THE GIZA PLATEAU MAPPING PROJECT

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Introduction to Season 2015

During Season 2015, from January 31 to March 26, the AERA team returned to excavations in the site named Heit el-Ghurab (HeG), the name in Arabic of its most distinguishing feature: the 200-meter-long, 10-meter-tall, limestone Wall of the Crow, 400 meters south of the Great Sphinx.

After twenty-seven years of excavating this and adjacent settlement sites at Giza and twenty-five years of reporting for the *Oriental Institute Annual Report*, I would like to take this year's report as an opportunity to sum up our results at Heit el-Ghurab.

This season we worked two areas at the far southern boundary of the 7-hectare site. In Area SWI (Standing Wall Island), 300 meters south of the Wall of the Crow, we excavated a

Figure 1. The Standing Wall Island (SWI) compound, enclosed by a fieldstone wall, with the Wall of the Crow and the pyramids of Khufu and Khafre in the background. View to the northwest

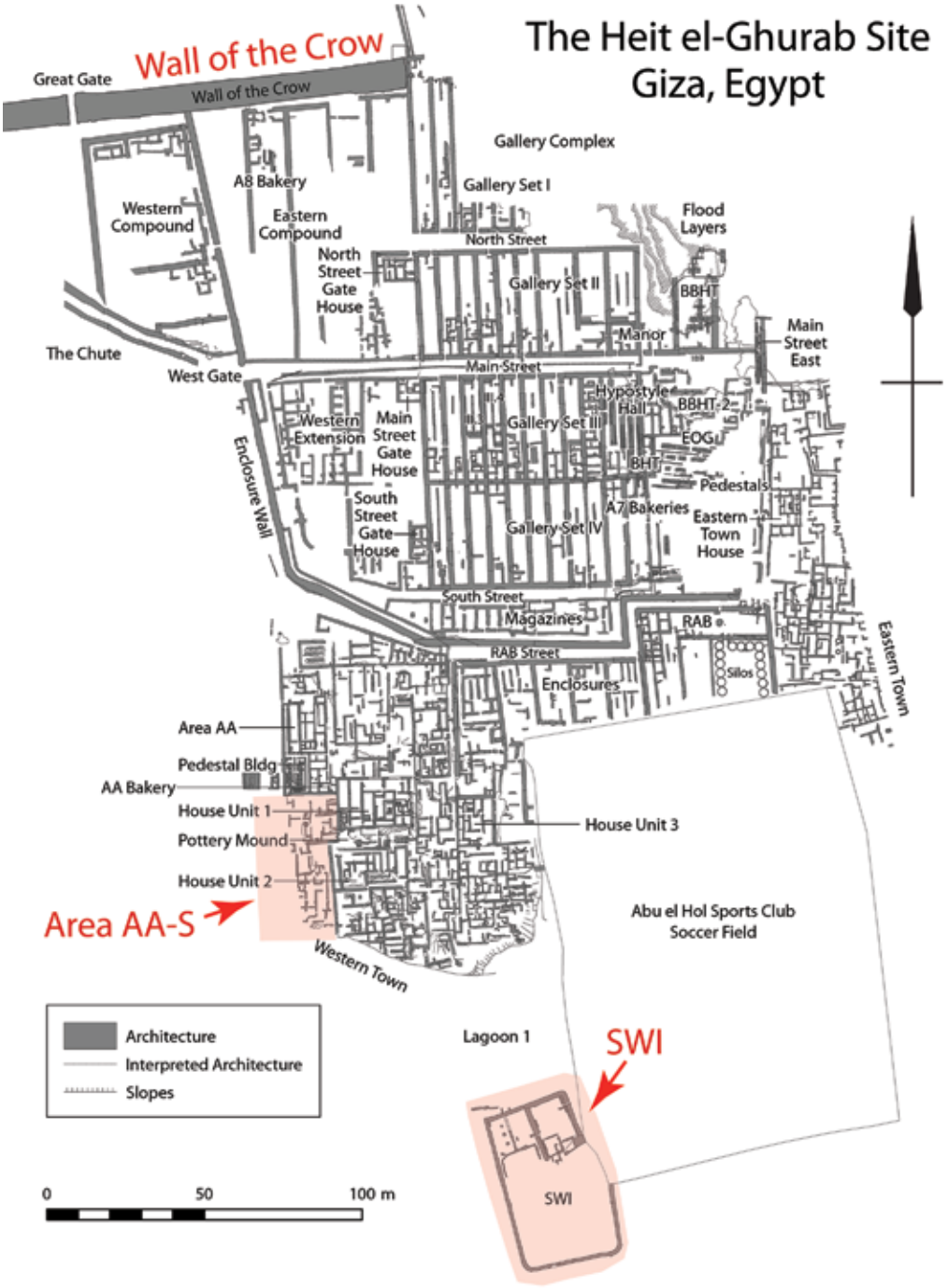


Figure 2. Map of the Heit el-Ghurab site at the beginning of Season 2015. Red highlights mark areas where we worked during Season 2015: AA-S (AA-South) and SWI (Standing Wall Island)

compound we have dubbed the "OK (Old Kingdom) Corral" on the hypothesis it served as the stockyard for cattle, a source of large quantities of meat consumed across the site, based on Richard Redding's faunal analysis (figs. 1–2).[1] In the northeastern corner of this compound, we found a residence of a prominent person who must have been in charge. In Area AA-S (AA South), we were on the lookout for evidence of beer brewing in an area of food-processing facilities (fig. 2). Here too, we found another residence, probably of an overseer.

We excavated these areas during Season 2015 while conducting a Beginners Archaeology Field School for inspectors of the Egyptian Ministry of Antiquities (MoA). A generous grant from the Antiquities Endowment Fund (AEF) of the American Research Center in Egypt (ARCE) secured the positions of ten MoA Inspectors in the field school. In partnership with the American University in Cairo (AUC), we opened the Archaeology Field Training (AFT) program to non-MoA students for academic course credit. Inaugural students Debra Karbashewski and Rahel Glanzmann joined twelve Inspectors from the Giza and Cairo areas. One goal of the AFT is to promote integration of MoA Inspectors with archaeologists and Egyptologists from universities abroad.

This season we celebrated the tenth anniversary of the field schools that AERA directed with ARCE sponsorship and USAID funding. Each Beginners Field School is the first phase of a comprehensive training program that includes Advanced, Salvage, and Analysis and Publication Field Schools. On March 21, alumnae from all over Egypt gathered with other MoA colleagues at the AERA Egypt Center, near the north entrance to the Giza Plateau, to celebrate.

Ana Tavares, Joint Field Director with Mohsen Kamel, organized trainees into three field school groups working under professional archaeologists as supervisors. The maps and records of these discoveries were made by beginner field school students under the supervision of these veteran archaeologists who bring thousands of hours of experience at sites all over Egypt and around the world. Some are graduates of the ARCE field school program who went on to become teachers. See the acknowledgments for the full staff list.

In this summary, I want to suggest how our 2015 findings cap off a bigger picture of administration in the Old Kingdom settlements at the southeastern base of the Giza Plateau, touching on both the HeG and Khentkawes Town (KKT) sites.[2]

Standing Wall Island as a *Ḥwt*?

We named Standing Wall Island in 2004 because we found the northern fieldstone wall of two enclosures (ES1 and ES2) standing a meter high on an "island" of compact ancient settlement that rose between low depressions on the north and south. We called the depressions Lagoons 1 and 2.[3]

In 2011 we found that the western boundary wall of these enclosures extends 35 meters south, then loops round to enclose the southern depression (Lagoon 2) in a larger compound with a paperclip ground plan, leaving on the east a corridor that opens north (fig. 3). Richard Redding, who has devoted a career to the archaeology of people and animals, recognized in the paperclip pattern and rounded corners a corral. In their art, the ancient Egyptians depicted corrals with just these features. So at the beginning of Season 2015 we asked if the inhabitants slaughtered and butchered cattle in the two side-by-side enclosures at the northern end. That is, do we have here both corral and abattoir?

Our hypothesis that inhabitants penned and processed cattle in the wider compound and in the western enclosure, ES1, survives our Season 2015. We need more evidence to confirm

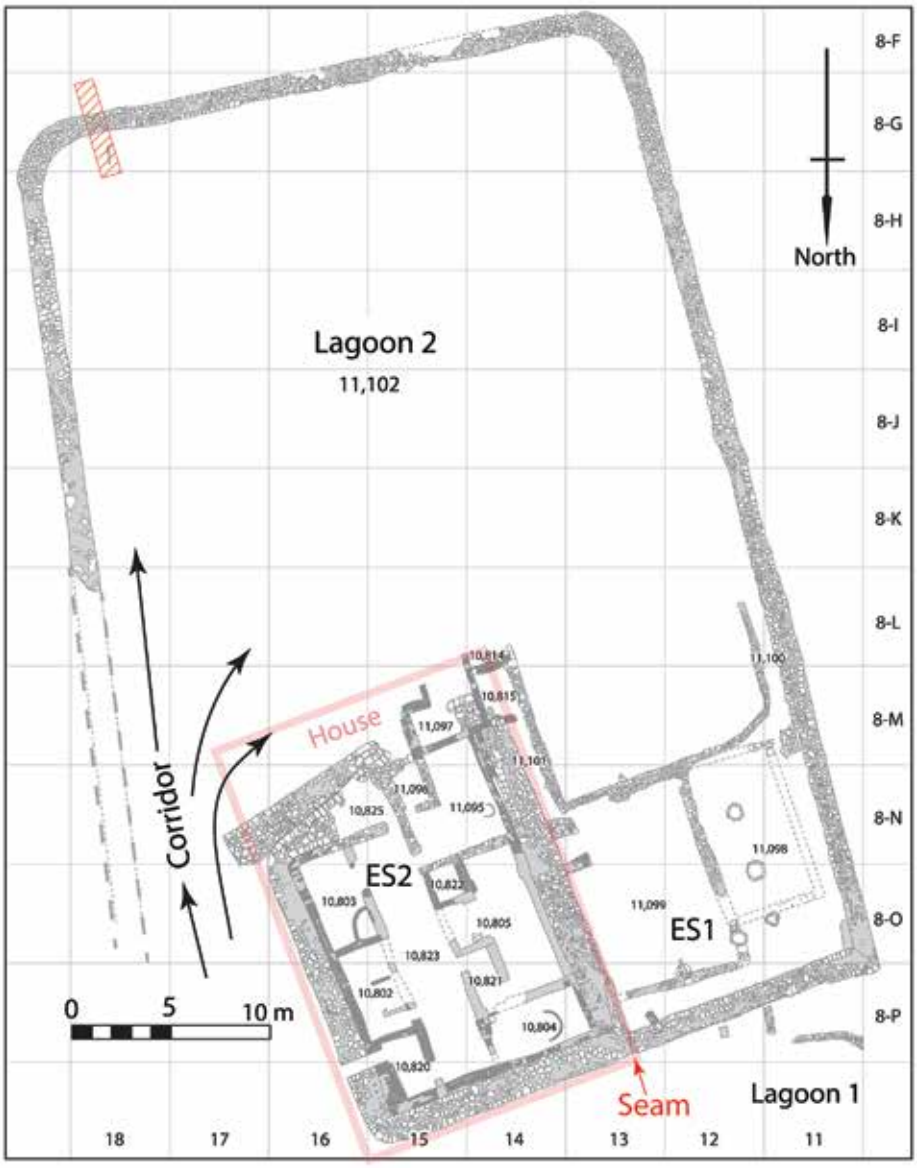


Figure 3. The compound in Area SWI, with south to the top, the orientation privileged by the ancient Egyptians, in contrast to north privileged on most of our maps

it. But we now know that people did not slaughter animals in the eastern enclosure, ES2. Here we found a house-like room structure, a residence, probably of a person of elevated, official status (fig. 3).

With a house in ES2, the ground plan of the SWI compound matches the hieroglyph for *ḥwt*, a tall rectangle with a smaller rectangle in one corner, often in the lower left (unlike the font that follows, with small rectangle in lower right): 𓉔.[4] We see the match when we look at the SWI ground plan with north to the bottom, as in figure 3, which is proper, because the

ancient Egyptians privileged south in listing cardinal directions. They used the same word, *ỉmnt* for "west" and "right," as though facing south,[5] unlike us, who take "north" as properly "up" in most of our maps.

When texts refer to *ḥwwt* (plural) as settlements in the country, often in contrast to *niwt* "village" or "town," Egyptologists translate *ḥwt* as "estate," "domain," "foundation," or "plantation." They see such estates as large ranches or plantations for agriculture and animal husbandry, similar to the Egyptian hamlet called *ezba* of recent times. But a temple or an urban establishment could also be a *ḥwt*. For example, the abattoir in front of the Raneferef Pyramid at Abusir was named the *ḥwt-nmt* "The House of the Knife."[6]

In 1962 Helen Jacquet-Gordon published a survey of all the Old Kingdom estates known at that time from ancient Egyptian texts. She suggested the larger rectangle of the *ḥwt* hieroglyph represented a wall enclosing a piece of property. The smaller rectangle represented a house, a "*maison seigneuriale*."[7] She cited Labib Habachi's discovery at Tell Basta of an edifice in the northeastern corner of a walled enclosure, 87.5 meters long.[8] In her view, the ground plan of the Tell Basta compound matches the *ḥwt* hieroglyph. In addition, on the northern face of the compound, Habachi found an inscription that named this enclosure: *Ḥwt-kꜣ*, literally a "house of the *ka*" (life force or spirit) of the Sixth Dynasty king Pepi I. Like the edifice in Pepi's *ḥwt-kꜣ* (as Jacquet-Gordon interpreted it), the ES2 house is in the northeast corner of the larger enclosure, which, at 60 meters long, is smaller than Pepi I's Tell Basta *ḥwt*, but not by an order of magnitude.

ES2 House Parts

At the beginning of Season 2015, we wanted to excavate all of ES1 and ES2. But field school students had to learn basic excavation and recording skills as they carefully removed debris from the collapsed walls. Through teaching, learning, and practice, the team revealed enough of the walls in ES2 to map its ground plan. Although we did not reach floor level, the ground plan and features very near the floor provided telltale evidence of an official residence.

We can take the main entrance into ES2 as one of the residence-like components, because it is off-axis and requires three turns (fig. 4). Like many of the doorways in the Khentkawes Town, this access is close to 0.70 meters wide (0.67 m) as it runs for a length of 2.27 meters through the limestone accretion against the original mudbrick wall.

This corridor delivered one into the first vestibule (space 10,820), about 3 meters long and 1.84 meters wide. We interpret a low block of bricks in the northeast corner as a bench (*mastaba* in Arabic). This putative mastaba rises around 0.45 meters, but extends only 0.30 meters wide from the wall.

From the first vestibule one entered a central aisle (10,823), a feature we have not seen in any of the other buildings that we call houses in the HeG and Khentkawes Town sites. The aisle (10,823) runs 12.85 meters, most of the interior length of ES2, at a width of 2.64 to 2.83 meters. The builders doubtless intended 2.62 meters — five royal cubits, a measurement we find again and again across the HeG site.

Two chambers (10,802–803) east of the central aisle included bins for storage. A small silo, perhaps for storing the grain allotment for the official and his staff, stood directly across the central aisle from the entrance, where the guard in the first vestibule could keep an eye on it. A chamber (11,095) in the southwest corner of ES2 may have been the household kitchen.

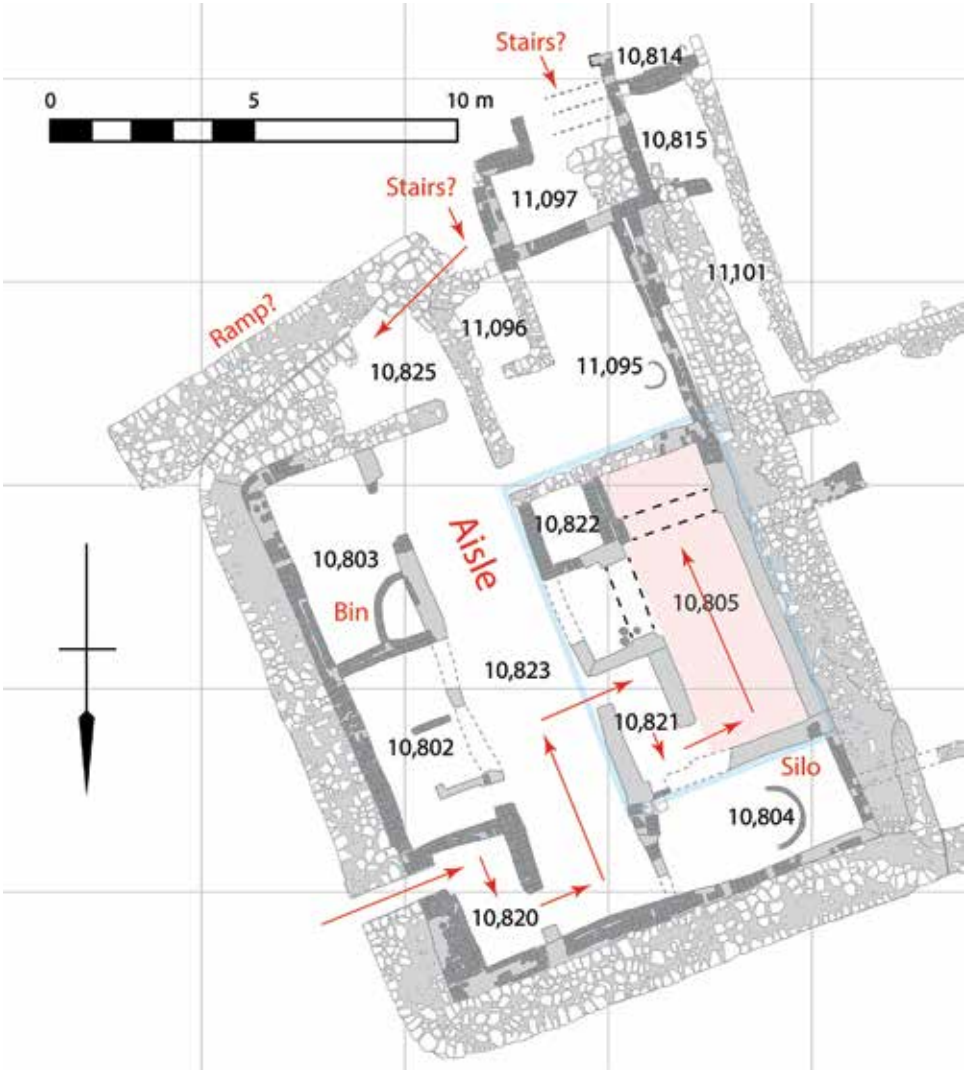


Figure 4. Internal structure of ES2. Red arrows indicate access from the main entrance on the northeast through a first, exterior vestibule, into the central aisle, into a second, interior vestibule, and then into the southern end of the long room with pilasters at the southern end. Plotted by members of 2015 Field School Group 3. Generated from AERA GIS by Rebekah Miracle

Builders added a massive fieldstone girdle around the original mudbrick building (fig. 4), as they did to the so-called Royal Administrative Building (RAB) to the northeast, across Lagoon 1, from SWI.[9] They thickened the eastern end around the southeast corner of ES2, and then they ended the girdle by framing in a rear vestibule (10,825). Steps appear to lead up into this space from the south and west, from Lagoon 2, the hypothetical corral. Steps may have continued from this space (10,825) upon the thicker girdle onto a rooftop.

Later, builders added a second stone accretion against the girdle on the south. This trapezoidal mass widens and slopes up to a squared end on the east that overlooks the chute-like

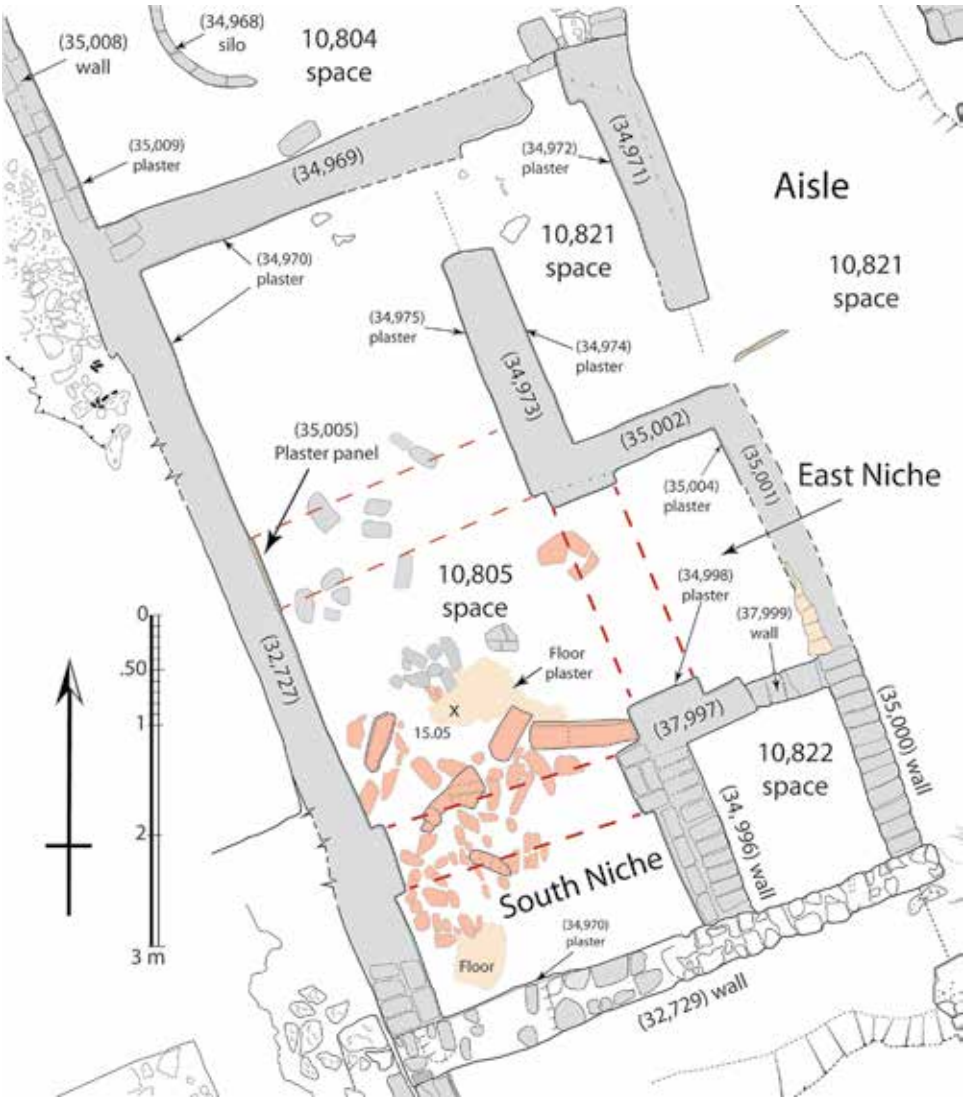


Figure 5. Plan of the "core house" in ES2. Red-colored pieces represent red-painted, molded, marl plaster on mudbrick, collapsed from an architrave that spanned the pilasters of the south niche. From original 1:20 Post-X field drawings by Hanan Mahmoud, Reham Mahmoud Zaky el-Sayed, Kirk Roberts, Mai Samir, Hossam Mokhtar, and Ayman Youssef Toukhy Mohamed. AERA GIS director Rebekah Miracle "stitched" the field drawings into a comprehensive Post-X map of ES2

corridor where we hypothesize cattle were driven into the corral (figs. 3–4). On the cattle hypothesis, we imagine someone standing at the top of this ramp to safely count the cattle on their way into the corral.

Three rooms form an inner core to the ES2 residence (figs. 4–5). From the central aisle, a second zigzag entrance through a second vestibule opens into a large rectangular chamber, 2.6 meters (5 cubits) wide.

We take this room as the signature of an official's residence. Pilasters project from the sides of the southern end to define a niche, about one meter deep across the width of the

Figure 6. Painted, molded plaster and collapsed mudbrick pieces near floor level between the pilasters at the southern end of space 10,805 in ES2

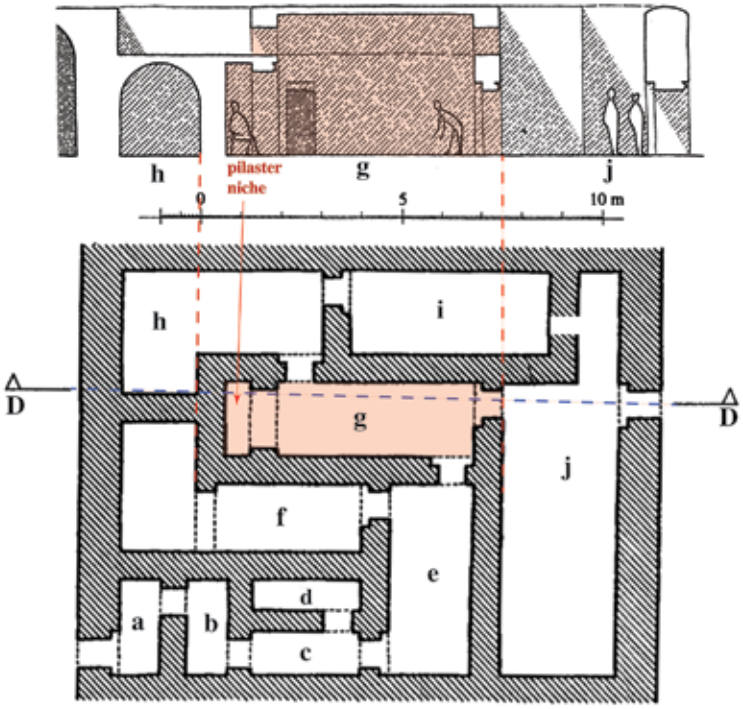


Figure 7. Schematic plan of a "priest's house" north of the causeway in the Khentkawes Town with one of Felix Arnold's reconstructed profiles across the central room (g, highlighted red). Pilasters define a niche at the southern end of room g (from Arnold 1998, figs. 7–8)

room. Between the pilasters in ES2, our excavators found large chunks of red-painted, molded plaster on mudbrick (figs. 5–6).

In 2006 Yukinori Kawae made a similar find between the pilasters at the southern end of the large central room in House 1 of the Western Town.[10] These painted plaster moldings fell from an architrave that spanned the tops of the pilasters and completed a frame around the southern niche. They confirm Felix Arnold's reconstruction of framed niches in the southern ends of the central rooms of the KKT houses (fig. 7).[11]

Official Residence Marker? Pilaster and Niche Room as Audience Hall

According to Felix Arnold, the master of the house received visitors and conducted business in the framed niche at the southern end of the central room. A projecting, red-painted frame, possibly topped with a rounded drum roll that hearkened back to a rolled-up reed-mat screen in a wood-frame prototype, put the focus on the proprietor, setting this individual apart as the head of the household/office. The frame established formality and decorum.

On Arnold's idea, this central long room was the Old Kingdom predecessor to the central hall with a dais in the classic Eighteenth Dynasty Amarna house, "where the owner and his wife would receive guests."[12] Painted relief scenes of that period show the owner seated on a chair elevated upon the dais.[13] At least some actual doors and faux doors in New Kingdom houses of prominent officials at Amarna are painted, sometimes with yellow panels. Doors that opened from an outer to the inner columned reception hall could be double width, or framed with stone jambs and lintels. In some cases they bore the name and titles of the proprietor carved in relief and painted, like false doors of any period.[14]

For the Amarna houses, Barry Kemp pointed out that this wall and doorway between the outer, transverse waiting hall and the inner, square reception hall was the true "front" of the house, "intended to make its mark on the visitor."[15] In ES2, we can envision the central aisle as an outer hall and waiting area (fig. 4). The large adjacent court (fig. 7, j) in some of the Khentkawes Town priests' houses must have also served as waiting areas.

We have seen such a large central room with pilasters defining a southern niche in three other houses at the HeG; in 12, possibly 14, houses of the Khentkawes Town (fig. 8); and in the official residence in the Silo Building Complex (SBC), making 17 to 19 houses with this feature in the southeastern settlements of Giza, including the house we have now found in AA-S (see below).

The lengths of the pilaster-and-niche rooms range from 6.1 to 8.46 meters; the widths range from 2.10 to 3.09 meters. Arnold explained how the width made these rooms suitable for vaulted roofs. The pilasters define niches ranging in width from 0.70 to 1.34 meters. Perhaps the builders had an ideal of 2 cubits (1.05 m), slightly wider than a modern office desk. Access into these rooms varies.

Arnold reconstructed clerestory window openings above the niche and pilasters. In similar fashion, thickenings or pilasters that defined bedroom alcoves in Amarna houses probably supported "a triangular wooden hood over a roof aperture that would funnel down a cool breeze during summer."[16] We find only the bases of the pilasters. So far, we cannot confirm from the fragments that a rounded cross bar, a drum roll, topped the frame, as in Arnold's reconstruction, but it is very possible, because this was a very common motif, carried over into tombs and chapels as the magical "false door" frame.

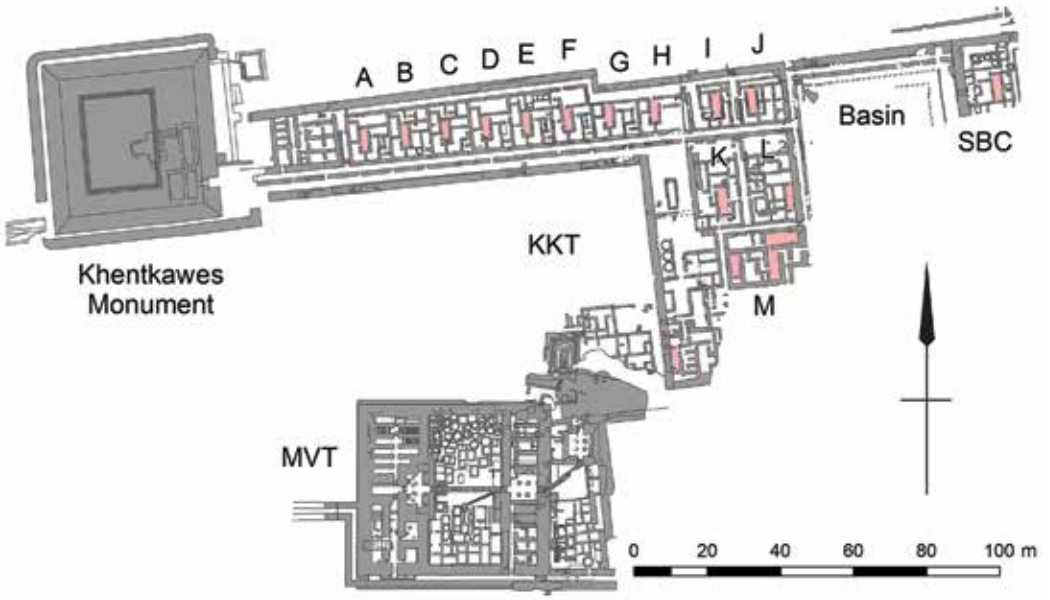


Figure 8. Plan of the Khentkawes Town and the Silo Building Complex with the central pilaster-and-niche rooms highlighted in red. It is not certain that the rooms highlighted in Building L and in the southwestern magazines belong to this class of rooms. From Hassan's plan we see two, possibly three such rooms in Building M, but we have not studied these on the ground. From Hassan 1943, fig. 1; AERA GIS by Rebekah Miracle

In all cases but one, the rooms are oriented north–south, with the pilasters and niche in the southern end. The exception is the largest room in Building M in the Khentkawes Town (fig. 8), which is oriented east–west with the niche on the east. With extra thick walls and three pilaster-niche rooms, there is something special about this building. We think of the occasional presence of royalty or a higher-status royal representative. House 3 in the "Western Town" of the HeG site also has two pilaster-and-niche rooms, end to end, taking up the whole eastern side of this building.[17]

The East Niche in ES2: Bed Frame?

Although broadly similar, no two of the large pilaster-niche rooms are identical. The ES2 central room features a second set of pilasters that frames an oblong niche that opens immediately left (east) of the set of pilasters and niche at the far south end (figs. 4–5). The eastern niche spans 2.21 meters, for a depth of 0.98 to 1.05 meters.

Immediately in front of the northern pilaster of the east niche, Field School Group 3 found three limestone objects in the form of truncated pyramids, each with a square rebate on the top (fig. 9). The complete set must have numbered four, because we know from tomb scenes and from such objects found in other ancient Egyptian contexts that they served as supports for the legs of either a bed or a chair (fig. 9b).[18]

Kemp reports that such stone leg supports were a common find in houses large and small at Amarna. They protected the ends of wooden chair and bed legs from termites and damp.[19]

Figure 9. Clockwise from top left: (a) Mohamed Shaltoot, Hanan Mahmoud, and Reham Mahmoud Zaky el-Sayed find the limestone furniture supports as they excavate the east niche of Room 10,805 in ES2. View to the south (photo 616589); (b) Chair leg with animal-paw base on furniture support as depicted in Sixth Dynasty tomb of Meruruka; (c) The three limestone furniture supports (photo 714152: Yaser Mahmoud)

Remarkably, in some houses excavators found these supports still in place where they once supported a bed or chair.[20]

For an Old Kingdom example, French archaeologists, working under Georges Soukiassian, found two sets of four stone supports in situ where they supported the legs of wooden beds or baldaquins in the Sixth Dynasty Governors' Palace at 'Ayn Asil in the Dakhla Oasis. They found the supports at the southern ends of two long halls on either side of a central vestibule. A fire destroyed the palace. The archaeologists could see the carbonized remains of baldaquins that stood upon four stone supports. Each of these baldaquins would have blocked a niche that opened east off the west chamber and west off the east chamber.[21]

In the Governor's Palace, we could understand the baldaquins as bed canopies, but I would like to ask if the privileged inhabitants might not have slept in the alcoves, or side-niches, which measure 2.40 meters long. They open off the main hall like the eastern niche in room 10,805. In the Governor's Palace, the hall and niche are larger than those of the western set. The plan shows that a double rebate framed the outer corners of the eastern niche. The walls thicken at southern end of the main eastern hall, making a southern niche like those defined by pilasters in the houses at Giza. The eastern niche and chamber were clearly for a person of higher status than the inhabitant of the west chamber.

A baldaquin could serve as a bed canopy or as "a canopy of state over an altar or throne."[22] Is it possible that these long chambers served as both audience halls and bedrooms, with the side niches as sleeping chambers? Soukiassian pointed out that a frame inlaid with bone hieroglyphs, giving the name and titles of Khentika, the governor and probable founder of the palace, decorated the doorway into the vestibule and dual baldaquin halls.[23] This doorway functioned like those that gave access to the audience halls in the houses of high-status officials at Amarna; those doorways also displayed the names and titles of the proprietor just before one entered the audience hall.

Diwan, Home, and Office

We then hold dual, or dueling, hypotheses. On the one hand we envision the side niche for the rather private act of sleeping. We see it as a parallel to bed niches and alcoves in ancient Egyptian houses from other sites and periods.[24] In the large central room of House 1 in the Western Town, we actually found within the southern niche defined by pilasters a sloping platform that we understood as a bed platform.[25] On the other hand, we see the main, southern niche, on axis with the room, as framing a proprietor during formal, official meetings.

It's hard to imagine an ancient Egyptian official conducting business reclining, given the formality of the chair of office in representations. Or could these seemingly opposite postures combine in the southern end of the ES2 central room with pilasters, and perhaps as well in House 1 and in the above-mentioned Governor's Palace (although not in the other, similar rooms of Old Kingdom houses at Giza where we do not see the additional niche on one side)?

Could bedchamber and audience hall exist side by side, insofar as these rooms served as parlors? The word derives from an Old French term, *parloir* or *parler* "to speak" and denoted originally an audience room.[26] The spacious, open length and width of these halls allowed visitors to sit on mats and cushions along the sides, close to the proprietor's seat. Farther down the sides, household members could place chests containing documents needed to transact business, or linen and clothing, when and if they served as master bedrooms.

As we endeavor to understand these rooms and the house layouts in which they occur, I can see the possibility that proprietors used them for particular, more formal meetings, and for receiving and entertaining visitors. But I also see the possibility that inhabitants used the rooms, at least the far ends, for casual, private relaxation, lounging, and more familiar, intimate visits, as shown, for example, in the scene of Wa'etetkehthor playing the harp for her husband, the high official Mereruka, upon a wooden bed, from Mereruka's Sixth Dynasty tomb at Saqqara.[27] The pair lounge upon a bed/couch, with pyramidal supports under the legs, like those we found.

Formal, more public, and informal, more private, interactions might have taken place in these large rooms if they functioned within the range of meaning of the Persian word *diwan:*

a kind of couch or bed, a type of audience hall, a guest house, a government council, and a number of titles and high governmental bodies in Islamic administration.

What Arnold suggested for the pilaster-and-niche rooms in the large houses at Giza — that the niche framed a chair or divan where the proprietor could receive visitors and conduct official business — may relate to the Egyptian word *st*, written with the "seat" or throne sign (). The basic meaning is "place." Egyptians used the word for a wide range of meanings.[28] When combined with the house sign () in certain New Kingdom titles, Egyptologists translate st as "office."[29] In the Fifth Dynasty papyrus archive of the pyramid of Raneferef, scribes used *st*  combined with the arm  and book roll  to write *śt-ʿ* to refer to some kind of administrative office, something like "department of documents," or "archive," while the exact meaning is not certain.[30]

Area AA-S: Another Official's House?

Before Season 2015, we hypothesized that in Area AA-S (AA South) people brewed beer. We saw much ash and other evidence of pyro-production extending south of the enigmatic Pedestal Building.

We found the Pedestal Building in 1988 during our first excavations on the HeG site.[31] Its name reflects the two rows of pedestals east and west of a central dividing wall. That it remains enigmatic is frustrating. That we are still investigating its environs reflects, hopefully, the persistence of our project at this one site, HeG, over twenty-seven years and twenty-five years of reporting for the *Oriental Institute Annual Report*. The results of our 2006–2007 excavations immediately outside the north, east, and southern sides of the Pedestal Building made me think the inhabitants might have used the whole complex for malting.[32] In Area AA-S, we wondered if two circular, burnt mudbrick structures served as sockets for large vats in which brewers heated malt soaked in water. Our work during season 2015 showed them to be ovens.

During Season 2015, Field School Group 1 excavated structures south of the Pedestal Building around a small court (fig. 10). The court (10,810) measures 5.25 meters (10 cubits) from east to west and 4.70 meters north to south. It is reminiscent of a square court in the center of House 3 in the Western Town.

Attached to the west side of the court, walls of broken limestone and mudbrick form a long and narrow foundation, about 1.20 meters wide. A buttress projects from the southeast corner. A partition divided the interior into what might be two bins. But the fact that the inner side of the east wall is irregular indicates that the builders intended to fill it to make a solid foundation. With the fill, they threw in much broken pottery, a cache of hammer stones, and a broken limestone headrest. The excavators removed much concentrated limestone debris from above this structure. They believe it derived from a collapsed stairway that rose from this foundation up onto to a roof over the western and eastern rooms of the complex.

In the southeast corner of the court we found a set of pedestals within a closet-sized chamber (fig. 11). We have found many similar pedestals across the Heit el-Ghurab site. The pedestals occur in series, from two to more than a dozen, all lined up. As I mentioned in regards to the Pedestal Building, their function remains uncertain.

Here a central pedestal is flanked by two half pedestals to form two slots (fig. 11). A thin partition wall rises on the center of the center pedestal. The partition creates two compartments. Whatever sat upon these pedestals sat within the compartments directly over the slots. (At first glance, everyone says this structure looks like a squat toilet, which it certainly

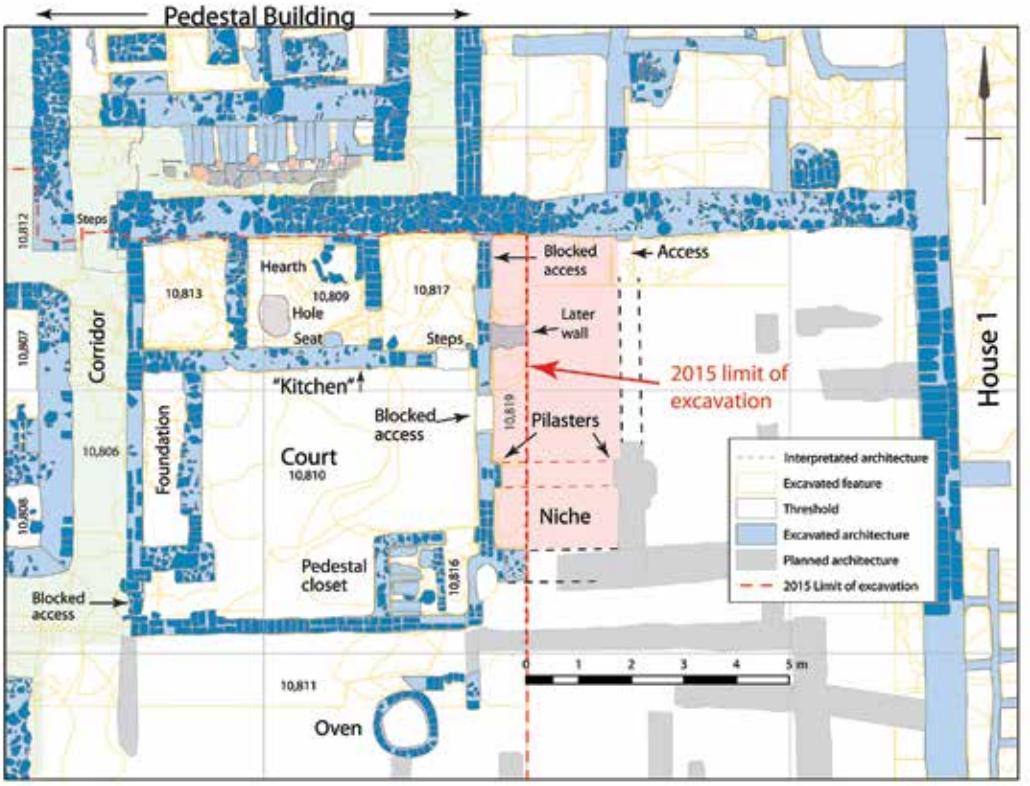


Figure 10. Area AA-S after excavation in 2015. Plan generated from AERA GIS by Rebekah Miracle from field drawings by Kholoud Abd el-Nady Hassen, Freya Sadarangani, Rahel Glanzmann, Hanaa Hagag Sayed Fayed, Virág Pabeschitz, Mohamed Mahmoud Arefa, Mohammed Abd el-Maksoud, Aly Ahmed Aly Abdel-Latif, Ibrahim Samir Ibrahim, Rabee Eissa, and Ashraf Abd El Aziz

Figure 11. The pedestal closet in the southeast corner of the court in Area AA-S, with a datum tape measure stretched across. Rabee Eissa takes notes. View to the west

is not.) In the southern corridor of the Pedestal Building, immediately north of AA-S (fig. 10, top), we found beer jars still in place, standing upright in front of the pedestals, leaned slightly into the slots.[33] The slots do not form conduits down to these jars. In the AA-S pedestal closet, we found a ceramic bowl embedded in the floor in front of the southern slot, and a hole where a vessel was removed from the floor in front of the northern slot.

As for the purpose of the pedestal assemblages, theories range from a cooling chamber to some kind of press or drip function for oil or whey. We found many peg and string sealings in the vicinity of the Pedestal Building, which contained two linear series of seven such pedestals as well as a pedestal closet in the northeast corner similar in size and form to the one we excavated this season in AA-S. One idea is that these sealings derive from closing and opening peg and string locks on chests that fitted into the compartments above the slots between the two adjacent pedestals.[34] This pedestal closet is the most striking find in Area AA-S this season. Solving the puzzle of its purpose would unlock insights to other areas where we found the odd pedestal assemblages.

Three chambers on the north of the court served as a kitchen (fig. 10). Two steps lead down to the floor of the eastern chamber (10,817), where the team found a complete storage jar and a piece of worked limestone. The walls showed effects of burning before someone applied a coat of plaster. The second room (10,809) featured a hearth, lined with broken stone and mudbrick, built into the northeast corner. An upside-down bread mold formed a corner post, just as we have seen in hearths at other bakeries. Bakers used these corner hearths for preheating the bread molds.[35] A hole in the floor of the southwest corner must have once held a dough-mixing vat. A worn, rounded limestone boulder against the southern wall allowed someone to sit and turn left to reach into the vat or right to stoke the hearth. In the back, western chamber (10,813), the inhabitants also built hearths that scorched the walls, before they dumped ashy waste and broken clay sealings into this room. Eventually they blocked access from the bakery, leaving this room as dead space.

Along the west of the court, the team excavated a corridor, around a meter wide, running north–south at a higher level than the court. This is a continuation of a narrow through-way that runs up into the Western Town from the north and circumvents the Pedestal Building. This is one of only two tube-like conduits running north–south through this dense part of the settlement, which is why delivery on a large scale had to come from the east, via the draw of Lagoon 1 (see below).

The most tantalizing 2015 find in Area AA-S was another large, oblong room, with southern pilasters defining a niche (fig. 10), like the pilaster-and-niche chamber that we found this season in ES2. The team excavated only the western side of this room. We mapped the eastern walls as they show in the surface of the ruins, but we have yet to excavate most of the width of this room. A wall, added later than the original building, divided the room into two spaces (10,818 and 10,819). Originally, these spaces belonged to a single room, 6 meters long and 2.40 meters wide — close in size to the large pilaster-and-niche rooms in other houses at Giza. Pilasters project from the interior faces to form a niche, about 1.12 meters wide north to south and spanning the width of the room east to west. The niche framed a low platform for sitting or sleeping. The team exposed the western side of this platform. As a parallel, in 2007 we found a bed platform in the niche between the pilasters in House 1.[36] Also like the large rooms in House 1, black paint still shows at the base of the walls, here in the northern end of the room, where a black band projects forward of pink mortar just above. These bands probably belonged to a dado, topped by strips of red and white above. Such dados are depicted in tomb scenes of domestic settings by bands of the same color sequence.[37]

Heit el-Ghurab and Household

In Area AA-S we have found yet another large house, situated up the slope of the escarpment on a higher terrace than the Western Town, which sprawls below and to the east. We interpret this house as another official residence, that is, office and residence, of the person in charge of production on the upper slope, while the person in the ES2 house took charge of the activity, possibly cattle processing, in SWI. Our 2015 findings add to an impression that houses served as administrative nodes of the Heit el-Ghurab.

As we pan back to look at the place of houses in the whole Heit el-Ghurab site we need to keep in mind that this site was the southwestern zone of a larger urban layout, a royal city that extended north and east, which we must infer from evidence that is best laid out elsewhere.

Although Eighteenth Dynasty Amarna in Middle Egypt and Fourth Dynasty Heit el-Ghurab at the Delta apex date more than a millennium apart, the sites bear some broad similarities — as well as enormous differences, of course. Like Amarna, the larger settlement developed linearly along the bank of a Nile branch. Like Amarna, the king founded the settlement at the location of the royal tomb. Government abandoned both settlements after decades — not more than twenty years in the case of Amarna, and between thirty and fifty years at the Heit el-Ghurab. (Maybe as many as eighty years if the lower, mostly unexcavated phase was founded already under Khufu.)

By organizing people and production around leading persons and large houses, as at Amarna, Heit el-Ghurab presents an early version of a basic social order that lasted millennia. Barry Kemp envisions people coming to settle the Amarna suburbs from hometowns or villages, where they belonged to group networks bound to patrons and to each other through kinship and household dependencies. Kemp described Amarna as a city of villages, with the senior officials — including those who decorated the doors into their houses and audience halls with their names and titles — as the village headmen. At Amarna, suburban villages emerged as dependents clustered their houses around the large urban estates of officials.[38]

I compare the inscribed doorframes of Amarna headmen to Arnold's interpretation of the pilaster, architrave, and niche "door" frames at the southern ends of large rooms in Old Kingdom houses at Giza. As yet, we have from Giza no evidence of titles inscribed on such frames. But in the Old Kingdom Governors' Palace at 'Ayn Asil, French archaeologists found evidence that the name and titles of the founder, Khentika, once graced the lintel of the doorway into the dual chambers with baldaquins, which might have functioned as audience or reception rooms, as well as bedrooms.[39] Colony and town emerged around this Governors' Palace.[40] At Heit el-Ghurab, the eastern and western suburbs emerged around several large houses.

Panning back to our map of the whole HeG, I highlighted in red those structures we hypothesize as residences of persons responsible for underlings in their midst (fig. 12). These "houses" show a fairly even distribution across the site. They do not show a dramatic difference in the size of the footprint, nothing like the order-of-magnitude difference in the Middle Kingdom town at Kahun, attached to the Senwosret II Pyramid, where the large houses occupy 2,520 square meters, and the ratio of small to large houses is about 1:20.[41]

In the so-called Western Town we have identified only four or five large houses. (We have doubts about "House 2.") These stand out in the midst of smaller structures because of boundary walls of greater thickness and longer run and because of internal features, such as large rooms. The set of five includes the "houses" we found this season in ES2 and AA-S. It is possible that with further excavation we might identify more large houses in the maze of

walls showing in the ruin surface of this western area. So far, I believe the other structures are ancillary to Houses 1 and 3, and the house in AA-S.

I imagine four or five high-status administrators had their houses built as the first, core structures of the neighborhood we call, for convenience, the Western Town. These houses served as their official residences and offices when they came to Giza to be on the job at the site of the royal building works. But we also know that the "town" extended up the slope, beyond what we have mapped. Stratigraphically, the settlement ruins run under the lower tombs of the "Workers' Cemetery." This season we found the house in Area AA-S on a higher terrace — the next highest level above House 1. This was a terraced town, and more large houses could have been established up the slope.

What compelled administrators to build their official residences up the slope of the escarpment? Why are these large houses — and the whole of the "elite" Western Town — stuck between the RAB complex and the escarpment? The answer depends on whether the Lagoon 1 bay was part of the topography during the time, 4,500 year ago, when people occupied the site, or whether erosion created Lagoon 1 after people abandoned the site.

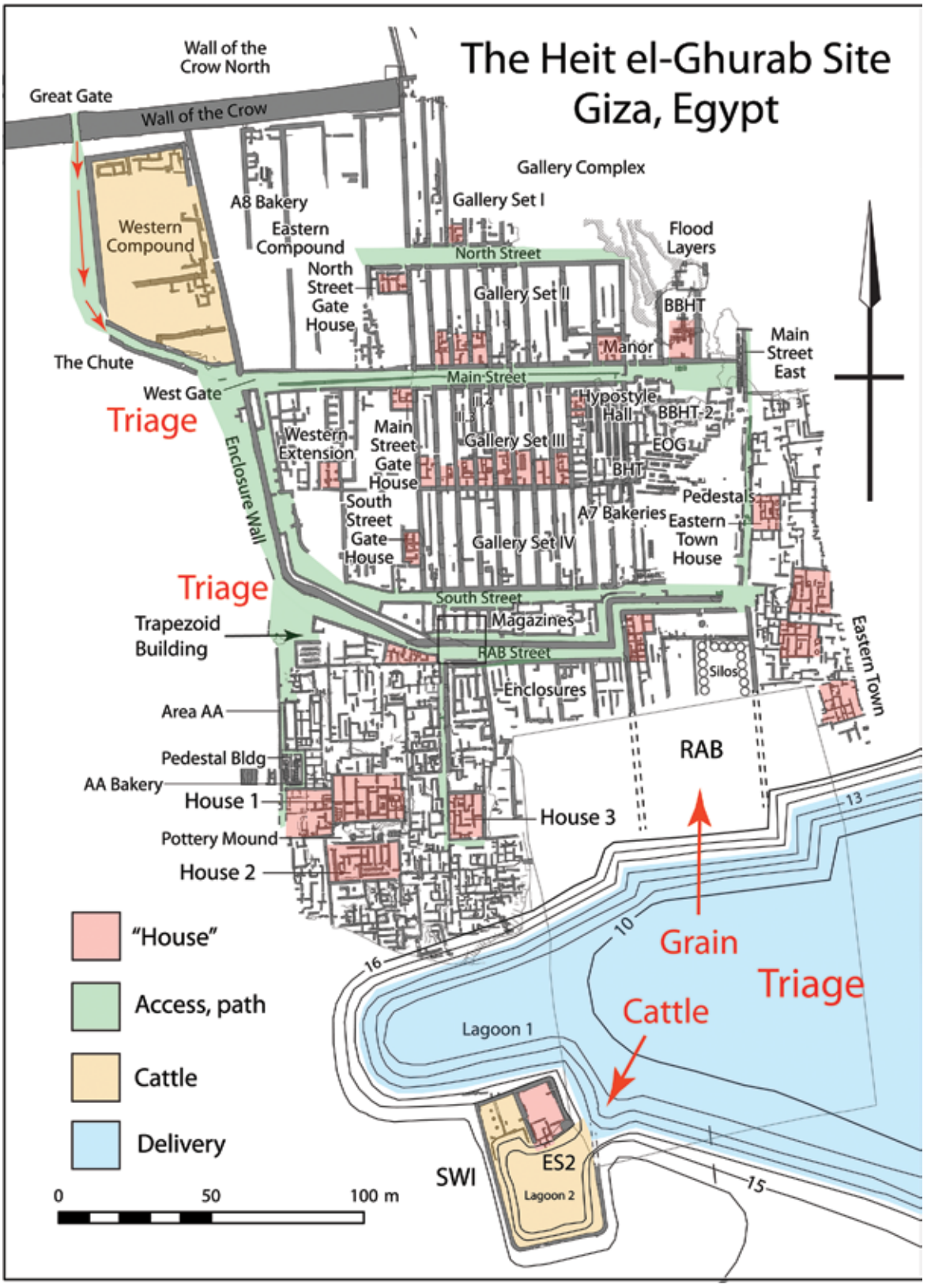
We are not certain, but evidence points to the antiquity of this bay.[42] The rim on either side of Lagoon 1 shows an abundance of broken pottery, which suggests people dumped settlement waste over this edge in the Fourth Dynasty. Lagoon 1 extends east under the modern soccer field. On the other side, northeast of the soccer field, we found in 2004 that the surface of the settlement ruins slope dramatically south, into this depression.[43] In a deep probe along the eastern wall of the RAB, as well as in pits in the RAB interior, we saw interleaved layers of clay and sand that the Fourth Dynasty settlement builders dumped to fill in the northern edge of Lagoon 1 and to raise the surface before building the RAB walls. Again, this suggests Lagoon 1 featured in the Fourth Dynasty topography.

If the annual, six-to-eight-week (generally August–October) inundation rose from 7.0 to 13.5 meters above sea level (colored blue in fig. 12), the Lagoon 1 depression could have served as a put-in bay for deliveries by water. The rest of the year, it would have formed a dry ravine for delivery on foot by human, donkey, or for cattle on foot.

Now we see the reason that proprietors fitted their large houses and their dense ancillary structures between the RAB and the escarpment. These houses stood at the head of the southern bay through which commodities were delivered. If, like the ancient Egyptians, we privilege south as "up," or at the "front," the hypothetical corral and the large houses of the Western Town stood at the head of the Heit el-Ghurab, gathered round the delivery bay, like custom houses at the ends of harbors.

By placing their houses at head of the bay, HeG headmen could supervise the delivery and allocation of commodities — goods that satisfied the needs of the royal works and city

Figure 12 (following page). Map of the Heit el-Ghurab site, with Lagoon 1 contour lines reconstructed at elevations of the time of occupation (ca. 2500 BC). Color key: Red = spaces hypothesized as houses; Green = access routes; Yellow = areas hypothesized as cattle holding and processing; Blue = delivery zone. If the annual, 6–8 week inundation rose from 7 to 13.5 meters above sea level (blue), the Lagoon 1 depression could have served as a put-in bay for deliveries by water. The rest of the year, it would have formed a dry ravine for delivery on foot (human, donkey, or cattle). In the galleries, only the known rear domiciles are highlighted as "houses." More galleries probably include house-like structures in the rear. At the same time, each entire gallery, with rear domicile, could be considered a "house," stretched out to a ratio of 7:1, length to width. The front parts, with colonnades, are equivalent to the more spacious areas for visitors at the fronts of houses



infrastructure. Protein, in the form of cattle, went up into the SWI; carbohydrates, in the form of grain, went down into the RAB and its western enclosures (fig. 12). SWI and RAB, as courtyard establishments,[44] show similar early mudbrick walls reinforced by thick girdle walls of broken limestone. We see the two enclosures — RAB and SWI — as a pair, flanking either side of the southern service and delivery track.

Certainly, delivery and triage areas existed also on the north, through the gate in the Wall of the Crow itself, and possibly out north and east of the Wall. Unfortunately, we lost the northern frontage of the Gallery Complex to erosion (fig. 12). In 2009 we excavated the Western Compound and "Chute" in northwestern HeG on the hypothesis that these served as a cattle holding area and animal chute,[45] which they might be. Results were suggestive, but inconclusive. From here, all routes (fig. 12, green) channel traffic south and east through the Gallery Complex, ultimately dumping it into the EOG production yard north of the RAB.

It could very well be that the northern galleries opened onto the central Giza waterways, and that a more open, north-to-south passage existed east of what we have mapped of the HeG site. However, we believe a substantial Nile channel flowed south-to-north only a kilometer or less east of the HeG, giving overland passage south to north on the higher western river levee. The Lagoon 1 bay, if it existed, would have cut across any north–south overland passage at the lower level of the floodplain, while providing access from the east, from the river. Visualizing the greater Giza access, via basins and waterways, based on evidence that has come to light in the last thirty years, is a topic for another forum.[46]

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Notes

[1] *Oriental Institute 2011–2012 Annual Report*, pp. 52–53.

[2] For this summary I draw from field reports by Freya Sadarangani, Hanan Mahmoud, Daniel Jones, Rabea Aissa, Kirk Roberts, Essam Mahmoud, Afaf Wahab, Ahmed Gabr, Claire Malleson, Richard Redding, Mahmoud el-Shafey, Sherif Abdel Moneim, Sarah Chapman, Ali Witsell, Ana Tavares, and Mark Lehner.

[3] *Oriental Institute 2003-2004 Annual Report,* pp. 77–79.

[4] This is not the first time we have seen the *ḥwt* ground plan at this site. I suggested in 2002 that the thick-walled, house-like "Manor" formed a *ḥwt* pattern within the larger enclosure on the east of the northern block of galleries, Gallery Set I; *Oriental Institute 2001–2002 Annual Report*, pp. 59–60.

[5] Hannig 2003, pp. 142–44.

[6] Verner et al., 2006, pp. 87–99; Posener-Kriéger, Verner, and Vymazalová 2006, pp. 341, 347–50, 358–59.

[7] Jacquet-Gordon 1962, p. 4. While I am prone to Jacquet-Gordon's idea, not all scholars agree that the small rectangle in the hieroglyph represents a house. For a full discussion of the glyph, its variations, interpretations, and references, see Moreno García 1999, pp. 18ff. See, more recently, Moreno García, 2013. On the *ḥwt*, there is an extensive bibliography.

[8] Habachi 1957, pp. 11–32.

[9] *Oriental Institute 2001–2002 Annual Report*, pp. 53–55; *Oriental Institute 2003–2004 Annual Report*, pp. 69-73; and note in *Oriental Institute 2005–2006 Annual Report*, pp. 56–59 that, like the residence in the northeast corner of SWI/ES2, a mudbrick house-like residence occupies the northwest corner of RAB. We see RAB and SWI as contemporary and connected institutions.

[10] *Oriental Institute 2007–2008 Annual Report*, p. 73.

[11] Arnold 1998, pp. 11–12, figs. 7–8.

[12] Kemp 1989a, p. 294

[13] Kemp 1989a, p. 297, fig. 99. However, the owner conducts business with scribes in a separate room (no. 3).

[14] Kemp 2012, p. 175, pls. 27–30.

[15] Kemp 2012, p. 183.

[16] Kemp 2012, p. 186, fig. 5.6.

[17] *Oriental Institute 2005–2006 Annual Report*, p. 53, fig. 7, rooms P and Q on the east. I thank Mohsen Kamel for this observation.

[18] Vercoutter 1978.

[19] Kemp 2012, pp. 202–03.

[20] Kemp 2012, pp. 186, 196, fig. 6.1, 202–203, fig. 6.6, citing Frankfort and Pendlebury 1933, p. 8, pl. 18.2.

[21] Soukiassian 1997, pp. 15–17.

[22] http://en.wikipedia.org/wiki/Baldachin.

[23] Soukiassian 1997, p. 16. I thank Aude Gräzer Ohare, via Ana Tavares and Dan Jones, for this reference.

[24] In what Kemp 2012, p. 202, called "the archaeology of sleeping."

[25] *Oriental Institute 2007–2008 Annual Report*, p. 73, fig. 33. The bed platform in House 1 could have been installed as a modification, when doorways were blocked and new doorways installed.

[26] "*Parlour* ... entered English around the turn of the 13th century. In its original usage it denoted a place set aside for speaking with someone, an 'audience chamber.'" Wikipedia: http://en.wikipedia.org/wiki/Parlour (April 30, 2015).

[27] Sakkarah Expedition 1938, pl. 95.

[28] For this term in the Old Kingdom, see Hannig 2003, pp. 1033–37. The term is sometimes determined by a chair with legs rather than by a block-throne. For its meaning as Verwaltungsbüro (administrative office) as well as Wohnsitz (residence), see Hannig 2003, p. 1034.

[29] Kemp 2012, pp. 125–31, section on "The Accommodation of Office."

[30] Posener-Kriéger, Verner, and Vymazalová 2006, p. 284 n. 173, p. 357 n. 102.

[31] *Oriental Institute 1990–1991 Annual Report*, pp. 24–25, fig. 3; *Oriental Institute 1991–1992 Annual Report,* pp. 56–58, fig. 1.

[32] *Oriental Institute 2007–2008 Annual Report,* pp. 65–70; Lehner 2009.

[33] *Oriental Institute 2007–2008 Annual Report,* pp. 65–68.

[34] Witsell 2014, p. 24.

[35] *Oriental Institute 1991–1992 Annual Report,* pp. 62–63; *Oriental Institute 1992–1993 Annual Report*, pp. 28–29; Lehner 1992, pp. 5–9.

[36] *Oriental Institute 2007–2008 Annual Report*, p. 73.

[37] For example, in the tomb chapel of the Sixth Dynasty official Mereruka, at Saqqara; Sakkarah Expedition 1938, pl. 95.

[38] Kemp 2008a, pp. 31–36; 2008b, pp. 41–46; 2008c, pp. 33–38; 2012, pp. 20, 41–44, 125–31, 161–81. The emergence of the Amarna city from series of self-organized villages is not entirely unique. London itself emerged from the "villages of London," as Bill Hillier and Julienne Hanson noted (1984, p. 18). They begin their influential analysis with a discussion of self organized settlements, a theme that Kemp now interlaces throughout his recent book on the city of Amarna (Kemp 2012).

[39] Soukiassian 1997, p. 16.

[40] Kemp 2006, pp. 201–02, fig. 71.

[41] Kemp 2006, p. 217.

[42] *Oriental Institute 2003–2004 Annual Report*, p. 77.

[43] Lehner 2002, p. 66–67.

[44] Kemp 1989b.

[45] *Oriental Institute 2009–2010 Annual Report,* pp. 42–46.

[46] For the latest attempt at modeling Fourth Dynasty water transport infrastructure at Giza, see Lehner 2014, pp. 14–23.

References

Arnold, Felix

1998 "Die Priesterhäuser der Chentkaues in Giza." *Mitteilungen des Deutschen Archäologischen Instituts, Abteilung Kairo* 54: 1–18.

Frankfort, Henri, and J. D. S. Pendlebury

1933 *The City of Akhenaten* II. London: Egypt Exploration Society.

Habachi, Labib

1957 *Tell Basta.* Cairo: Institut français d'archéologie orientale.

Hannig, Rainer

2003 *Ägyptische Wörterbuch* I: *Altes Reich und Erste Zwischenzeit*. Hannig-Lexica 4. Mainz am Rhein: Philipp von Zabern.

Hassan, Selim

1943 *Excavations at Giza,* Vol. 4: *1932–1933.* Cairo: Government Press.

1984 *The Social Logic of Space*. Cambridge: Cambridge University Press.

Jacquet-Gordon, Helen K.

1962 *Les noms des domaines funéraires sous l'Ancien Empire égyptien*. Cairo: Institut français d'archéologie orientale.

Kemp, Barry J.

1989a *Ancient Egypt: Anatomy of a Civilization*, 1st edition. London: Routledge.

1989b "Appendix: Workshops and Production at Amarna" In *Amarna Reports* V, edited by Barry J. Kemp, pp. 56-63. London: Egypt Exploration Society.

2006 *Ancient Egypt: Anatomy of a Civilization*. 2nd edition. London: Routledge.

2008a "Amarna's Genesis." *Ancient Egypt* 8/4: 31–36.

2008b "The People of Amarna." *Ancient Egypt* 8/5: 41–46.

2008c "What Kind of City Was Amarna?" *Ancient Egypt* 8/6: 33–38

2012 *The City of Akhenaten and Nefertiti: Amarna and Its People*. London: Thames & Hudson.

Lehner, Mark

1992 "Excavations at Giza 1988–1991: The Location and Importance of the Pyramid Settlement." *Oriental Institute News & Notes* 135: 1–8.

2002 "The Pyramid Age Settlement of the Southern Mount at Giza." *Journal of the American Research Center in Egypt* 39: 27–74.

2009 "Enigma of the Pedestal Building: Hypotheses Desert Refrigerator? Malting Machine? Or Both?" In *Beyond the Horizon: Studies in Egyptian Art, Archaeology and History in Honour of Barry J. Kemp*, edited by Salima Ikram and Aidan Dodson, pp. 1–3. Cairo: American University in Cairo.

2014 "On the Waterfront: Canals and Harbors in the Time of Giza Pyramid-Building" *Aeragram* 15/1–2: 14–23.

Moreno García, and Juan Carlos

1999 *Ḥwt* et milieu rural égyptien du III^{e} millénaire: Économie, administration et organisation territoriale. Paris: Librairie Honoré Champion.

2013 "The Territorial Administration of the Kingdom in the 3rd Millennium." In *Ancient Egyptian Administration*, edited by Juan Carlos Moreno García, pp. 85–151. Handbook of Oriental Studies 1. Leiden: Brill.

Posener-Kriéger, Paule; Miroslav Verner; and Hana Vymazalová

2006 *The Pyramid Complex of Raneferef, The Papyrus Archive.* Abusir 10. Prague: Czech Institute of Egyptology.

Sakkarah Expedition

1938 *Mastaba of Mereruka*, Part 1. Oriental Institute Publications 31. Chicago: University of Chicago.

Soukiassian, Georges

1997 "A Governors' Palace at 'Ayn Asil, Dakhla Oasis." *Egyptian Archaeology* 11: 15–7.

Vercoutter, Jean

1978 "Supports de meubles, éléments architectoniques, ou établis? (Inventaire: Balat 205–717 et 207–720)." *Bulletin de l'Institut français d'archéologie orientale* 78: 81–102.

Verner, Miroslav

2006 *The Pyramid Complex of Raneferef: The Archaeology*. Abusir 9. Prague: Czech Institute of Egyptology.

Witsell, Alexandra

2014 "A Return to Area AA: Informal Seals and Sealings of the Heit el-Ghurab." *Aeragram* 15/1–2: 32–34.