellow sand [5372] sealed the ash. Light gray ash with burnt fish bone [4097] sealed the sand.

To the south, an oval depression [21,673] with a relatively flat base measured 1.45 m (east-west) by 1.76 m (north-south) and 7 cm (deep). Concreted yellow marl [21,637] filled this pit and lipped up the sides of its cut. This feature is probably a mixing pit for marl plaster that the builders applied to the walls. Small circular depressions in the surface of the marl might be finger impressions.

In addition to these and two other pits, this period of occupation is further represented in the courtyard by material that filled the bins south of Room 9. Both compartments contained layers of loose yellowish-gray slightly silty sand [4093] and [5284]. The southernmost bin contained frequent ceramic sherds and occasional mudbrick [5284] whereas the northernmost contained occasional lenses of ash and moderate amounts of ceramic sherds [4093]. Over time a sequence of floors built up over the courtyard.

The Courtyard: Grid of Holes: In the area of the courtyard that corresponds to the southern end of our square 6.S22, the occupants (of Phase 11) formed twenty-six shallow circular depressions in rows aligned both east-west (with 7 in a row) and north-south. The north-south series disappear under the southern limit of our 2005 excavation. These shallow depressions were fairly uniform in dimension, depth, and spacing. They averaged 12 cm in diameter, 6 cm deep. They are spaced, from the central point of each depression to the central point of any adjacent depression, on average 35 cm. The material that filled these depressions showed some variation, but it consisted mainly of loose, grey, ashy sand that contained moderate charcoal flecks.

> The shallowness of these depressions preclude them from having had any structural function—at less than 6 cm deep they could not support a post or stake. Their shallow circular form, slightly concave base, gradual slope gradient and general dimensions could easily accommodate bread-moulds. Indeed, their dimensions and form match the depression caused by the bread-mould pressed into the floor at the southern end of Room 6. It is possible, therefore, that the depressions represent rows of bread moulds, with each mould stabilized by any one adjacent mould, set into the floor (Sadarangani 2005:93).

It is noteworthy that the distance between the centers of the holes is about 35 cm, which is close to the rather standard diameters of the largest size-class of bread molds on our site. So, if bread molds of this size were stuck into the holes, they would just touch rim to rim and support one another as Sadarangani suggested.

Also, there are limestone models from Old Kingdom tombs that represent just such a grid of pot sockets, in some cases on a little platter that is a separate piece from the model bread molds that could be set one to each socket. Sadarangani continues with more evidence of these holes as bread mold sockets:

> Further, the ashy matrix common to the fills of almost every depression could be remnant of the ash used to surround bread-moulds during the bread making process. It is possible therefore, although entirely speculative, that the rows of shallow depressions represent bread-cooling processes – having baked the bread, the bread and their moulds are set out in an external space to cool. Once cool, the moulds are removed, leaving traces of the ash that had packed the mould (Sadarangani 2005:93).

Comments on Occupation: Room 6 as Complex 1 Central

Sadarangani (2005:77) points out that activity during the first phase, and throughout much of the occupation, appears to have centered on Room 6. This is indicated by the density and complexity of features within this small room, which, as we will recall, lay just inside the main access to Complex 1, and gave access to the rooms north, west, and south.

Here is an abridged version of Sadarangani's (2005:77-79) comments on the Room 6 occupation:

> Construction and use of the limestone-bordered hearth begins at this phase and it continues to be used and modified throughout subsequent occupation phases. Located in the northwestern corner of the room, the hearth would have been directly visible from the courtyard and would be the first feature encountered when accessing the internal space from the external space. The absence of any small neutral 'transitional' space between external and internal areas, coupled with the hearth's very visible location differs greatly from the 'domestic' habitations seen elsewhere (see North Street Gate House and Eastern Town).
>
> Contemporary with the construction of the limestone border, pots were set into the floor almost adjacent to the southern limit of the hearth. If domestic activities were being performed they may have functioned as units to prepare food/ mix ingredients etc prior to cooking. The truncation of one vessel by a larger spouted vessel shows a deliberate, same phase re-use of this space, an importance to locate vessels next to the hearth, and the need for only one pot emplacement at a given time.
>
> Within the same phase of occupation, an ash filled rectangular pit was in use in the courtyard…It is highly feasible that during this early phase of occupation, the residue from the burning activities in Room 6's hearth was the source of the pit's re-deposited ash (the scrapings from the hearth). An archaeobotanical and micro-faunal comparison between the deposits within the hearth and the fills of the pit may either refute or confirm this.

We might suggest that a guard lived in Room 6. Elsewhere on the site, including in the older Structural Complex 2, we have found what we believe are sleeping platforms across, or near, crucial doorways. It suggests that people on guard duty lived and slept close to the port of access. In this case anyone entering Complex 1 had to cross the person who virtually lived in Room 6, a foyer to the rest of the complex.

Second Story for Structural Complex 1?

Sadarangani makes an important point about the thickness of the RAB outer fieldstone wall, one crucial for our thinking about other major architectural components, like the galleries with their thick walls, and about the numbers of people they accommodated:

> It is possible that the much greater scale of this limestone 'casing', compared to its mudbrick forbear, may be in order to support a second story. A 'buttress' located on the external side of the wall, in square 6.S20, may for example have supported a staircase, although this cannot be proven without further investigation (Sadarangani 2005:72).

If there were a second story, it surely did not extend over most of the 48-meter breadth of the RAB. Instead, what we seem to have here are roofed structures formed of thinner walls built up against a massive enclosure wall of broken limestone or fieldstone. We see similar patterns at other Old Kingdom sites, notably of industrial settlements.

As mentioned, a series of compounds with open courts and rooms built against thick enclosing walls exist near the Old Kingdom dam in the Wadi Gerawi, published by Günter Dreyer and Horst Jaritz (1983). A more formally organized example, very similar in ways to the RAB, occurs at Giza in the settlement that Abd al-Aziz Saleh (1974) excavated for Cairo University in the early 1970s southeast of the Menkaure Pyramid, just beyond the edge of the quarry that likely furnished most of the stone for that pyramid. Like the RAB northwest corner, house-like structures are built against a thick fieldstone wall that enclosed the compound on the south and east.

On the possibility of a second story over the RAB internal mudbrick walls, Sadarangani (2005:72) made the following observations:

> The substantial widths of the majority of the Complex 1 walls (including the annex walls) suggest that they supported an upper storey. However, to date, there has been no evidence of access to an upper floor. Evidence of the existence of an upper storey could have been provided by the presence of huge volumes of mudbrick tumble. However, post-abandonment leveling event(s) combined with the 'mud mass' process means that minimal

amounts of tumble (not even enough to be generated by one storey) are represented in the archaeological record. Evidence of roofed internal spaces and non-roofed external spaces through quantities and locations of roofing material has been greatly affected by the 'melt down' of the post-abandonment mudbrick collapse.

Structural Complex 2

So far we have excavated down to the uppermost floor of the older Structural Complex 2 (fig. 11), so Sadarangani (2005) assigned only one phase to it. In Room F, Sadarangani saw an alignment of mudbricks underlying the uppermost floors, hinting at distinct structural phases within Structural Complex 2. Cuts through the floors of Complex 2 for pot emplacements show two floors overlying what appears to be sterile sand. So we know there are older, underlying floors.

Within 15 m north to south of the strip that is 10-cubits wide east to west, Sadrangani excavated 14 spaces enclosed by walls. She designated these as rooms A through N. The space to the east showed no structural features for a distance of 4.5 m, so we infer this was already an open courtyard in the earlier period, as it was during the time of Structural Complex 1, making a total of 15 spaces.

The Older Layout on the North

The overall pattern in the northern 8.5 m is a very long room, F, with doorways into four smaller, more square chambers, along the west of F, from north to south A, B, C, and E. Limestone pivot sockets for swinging doors are fitted into one lower corner of the doorways, which are about 52 cm (1 cubit) wide. The chambers are fairly modular in size, ranging from 1.4 m to 2.14 m for B, C, and E where we have the total dimensions.

Modular Two-room Units

The modularity of the small rooms gives them the appearance of magazines, but now we see, thanks to the breach through the later RAB western wall (see pages 41-42), that thin mudbrick partition walls jut from the walls separating A from B, and C from E, to form narrow western chambers (H, I, D, and J) for all four units. Chamber I, at the back of B, was only 1 m wide between the partition wall and the mudbrick western wall of Structural Complex 2. A limestone pivot socket indicates there that a wooden door opened into this back chamber. The mudbrick western wall of Complex 2 is embedded with the later, thicker, western fieldstone RAB wall, but if the mudbrick wall continues along the length of all four units, as it probably does, the back chambers H (belonging to A), and J (belonging to E) are also only 1 m wide, while D, the back chamber of C was 1.4 m wide.

With these back chambers, the pattern is four units, A-H, B-I, C-D, and E-J, with a larger front room and narrow back room. The length of each unit is about 3 m between the walls; the width is about 2.6 (5 cubits) from the center of the shared wall between each. The four units opened onto the common vestibule, F.

The plan of each of these two-room units is similar to our so-called Workers Houses that existed along the western side of the Hypostyle Hall in a later phase of the overall site. The plan consists of a rectangular unit, with a single partition wall forming two rooms, an off-axis entry, but here the units are smaller than the so-called Workers' Houses. Could the back rooms here have been for sleeping, or, being so narrow, for storage?

Common Vestibule, Room F

Room F continues north under the northern RAB limestone wall [5433]. Room F is at least 8.50 m (north-south) by 2.60 m (east-west). If the northern wall of Structural Complex 2 is 60 cm wide along and under the northern side of the northern RAB wall, the total length of F would be about 9.5 m. Room F resembles the long, rectangular chambers we see in some of the structures in the Western Town, such as House Units 1, 2, and 3.

Only a scant layer remained of the bottom of the eastern boundary wall of Room F. The traces consisted of a plaster face on a foundation composed of dense, black UTA (untempered Nile alluvial) mudbricks [22,817]. Doorways opened from Room F into Rooms A, B, C, and E in the western

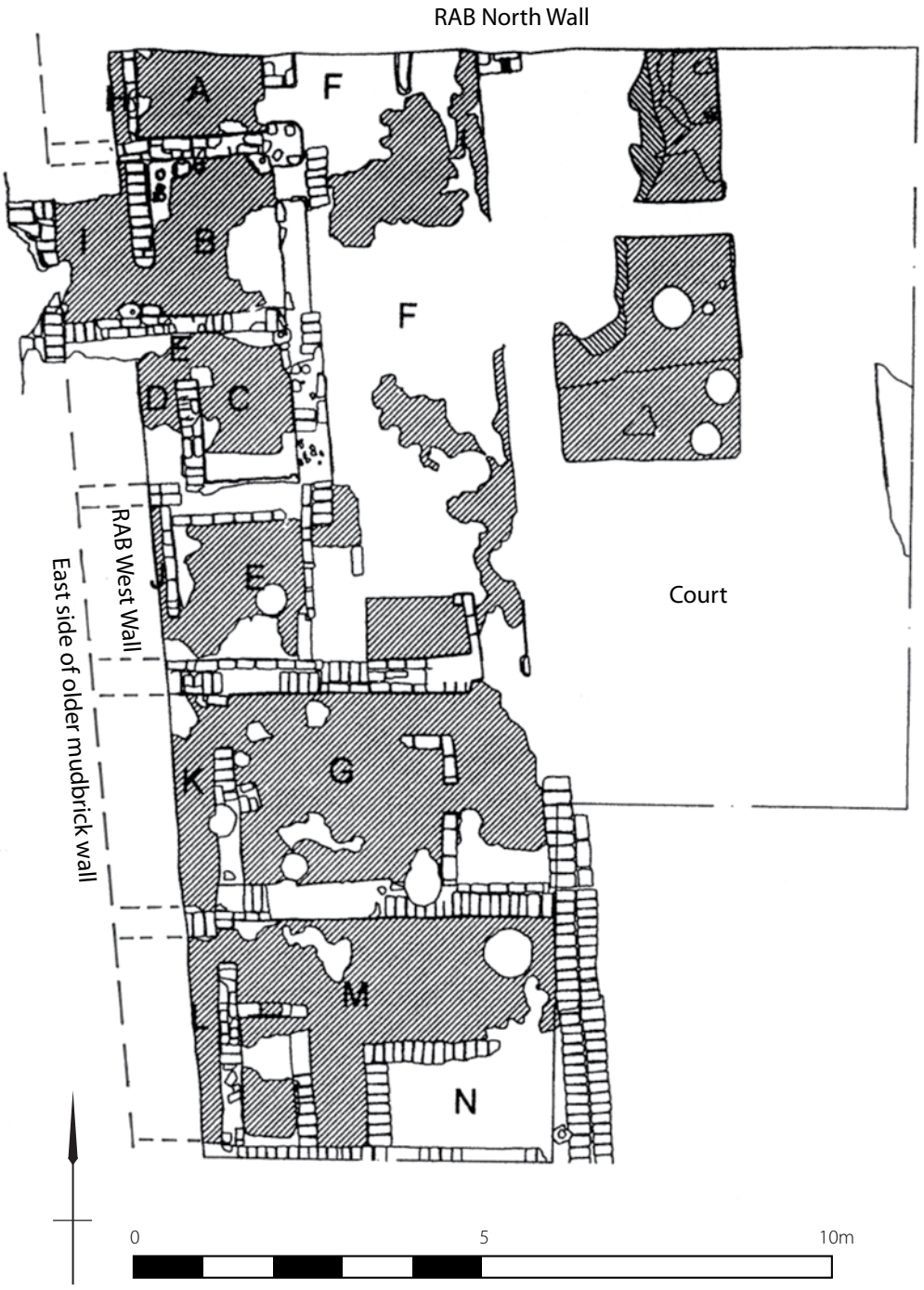


Figure 11. Structural Complex 2 in Area BB (RAB). Floors are shown as hatched areas.

wall. Limestone pivot sockets indicate that these were fitted with wooden doors that swung open into the smaller chambers. Another doorway in the southeast corner of Room F opened into Room G. Any evidence of doorways through the eastern wall of Room F was destroyed when the builders of Complex 1 took this wall down.

At the northern end of Room F a small section of a north-south plastered wall [21,304] 20 cm thick, juts out from under the northern RAB fieldstone wall [5433]. A low plastered bench, 30 cm wide by 1 m deep, is oriented north-south just south of the doorway to Room C.

Sleeping Platform

A platform occupied the southern end of Room F. It lay immediately east of the doorway into Room G. It is similar to features we have interpreted as sleeping platforms in other parts of the site.

This one is oriented east-west and slopes down from west to east. A thin, north-south return wall, [4108] with a plaster face frames the low eastern end of the platform. The builders of Complex 1 cut [21,661] the foundation for one of their later walls through the western end of the platform. Before this, the platform was 1.90 m long. What remains of the platform measures 80 cm north-south by 1.5 m east-west. At its high western end, the platform is 10 cm above the surrounding floor, and it slopes down to level with the floor. Dark brown, clayey silt covered the platform, which had a small shallow depression at its eastern end (worn by feet?). The silt plaster lipped down to and was continuous with the remains of the floor within Room F, which appeared to seal an underlying marl surface.

This platform is similar to what we hypothesize are sleeping platforms in Gallery III.4 and elsewhere on the site. Before the wall foundation cut through its western end, the platform might have extended across a second doorway into Room G.

Courtyard

The area along the east of Complex 2 might have been an open courtyard. Here the excavators found patches of floor unbounded by walls. However, we should note that only the foundations are left where we can see the walls, because the builders of the later, higher phase took them down and possibly reused the bricks.

The Older Layout on the South

An east-west cross wall divided the pattern in the southern 6.5 m of the 10-cubit strip into two sets of rooms, G-K and M-N-L, 2.60 and 3.14 m wide, north-south, respectively. One, or possibly two, doorways allowed access into Room G from the vestibule, Room F, at either end of the sleeping platform in Room F. Anyone entering G from F had to pass by anyone else occupying that platform.

Unit G-K

Room G spans an area 4.40 m (east-west) by 2.60 m (5 cubits) (north-south). A thin north-south wall [21,695], the width of a single row of UTA (untempered alluvial) bricks, partitions Room G into a main square chamber and a narrower rectangular vestibule on the east. The thin wall turns west for 70 cm to form a short corridor along the north side of Room G. If extrapolated this leads west toward a doorway, 58 cm wide, which opens to Room K. A limestone pivot socket indicates the access to K was once fitted with a swinging wooden door. A small marl brick bench, measuring 46 cm (north-south) by 29 cm (east-west) and at least 8 cm high, abuts the western wall of Room G.

Sadarangani's team found a rich artifact assemblage on the silt floor, including large pounders, polishers, a limestone door socket that was out of its original place, a complete bowl, and various other ceramic vessels.

Room K appears to belong to Room G in a pattern similar to, but larger than, units A-H, B-I, C-D, and E-J to the north. The later western RAB fieldstone wall [5435] conceals most of Room K; we see only 45 cm of its width (east-west). But if the western mudbrick wall of Structural Complex 2 that we see in Room I continues this far south, Room K is 1.5 m wide. In the narrow exposure, the bricks of the southern wall of Room K might mark the threshold of a doorway into Room L.

Unit M-N-L

Room M, located south of Room G, is 4.60 m (east-west) by 3.14 m (north-south) and is T-shaped with the small leg of the T extending south to the west of Room N. A thin partition wall in the southeast corner of Room M forms the leg of the T, and turns a 90-degree corner to run east and partition off Room N, 1.16 m (north-south) by 2.50 m (east-west). A doorway opens 44 cm wide in the northwest corner of Room M into Room L, which is 2.8 m long and probably the equivalent of Room K. If the western mudbrick wall of Complex 2 continues this far south under the later RAB wall, Room L is only 1.40 m wide, maximum. The heavy truncation of Phase 1 walls by the construction cuts for the later Complex 1 obliterated any additional doorways into Room M.

Another low platform occupies the southwestern corner of Room M. This platform measures 1 m (east-west) by 1.8 m (north-south) and 12 cm high. It abuts the southern and western walls of Room M. An additional, narrow east-west wall [7147] borders the platform to the north. The presence of a mud render [21,865] on top of this wall indicates that this is the original height of

the wall [7147], which is only 25 cm higher than the platform itself. The mud render on the surface of the platform sealed the top of the eastern retaining wall [21,691]. The same plaster lips down to cover the east face of platform retaining wall, and then continues throughout Room M as a compact floor.

This platform is similar to what we have taken as sleeping platforms in other buildings across the site, except it is level and not sloped. If so, it gives unit M-N-L a domestic cast. With their subdivided front rooms (G and M), and narrow back rooms (K and L), these two units looks like large versions of those west of the vestibule (F) in the northern part of our exposure of Structural Complex 2.

Material Found in Structural Complex 2

Table 4 summarizes, by room, the objects and material our excavators found on, or close to, the floors of Structural Complex 2.

Table 4. Objects and materials on or near Structural Complex 2 floors

Room	Objects and Materials
A	Flint artifacts, including a scraper and flint knife blade, mineral pigments, sandstone polishers, painted plaster, and a whole pot.
B	A saddle quern, sandstone polishers (including a cluster against the southern wall), and mineral pigment.
C	Whole pots, "pillow-stones," mineral pigments, various pieces of chipped flint, sandstone polishers, whole shells, and a dolerite hammer stone.
D	Pottery and mineral pigment; a polisher; and a polished, worked bone point, provisionally interpreted as a weaving implement.
E	Two beer jars set into a small mudbrick installation, two pillow stones, a quern fragment, polishers, and red mineral pigment.
F	Chipped stone, sandstone polishers, and broken stone tools.
G	Large pounders, polishers, loose limestone door socket, a complete bowl, and various other ceramic vessels.
H	A pounder, polishers, and red mineral pigment.
J and E	Charcoal, complete cylinder seal, triangular limestone object with etched design.
Courtyard	11 fragments of clay sealings, four of which were inscribed.

Workshops, Magazines and Overseer

The materials that we found on or near the floors of Structural Complex 2 suggest activities like pounding, cutting, scraping, grinding, and polishing. The "pillow stones" are rectangular blocks of limestone with rounded corners and edges. All of the above-listed rooms, except one, contained polishers, which are generally of sandstone. The querns might have been domestic, for grinding grain, but we should also note the presence of mineral pigment in six of the 11 rooms listed above. Altogether, the material might seem most appropriate for craftwork in stone and pigment.

Sadarangani (2005:68 5.1.5) noted:

> Significantly, the rich artifact assemblages that were identified sitting directly upon the Structural Complex 2 floors were mainly recovered from Rooms A, B, C, D, E, H, I and J. These assemblages were comprised of a repeated range of artifacts including lithics, sandstone objects, mineral pigments, pot stands, beer jars, vessels, polishers, pounders, mineral pigment, and 'pillow stones'. Although it is possible that these objects may actually be associated with the abandonment of Structural Complex 2 and the construction of Structural Complex 1, the fact that the artifact assemblage was not as rich in rooms F, G, K, L, M, and N, may suggest that these objects were associated with the function of these rooms. As such, it is possible that this network of small, square to rectangular rooms functioned as workshop/magazine spaces.

Magazine Doors

Sadarangani went on to point out that the limestone door sockets "were all located on the western side of an access. As such all doors would have swung west" (2005:69).

Ancient Egyptian workshops, depictions of workshops in Egyptian tomb scenes and on models, generally include rear roofed rooms for storage of tools and materials, and open front rooms or courts where people could work in the light. The four units A-H, B-I, C-D, E-J could have been such workshops. The common "vestibule," F might have remained open to the sky, or lightly covered with reed mats, although it is narrow enough to have had a solid roof without pillars (something like 3 m might have been the limit).

About the access into Room F, Sadarangani (2005:69) noted:

> Although it is possible that other accesses existed into Room F, both to the east and to the north, these are unsubstantiated due to concealment by the limestone enclosure wall and wall robbing events respectively. The only identified access into Room F (not including the 'magazines') was located in its southeastern corner, from Room G.

Bowabs *of Antiquity*

The Abusir Papyri are the records of the administration of the pyramid temple of the 5th dynasty pharaoh Neferirkare. This literary window into a royal complex reveals just how very concerned the administrators of such an institution were about guarding doors, passageways, and especially magazines. According to the service rosters, people of high and low titles, in a social leveling of obligatory labor, performed guard duty at some time, especially during the night (Posener-Krieger 1976).

Sadarangani (2005:69, 5.1.8) points out that "The morphology, size and orientation of [the Room F] platform exactly corresponds to the series of platforms identified within Gallery III.4, all of which have been interpreted as sleeping platforms."

Bed platforms are known in ancient Egyptian houses from other sites and periods. We have the hypothetical bed platform across the southern end of vestibule F. We found similar sleeping platforms across or near doorways within Gallery III.4 and in the southwest corner of the Hypostyle Hall. It is possible that guards actually slept across the doorways for which they were responsible during the night, as *bowabs* (door keepers) do in Egypt today:

> The location of this possible sleeping platform at the southern end of Room F adjacent to Room F's southeastern access may be related to the activities associated with Rooms A, B, C, D, E, H, I and J. If the head of a sleeping individual was placed at the western end of the platform, that individual would have had full visibility of Room F, its southeastern access and the [doorways] into the individual 'magazines.' As such this platform may represent a guard's sleeping unit (Sadarangani 2005:69, 5.1.8).

Anyone occupying the platform at the southern end of the vestibule (F) would be able to monitor all comings and goings from the doorways of the two-room units to the north, provided this person was not asleep.

Houses for Overseers?

Perhaps the southern part of Structural Complex 2 was more domestic than the northern part. It is possible that craftsmen, the guard, or an administrator of the complex lived in the southern chambers.

Sadarangani notes that while one could access Room G through its southwestern corner (into Room K), northeastern corner (into Room F), and possibly from its eastern side, it may be significant, there was no direct access south into Room M. This could indicate that Rooms G and M belong to two distinct units.

Sadarangani (2005:70, 5.1.10) also notes that the platform in Room M

> is of a size suitable to fit a supine individual and may therefore represent a different type of sleeping platform of that seen in Room F and in Gallery III.4, equally it may represent a raised work/storage platform….The enclosed area of space identified within Room M's southeastern corner (Room N) may represent a similar platform for the following reasons: firstly Room N and Room M's platform are of similar sizes, secondly no floor was identified within 'Room N's' enclosed space.

If the larger platforms of Room M were beds, they might indicate a higher status, similar to the larger bed platform in the house of an overseer at the back of Gallery III.4 compared to its smaller bed platforms in the front colonnade.

Demolition of Building Complex 2

People demolished the walls and robbed the bricks from Structural Complex 2 prior to the construction of Structural Complex 1, the RAB. They cut [21,684] out the eastern wall of Structural Complex 2, common to both the north and south layouts, although they left the lower bit of the marl plaster of the "robbed" wall. Where they took out the wall, broken brick and plaster filled the trench. Next, they covered the backfill of the trench with layers from their demolition and other material they had dumped and spread into the northern rooms of Structural Complex 2.

In the southern part of the complex they sealed all the floors and occupation deposits within Rooms D, E, G, J, K, L, M, N and the southern half of Room F with a single, uniform, demolition/leveling layer [21,641]. This deposit consisted of loose brown, silty sand, with frequent marl plaster and mudbrick fragments, charcoal flecks, and pottery sherds. This deposit was rich in finds, which included a quantity of clay sealings, lithics, pigment, and whole ceramic vessels. It is likely that the builders of Structural Complex 1 mixed fragments of the Complex 2 walls with Phase 1 occupation material to provide a level surface for their new limestone enclosure walls, and the new internal mudbrick walls and floors.

Brick Recycling: Complex 2 into Complex 1

Sadarangani (2005:70) noted that the demolition layers between Structural Complex 1 and 2 were not of sufficient volume to account for all the walls of Complex 2, saying, "Rather, it seems likely that the walls were partially dismantled—its bricks possibly used for Building Complex 1's walls—and the rest was mashed up to create a spread of leveling material throughout the complex, on which to found Building Complex 1's walls and floors."

On the time interval between the two layouts, Sadarangani (2005:71) sums the evidence:

> Significantly there was no archaeological evidence for a phase of abandonment of Structural Complex 2 prior to the construction of Structural Complex 1. No definable tumble or aeolian [wind-blown] events were identified. Rather, there appears to have been a swift remodeling of the complex, from use of Structural Complex 2, to demolition of that complex, to construction of Structural Complex 1.

The Enclosures E1 and E5 (Field School Units 2 and 3)

The excavations of Field School Units 2 and 3 were the first in the large Enclosures, each about 10.20 m wide, separated by thick fieldstone walls, that run in a series of five (E1-E5) west of the Royal Administrative Building (itself more of a large enclosure than a discrete building) (see fig.

1). Here we report first on the excavations of Field School Unit 3 (FS3) in E1, because it shares a common wall with the RAB. We proceed from east to west to the excavations of Field School Unit 2 (FS2) in Enclosure E5, which shares a common wall with the excavations of Transect A.

FS3 Excavations in Enclosure 1

James Taylor and Mansour Bureik supervised FS3 excavations in the northern middle of Enclosure 1 (E1) immediately to the west of the excavations under Freya Sadarangani in the northwest corner of the RAB. FS3 excavated in grid squares 6.R19-21. FS3 team members included Gaber Abd al-Dayem Ali Omar, Rabea Eissa Mohammed, Ahmed Mohammed el-Lathiy, and Amira Fawzy Ahmed. At the northern end of the enclosure, thin walls define rectangular magazines, measuring about 1.70 to 1.80 m wide, each oriented north-south, in an east-west series.

Entrance Corridor

The western wall of the RAB (which is half mudbrick and half fieldstone) and a thinner mudbrick wall, 45 cm wide, define a corridor on the east, leading south into E1 from an entrance, 80 cm wide, at the northward jog of RAB Street where it runs along the western side of the RAB. The corridor is 1.30 to 1.40 m wide. Amira Fawzy excavated the corridor down to a clean plaster floor that lips up to the plaster on the western face of the RAB western wall. She found charcoal fragments embedded in the floor where the plaster gives out.

Magazines in E1

Three internal mudbrick dividing walls, each about 40 to 50 cm wide, and orientated north-south divide the northern end of E1 into four spaces or rooms. Room 1 on the west is 4.20 m wide and extends south into the unexcavated area. Room 1 was probably an open court. Rooms 2 and 3 to the east are 1.66 m and 1.6 8 m wide respectively. Again the southern limits of these rooms extend under the limit of FS3 excavations.

It is possible that Rooms 2 and 3 were magazines; they are similar to long, narrow rooms in the north ends of Enclosures E4 and E5. Up against the eastern walls in Rooms 2 and 3, the FS3 excavators found concentrations of pottery, including many beer jars and bread molds. Toward the western side of their excavation, FS3 members retrieved many kilograms of chips of Egyptian alabaster. They came down on an unusually large, square piece of alabaster, 43 x 68 cm, embedded in the fill.

Walls are indicated by marl plaster lines in the surface of the mud mass south of the excavations within E1. The pattern suggests another, roughly matching set of chambers or magazines to the south. A central corridor separates the two series, each running east-west. Each magazine in the series is oriented north-south and opens onto the corridor.

Bakery in E1

In Room 1 in the northwest corner of E1, the FS3 team came down on a hearth, consisting of a mound of stones, mud, and bread pots that must have served as a platform for stack-heating the pots, as we know from our previous excavations of Old Kingdom bakeries. The burning on the walls attested to the use of the hearth. In the tumble alongside this hearth, the team excavated a complete bread mold of the smallest size class, about 20 cm in diameter. Another bread mold lay broken on the floor near the base of the hearth.

Stretching from the hearth along the western wall of E1, FS3 found a hump of ashy material, 1.28 m wide, with subtle but tell-tale circular depressions and round spots of lighter fill. This must be the baking pit with its characteristic egg-carton-shaped depressions, filled with ash from the last baking session.

The team found these features within Room 1, between the western fieldstone wall of E1 and a north-south wall, 48 cm wide, of mudbrick. Room 1 was probably an open court, given its width and the pyrotechnic activity. The magazines lay to the east of this court.

E1 Internal Organization

Taylor et al. (2005:10) made the following comments about the internal organization of E1:

> The internal division of the enclosure clearly continues to the south of the excavation area. There is some indication of a large east-west wall dividing the complex about 4 m to the south of the excavation area. To the south of this are at least three north-south dividing walls that continue on the same alignment as those identified inside the excavation area… suggesting a similar division of space to the south of the dividing wall, reflecting Rooms 2 and 3. However, there is no evidence yet to suggest how long the 'corridor' extends south, because as yet it remains covered with overburden. The southern part of the area adjacent to Room 1 appears to have another north-south dividing wall separating it into a further two units roughly the same size and shape as Rooms 2 and 3. This suggests that the form and function of Room 1 may be unique within the complex.

FS2 Excavations in Enclosure 5

Justine Gesell and Abd al-Ghafar supervised the FS2 excavations in the middle of Enclosure E5, immediately east of the Transect A excavations. Mohsen Kamel took Justine Gesell's place when she had to leave before the end of the excavation period. The FS2 team included Sherif Mohammed Abd al-Moneem, Amer Gad el-Kareem Abu el-Hasan, Momen Saad Mohammed, Shaima Rasheed Salem, Jihan Abd al-Raheem, and Amer Gad el-Kareen Abu el-Hasan.

The excavations in squares 6.Q10 and 6.R10 focused on the middle two of four narrow chambers, probably more magazines, and a small court in the north central part of E5. Digging through a fill of ashy, muddy, pottery-rich soil, they found a possible entrance through the common north wall of the magazines. The team also ascertained the existence of a chamber or small court enclosed by fieldstone walls at the northern end of E5.

Western Wall of E5

FS2's excavations were nearly joined on the west by the western end Transect A2. The trench cuts across the robbed western wall and into the western corridor of E5, through ashy material with tumbled mudbricks some 90 cm deep. The deep and wide trench left by the robbing of the western wall of E5 "has indicated that the wall would have been set on a foundation pad of large, roughly hewn limestone blocks, which were in turn set onto the hard packed foundation surface" (Hounsell 2005:30).

Magazines in E5

Trench A2 cut through the first magazine to the west, 1.62 m wide, descending 47 cm through very dark, ashy fill with pottery, but did not reach floor level. FS2 excavated the two central magazines in square 6.Q10. The team also found very dark fill, albeit less ashy, in the second magazine to the west, which is 1.90 m wide.

The FS2 team established that a wall [23,551], 68 cm wide, separates the two middle magazines in 6.Q10. The western of these two magazines is about 1.70 m and the eastern magazine is 2.00 m wide. These walls and the magazines extend south into 6.P10 beyond the limit of the FS2 excavation. The two magazines seemed to be linked by a doorway [23,623], located between north-south wall [23551] and cut [23,553]" (probably from robbing a wall) (Gesell et al. 2005:2).

Northern courts in E5

FS2 discovered that there are actually two rectangular, east-west oriented courts or chambers, and two east-west walls, at the north end of E5. The 2004 map, based on surface indications, had only one wall and one court on the north. The northern court or chamber is 1.50 m wide, and the southern one is about 2.50 m wide. The southern wall of the southern court is the common northern wall of the magazines.

> The 2.50 m wide chamber or court north of the magazines is bounded by an east-west stone wall [23,560] to the north. This wall was plastered with a layer of marl [23,617] overlying a layer of mud [23,618] on the northern face and a layer of marl [23,612] overlying mud [23,616] on the southern face (Gesell et al. 2005:6).

RAB Street North of E5

Neither of these northern, east-west-running walls align with the east-west wall that is the northern border of the Western Town (minus the trapezoidal Guard House which was added on later) as found in Transect A1 to the west of E5. The northernmost wall of E5 that FS2 discovered is only 48 cm thick. This wall reduces the width of RAB Street, which runs east toward the RAB between the Enclosures and the Enclosure Wall, to 4.20 m. This wall could be a later addition onto E5. However, the second wall that FS2 discovered would leave RAB Street 6.10 m. Neither measurement agrees with the 5-meter width of RAB Street to the west, where Transect A1 cut through the street. The width of RAB Street in Transect A1 is closer to the 5.25-meter width of North Street, Main Street, and the original South Street within the Gallery Complex.

Old Kingdom Burial

Gesell and her team (2005:6-7) described a burial in E5 as follows:

> At some point during the Old Kingdom, the chamber or court north of the magazines was reused as a cemetery, as indicated by Burial 403 (cut [23723] and fill [23724]). The burial of a female skeleton oriented north-south and in the fetal position had been partially obstructed by tumble [23573]. The tumble had shifted and squashed some of the bones. The burial resembles the burials in the Old Kingdom cemetery west of the GPMP site… It seems that the cut was made to align with a north-south wall running along the square line to 6.R11.
>
> As other parts of this area were used for burials, e.g. another burial in Transect A, which was also dated to the Old Kingdom, it might be possible that another cut, [23600], also belongs to a burial. This pit is oriented east west and was made along the northern wall in square 6.S10. Limited time of excavation made it impossible to investigate cut [23600] and ascertain if it indeed is a burial cut. Its location right along a wall is similar to Burial 403, but it could also have been made at a much later point in time (e.g. Late Period), as its position within the later debris layer [23595] would suggest.

Transect A and the Western Roadway (WRW)

We planned Transect A in order to determine the relationship in time between the Gallery Complex, the Western Town, and the thick fieldstone Enclosure Wall, which separates the two districts. Dan Hounsell supervised the Transect A excavations with Katherine Bandy, Kathryn Habbot, and Petter Nyberg.

We located Transect A just south of the bend in the Enclosure Wall where it turns to run due east (fig. 12). The trench runs alongside the Western Roadway (WRW), a pathway between the Western Town and Enclosures E5. This path seems to penetrate south into the labyrinthine Western Town from an opening onto RAB Street, which runs along the outside of the Enclosure Wall.

The Transect A team also worked in two parallel trenches, A2 and A3, east to west, each of which spans the Western Roadway (WRW), the structures to the west, and the interior of Enclosure E5 to the east. The goal was to establish the stratigraphy in each area.

Western Town Structures in Transect A

The main north-south trench, Transect A1, cuts cross the eastern end of a trapezoidal building, built onto the north wall of the Western Town. The fact that this wall runs straight east-west, while the north wall of the building runs parallel to the southeast-northwest bend of the Enclosure wall, creates the trapezoidal ground plan.

While we could see and map much of the ground plan of Enclosure E5 last year, the structures east of the WRW were more problematic because they ran down into depressions that wind and water filled with layers of sand, gravel, and desert clay (marl or *tafla*) after the site was abandoned.

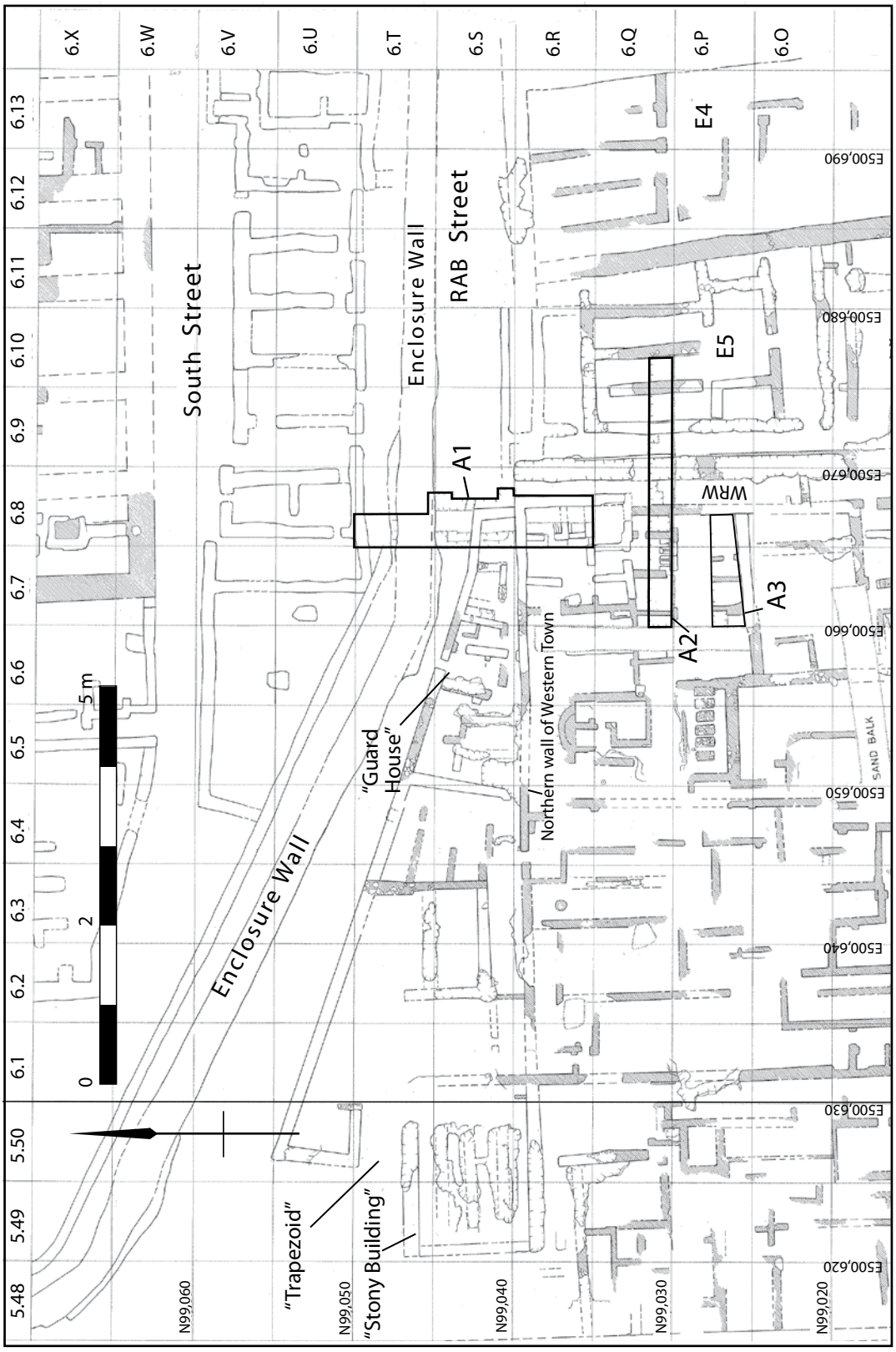


Figure 12. Transect A, with north-south trench A1, east-west trenches A2 and A3, and E5 excavations.

RAB Street

The team excavated down to the latest road surfaces [22072, 22071] of RAB Street, consisting of small, broken limestone fragments in a coarse, sandy matrix. A shallow (14 cm deep), 55-centimeter-wide (ca 1 cubit) channel [22,064], lined with clay, runs roughly along the center of the road. Remnant stones indicate that the builders may have edged it with small, unworked limestone blocks. It is similar to the carefully built channel in the center of Main Street that Ashraf Abd el-Aziz found in 1999-2000. Silty sand with much pottery [22066] filled the drain after it fell out of use.

Guard House and Trapezoid

At the west side of the juncture between the RAB Street and WRW is a structure that constricts RAB Street to less than 2 m before it runs as a wider roadway to the east. We provisionally called it the Guard House because it looks like it might be domestic and because its position at the intersection of the two paths and its restriction of RAB Street suggest that someone ensconced here could have monitored traffic through the two ways.

Eastern Domestic Unit

The south wall of the Guard House is the straight east-west wall forming the northern boundary of the Western Town. The north wall of the Guard House runs at an angle, 17.5 m southeast to northwest, nearly parallel to the bend in the Enclosure Wall, although the distance between the two walls widens from southeast to northwest. The ground plan is, therefore, a trapezoid. The eastern fieldstone wall of the building, exposed in Transect A immediately west of the opening of the Western Roadway, is only 2 m long north-south. The western fieldstone wall, 18.5 m to the west, is about 7 m long. Six or seven chambers occupy the northern side of the trapezoid, connected by a common corridor along the south side.

The Trapezoid

The trapezoid continues farther west because the north wall of the Guard House continues another 25 m northwest beyond what we believe was the west wall of the Guard House, for a total length of 42.50 m. Over this distance RAB Street, that is, the corridor between the Enclosure Wall and the north wall of the Trapezoid, increases from 1.5 m at the east end of the Guard House to 7 m, ending in the vicinity of the stony mass that marks a building at the far northwest limit of our clearing of the Western Town ruins, immediately below our camp and guard tent as of the end of our 2005 clearing operations. We provisionally call this structure the Stony Building.

The Stony Building

This structure occupies the southwest corner of the Trapezoid. The south wall of the building is the continuation of the north wall of the Western Town. Trenches, where someone robbed the walls, indicate that three east-west walls divided the 6.8 m north-south interior of the building into four long magazines or corridors about 7 m long east-west. The remainder of the interior of the Trapezoid is comprised of a few walls that define wide, open courts west of the Guardhouse.

RAB Street appears to come to no formal end on the northwest, rather the far end of the north Trapezoid wall turns south and then east, forming, with the north wall of the Stony Building, a 2.60-meter corridor leading into the open space of the broad northwest end of the Trapezoid.

Guard House Building and Function

The Guardhouse probably had some function connected with the larger purpose of the Trapezoid in addition to housing people who monitored the paths leading east and south. The inhabitants built the Guardhouse later than the RAB Street surface and its channel.

> The inhabitants built the so-called "Guardhouse," which narrowed the road near the juncture of RAB Street and the Western Roadway. The builders laid a footing of one course of mudbrick [22,080] and then built a sizable limestone wall upon the footing [22,081]. This Guard House wall partially overlies the drainage ditch (on its southern edge), and the nature of its construction is visible in the excavated section of this area of the ditch (Hounsell 2005:30).

The team cleared a considerable quantity of broken pottery filling the east end chamber of the building. Someone dumped the sherds into the room long after its occupants had abandoned it.

Fieldstone Walls and Chambers: Trench A1 South

The southern end of the north-south trench, Transect A1, penetrated small chambers defined by fieldstone walls south of the north wall [22,103], of the Western Town. The walls here are preserved more than 1.20 m high, which is extraordinary for our site. In square 4.R8, a space that was blank on the overall map from 2004, the excavations revealed a series of three small chambers built on the western interior side of the west wall of the Western Roadway. The northern chambers measure 1.70 m wide east-west by 2.2 and 1.0 m north-south respectively. The southern chamber is 2.3 m east-west by 1.9 m north-south. The trench did not penetrate the southern chamber, but the surface cleaning revealed the tops of the walls that walls define it.

In the northern chamber, the north face of the southern wall is carefully fashioned into stepped, narrow shelves, about 15 cm wide and from 15 to 35 cm tall with marl plaster on the faces. A doorway, 65 cm wide, opens west to another chamber or court. The three chambers and court appear to belong to a larger, square compound or interior space, about 6 m long and wide, with three more small chambers on the south and west sides.

Western Roadway: Trench A2 East

The Western Roadway (WRW) appears on our schematic map of the walls, after removing all the "noise" of toppled stone, uncleared sand, and debris. The path, about 1.5 m wide, was framed by the thick western wall of Enclosure E5, now marked by a robber trench, and a thinner wall on the west. The reality on the ground is a mass of toppled stone that Dan Hounsell's group cleared where the east-west part of the transect cuts across the hypothetical path.

The western wall of Enclosure E5 formed the eastern side of the Western Roadway. Trench A2 cut perpendicularly across the trench that robbers left when they removed the thick western wall of Enclosure 5. Here, the ancient cut is extremely straight and neat. The wall robbers left a brick lining, about 16 cm thick, extending 35 cm down into the eastern side of the trench, which is the "ghost" of the wall. The robber trench itself is about 80 cm deep and 1.40 m wide, nearly the same width as the eastern wall of Enclosure 5.

Trench A2 exposed part of the western wall of WRW, which is composed of mudbrick 70 cm wide. The A2 trench confirmed that this path could not have been more than 1.50 m wide. We picked up more of WRW about 40 m south in square 6.I8 along the west side of House Unit 3 where it is also 1.50 m wide. WRW must have penetrated north to south deep into the Western Town like some of the narrowest lanes through contemporary villages.

Magazines and Pedestals: Trench A2 West

The western end of Trench A2, west of the WRW, exposed parts of four rooms that could have functioned as magazines. East-west fieldstone and mudbrick walls frame these small chambers on the north and south. The excavation cut a stratigraphic section through the fill across the southern side of the three rooms.

From east to west the chambers are 1.00, 2.00, 2.00, and 2.60 m wide. The last chamber on the west extends beyond the limit of the A2 excavation, across a balk that we left through the clay and gravelly sand filling a depression, and into square 6.Q6. (Beyond these rooms to the west, the surface slopes rapidly into a wide depression that might have been an open court.) The western wall of the eastern chamber, and the eastern wall of the western chamber are T-shaped, ending on the south in short cross-bars, such as mark the ends of the magazine partition walls in Enclosure E1. T-endings mark the southern extent of the chambers, making them about 2.5 to 2.6 m long north-south.

In the center chamber, the excavators came down on a set of four small pedestals set within the two-meter width of the chamber. These are similar to pedestals that we have found in various places throughout the site, such as east of the galleries (EOG), in BB-N (FS4 see above), and in the Western Town. The most elaborate set is in the Pedestal Building in Area AA. We found a set of one full-width pedestal flanked by two half-width pedestals within a box or bin in the northeast corner of the Pedestal Building (in 1991), and in the large Unit 3 house in SFW (in 2004).

Here we have two full-width pedestals flanked on east and west sides by a half-width pedestal. These pedestals are about 70 cm long (north-south). The full-width pedestals are about 40 to 50 cm wide, and the half-width about 30 cm wide. Slots about 18 cm wide separate the pedestals, which are aligned in an east-west row, with the long axis of each pedestal orientated north to south. They are built against the inner face of the southern fieldstone wall of the chamber, while the eastern and western pedestals join to the inner face of the eastern and western mudbrick walls respectively.

In 1991 we found traces of thin, single brick, dividing walls forming a cross pattern on top of one of the pedestals in the Pedestal Building, Area AA. The original marl plaster surface remained in the four quadrants on the top of this pedestal. The thin partitions formed compartments that were positioned, not square on the pedestal, but over the slot or space between pedestals (see sketch above, page 43). In Trench A2 we found the bottom of thin partition walls down the top center of the middle two full-width pedestals. The eastern partition was damaged and only the base remained, but the western partition survives to a height of 15 cm, and it is unmistakably like those traces of partitions that we found on the pedestals in Area AA in 1991. In this case the partitions formed three compartments, 50 to 60 cm wide, situated over the slots between the three pedestals below.

What we found in Trench A2 in 2005 confirms that when compartments stood upon the pedestals, they stood over the slots or spaces, not directly upon the pedestals.

More Magazines and Larger Compound: Trench A3

The team found another east-west series of chambers in their second east-west trench, A3, 2 m south of Trench A2. The chambers that trench A2 partly exposed are fairly regular, although not quite modular in size. The eastern one is 1.50 m north-south and 2.62 (5 cubits) east-west; the middle is 1.04 (2 cubits) east-west and the western chamber is 1.50 east-west. A doorway, 60 cm wide, connects the eastern and the middle chambers of this southern series.

The chambers in trench A3 do not quite mirror the chambers in the northern cross-trench, A2. The two meters of unexcavated ground in between the two trenches, and between the two sets of chambers, covers the northern ends off the walls of the southern set, and what is probably a central corridor that gave access to the northern and southern sets. The configuration is probably similar to the two facing sets of magazines separated by a common corridor in enclosure E1 where field school unit, FS1, excavated in 2005 (see above).

We excavated in these narrow trenches, A2-A3, to obtain the stratigraphic relations between structures—what came before what—not to get a broad view of the layout of the structures and to know their function. But now, of course, the broader layout and function intrigue us. The chambers appear to be some kind of magazines in another broad, open area immediately west of the Western Roadway, and south of the six-meter square compound partly excavated in the southern end of trench A1. This compound, the outer walls of which show in the ruin surface, measures 10.2 m east-west by 6.5 (east end) to 7.2 m (west end) north-south.

The evidence indicates that these square or rectangular compounds, like the large enclosures (E1-5) contained magazines for storage and small courtyards where the inhabitants might have accounted for goods going in and out. Less than 5 m farther west of Trench A3, our surface cleaning and mapping in squares 5.P5-6 exposed another row of six pedestals separated by slots. The pedestal series appear to be intrinsic to some particular storage function.

Stratigraphic Sequence in Transect A

By the end of March 2005, Dan Hounsell and his team finished their excavations and within these trenches established the sequence from oldest to latest.

Northwestern Town Wall: Two Phases

The Western Town ends on the north along an east-west fieldstone wall. We now see that this is not a single construction. The western side of Trench A1 exposed a seam running vertically through the wall. West of this seam [22,104] the wall foundation is set deeper than to the east. The inhabitants built the eastern part [22,103] on higher ground that had accumulated up against the western part. They also built the eastern part up over the western part as a kind of capping.

Western Town is Older Than The Enclosure Wall

Two distinct layers [22,501, 22,506] of silty sand accumulated up against the face of the older wall segment. The team traced one of these layers [22,501] to the north where the inhabitants built the Enclosure Wall [22,102] upon it. Since the Enclosure Wall is built upon this layer, [22,501], which banks up to the north wall of the Western Town, the Enclosure Wall must be younger than the older part of the Western Town's north wall.

The Enclosure Wall is Younger than the South Street Magazines

The northern end of Transect A included a the trench north of the Enclosure Wall across a corridor, 1.50 m wide, between it and the southern back wall of the South Street Magazines. The stratigraphy here showed that the Enclosure Wall is younger than the South Street Magazines (SSM), which are enclosed by the wall and therefore belong to the Gallery Complex. The Enclosure Wall sits upon a layer, 35 cm thick, of dark, sandy silt with many pottery fragments (30%) that runs up against the southern wall of the Magazines, making the Magazines older than the Enclosure Wall.

RAB Street is Younger than the Enclosure Wall

People laid down a layer [22,088] as a level bed for RAB Street. Above this they formed the road surface [22,502] with a drain running through the center. At this point they built the addition [22, 103] or repair to the older north wall [22,104] of the Western Town. They founded this addition or repair on the road surface itself.

The Guard House is Younger than RAB Street Surface

Up against their addition [22,103] to the older wall [22,104], they next added a mud padding or foundation for the trapezoidal building that we provisionally dubbed the Guard House. The inhabitants built the walls of the Guard House in fieldstone up against the younger part [22,103] of the Western Town north wall. The Guard House filled much of the space between the north wall of the Western Town and the Enclosure Wall at its elbow or bend to the east. The extension to the west of the northern wall of the Guard House, which runs southeast to northwest, carried RAB Street northwest alongside the bend of the Enclosure Wall.

Someone cut a pit [22,138] through the floor of the Guard House, and further down through the old surface [22,088] of RAB Street. The inhabitants filled the pit with layers of pottery [22,494], and a higher layer of sand, clay, and limestone fragments [22,500]. They laid down a thick plaster floor [22,486] over the pit and made other repairs [22,493] to the old road surface that now served as the floor of this building.

In sum, we cannot confirm an early hypothesis that over time the settlement expanded from north to south. At least part of the Western Town is older than the Enclosure Wall.

Separations and Control

Since parts of both the Gallery Complex and the Western Town predate the Enclosure Wall, we must conclude that at some point it became important to those who made the decisions about the city to segregate residents of the Gallery Complex from residents of the Western Town by building the 2-meter-thick Enclosure Wall.

For now, it looks like both the Eastern and Western Towns existed and thrived prior to the Enclosure Wall, which established a strict separation of north (Gallery Complex) from south (Western Town). The Royal Administrative Building established an east-west separation between the Eastern and Western Towns, with RAB Street as a controlled link between the two towns.

We do not know how far north the older parts of the Western Town might have extended before the Gallery Complex was built. Here and there we have excavated deep into the area of the Gallery Complex to encounter older, lower walls of another pattern. We have seen these hints of an older layout in WCE, the Manor, RAB, EOG and the 1991 Backhoe Trench (BHT).

Did authorities superimpose the strict, rather orthogonal Gallery Complex upon a more conventional settlement and later tighten control all the more with additional construction: first, the massive Wall of the Crow and then the Enclosure Wall? Finally, did they exert even greater control through regulating access into and out of the Gallery Complex?

East of the Pedestal Building (Area AA) Field School Unit 1

Lauren Bruning supervised Field School Unit 1. The team included Essam Mohammed Shihab, El-Said Abd al-Fatah Amin, Mohammed Abd al-Moeen, Said Mohammed Abd al-Raheem, and Susan Sobhi Azeer.

FS1 excavated a strip 10 m wide east-west by 8 m long north-south in squares 5.K50 and 6.K1 and the northern 3 m of squares 5.J50 and 6.J1 (see fig. 1). These squares connect our old Area AA, our first excavation squares where we found the Pedestal Building in 1988-'89 and 1991, with the Western Town, which we discovered in 2004. This zone takes in a dramatic drop from the highest point on the west side of square 5.K50 to its lowest point on the east side of square 6.K1. The area above and west of this slope is the upper settlement that we exposed in our 2005 clearing (see page 17).

The goals of the FS1 excavations were to stratigraphically link Area AA to the Western Town and contribute to the understanding of the Pedestal Building.

> Square 6.K1 was chosen because it included two architectural structures, walls [23,625] and [23,626], which were believed to comprise the southwestern corner of a large building of the Western Town. The importance of square 5.J50 lay in the presence of limestone wall [23,629/23,647]. The relationship between this wall and limestone wall to the south of the pedestal building would have to be found in square 5.J50 (Bruning et al 2005:4).

The team began to expose mudbrick walls and spaces, probably chambers, filled with mudbrick debris that tumbled from the walls. The walls could belong to one of a series of large houses that make up the Western Town, possibly the residence of administrators who had access to the storage facilities in the large Enclosures northeast of the area. Underneath the layers of mudbrick collapse, the excavators exposed a great deal of ash, which could be from people burning the reed roofing material when they abandoned the settlement.

We thought walls [23,625] and [23,626] might be the southwest corner of a separate building in the northeast corner of square 6.K1. The FS1 excavations revealed a connection to the walls east of the Pedestal Building, by way of the east-west wall [23,625]. This wall turns a corner to run south, and may link with the prominent fieldstone wall [23,629] that runs farther west to become the back wall [23,625] of the Pedestal Building. This wall [23,629] is one link between the Pedestal Building and the Western Town.

> Although the investigations of area FS1 are still at a very preliminary stage, the results of this year's excavations suggest that area AA functioned as a part of the Western Town. A first indication for this was that the limestone wall to the south of the pedestal building in Area AA proved to extend to the east, across square 5.J50 into square 6.J1. The eastern end of this wall lines up—and possibly meets—with the Western Town architecture in square 6.K1. Second, the southern face of the limestone wall was covered with black painted plaster similar to the plaster that was noticed on many of the architectural elements of the Western Town (Bruning et al. 2005:2).

Pottery Mound (PM) in the Western Town (SFW)

Yukinori Kawae and Tove Björk supervised excavations in Pottery Mound, assisted by Nevine Moussa and Fatma Hussein. Pottery Mound is the name we gave to a large mounded midden in squares 6.G2 and 6.H3 (see fig. 1). Pottery Mound fills an enclosure surrounded by walls composed primarily of mudbrick with some fieldstone. The enclosure measures about 6.40 m north-south by 11+ m east-west (we have not yet ascertained the western wall). Repeated dumping within the enclosure created the mound. After the softer mudbrick of the adjacent walls and chambers that we provisionally call House Units 1 and 2 eroded away, they left the harder pottery, which constitutes the bulk of material in the mound.

The team excavated opposite quadrants, squares 6.G2 and 6.H3, inside the enclosure where the pottery mounded up. They also excavated in a small corridor, or chamber, 1.60 m wide (north-south) and 3.4 m long (east-west) along the north side of the Pottery Mound, between the mound and House Unit 1 on the north.

Hints of Roofs and Decorated Walls: The Corridor and House Unit 1

By March 3rd the team excavated almost all the potsherd layers down to a loose sandy soil within the enclosure of the Pottery Mound south of the south wall [21,579] of the corridor between House Unit 1 and Pottery Mound. On the other side of this wall [21,579], inside the corridor, the team excavated two little trenches ("slots"). The western trench measured 2.30 x 1.60 to 1.75 m and the eastern trench was 2.00 x 0.65 to 0.70 m. Within these trenches they excavated down to the floor of the corridor and cleared the southwestern doorway of House Unit 1.

Painted Plaster

As the team removed the mudbrick that tumbled into the corridor, they found red painted plaster fragments in the compact sandy soil [24,461] above the floor. In the western of the two small trenches they found thin fragments of white plaster with red paint [24,465] that had fallen onto the silty gray floor of the corridor, probably from the surrounding walls.

> As we excavated the soil, we realized that scattered, thin, red-painted white plaster fragments had been deposited first, and then yellowish white plastered mudbricks, some of which were also painted in red, had tumbled over, probably from surrounding wall(s)…. Some fragments clearly showed that the plaster face had been repainted. Under the layer with the plaster fragments, we found charcoal, presumably traces of living activities, on a silty gray floor (Kawae and Björk 2005a:1).

Kawae noted that the bottom of some of the walls of the surrounding Western Town retain black-painted plaster. He had already observed in his final report of Season 2004 that, "the plaster faces of the walls in this area (the Western Town) could originally have had a decoration of horizontal bands of black and red (or more colors). The linear pattern of color decoration seemed to have been common in houses, palaces, and estates during the dynastic period" (Kawae in Kamel et al. 2004:25).

For this astute observation, Kawae offered published references to houses and palaces in other settlements dating to the Early Dynastic, Old Kingdom, and Middle Kingdom. The black color at the base of the walls could remain from a dado, a term for the lower part of a decorated interior wall. We see black dados painted on paneled mastaba facades of the Early Dynastic and Old Kingdom.

Remains of Roofs

In the eastern slot that the team excavated into the fill of the corridor, they found clumps of mud with impressions of reed and rope. Kawae found similar mud fragments in his 2004 excavation inside the rooms of House Unit 1 that stretch north of the Pottery Mound. These mud fragments are likely pieces of the roof. The ancient Egyptians roofed their houses and other structures with layers of reed daubed with mud over wood spanners. The fragments lay in ashy sand [24,460] banked against the south wall of the corridor. The largest piece (25 x 6 cm), retained rope imprints on the surface but the impressions were rather irregular compared with the roofing materials found in the 2004 season.

By March 25 the excavations in square 6.H3 arrived at what Kawae called "the pre-pottery mound phase," down to a compact layer of mudbrick tumble [24,462], and under this was a layer of loose sandy soil including a few potsherds, limestone fragments, and faunal remains, "which was very similar to the foundation underlying a well-preserved silty floor to the north of the wall" in the corridor (Kawae and Björk 2005b:2).

More Pedestals: PM Quadrant in Square 6.G2

In square 6.G2, the southwest quadrant of Pottery Mound, Tove Björk cleared layers of potsherds and ashy, muddy soil to expose the southern wall [4,721] of the Pottery Mound enclosure and the western end of a series of pedestals, like those so ubiquitous across the site. Here Björk found what

must be the end of a double series of pedestals, backing to a wall that projected from the eastern (west-facing) section of her excavation.

Someone removed stones from one of the pedestals leaving only its plaster, and the end pedestals, possibly to reuse the material elsewhere (tombs in the Workers' Cemetery?). This disturbance obscured the pattern of the pedestals.

However, the pedestals appear to have belonged to two series attached to the north and south sides, and to the western end, of a mudbrick wall running east to west. By March 25 Björk had exposed the northern plaster face of this wall. If we extrapolate this wall under the unexcavated part of Pottery Mound in square 6.G3, it lines up with a doorjamb attached to the eastern wall of the Pottery Mound enclosure. We saw and mapped the marl plaster lines of this doorjamb when we removed the sandy overburden in 2004. It is very possible that the two or three pedestals exposed in Björk's excavation are the western end of a series that continue another 5 m to the east along both sides of this wall.

Two other sets of pedestals occupy an open area immediately to the east of the Pottery Mound enclosure. There are six pedestals in each set, back-to-back, one set running north to south, the other east to west. These pedestals are not attached to a wall like those that Björk found in 2005.

We must consider the function of these pedestals when assessing the meaning of Pottery Mound. The purpose of the pedestals seems to have been to provide a slot—the space between two pedestals—of empty space below storage compartments, so that one storage compartment stood over each slot (see sketch, page 43). The compartment walls were of single bricks founded on half of the two adjacent pedestals, such as we found in Transect A2 (see above). Such storage compartments were sometimes tucked into dark, small, cupboard-sized chambers. We have found pedestal foundations in such chambers in the northeast corner of the Pedestal Building in Area AA, BB-N (see page 68), House Unit 3, and Transect A2 (see page 66).

The Stuff of the Pottery Mound: Material Culture

We excavated Pottery Mound in the hopes that this dump might be refuse ejected by the people who lived in the nearby structures. We designated two complexes of walls, chambers, and courts, to the south and north respectively as House Unit 1 and House Unit 2. These "houses" frame the enclosure of the Pottery Mound. The idea was that the garbage would tell us as much about life in the vicinity as the architectural footprint and what we find on the floors inside the courts and chambers.

Beer Jars and Pig Bone: Refuse of the Commons

In spite of the large size of the courts and chambers of House Units 1 and 2—which immediately evokes the term "elite"—much of the material extracted from Pottery Mound is the sort one would expect to find in the most menial domiciles anywhere in the Old Kingdom. The most common ceramic form appears to be the hand-made, crude red-ware jar, our type AB-4, often called a "beer jar." Across the entire site, this is one of the two or three most common types.

(At the same time, we seriously question the idea that certain types of pottery, like the thin-walled, red-burnished, carinated "Meidum ware" bowls, reflect "elite" use and consumption, more than cruder pottery like the so-called beer jars. The ceramic corpus of the Old Kingdom appears relatively uniform, and we have found the Meidum ware bowls in all kinds of contexts across our site).

Tools, Games, and Beads

The team found fragments of flint knives, oval ceramic objects (possible weaving tools), a bone weaving tool, fragments of diorite hammers, beads, many whetstones (or polishers) a possible game piece, and one conical limestone object about 5 cm in height with a string groove in both a horizontal and vertical direction.

Animal Bones

The team retrieved bones of fish, cattle, sheep, and pig. Björk noted that epiphyseal fusion of the cow and sheep bones might indicate that many of them were young. In her preliminary assessment, all the pig bones were from more or less fully grown animals. The individuals had lived for at least two years before they died. The pig bones all came from less meaty parts of the body and may have been

waste from slaughter rather than food parts. The team also found bone that may derive from adult bulls (Kawae and Björk 2005a, 2005b).

Björk reported one deposit [22,826] "contained a talus of cow with gnawing marks all over the bone, that probably came from a dog. We have had several bones earlier with gnawing marks on them. But this talus had really 'gone through' a dog's jaws" (Björk in Kawae and Björk 2005b:2-3). Richard Redding (personal communication 2005) reported:

> One deposit, feature [21,557], from Pottery Mound produced ten bags of animal bone. Cattle are very dominant, with 88 and only 15 sheep-goat, resulting in a sheep-goat to cattle ratio of 0.2:1.This is lowest on site and the only sample so far in which cattle outnumber sheep-goats. (In the whole site sample, the ratio of sheep-goat to cattle is 3:1). The cattle are all very young—there is not one fused bone! Of 9 phalanges all are unfused (fuses at about 18 months). House Unit 3 had five phalanges and all were fused.

Jars and Pedestals

We now know that the Pedestal Building and other structures in area AA belong to the Western Town. As Fiona Baker excavated the rear, southern part of the Pedestal Building in 1991, she was exposing a series of compartments formed by thin marl-plastered walls with rounded tops. We never completed that part of the excavation, but here we may have the compartments that stood over spaces between pedestals. We hypothesize that if we dig deeper we will find the pedestal foundations of the compartments, pedestals like those that we found in the Pedestal Building and in the open court just east of the Pottery Mound, and like those that we have found elsewhere on the site.

Jars and pedestals appear to go together in the Pottery Mound enclosure and in the Pedestal Building. It is our impression that fragments of crude red ware jars are the major constituents of Pottery Mound. Jars and jar fragments were numerous in area AA, especially in the tumble above the southern compartments. In a preliminary report on the relative frequencies of pottery from the 1988 to 1991 excavations in AA Ana Wodzińska (2005) notes that the "beer" jar (AB4) is the most frequent type (23.43%), whereas in the rest of the site bread molds tend to be the most frequent (as of 2003). From the 2005 excavations of FS1, which are within meters of AA excavations, again AB4 "beer" jars are the most frequent type, almost 40% of the entire assemblage, whereas they are just above 10% for the entire site.

John Nolan (2003:3) reported about the sealings from AA: "When I displayed all 335 sealings from Area AA (including the 119 un-inscribed pieces), the vast majority seem to fit the description of jar sealings—either direct or indirect." It is possible that the relative abundance of sealings and jars is a clue to the functions of the pedestals, and to the function of those places where pedestals, jars, and sealings are found together in abundance, as they were in pottery mound in 2005. We might hypothesize that the pedestals supported compartments for storing material sealed in jars, in dark, and relatively dry conditions.

Sealings from Pottery Mound 2005

One of the salient finds from the Pottery Mound in 2005 was an extraordinary number of sealings with many motifs and designs that we have not seen on sealings from previous excavations on our site. Prior to Season 2005, John Nolan had a total of 2,664 registered sealings (fragments inscribed, or incised with signs, or un-inscribed; and objects related to sealing such as mud cores, little tokens, etc.). A preliminary sort and count indicates that Pottery Mound alone produced 2,540 registered sealings, nearly doubling the corpus. The preliminary total from all excavations this season, 4,446, more than tripled the corpus.

Feature 21,557 alone, which yielded such a high ratio of young cattle to sheep-goat bone (see above), yielded 1,551 out of 2,540 sealings. This feature probably represents a single dumping event or a short period of dumping; perhaps a clearing out of some accumulated cache.

The clay sealings from Pottery Mound included the most formal and sophisticated designs from anywhere on the site. The formality of these sealings, the apparent high rank of the titles, like "Royal Scribe," and the variability of the motifs strike a contrast to the crude pottery that comprises so much of the bulk of Pottery Mound. The sign for "Scribe" is frequent. In addition to

the title, "Royal Scribe," some fragments bear the Horus name of Khafre, *Wesir-ib*, others carry the Horus name of Menkaure, *Ka-khet*. The corpus presents "a mixed batch of Khafre and Menkaure" (Witsell 2005:9), however, those with the name of Menkaure were more numerous. The mix of two royal names suggests an accumulated cache of sealings dating a period that saw the transition between the two reigns, cleared out and dumped all at once or in a short time.

The Pottery Mound sealings include a large number that John Nolan and Ali Witsell thought are "box" sealings: "the back surface will have a flat impression (sometimes with a clear wood impression), and the sides and back will show strategic placement of the clay over horizontal or vertical crossing of the twine or string used to secure the package" (Witsell 2005:9). The backs of some of the sealings that are inscribed with royal names appear to show the impression of a string, about 2 to 3 mm wide. These could derive from rolled papyrus documents. From Pottery Mound, the most numerous back impression was twine, with box sealings second most frequent.

Using repeated and overlapping designs on the different fragments, John Nolan is now reconstructing several of the original compositions on different seals that produced the impressions.

House Unit 3 in the Western Town (SFW)

We identified this layout of walls and chambers as a discrete domestic unit in 2004, when we began excavating House Unit 3 (fig. 13). The main unit is 16 m north-south and 12.3 m east-west. A series of four long chambers or corridors, 1.0 to 1.2 m wide, run along the inside of the outer walls for most of the north, west, and south sides. A small chamber at the north end of the house contains a set of two half pedestals and one complete pedestal against the south wall. A room, 4 m north-south by 3.5 m east-west, occupies the very center of the house. Two large rectangular chambers, just under 7 m long north-south, and 2.5 to 2.8 m wide east-west, occupy the length of the east side of the house.

Mohsen Kamel supervised a team that excavated in House Unit 3 in the Spring 2005. He continued excavations in the fall field season, assisted by Freya Sadarangani and Aneis Hassan. The work, which ended October 27, 2005, took place within squares: 6.G9, 10, and 11; 6.H9, 10, and 11; 6.I9, 10, and 11; 6.J9, 10, and 11. Kamel, Hassan, and Sadarangani (2005) report the following 2005 findings room by room:

> **Room F:** It appeared, after clearing the western extent of House Unit 2 in search of a doorway, that the western wall of this room had been re-patched, where an extra skin of mud-brick had been added from the north of the room extending about two thirds of the room's length to the south. This was built on two cut features, which were cut up against the pre-existing western wall. The reason for this is unclear and will require further excavation to determine. A pot emplacement that respected this later addition to the wall was excavated in the northwest corner of this room. Coupled with the *in situ* bread moulds and the large pot emplacement in the southeast corner of the room, this leads us to conclude that Room F was an area for the production of bread.
>
> **Room J:** The only additional feature to be excavated in this room, other than the two makeshift hearths, was a clay-lined dish emplacement in the northwest corner of the room.
>
> **Room H:** The large pit cut in the floor of the centre of this room was half sectioned. Prior to the excavation of this feature it was assumed that this was a large post hole or possibly a hearth. However, the nature of the cut—extremely irregular and extending under the floor surfaces with portions of fill diving into the natural sands—led us to conclude that this was in fact a tree bowl, that is, the position of a once-standing tree. This is comparable to the Middle-Kingdom wooden model of a house portico and court from the Theban tomb of Meketre, which show trees on either side of a pool in the court. This implies that room H was open, acting as a light well in the midst of the surrounding chambers.

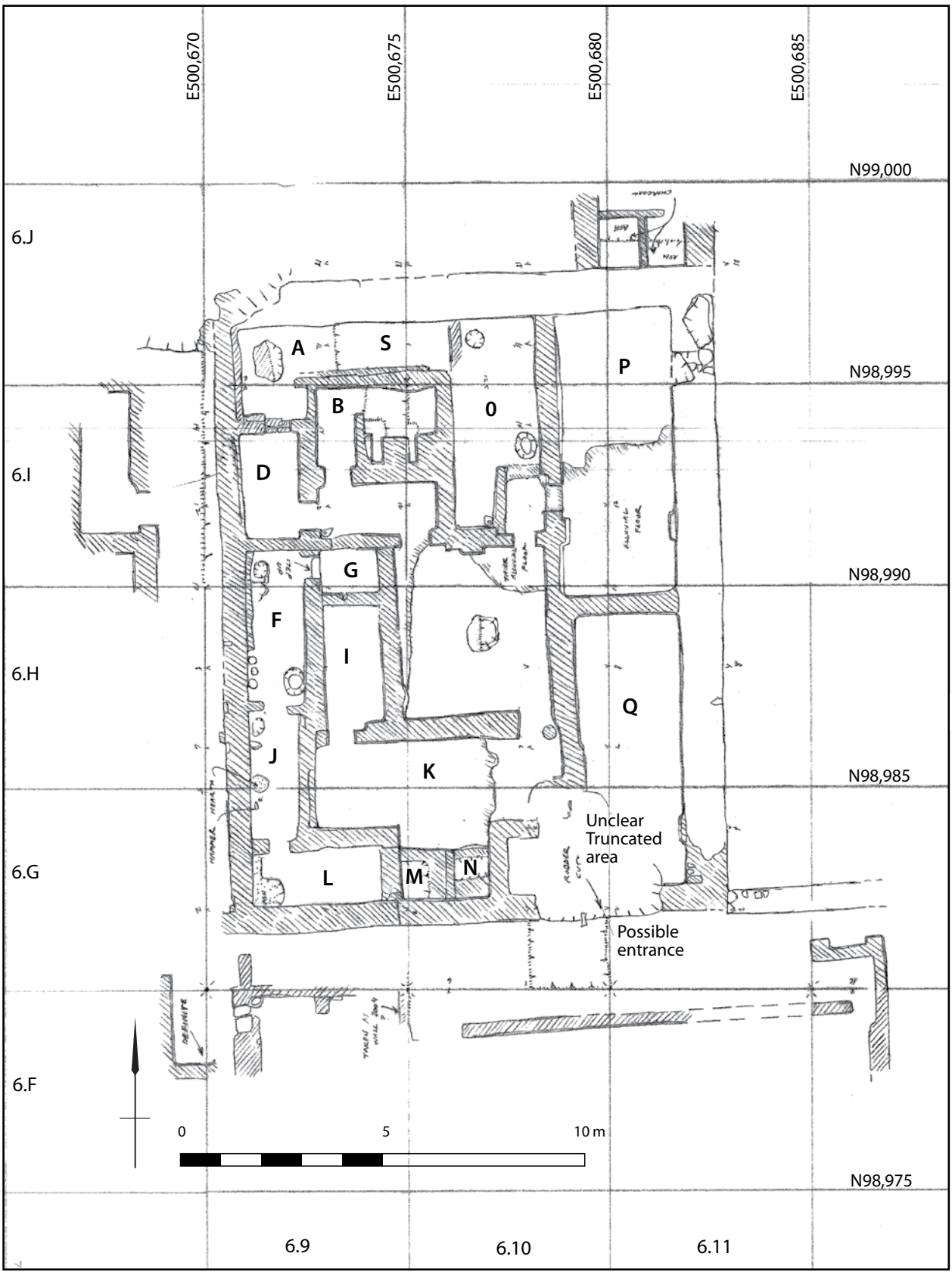


Figure 13. SFW House Unit 3 after 2005 excavations. Lehner field drawing, reduced from 1:100.

Room/space M: It was discovered that what was thought to have been a platform in this area was in fact an in-filled storage bin, with two equally sized compartments. (It is possible that the space functioned as a platform in a later phase, after the compartments were filled.)

Room O: Two small pits measuring roughly 40-50 cm in diameter were excavated. The one in the northwest corner of the room contained fill very similar to the ashy overlying deposit. The other, just north of room R, against the east wall of Room O, was fairly rich in pottery, containing an almost complete small beer jar. A large granite dust deposit was removed from the northeast corner. This deposit was very well contained and did not appear to spread out into the rest of the room.

Room P: The excavation of the fill and primary collapse from this room revealed two jambs directly opposite each other towards the south end of the room on the east and west walls. These may have been the base of an arch that set off the small southern portion of the room. We investigated the possibility of a doorway leading to the north-south running street to the east of the building, through the eastern limestone wall. This probing proved that there was no door here, instead just a portion of disturbed wall that was possibly re-patched with mud and UTA (untempered alluvial) brick.

Room Q: The removal of the primary fill and collapse revealed a doorjamb towards the south against the east wall. This suggests the presence of a doorway, although the other side of this doorway has been cut away.

Room Q/Room N: The southeast corner of House Unit 3 is cut away, heavily truncated. From the beginning of excavations in this area we expected to find a door here. After exhausting all other possibilities for the location of an entrance into House Unit 3, we decided that the door must have been near the southeast corner. In search of more evidence we excavated a two-meter-wide trench outside the house to the south where the wall had been completely truncated away. We hoped that these exterior deposits might help us show that there had a door here. We found a series of dumped deposits that were very rich in alabaster dust and fragment, worked alabaster pieces, including one fragment of the rim of a vessel, and an incomplete vessel. An ashy layer that lay under these deposits ran under the truncated limestone wall. This deposit continued east for about 20 cm where it was vertically cut. About 80 cm east of this cut a north-south mudbrick wall continued into the south section of the trench. It is my assumption that this is the location of the door and that the silty sand between the ashy deposit and the north-south wall respects this feature.

http://www.aeraweb.org/gop/gop2.pdf

4. Mapping Late Period Burials

Two thousand years after the 4th dynasty occupation of the "Workers Settlement," the site became a burial ground. People of the Late Period through the Persian Periods (664-332 BC) dug burial pits through a sand layer and often down into the "mud mass" of the settlement ruins. When wind, the modern sand diggers, or our own clearing removed the sand cover, the outlines of the burial pits were exposed.

It has long been an objective to try to survey burials that are visible from the surface, as a record of this cultural phase of the site and in order to give us the option to choose areas for excavation where the density of burials is low. During our 2005 season, Jessica Kaiser, and Tom Westlin began this task, assisted by Baghdadi Mohamed and El-Soughaer Said Ahmed. Jessica Kaiser summarizes this operation below (Kaiser and Westlin 2005).

The 2005 Burial Survey

by Jessica Kaiser

Burial Survey Methods

Due to time constraints, we limited our survey to the area from the Wall of the Crow to Main Street. Across this area, we took away our own backfill, light sand cover from previous seasons, along every other 5-meter wide range, that is, squares running north-south. This would still gave us an idea of the density and distribution of burials across the selected area, with one test range stretching from Main Street to SFW.

The osteo team members took four points, with a total station, one in each corner of every burial. They surveyed 630 burials. They gave each burial a survey number, starting with 1. We sketched the visible cuts on a 1:100 plan, and took notes (Kaiser and Westlin 2005, Appendix 7) on visible features—the approximate dimensions and shape of the cut, whether or not coffins or bones were exposed, orientation and any visible burial objects. The team downloaded the total station points each night, and plotted against the 1:100 site plans to ensure accuracy.

While the workmen cleaned the first two ranges, the surveyors carried out a visual survey, square by square, of the opened areas of the site. On paper copies of the 1:100 site plans, they crossed out the squares in which no burials were visible, and noted the squares where we could see definite or possible burial cuts. By combining the visual and total station survey, we could make a digitized map (Kaiser 2005:fig.18).

The team also surveyed another 100 burials in 13 squares east and northeast of the 1998 area called TBLF and north of Main Street. Burials were clearly visible here even without cleaning. Here in the area they designated the EF (Eastern field) 2001-2100, they took eight points on each burial, giving an approximate outline of the shape and orientation of the pits. After the end of the winter-spring season, Johnny Karlsson digitized the plans of the areas north of Main Street (fig. 14).

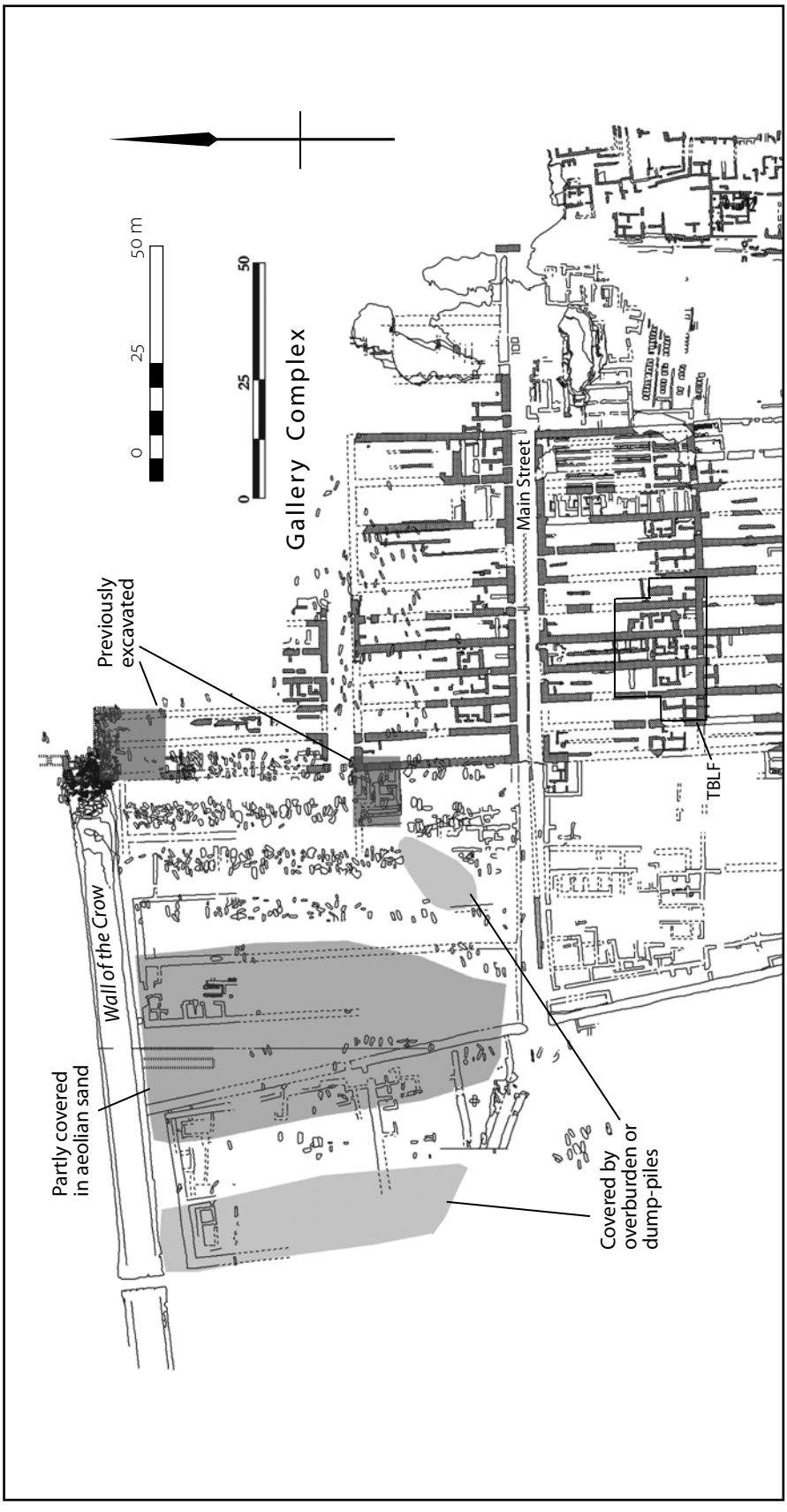


Figure 14. Digitized map of the surveyed burials north of Main Street. Shaded areas are approximate outlines of un-surveyed or incompletely surveyed areas. Digitized by Johnny Karlsson. (after Kaiser and Westlin 2005:38, fig. 20)

Burial Density and Survey Limitations

From figure 14, it appears as if the central and western part of the surveyed area did not contain any burials. That image is probably misleading. Although it does look as if the density of the burials decreases to the west, we could not successfully survey the entire area. First, excessive overburden, or dumps from previous seasons, obscured some areas, as indicated in figure 13. Second, the GPMP team left part of the area covered by what was deemed to be ancient sand that is later than the burials themselves. The sand cover was not complete, and the surface was undulating, in some areas to the point where part of a burial was visible, and part of it continued under the sand. The burial cuts were not visible on the surface of this deposit. It is probable that many more burials are hidden under this later, windblown surface. We left this sand in place. This area is indicated in the figure. Finally, we did not remove the overburden from areas where we previously excavated burials, also denoted.

Because of these limitations, only the four easternmost ranges in the selected area were satisfactorily surveyed. On average, each square in these four ranges contained nine burials. It is important to remember that the survey only recorded burials visible from the surface. During complete excavation in previous seasons, we have encountered, on average, seven times more burials after complete excavation than what was visible from the surface. For example, nine burials were visible in area NSGH in 2004 before extensive excavation was started. At the end of the season, we had lifted 64 burials. This means that if previously excavated areas should be taken as the norm, the area north of Main Street could contain as many as 5,670 burials.

Some 65 burials have bones exposed, and some 20 burials have exposed coffins. The locations of these burials have been recorded, and it is the team's recommendation that they be excavated for conservation purposes, since the exposure to the elements rapidly accelerates the deterioration of the burials, which will result in loss of data.

Burial Survey: Observations

The 2005 burial survey confirmed that the GPMP concession contains a large Late Period burial ground. The cemetery includes several hundred graves visible from the surface, and most likely several thousand graves at lower elevations.

It is interesting to note that the Wall of the Crow seems to limit the Late Period burial ground on the north and Main Street limits the cemetery to the south. No Late Period burials were identified south of Main Street, and the southern limit of the grave field is very abrupt. Hence, it is possible that the Old Kingdom walls or some otherwise defining feature of this Old Kingdom thoroughfare was still visible and recognizable during the Late Period. It seems unlikely, however, that Main Street was still in use as a street proper, since 16 burials were located down the center and edges of the street, resting on street level. With the exception of one burial that was interred north-south partly under the tumble and therefore deemed Old Kingdom, and two Old Kingdom child burials from square 4.E1, no burials were noted between Main Street and South Street. It is possible that additional Old Kingdom burials are hidden under the limestone tumble in this area, but even so, the burials in this area seem to be few and far between.

Although the Old Kingdom burials excavated at the GPMP constitute only a small fraction of the total corpus of human remains hitherto recovered, it should be noted that all areas that have been opened for excavation in the southern parts of the site have contained grave cuts. Most of these cuts have been hidden under the limestone tumble, and have not been discovered until the stones have been lifted. It appears likely, therefore, that the deteriorating ruins of the Old Kingdom production area were utilized to some extent as makeshift tombs by the poorer population of late Old Kingdom Giza, albeit with a lesser density than during the Late Period.

http://www.aeraweb.org/gop/gop2.pdf

5. Conservation

In the fall extension of our 2005 field season we selected the Eastern Town House (ETH) (see fig. 1) as a pilot project for our program to conserve the site by backfilling and reconstructing select structures for presentation. The conservation team included Ana Tavares, project director, Ed Johnson, conservator, Günter Heindl, architect, and Ashraf Abd el-Aziz, archaeologist.

Conservation and Restoration versus Backfill

A body of experience and literature supports the idea that backfilling with proper material is the best way to preserve archaeological sites and structures, unless the structures stand high above the surface as, for example, the Hierakonpolis "fort" or the Shunet el-Zebieb at Abydos. Why, then, would anyone want to cap ancient mudbrick walls as we initially proposed for certain, select structures on our site? The answer is that people want to present ancient architecture, in this case, of mudbrick, as well as to conserve it. Showing the structure is important as a transfer of information in its own right, and heuristically, it generates insights about how people built and used the ancient structure.

For example, at Dahshur, the German mission capped the mudbrick chapel walls of certain Old Kingdom mastabas. Here, they had to cap the sides as well as the top. They, therefore, had to thicken the walls as well as raise them. They choose to illustrate the heights of the walls as they found them with the height of the casing that they applied to the sides, and the original thickness of the walls with the width of the capping on top (Günter Heindl, personal communication 2005). While this "shows" the structure, it also drastically changes its dimensions. It is, in effect, backfilling or covering the original completely. Instead of covering the ancient structure with clean sand, or some neutral material, this procedure covers the structure with modern materials.

At the Seti I Temple, Günter Heindl capped the walls, but only after putting in a separation layer. This was essential to keep ground moisture from wicking up through the ancient walls and causing the bottom of the capping to deteriorate. The team at the Seti Temple found that they had to put a separation layer between the ancient fabric and modern materials whether they used modern mudbricks or fired bricks. Using tar paper as the separation layer, they went on to reconstruct the walls in part with fired brick and cement (Günter Heindl, personal communication 2005).

We believe that backfilling with clean sand is the best measure to conserve our site (Johnson 2005). At the same time, we want to present examples of the ancient mudbrick and broken stone architecture that lies embedded in the compact ruin layer (what we loosely call the "mud mass"). The SCA Inspectorate encouraged us to make some of the structures on the site presentable in order to "show" the reality of the archaeological structures. It is important to be able to "show" the significance of the site to those who make decisions about factors such as the new high security wall, the eventual removal of the soccer field, and the control of the numerous stables and horse and camel riders. So in this indirect way, "showing" the architecture also aids the conservation of the site. And, we believe, it is important to present some of the salient ancient architectural structures for colleagues and scholars in the future.

Eastern Town House Pilot Study, 2005

We chose the Eastern Town House (ETH) for our pilot project because it is a small, discrete compound, a core house within a series of larger rooms or courts—in effect, a small urban estate.

By the time we started in mid September, Ed Johnson had reviewed some of the results of capping on other projects and sites through the desk-based assessment that we proposed would be part of our study (Johnson 2005). At the beginning of the season, Johnson and other team members visited other sites in the Cairo area where restoration or conservation had been done.

Ground Water Rise and Separation Layer

Like Heindl in his work at the Luxor Seti I Temple, we had to provide a separation layer between the fabric of the ancient mudbrick and our new reconstruction of the ETH. In our original proposal, we suggested using a separation layer. At the time we thought it could be pottery sherds, such as our German colleagues used at Elephantine between the ancient walls and the modern capping.

At the beginning of the season we were concerned (as we still are) about the rise in ground water at our site. It was higher in 2004 than in previous seasons and higher still in winter-spring 2005. We continue to measure its rise. Around the corner of the soccer field we measured the ground water level at 14.67 m asl in 2004. During fall 2005 just south of the ETH in our Area BB it was 15.12 m asl. This is a rise of nearly half a meter. When he joined our team this fall, Günter Heindl shared Ed Johnson's concern that we would need a substantial separation layer between our modern capping and the ancient fabric in order to keep the modern, drier mudbrick from wicking up ground water, as did the modern materials at the Seti I Temple.

Given the concerns about rising ground water and the weight of the reconstructed walls, Johnson and Heindl recommended that the sand layer be at least 30 cm thick, which meant it had to be even thicker where the ground sloped down in the northern part of the ETH (Johnson 2005, Heindl 2005). The end result was a completely new, reconstructed ETH, rather than a capping of the ancient walls.

The Reconstructed ETH

To retain the sand layer, we used walls that approximate the position of the ancient outer walls of the ETH on the south and east, and that correspond exactly to the positions of the ancient outer walls on the west and south.

In order to follow the mandate to "show" the structure, we reconstructed the walls to the same exact widths as the ancient walls, and we positioned them on the sand separation layer exactly over the locations of the ancient walls. For our bricks, we used a mixture of alluvial mud and sand similar to the original bricks in the ETH. We established this mixture as part of Ashraf Abd el-Aziz's (2005) long-term study of mudbricks, which includes a typology of bricks across our site based on size and fabric. We made the bricks the same size as those in the original walls of ETH.

Günter Heindl (2005) recommended the program we carried out at ETH as an adaptation of his work at the Seti I Temple. He saw this as more appropriate than other methods to the conditions of our site, to the protection of the ancient structure (ETH), and to the sensitive archaeological deposits. Our procedure is also more reversible. We can simply take down the modern reconstruction and remove the sand.

The reconstruction of the ETH that now sits exactly upon the ancient ETH is inspiring to our team. We expect it will similarly interest visitors and colleagues. It is a dramatic presentation of the reality of the architecture that once stood here. The exercise has generated new ideas and hypotheses about how the ancient inhabitants built and used these spaces. After reconstructing a short segment of one of the 1.57-meter-thick gallery walls nearby, we began to think about second stories over the galleries, which has important ramifications for all our interpretations about the population and organization of the overall site.

What We Did and What We Proposed

How was our pilot program at ETH different from what we proposed? In spring 2004, we proposed the following:

> Our plan requires minimally invasive methods that are, as far as possible, reversible. A variety of techniques are available but the one that meets our criteria is capping and renewing. This method consists of covering the original material and structures with new but identical material that is sympathetic to the original, while leaving a break, such as a line of sherds, which distinguishes our restoration from the original. This makes the structure more easily recognizable by conforming the protective coat to the form of the original, keeping it open to the elements.

Near the beginning of the 2005 fall season we outlined our plans for the conservation part of the season. As outlined, we did the following:

- Carried out a desk-based assessment, augmented by site visits (Johnson 2005).
- Prepared ETH for our conservation program. We resurveyed the ancient walls for three dimensional, graphic reconstructions, and carried out a new photographic coverage, feature by feature.
- Found sources of both alluvial silt and desert marl clay. We experimented with mixtures of sand and silt. We tested rates of drying on wall segments that we built for such tests and for long-term monitoring (Johnson 2005).
- Tested different compositions and techniques of applying plaster.
- Began a monitoring program to assess erosion factors on the site for exposed and backfilled surfaces (Johnson 2005).
- Continued to analyze the materials used by the ancient builders of our site (Abd el-Aziz 2005).

The only difference between what we proposed and actually did was to use a sand layer, rather than pot sherds, as the separation between the ancient and modern reconstructions. True, this is more substantial than tar paper or a sherd layer, but also more appropriate for the conditions of our site.

We came to see that capping as a covering is sometimes worse than backfilling for ancient surfaces. Without a separation layer, the capping puts modern material directly in contact with the ancient material. Backfilling, on the other hand, is a way of controlling the immediate environment of the mudbrick structures. Sometimes capping merely hides problems. Capping directly against the sides and tops of ancient walls thickens and distorts the ancient structure.

Conservation Pilot Season: Conclusion

We selected our methods and carried out the pilot conservation program this season after careful consideration of other conservation efforts, after observing the changing conditions of our site, and after a desk-based assessment of literature on capping and backfilling.

Rather than sticking rigidly to preordained protocols, the conditions of our site (probably any site) require a certain degree of flexibility and leeway. Capping ancient mudbrick walls, while perhaps more beneficial at other sites than at ours, covers up the ancient structure, as does backfilling. It differs from backfilling, however, in that the cover is new, or at least of new material. It would be ironic if a program to both conserve and show the original ancient structure were not considered conservation if it did not involve applying modern material directly onto the ancient fabric.

Many of the conservation programs that we examined were never published (although colleagues were most generous in providing photographs and information on their projects). We, however, plan to publish our conservation work. The publication will include Günter Heindl's

architectural report (Heindl 2005), Ed Johnson's conservation report (Johnson 2005), Ashraf Abd el-Aziz's report on the mudbrick study (Abd el-Aziz 2005), appendices with our observations on the results of other restorations of ancient mudbrick walls in Egypt, and a bibliography on the issues of backfilling and capping.

We are preparing this report because we feel that in wrestling with these issues on the ground this season, can contribute to future restoration and presentation work that the SCA might want to support. We believe we may have found some innovative, as well as reversible, solutions.

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