GIZA PLATEAU MAPPING PROJECT

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Introduction to Season 2016

During Season 2016, February 20 to March 31, the AERA team worked at the Great Pyramid and in the Heit el-Ghurab site of Fourth Dynasty settlement ruins.[1] At the Great Pyramid, as part of the Glen Dash Foundation Survey, our team mapped marks that the pyramid builders left in the bedrock terrace surrounding the monument — etched lines, postholes, lever sockets, and other traces of the human hand that had never been mapped before. The overall set of "tracks" reveals much about the builders' movements and modus operandi. As the analysis of this survey is ongoing, I focus here on our work at the Heit el-Ghurab (HeG) site.

We resumed excavations on the southern edge of the settlement in a compound that we call Standing Wall Island (SWI), named for the meter-tall fieldstone wall we discovered in 2004 perched on high ground between two depressions, dubbed Lagoon 1 and 2 (figs. 1–2). The wall formed the northern boundary of two compounds, ES1 and ES2, which opened on the south to a large enclosure defined by a fieldstone wall that we uncovered in 2011. Our faunal specialist, Dr. Richard Redding, noted the striking similarity of the large enclosure to corrals and livestock pens depicted in ancient Egyptian art. The rounded corners are similar to the rounded corners of modern livestock pens and corrals. So we dubbed the enclosure the OK (for Old Kingdom) Corral. During our 2015 season we excavated ES2 and discovered the elaborate room structure of a house, which we hypothesized served as the residence and office of a high official who managed a stockyard and slaughterhouse, which Redding hypothesized as the function of the overall complex.[2] After we determined last season that ES2 contained a residence, we now think the slaughterhouse could have been in the adjacent enclosure ES1

We based our office-residence hypothesis on several key findings. The compound in the center of the residence (rooms 10,805, 10,821, and 10,822) — the core house — included a large, oblong room with pilasters that project from the east and west walls to frame a niche, about a meter wide, at the southern end — a feature we have also found in three other large houses at HeG, and in other houses in the Khentkawes Town and in the Silo Complex Building (fig. 3).[3] Felix Arnold suggested that in the so-called "priests' houses" of the Khentkawes Town these large, oblong chambers served as the audience hall for the master to receive visitors and conduct business.[4] Arnold believed the pilasters formed the sides of a projecting frame. During 2015, our excavators found in ES2 pieces of red-painted plaster and mudbrick — the collapsed and broken remains of just such a frame as Arnold reconstructed — strewn between the pilasters.[5] In addition, between another set of pilasters that set off an adjacent niche on the east of the hypothetical audience hall, our team found three limestone furniture supports like the ones that ancient Egyptians placed under the wooden legs of chairs and beds. We regard the hall with the pilastered niche at the south end as the hallmark of an official residence. The collapsed pieces of a red frame and the limestone furniture supports lend credibility to this hypothesis.

Along with uncovering the core house in 2015, we partially cleared all of the other spaces in ES2, revealing the ground plan of the compound. But we did not reach the floor level in

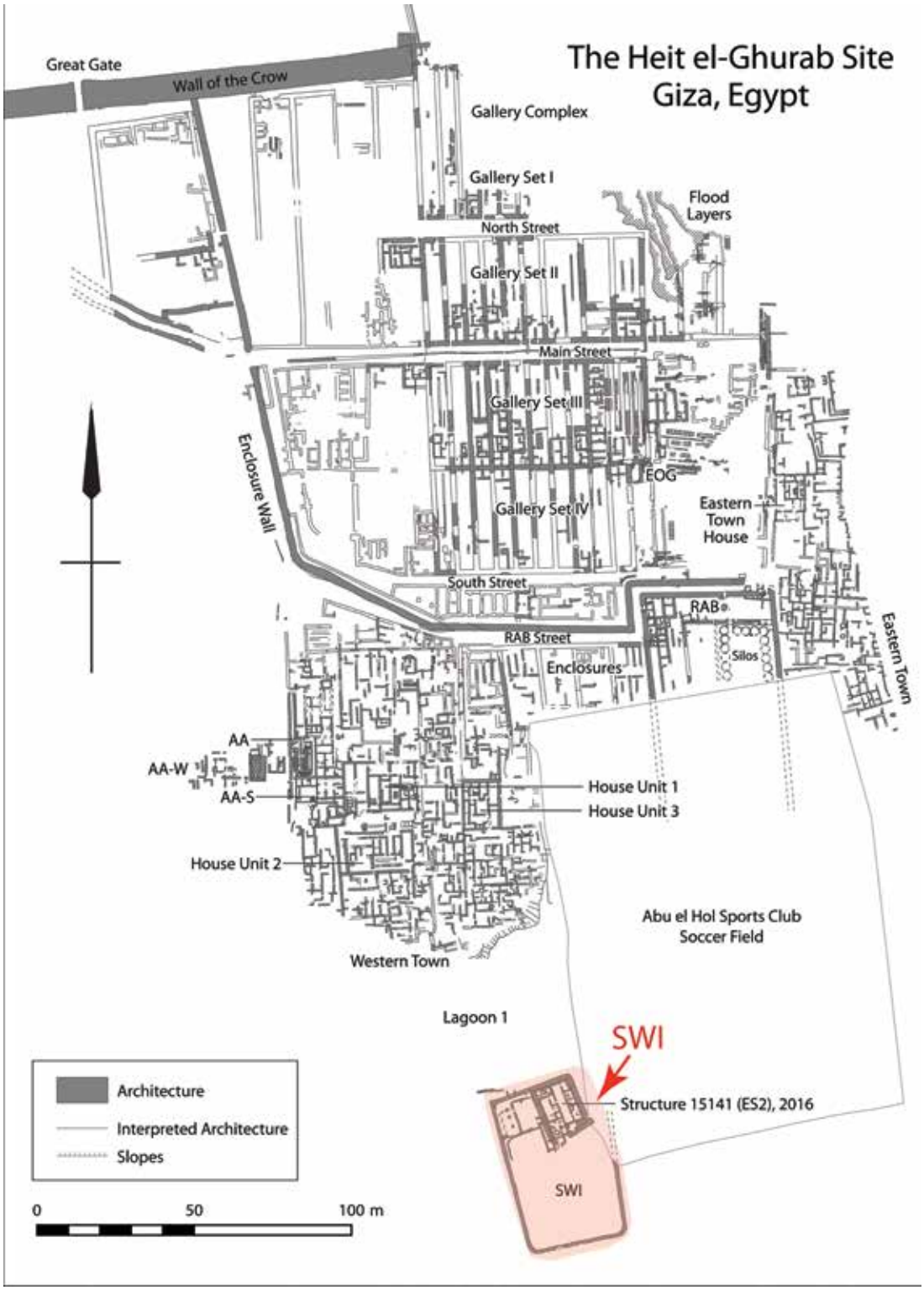

Figure 1. Map of the Heit el-Ghurab site at the end of Season 2016. SWI (Standing Wall Island), where we worked this season, is highlighted in red (map: Rebekah Miracle from AERA GIS)

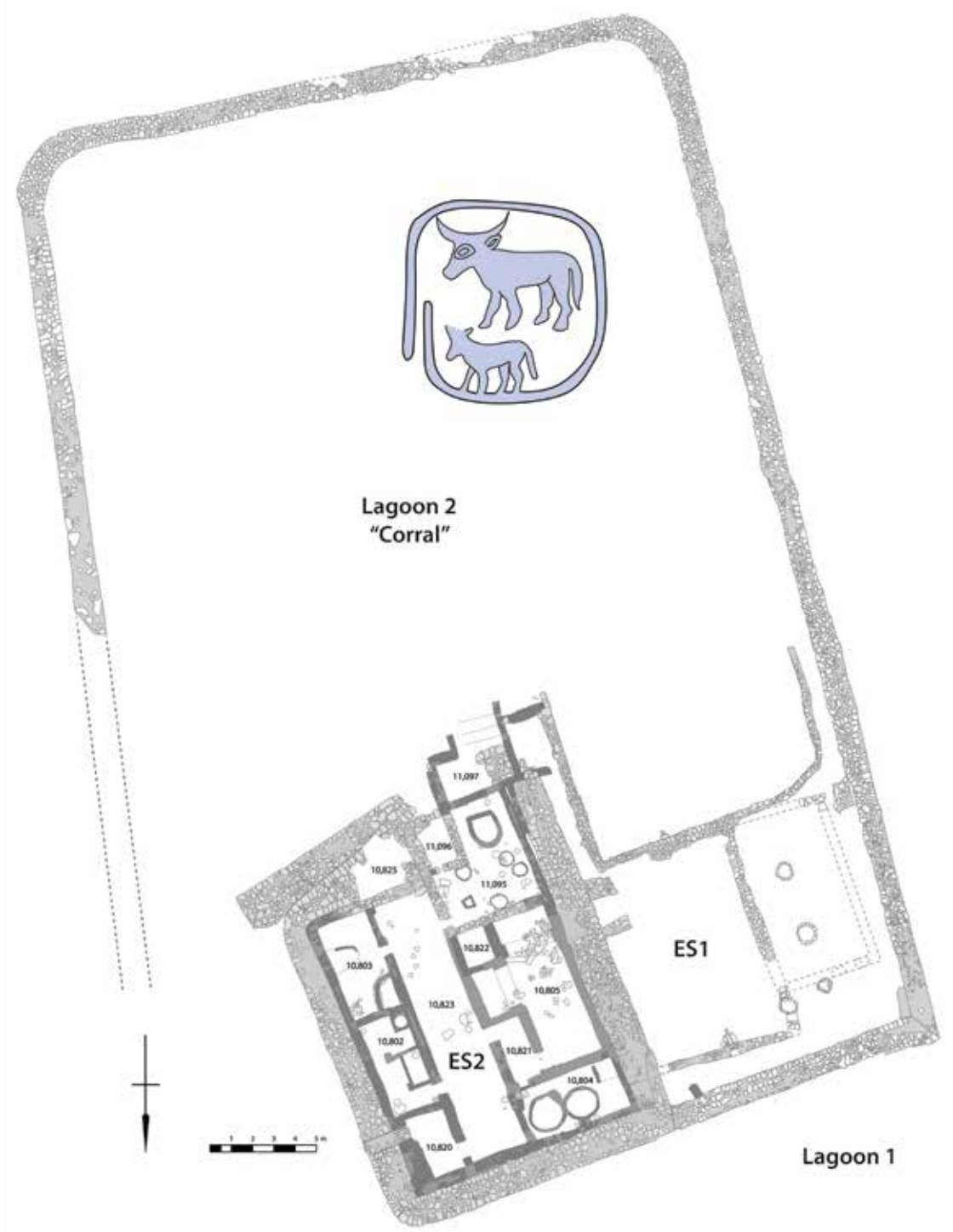

Figure 2. The compound in Area SWI, with south to the top — the orientation privileged by the ancient Egyptians, in contrast to north at the top. Insert: One of two corrals depicted on the upper (right) shoulder of the Early Dynastic ceremonial mace-head of King Narmer. Note the similarity of the SWI corral to the image on the mace-head (map: Rebekah Miracle from AERA GI)

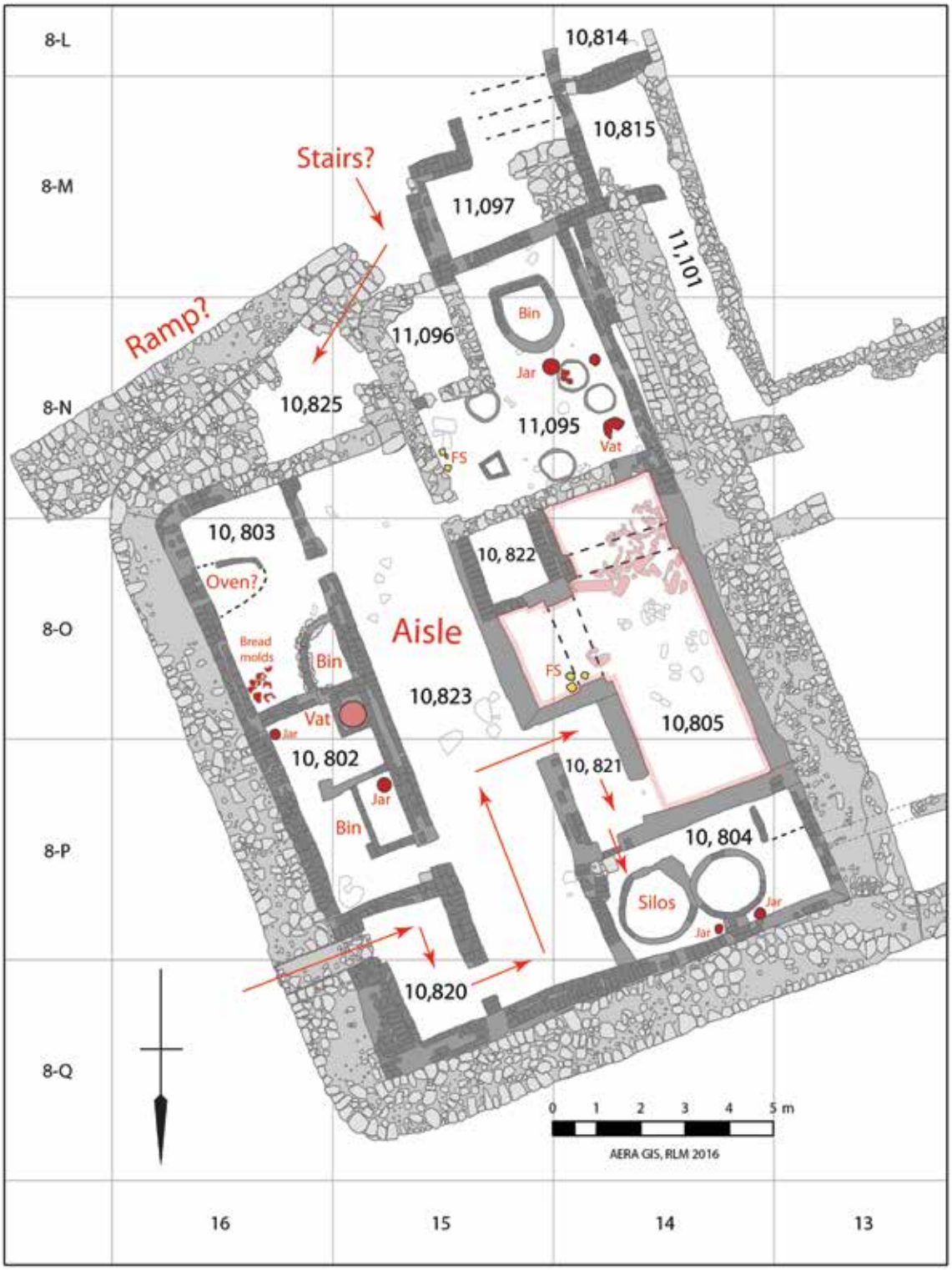

Figure 3. Internal structure of ES2 after Season 2016. FS = furniture supports. Red = ceramic vessels. Yellow objects are furniture supports. Generated from post excavation plans and from AERA GIS by Rebekah Miracle

Figure 4. Room structure of House ES2 in the northeast corner of Standing Wall Island, with assigned space numbers. View to the southeast (photo: Dan Jones)

most of the rooms. We were training beginners in a field school, which necessarily slowed our progress. So our goal for 2016 was to excavate to the floor and learn more about each of the chambers, their contents, and functions.

Discoveries in ES2 during Season 2016

The layout of ES2 is unlike any other house we have uncovered at HeG or in the Khentkawes Town. A wide central aisle or hallway runs north to south down the middle. All the other chambers open directly or indirectly off this aisle (figs. 3–4). The aisle (10,823), 12.85 meters long, traverses most of the interior length of ES2. While the width ranges from 2.64 to 2.83 meters, the builders doubtless intended five royal cubits (2.62 meters), a dimension we find again and again across the HeG site.

A thick fieldstone girdle wall reinforces a much thinner outer wall of mudbrick on the east, west, and north sides of ES2, creating the appearance of a fortress. One entered at the northern end of the eastern wall through a corridor, 2.27 m thick. It gave access to the interior via a small vestibule (10,820), where a guard may have kept watch.

Silo Room

Directly across the central aisle from the entrance vestibule stands a room (10,804) containing two silos (fig. 5). In 2015 we uncovered the base of one round silo here, and this season, excavating down to floor level, we found the base of a second silo. In modern times, someone

Figure 5. The Silo Room (10, 804) in House ES2; view to the west

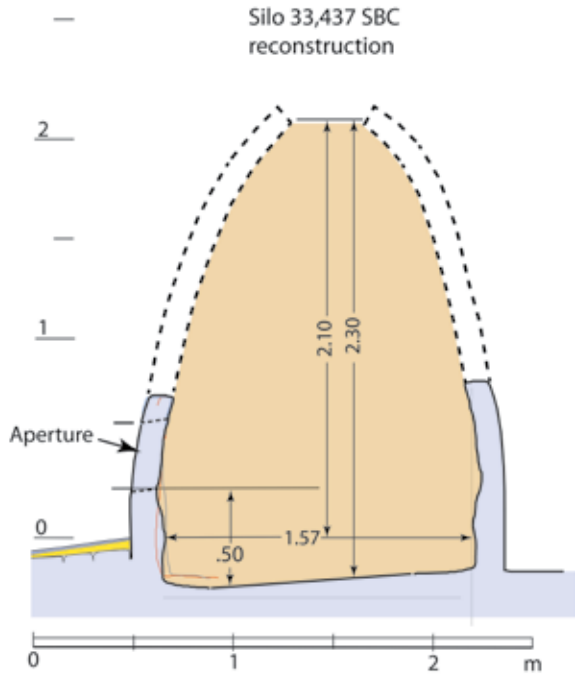

Figure 6. Schematic profile of an SBC silo on the basis of the measured profile at the eastern side of Silo 3,437 in 2014

cut down the ruins in this part of ES2, leaving the silos nearly flush with the floor. But the interior floors of these silos lie 16 to 30 centimeters below the truncated tops. The builders set the bottoms of the silos below floor level, as they did in the two silos we excavated in the Silo Building Complex (SBC) in 2014. The ES2 silos measure about 1.50 meters in diameter, a little less than 3 cubits (1.575 meters), with single-brick walls, 10 to 14 centimeters thick. With so little of the walls remaining, we cannot reconstruct the shape or height of the silos. However, since the ES2 silos are the same diameter as the SBC silos, they may have been the same shape and height as well. In 2014 I extrapolated the shape and height of the SBC silo walls, which were preserved to 0.9 meters high, and came up with an elliptical cone standing 2.1 meters above the floor level (fig. 6).

The ES2 silos almost certainly held grain, which workers would have poured in through an opening in the top. A ladder, if not some other structure, would have been required to get up above the silos. On the southwest side of each silo we found what might have been the base of a step, possibly for a stairs or ladder positioned against the silo. But it is not clear how workers would have brought grain sacks into the silo room. Only one door, a mere 47 centimeters wide, gave access through the southern wall. It connected the Silo Room with the interior (10, 821) small vestibule leading into the hypothetical audience hall (10,825). But would workers have carried large, heavy sacks of grain into the small vestibule, via a sharp right turn, then through this narrow doorway? More likely they reached the tops of the silos from a staircase outside the chamber, possibly via a stairway in the girdle wall. A partial roof over the silo room would have allowed them to access openings at the tops of the silos.

In the southwestern corner of the room, we found a square marl-paved patch on the floor, 0.80 × 0.90 meters, lined with three bricks on its east side. On the north, between the western

silo and the northern wall, we found the remains of a cross-wall that appears to have once divided the room until those who built the western silo cut through it. On either side of this older wall, we found two fine red ware jars embedded in the floor.

A round limestone table turned up against the eastern wall of the Silo Room (fig. 7). Considering it came from mudbrick debris that had collapsed from the walls, it may have found its way into this room from elsewhere in the house. It was one of two complete limestone tables—the other is a rectangular table from Room 10,802 (see below). Several fragments of tables in alabaster and travertine also turned up. Was there something special about this building that required small tables for serving or working? Or would we have found just as many tables in other houses of the HeG site had people not stripped them of objects when they abandoned the site?

Figure 7. Director of Archaeological Science Claire Malleson holds the small limestone table from the Silo Room in the ES2 house

Bin Room

Room 10,802 on the east side of the central aisle features a bin and a vat built against the western wall (fig. 8). We enter through a doorway, 1 cubit (0.52 meters) wide, into a corridor formed by a thin wall on the south. At the end of this corridor a hearth, simply a small fire lit upon the floor, must have warmed someone. We see how it scorched the floor. Perhaps a bowab (door person) watched from here to see if anyone entered through a wooden door that swung inward on a pivot and pivot stone with a round socket.

Single-brick walls define the bin, 1.56 × 0.88 meters. We do not know how high the sidewalls stood as the upper courses have eroded or collapsed, but the eastern wall was a low partition, only 15 centimeters high. At the southwest corner of the bin, we found a jar embedded in the floor, with a pot mark inscribed on its shoulder (fig. 9). We found a similar jar embedded almost to the rim in the floor in the southeast corner of the room. In the southwest corner we found a vat, 0.54 meters in diameter, encased in a mudbrick box, 0.70 × 0.80 meters, standing 0.36 meters high (fig. 10). The vat is 0.44 meters deep, bringing the bottom below floor level of the room. We have found a number of complete vats across the HeG site, but none boxed in like this. Did it contain liquid or dry goods? Whatever the contents, one would have to scoop the material to empty the vat. People must have used the bin and vat together.

Figure 8. Room 10,802 with the bin (center) and vat emplacement (right) found in 2016 (photo: Dan Jones)

The second complete limestone table turned up in this room (10,802) with the bin and the vat. This limestone table was larger and rectangular, 0.10 × 0.20 meters. It

Figures 9–10. From left to right: (9) Close up of the jar, with the pot mark etched into the shoulder next to the wall; view to the east; (10) the vat boxed in by mudbrick in the southwest corner of room 10,802; view to the west

Figure 11. Room 10,803 in the southeastern corner of House ES2; view to the east-southeast (photo: Dan Jones)

also features a knob or foot on the bottom and shows lines made from cutting with a sharp edge.

Oven Room

Unlike most HeG walls, which are ankle- to waist-high at best, the eastern and southern walls of east room 10,803, adjacent to the Bin Room on the north, stand 1.85 meters high (fig. 11). The wall is heavily scorched for a length of about two meters, suggesting an oven may have once stood against it. Only a curving line of bricks remained because, prior to our work, someone had dug a pit down through the ruins and took out most of this hypothetical oven.

Figure 12. View of Courtyard Pantry (11095) and its annex (11096) showing the features within the space 11095; view to the southwest (photo: Dan Jones)

The bricks suggested the oven extended about 1.4 meters from the east wall, probably as a domed superstructure rising from a half-oval projecting base.

In the northeast corner of the room, not far from the oven, we uncovered a larger cluster of about two dozen nearly medium-sized bread pots (one of the three sizes found at HeG). But it is unlikely that the inhabitants used these molds for baking bread in the oven, despite their proximity to it. The conical, thick-walled molds were designed for baking in open pits. We have found a good number of bread-baking pits at the HeG settlement, but none in ES2. The residents may have baked in the adjacent enclosure, ES1, but that would not explain why the molds were lying amongst ash deposits, next to an oven in this room.

The Oven Room (10,803) also featured a bin, 0.91 × 1.43 meters, formed by a wall curving across the northwest corner. Preserved to a height of 0.98 meters, the wall was built of mudbricks on a foundation of rough limestone pieces that protrude from the lower interior and exterior sides. The interior floor lies 0.20 meters above the chamber floor. While people probably filled the bin from above, they may have removed the contents from an aperture, 0.42 meters wide, near the bottom next to the west wall of the chamber. On the other hand, if they used the bin to store fuel for the oven, such as charcoal, straw, and chaff, they would not have taken these materials out of the small opening, which, in any case, they blocked at some point.

Courtyard Pantry

Across the aisle from the Oven Room, four steps led up through a narrow doorway into a large, L-shaped chamber (11,095) that appears to have been a storage and food processing area. In this space our team uncovered four silos, smaller than the two in the Silo Room, with outer

diameters ranging from 0.62 to 0.80 meters (fig. 12). These silos appear to have been placed more ad hoc—created for a particular purpose as necessary. They were less designed into the room space than the two big silos or subsidiary structures in the other chambers. Moreover, they were formed of clay more than mudbrick and set directly on the floor. Two on the east side of the chamber sit against the walls. One of these is preserved only slightly above floor level. The other three silos range in height from about 0.30 meters to more than 0.50 meters. None showed any signs of an opening at the bottom. People must have removed the contents from the top. They may have kept pulses, dried fruits, malted grain, and other foodstuffs in these small containers. In the bottom of one of the silos, we found two ceramic vessels that would have been used to measure out commodities (fig. 13): a cylindrical pot, known from tomb scenes to have been used to measure oil,[7] and a pear-shaped vessel, with a capacity twice that of the cylinder. A shallow ceramic bowl lying next to the pots had served as a lamp, as indicated by the soot coating on the inside and outside of the rim.

Next to one of the silos, the inhabitants partially buried, upside down, a ceramic pot with its rim embedded deep in the floor. They cut its bottom cut off to create an opening, apparently so they could use it as another ad hoc storage vessel (fig. 14). Adjacent to the northernmost western silo, we found sitting upon the floor a large, deep ceramic vat (our type CD 25), such as we have found in several of the bakeries at the HeG settlement. This one appears to have crumbled in place.

A large horseshoe-shaped bin stands in the center of the southern leg of the room (fig. 15). It measures 1.64 meters north–south and 1.30 meters east–west across the widest point. The thin walls, the width of a single brick, were preserved to around 0.30 meters above the floor. The bottom of the bin lay more than 0.27 meters below floor level. The walls showed no sign of an aperture, so people must have added and removed contents from above. The team found a complete bread mold and a part of a bread mold on the floor at the southwest corner of this bin. Perhaps it served as a pottery stash. Elsewhere at HeG, we have found bins and boxes built into mudbrick walls stuffed with pottery. In two such compartments, we found, bread molds stacked upside down, one over another.

This series of containers in 11,095 — the bin, upside down jar, the western silos, and vat — all line up in a row. Perhaps people used them to hold different ingredients temporarily, or ingredients at different stages of processing, such as in malting grain, in a kind of assembly line (fig. 15). People set the western silos and the bin to stand out from the wall, so they could move around this assembly line. They could access the two eastern silos, set against the walls, from the front. They must have filled and removed contents from openings at the top, as we saw no obvious apertures on the sides near the bottom (although we are lacking most of the height of the silos). A small square enclosure, defined by bricks, just inside the entrance of this space (11,095), must have functioned with the assorted storage containers. The excavators suggested that people supported the bottoms of conical jars in this odd feature, as a socket, while they filled the jars with grain or other goods.

The bins and silos may have served to store more than foodstuffs. In the deposits covering much of the room, and spilling into the small annex space (11,096) on the southeast, team members found a variety of craft tools and common domestic utensils: capstones for rotary drill rods; a stone axe; dolerite pounding stones; beads and abraders; granite querns and grinding stones for milling grain; a ceramic jar stand; and fragments of plates, tables, or pallets. Ancient Egyptians seemed prone to stashing hodgepodges in storerooms. Even in the magazines of the pyramid temples at Giza, they stuffed a completely heterogeneous mixture,

Figures 13–15. Clockwise from top left: (13)The two jars and a dish as found together in the silo on the left in figure 14; (14) Silos and a jar set upside down as a mini-silo in the western side of Room 11,095; (15) The large bin (background) and silos in Room 11,095. The bin, a jar set upside down as a container, two mudbrick silos, and the ceramic vat comprised a production line; view to the south-southeast (photos: Dan Jones)

including pottery vessels, copper ore and copper chisels, hammer stones, plaster cones, faience beads, and many flint knives.[8]

Among the hodgepodge of common objects in space 11,095, the most remarkable, and perhaps most out of place, were three truncated limestone pyramidal furniture supports, similar to the three we found last year in Room 10,805, mentioned above (fig. 16).[9] In our 2016 season, when we uncovered the first such object we thought it must be the fourth support that completed the set we found in 2015. But then we discovered two more in the same collapse deposit. So now we have a total of six from two different chambers, perhaps members of two incomplete sets. If they had all been used in the pilaster and niche room (10, 805) as supports for a bed and a chair, then the objects clearly moved about after abandonment.

Figure 16. The six furniture supports from House ES2

Back Entrance, Ramp, and a Tower?

The small space at the south end of the house (10,825) offered a back entrance off the "corral." From the central aisle in the house, people accessed this small rear chamber via four steps leading up to the floor, which lies 0.47 meters above the general floor level of the house (fig. 17). Anyone who continued south into the corral had to descend 0.75 meters down what appears to be a short stairway, formed as a series of stones set in pairs, at the southwest end of room 10, 825.

On the east side of space 10,825, the stone girdle wall terminates in an irregular sloping pile of stone. Perhaps a squared end here collapsed. Against the outer girdle wall on the south, builders added a huge trapezoidal mass, 8.80 meters long, made of fieldstone and clay. It fans out from a width of 0.5 meters on its low, southwestern end to nearly 2 meters wide at its squared-off eastern end, which projects slightly east from the southeast corner of the house. Could the trapezoidal mass have risen to a lookout tower? Apparently, people built towers in the Old Kingdom countryside.[10] The trapezoidal mass not only widens four-fold on its 8-meter run, it rises more than a meter, from 15.64 to 16.59 meters asl, a slope of around 6 degrees. I think the slope may reflect its purpose as a ramp up onto the roof. At its upper end, the combined thickness of the mass and the girdle wall could have created a platform whence anyone could watch all movement through the corridor leading into the corral. It was also thick enough to have supported a tower that rose higher than roof level. But the shape is not right. We would expect a square or round footprint as the foundation for a tower, as suggested by models of ancient Egyptian towers.[11]

How was ES2 Roofed? [12]

The central aisle most likely functioned as an open light well, without a permanent roof, like the open courts in House 3 and AA-S at the HeG site.[13] Oriented roughly north to south, the long walls would offer shaded relief from the sun, except at high noon. But the whole house turns slightly west of north, so it could catch the prevailing northwest wind. A partial, move-

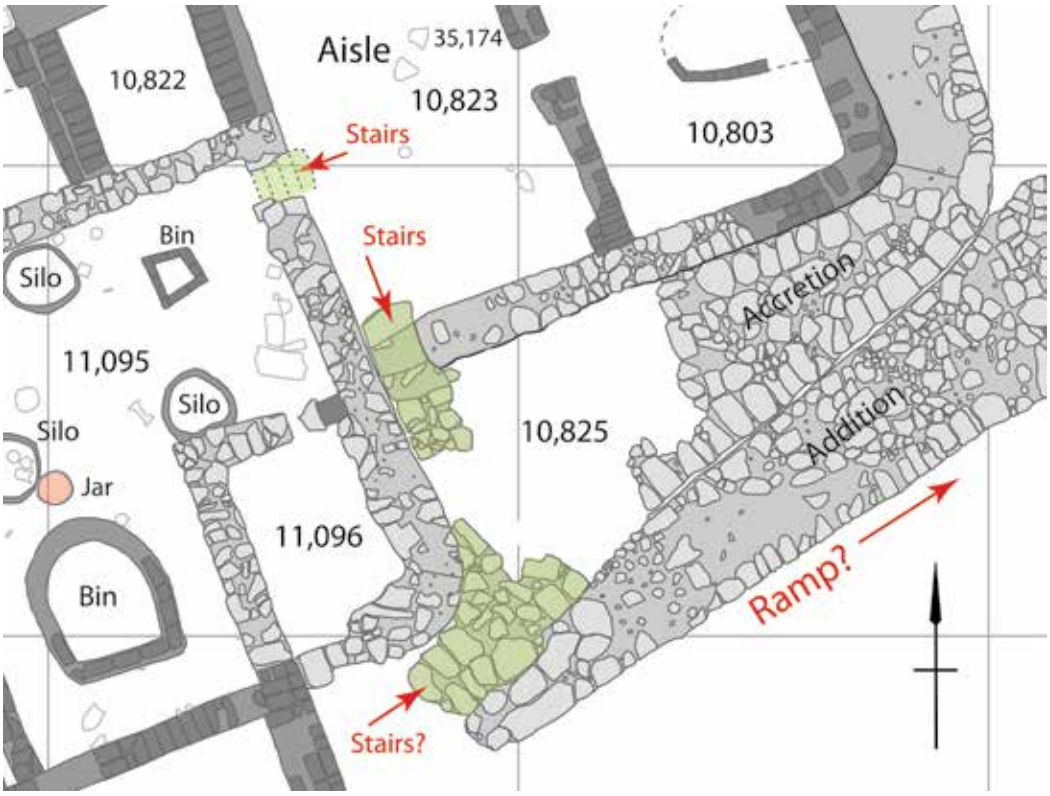

Figure 17. The southeastern corner of House ES2, showing stairs (green) from the lower floor level of the aisle up into rooms 11,095 and 10,825, and possible stairs (or stone blocking?) from the southern edge of the larger enclosure — the hypothetical corral — up to floor level on room 10,825. Note that north is up, unlike figures 2 and 3, where north is down. We found the stairs from the central Aisle (10,823) into room 11,095, collapsed, with stone pieces from the steps scattered in the aisle (map: Rebekah Miracle from AERA GIS)

able, light cover of reed mats on wooden spanners — palm logs could span this 5 cubit (2.62 m) width — would offer shade and admit the breezes (fig. 18).

The reception hall (10,805) in the core house was most likely roofed with a vault, following Arnold's reconstruction of the priest's houses in the Khentkawas Town: a parabolic leaning vault extending over the hall (fig. 18).[14] Windows in the end walls would allow pleasant cross-ventilation with the northwesterly prevailing winds.

Other chambers would probably have had flat roofs, if roofed at all. From ancient times until today, Egyptians built flat roofs on mudbrick structures with wooden beams, such as palm logs, laid across the short axis of the room and covered by a layer of plant material — poles, woven matting, palm frond ribs, and coarse grass — finished with a thick coat of mud.[15] Unfortunately, ES2 left no archaeological evidence of roofing, such as impressions of matting. But a layer of ash that covered part of ES2 (see below) included a small quantity of mud and brick fragments, which might have collapsed from a roof.

A flat roof probably covered the southern and eastern niches and other two small chambers ancillary to the hypothetical audience hall, while a vaulted roof may have covered the hall itself. For channeling cool air through these spaces during warm months, a *malqaf*, or wind catcher, could have been positioned over the eastern niche (for sleeping?). The open

side of the wind catcher would have faced northwest, provided there was also an outlet for expelling hot air, such as a window or another *malqaf*, opening to the leeward side. *Malqaf*s may also have been mounted above both ends of the central aisle to increase airflow and help cool the rooms on the east side.

The Oven Room would have had at most a partial roof covering only the north side of the chamber, given the need to ventilate smoke generated by the oven. The adjacent room 10,802 and the vestibule (10,820) may have been roofed with a continuous flat roof. It would have provided protection from the elements, security, and a work and storage area, as well as a place to escape the summer heat at night.

The Silo Room (10,804), as suggested above, may have had a partial roof, which workers used to access openings in the tops of the silos. If the silos were also covered, and grain was indeed poured in through the top, the covering needed to be high enough to accommodate men standing over the silo apertures. A light screen supported by poles would have been preferable to the heavier flat roof described above, as it would not have blocked windows in the end wall of a vault over the reception hall, if there had indeed been a vault. On the other hand, there may have been nothing over the silos, as at a number of ancient Egyptian sites.[16]

The L-shaped layout of the pantry (11,095) does not lend itself to a continuous flat roof, unless it had support columns for which we find no evidence. However, a light roof may have covered part of it, perhaps the southern end. On the other hand, people may have preferred to leave this space open because they probably needed abundant light for tasks involving the small silos.

An Evolving Layout

As noted above, originally the thick field stone girdle of ES2 reinforced an inner, thinner wall of mudbrick. Certain details indicate the mudbrick walls belong to an earlier phase, not just the step of a short building process. We found evidence of an earlier, different internal layout, but not enough to reconstruct the older ground plan or to link the features stratigraphically.

Our excavators found that room 10,805, the hypothetical audience hall, was originally an active space of movement and transit rather than a stative space for decorum. A door in the southwest corner, into what would later be the pilastered niche, opened into the pantry room (11,095). Of this we are certain. Also, a wide access may have opened through the west wall from adjacent enclosure ES1. This looks probable, but we still need to confirm it. Builders blocked these entryways when they fashioned the southern pilasters and niche. It was probably after they framed in the southern niche that they wrapped House ES2 in the massive girdle wall of broken stone.

In the Oven Room (10,803), our excavators discovered a sealed opening in the north wall of the bin that connected it to the southwestern corner of adjacent room 10,802. At some point, inhabitants blocked this opening and constructed the mudbrick box encasing the large vat. The Silo Room (10,804) also had a different configuration in an earlier phase of ES2. As noted above, a cross-wall divided this room into western and eastern parts before the western silo was built.

Builders created the back transit space (10,825) when they erected the trapezoidal ramp or accretion against the south girdle wall. But this area and the adjacent small chamber (11,096) on the west were once a single space. The uppermost surfaces of both spaces shared a common floor until inhabitants built the stone wall that separates them, perhaps at the same time that they built the girdle wall. Nearby, the southern wall of the Courtyard Pantry (11,095) shows blocked access into space 11,097 to the south, installed on a common floor of these spaces.

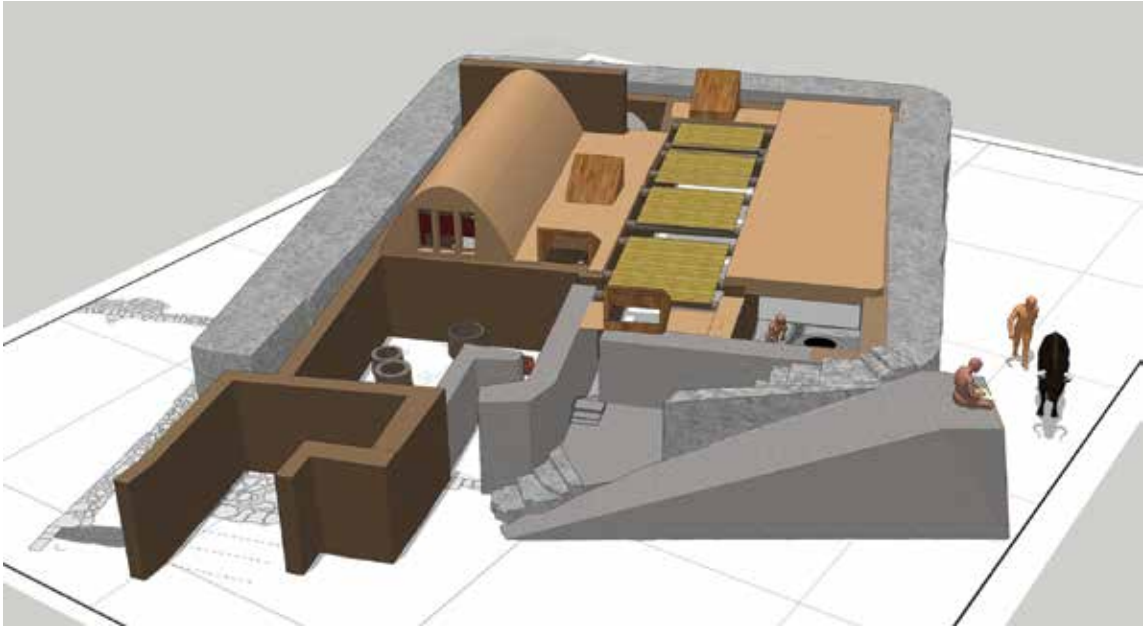

Figure 18. A 3D model showing possible roofing over ES2, including a leaning vault over the "reception hall"

Late Phase Activity and Abandonment

Our team also found traces of changes late in the occupation of ES2. In the northeast corner, people blocked the main entrance opening into the vestibule (10,820) with limestone and red granite chunks. The outside surface of the blocking was coated in silt that was smoothed over the exiting plaster on the wall, such that there was no external sign of an opening. Unfortunately high ground water prevented the excavators from reaching the bottom of the blocking or the floor in the vestibule, but they believe that they were very close to the floor level. The careful blocking suggests that people still used ES2 after this main access was closed. At this stage, they must have come from the north, through the eastern corridor into the "corral," and then they must have turned around to enter ES2 from the south.

The excavators noted that the numerous objects they found littering the final floor surface of the central aisle (10,823) probably related to activities during this late phase. Near the south end of the aisle, they found a beer jar, bread molds, worked stone, and a flint knife. Near the north end, they uncovered a worked stone and fragments of a storage vessel. Five pieces of limestone resting on the aisle floor may have been sills or lintels from the doorways along the hallway, perhaps dislodged when wooden doors were removed.

At some point after people blocked the access openings and doorways and left these items, an undulating layer of ash and charcoal accumulated over the central aisle (10,823) and eastern chambers in ES2. People may have dumped this ash and debris, as opposed to it falling from a burning roof. The core house, silo room, and 11,095 were apparently still in use. But then another layer of ash and charcoal fell over the aisle, the Oven Room (10,803), and this time, on the core house vestibule (10,821) and Silo Room (10,804) as well. The reception hall (10,805), however, was spared. It appears inhabitants were still keeping it clean. The walls in ES2 were still standing to some height, but the two large silos had collapsed. It is possible that people dumped the second layer of ash and charcoal into these spaces from elsewhere,

moving burnt debris around. Or the material might have collapsed as the roof burned and the walls crumbled.

Obviously, people eventually abandoned ES2 completely and this building fell into ruin. But ruination was not entirely gradual. In the central aisle, we found "sheet collapse," where a whole section of wall fell at once. Curiously there was no sheet collapse in the rooms along the aisle.

The Stockyard-Slaughterhouse Hypothesis

We have yet to confirm our hypothesis that the greater enclosure, together with the northern enclosures, ES1 and ES2, functioned as a "corral" and processing center for cattle. Our 2016 excavations of house ES2 did not yield items and structures we would expect from butchering, such as tethering rings, meat hacking tables, or an entrance that a bull, or bull calf, could pass through. In ES2, bins, jars, vats, and silos suggest storage and processing of grain. We might find them in any large house of this time. We have yet to excavate the adjacent enclosure, ES1 (fig 2). I suspect that there lies important evidence on the overall purpose of the whole SWI. Enclosure ES1 is on the docket for Season 2017. Meanwhile, I still find compelling the similarity of our large SWI "corral" to animal enclosures found elsewhere and to the ancient Egyptians' depictions of corrals.

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Amer Zakariya and Ashraf Abd El-Aziz headed the survey team. While we excavated at SWI, they continued the Glen Dash Foundation Survey (GDFS) of the Great Pyramid, working with a team of three assistants and Inspectors Menah Taher and Mennat Allah Taher Ahmed.

Notes

[1] In this report I benefit from the Data Structure Report prepared by Dan Jones, Hanan Mahmoud, and Rabee Eissa, "Data Structure Report for the 2016 Excavations at Standing Wall Island." Report on file. Ancient Egypt Research Associates, Boston and Giza, 2016. Wilma Wetterstrom edited this report for the *Oriental Institute 2015–2016 Annual Report* from my longer dispatch from the field.

[2] Lehner 2015, pp. 74–96.

[3] Lehner 2015, p. 76.

[4] Arnold 1998, pp. 1–18.

[5] Lehner 2015, p. 81, fig 6.

[6] Lehner 2014, p. 65, fig. 5.

[7] One example of this style of pot being used for oil comes from Mastaba G 6020, Iymery's tomb at Giza. The scene on the south wall of the first chamber includes a man pouring oil out of a cylindrical vessel like the one found in ES2. Weeks 1994, pp. 36–37, pl. 30.

[8] Reisner 1931, pp. 16–18.

[9] Lehner 2015, pp. 83–85

[10] Moreno Garcia 1997, p. 116.

[11] Badawy 1966, fig. 36, 1–3.

[12] In this section I benefit from Wilma Wetterstrom's reconstructions of how the rooms of building ES2 might have been roofed and her research into roofing in ancient Egyptian vernacular buildings.

[13] Lehner 2015, p. 86.

[14] Arnold 1998, p. 13, figs. 7, 10

[15] Kemp 2000 p. 99

[16] Khentkawes Town (Yeomans and Mahmoud 2011, figs 7.7, 7.8); Lahun (Petrie et al. 1923, p. 39, pl. 36A); Edfu (Moeller 2016, fig 8.46); Elephantine (von Pilgrim 1996, fig. 26); and Amarna (Kemp 2012, figs. 2.6, 35) all had sets of large round granaries standing in open courtyards.

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