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Table of Contents

Article - Author	Page
The Human Remains at Amarna Barry Kemp	2
Current Work at Amarna Barry Kemp	4
Pieces Found in Place Kristin Thompson	10
Where Did Amarna's Stone Blocks Go? Barry Kemp	14

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The President's Papyrus

Greetings fellow Amarnaphiles! Once again another year has passed and another annual TARF meeting was held and new officers were elected. Although the board is largely the same, this is the first time I have been elected president. As a founding trustee, I have been involved with the Foundation from its inception. It is hard to believe that TARF has been a viable organization now for 14 years. Although it has remained small (and smaller than we would like), it nevertheless, has played a very important role in helping fund research about the Amarna Period and excavations of the Amarna site. The Foundation is well known to the Supreme Council for Antiquities (SCA) in Egypt and its contributions are deeply appreciated by Egyptologists whose focus is the Amarna Period. All of this would not have been possible were it not for the interest, contributions and dues that you, our members, have given over these many years. For this, on behalf of the board, I wish to extend a heartfelt thanks and our sincere gratitude.

Like many of you, I have been fascinated with the world's ancient civilizations since the age of nine. But ancient Egypt has always been at the top of my list.

I have been formally trained as a fine artist, cultural anthropologist and historian. I am a digital archeological and historical illustrator and epigrapher, specializing in the art of the ancient world generally, and the art of ancient Egypt specifically. During my tenure as TARF's president, I hope to be able to share some of my full color reconstructions of Amarna tomb art.

In closing, I want you to know that without the tireless and dedicated efforts of Anita McHugh, David Pepper, Jill Taylor-Pepper and Evan Mitchell, this organization would not exist. We all owe them a great amount of thanks.

May you all have a great new year and I hope that you will continue to support the work and mission of this unique Foundation, of which you are all an integral part.

Floyd Chapman

The Human Remains at Amarna: Individual 114 *by Barry Kemp*

The bioarchaeology field school run by Jerry Rose for a month beginning in early May brought us up to date with the study of the human bones from the recent season, and a full checking of all of the bones from previous seasons in the search for matches between parts of individuals. It also pointed to intriguing possible differences in the results from the upper site (where this season is the fourth of excavation) and the new area lower down the valley (editor's note: see *The Akhetaten Sun*, Spring 2009, for more information on the cemeteries at Amarna). The new area is, of course, smaller, the recovered burials fewer, and the results inevitably more tentative. The finds from the graves, even though often very broken, suggest a slightly richer set of material to accompany the dead. The ages of people at death, whilst still low and suggestive of short life spans, show a more normal pattern of death, with a smaller proportion of the population dying in their teens and twenties, and more surviving beyond, although still with few living beyond the age of 45. Are these signs that the people buried closer to the valley mouth, and hence closer to the well-known rock tombs of officials, belonged to a somewhat higher stratum of society? It is a question that should be clarified as future seasons develop.

The bioarchaeology team selected two skulls, one of an adult and one of a child, and submitted photographs and other data to the University of Louisiana, Forensic Anthropology and Computer Enhancement Services (FACES) Laboratory (the skulls remaining at Amarna). Thanks to the good offices of Mary Manhein, the Laboratory returned facial reconstructions based on a computerized method that 'drapes' tissue and hair over skull data. The adult skull (Figures 1 and 3) and its strikingly lifelike reconstruction are illustrated here (Figures 2 and 4).



Figure 1: Anterior view – Individual 114



Figure 2: Anterior reconstruction – Individual 114

Individual 114 was a woman of between 40 and 50 at her death and so, for her time, a survivor. She was between 161–2 cm tall (around 5 ft 3 ins). She had broken her left upper arm but it had healed to a shorter length. She had suffered a blow to her head that had depressed her skull slightly and brought infection, but that had healed, too. She had been buried face downwards, and this had preserved her long hair plait. She took to the grave a single item of jewelry: a round bead with a flat surface and a domed back that she wore on a thread around a finger of her left hand. The design is that of the Eye of Horus (Fig. 5). In the reconstruction of her profile, we have given her a decorated ear-stud of the kind worn at the time.



Figure 3: Lateral view – Individual 114

Figure 4: Lateral reconstruction – Individual 114



Figure 5: Bead found in the grave of Individual 114

Current Work at Amarna:

2009

by Barry Kemp

The 2009 Amarna season ended in early June but results have continued to come in. In this issue of the *Sun* I report on two of them.

The geophysical survey of Amarna

In the last issue I gave a short account of a visit in March by a two-person team (Christopher Goodmaster and Stephanie Sullivan) from the University of Arkansas' Center for Advanced Spatial Technologies (CAST). Bringing with them a proton magnetometer and a ground-penetrating radar unit, their aim was to take the first step in establishing a full geophysical survey of Amarna. It is quite a costly process that stretched our resources to the limit. That it took place at all is a result of additional donations, amongst which was one from The Amarna Research Foundation that I would like to gratefully recognize.

Excavation is an essential tool for gaining knowledge about Amarna; but so too is a survey that covers the whole vast area that Amarna encompasses and enables one to see it as a unity. The survey side to the mission began as far back as 1977, with a conventional mapping of the city itself, initially done by me and later with the assistance of Salvatore Garfi, an experienced archaeological surveyor. Those were epic days, the tools a brass theodolite, tape measures, a surveyor's chain, and the means of transport was a donkey. In 1993 the Egypt Exploration Society published the result as a series of eight large folding map sheets accompanied by a volume of text.

The survey developed a second stage, beginning in 2000 and ending this year. It was to cover the rest of the desert plain, for the most part as defined by the eastern set of Boundary Stelae. Helen Fenwick of the University of Hull (UK) undertook the survey, each year bringing with her a differential GPS unit that maps to an accuracy of less than a centimeter, both horizontally in terms of co-ordinates, and vertically; an order of accuracy essential to the establishment of contour intervals especially over relatively flat desert. This year Helen drew a line under the gathering of further data in order to be able to work within a stable digital landscape model. From this a series of contour maps and shaded topographic models will be developed, that take in the results of the initial survey of the city.

The geophysical survey is the logical next step. Its aim is to gather information on what lies beneath the ground, that goes beyond what can be inferred from aerial photography. One result of the March work is to demonstrate that the magnetometer is a far more useful instrument, covering the ground faster and requiring less time for processing results than ground-penetrating radar.

Equipment that maps what lies beneath the ground typically records sudden lateral changes in the composition of deposits. Places in desert locations where sand gives way to mud brick produce a particularly strong response in a magnetometer. It is a mistake, however, to think that geophysics equipment produces something equivalent to what one might see if the covering deposits were removed by excavation. Results are typically 'fuzzy' because it is normal for walls to be surrounded by the material that has fallen from them, and no amount of filtering can completely separate rubble from standing structures. The resulting maps need careful evaluation. Close to areas of previous excavation, the composition of the old spoil heaps also has to be taken into consideration. If they are mainly sand, they are 'invisible', but if packed with brick rubble will give a strong reading.

At Amarna, where so much is already known and surveyed, calibration is a serious issue. The geophysics equipment is carried or dragged back and forth over the ground in parallel lines, equally spaced, rather in the way that fields are ploughed. The remains of the city do not lie beneath a flat surface but, covered in sand and other debris, they rise unevenly from the general surrounding level.

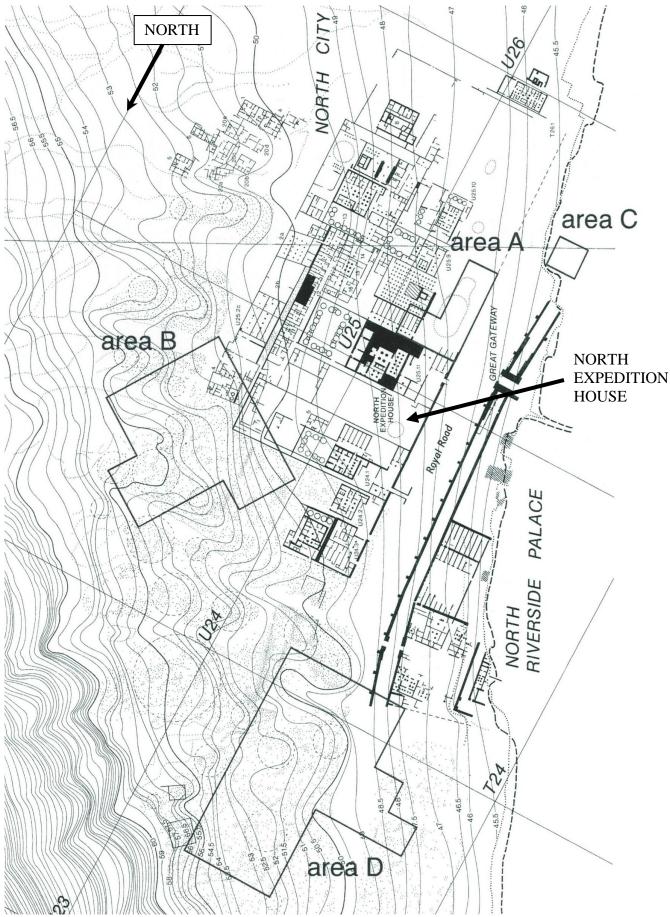


Figure 6: Map 1 - The survey area in the North city, as presented in the 1993 survey sheets. The large grid squares measure 200 meters along each side

Making sure that the grid of lines within which the equipment is conveyed is accurately laid out and is also accurately positioned with respect to the existing survey maps and visible features is no easy task. Then one has to remember the nature of the existing survey maps. The plans of the excavated buildings, which occupy a significant part of the eight published map sheets, were of necessity those of the original excavators. Too much has been covered by sand or lost to make it feasible to survey them all again without a full re-excavation. No part is inevitably incorrect, but the maps are compilations from several sources and this has to be borne in mind when trying to co-ordinate the results of the geophysics survey with the conventional maps.

It would also be useful now to take more low-level aerial photographs of the areas, with the expedition's balloon, at times of optimum shadow, so that more detailed comparisons can be made.

The following notes are based on those of the CAST team, with additional comments from me. This is a first step in establishing the survey as a long-term project and should be seen as a 'testing of the waters', the start of a learning curve. I have prepared three maps. The third map takes a first shot at adding interpretation, which brings out how much we have to learn in order to make the most of working in this way. Geophysics maps are by no means a 'quick fix'.

Christopher Goodmaster describes the magnetometer equipment: "A Bartington Instruments Grad601 vertical component fluxgate gradiometer was employed to collect magnetic gradient data over 2.12 hectares (5.24 acres) of the site. Rather than measuring the total magnetic field at any given location with a single sensor, as would a standard magnetometer, a gradiometer employs two magnetic sensors separated in vertical space. The strength of the magnetic field recorded at each sampling location by the two sensors is mathematically differenced to yield a measure of magnetic gradient across a surveyed area. Magnetic gradient is a more useful measurement than total field magnetism because it reflects levels of magnetism that are attributed to deposits within the shallow subsurface, rather than other atmospheric or more deeply buried geological sources. Additionally, the Grad601 employs two of these gradiometer sensors, separated horizontally on a carrying frame which allows two transects of data to be collected simultaneously with a single traverse, thus decreasing survey effort.

The majority of the data were collected with a sampling interval of 0.125 m at a 0.5 m transect interval (yielding a sampling density of 16 measurements per m2), while select areas were collected at a 1m transect interval (8 measurements per m2). These data were collected in 20 m x 20 m grid squares over four areas of interest in the North City, referred to as Areas A, B, C, and D."

If you want to see the area via Google Earth, go to the co-ordinates 27 40 41.28 N; 30 54 16.22 E.

<u>Survey Area A</u>

Survey Area A was located south of the old north expedition house, the one used by John Pendlebury in the 1930s. The primary goal was to investigate a large depression that may have been used by previous expeditions for the disposal of surplus objects from their excavations. A published note of this time hints that somewhere in the vicinity is the place of burial. A total of four contiguous 20m x 20m grids were laid out, oriented to the cardinal directions, and were surveyed with a transect interval of 1m. The south-west corner of the expedition house was used as a temporary datum.

The strip of ground beside the house had previously been excavated, the walls subsequently becoming covered again with sand. It is reassuring to see how the magnetometer picks up the wall outlines. The long extension of the grid southwards was over unexcavated ground, mainly occupied by the oval depression which probably marks the site of a large ancient well. The depression had been a convenient place for dumping excavation spoil. Both the depression itself and the dumps that surround it produced almost no magnetometry signature, but a major anomaly occurs towards the southern end of the depression (marked by a clustering of white and black patches).

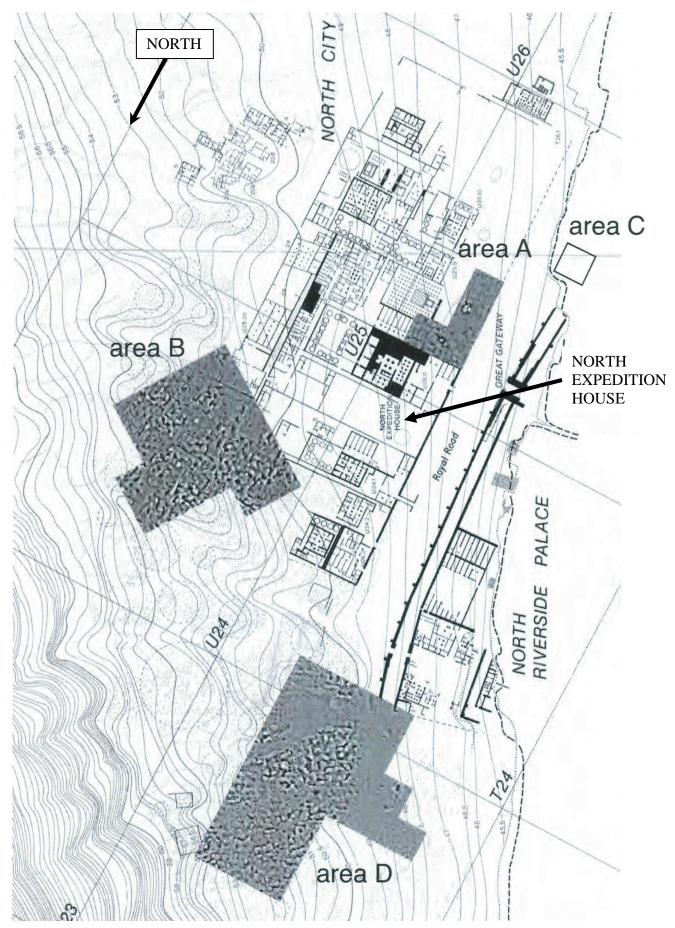


Figure 7: Map 2. The same area with the magnetometer plots superimposed.

This could have been produced by something made of metal, but whether 1930s tin cans or archaeological finds, one cannot tell without excavation. The magnetometer has, in addition, picked up the line of a long wall running close to the western edge of the survey area, and the line of an offset wall heading eastwards at right angles. These had not been noted in the previous conventional survey and are another pointer to the sensitivity of magnetometry in respect of buried brick walls; perhaps giving a clearer result when the walls are eroded and not surrounded by dense rubble.

Survey Area B

Survey Area B was to the north-east of the expedition house. Again this had been an area where surplus finds had been discarded, in this case fragments of hard stone statues of which, over the years, we have collected several hundred fragments. It is also a part of the North City not previously investigated by archaeology, running northwards from the line of buildings where the excavations of the 1930s ended. A total of 20 contiguous 20m x 20m grids were surveyed in this area, oriented at approximately 45 degrees off the cardinal directions to cross linear architectural features known to exist in the area. This area was surveyed with a transect interval of 0.5m.

It was reassuring to see how the magnetometer picked up the partially buried walls along the edge of the old excavations, providing a credibility test of the system although, when examined closely, it looks as though a topographic calibration problem is present. Northwards, one steps from the known to the unknown, the contrast in the appearance of the maps being between areas from which all rubble has been cleaned so that only original solid walls remain, and areas where walls are present but to some extent 'hidden' by accumulations of buried mud-brick rubble. The pattern that emerges suggests that the regular lines of the large estates quickly give place to individual houses more irregularly laid-out that did not keep to quite the same alignments.

The area where fragments of discarded statues have been picked up emerges as an almost featureless patch surrounding a conspicuous pale circle, somewhat to the south-east of the middle of the survey area, that is perhaps a pit.

<u>Survey Area C</u>

Survey Area C was in the fields, and was positioned to straddle the line of the twin parallel walls that run south from the Great Gateway. A single 20m x 20m grid was laid out in this area, oriented with the cardinal directions. This action provoked something that was to some extent anticipated but which shortness of time prevented from being properly addressed. The landowner wanted to negotiate a payment. This is not unreasonable but since we expect to attempt surveys in the fields regularly in the future, I decided to postpone an agreement until there was proper time for consultation. This part of the survey was, therefore, stopped before completion.

Survey Area D

Survey Area D is located to the north of the Great Gateway wall termination. A total of 28 contiguous 20m x 20m grids were surveyed, oriented to the cardinal directions, with a transect interval of 0.5m.

At the southern margin the magnetometer image shows up the outlines of a large house facing a wide open strip (Royal Road). Behind it, north-eastwards, there seems to extend a run of further houses (perhaps two of them within the magnetometer plot). The Y-shaped patch of blank ground to the south is the line of a watercourse where it looks as though ancient remains have been swept away. On its edge appears a regular pattern of small dark circles. They resemble a plan of tree pits in a formal garden. The ground here is a flat open area surrounded by what is evidently a brick enclosure wall. Two adjacent circular pale features are probably pits dug illicitly in the past and still visible. The northern end of the plot presents a more chaotic appearance. Some rectangular outlines probably represent small houses, but some of the detail is likely to be the result of illicit digging into surrounding rubbish deposits.

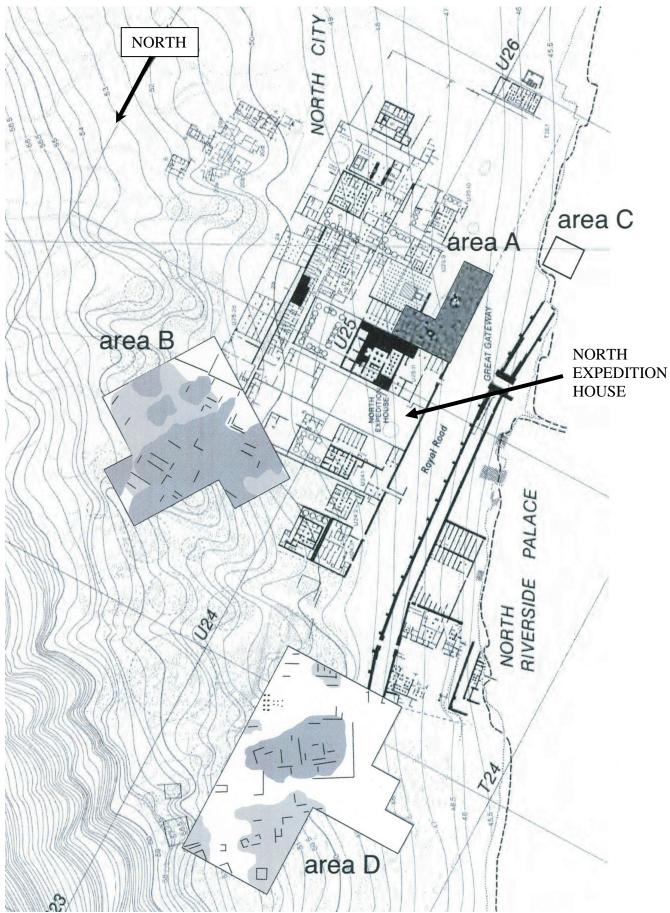


Figure 8: Map 3. The same with a preliminary interpretation superimposed on the magnetometer plots. The two shades of grey represent areas of greater (dark grey) and lesser (light grey) magnetic contrast.

The Future of the Survey

The pilot survey has led to what seems to be a solution to the need to sustain a long-running program. CAST at Arkansas, under the guidance of its director Fred Limp, has developed a series of survey field schools in conjunction with the University of California, Los Angeles and its Cotsen Institute of Archaeology. Amarna has been added to the list. The first six-week field school devoted to geophysical and conventional survey will be held in January and early February, 2011. Offering some places to members of Egypt's Supreme Council of Antiquities personnel, it has the blessing of that organization. The hope is that those who take part will benefit from working as a team on a real research project, and that, at the same time, the project will progress.

Without the generosity of our donors, however, we would not have reached this stage. Conventional survey, for reasons explained above, remains an essential component, and there is a continuing need for it in all our work. We have reached the stage where the expedition needs to have its own survey electronic Total Station. At its last board meeting, TARF made a very generous donation that covers the full cost of an instrument. I have been taking advice, and plan to make the purchase (in Cairo) shortly, in time for the next field season.



Figure 9: Photograph of the northern expedition house in the 1920s, showing just behind it the huge well depression partly filled with recent spoil heaps. Photograph copyright Egypt Exploration Society.



Figure 10: Recent photograph of the northern expedition house, now a ruin.

Pieces Found in Place

by Kristin Thompson

In past issues of the Sun, I have described the hundreds of statuary fragments that were reburied by previous excavation teams (*Akhetaten Sun*, May 2003). The South House Dump contained pieces that the German expedition found during the years immediately before World War I. Some of these come from the workshop of the sculptor Thutmose. Others probably came from additional workshops in the same district of the Main City, also excavated by the Germans. Perhaps a few originated with the early seasons of the Egypt Exploration Society in the 1920s. The North House Dump pieces were buried in the mid-1930s by John Pendlebury's team; most or all of them originated in the Great Palace.

During eight seasons beginning in 2001, I registered the fragments from these two dumps, matching pieces when possible, and reconstructed large portions of an unfinished granodiorite seated pair statue of Akhenaten and Nefertiti. (See "A Tale of Two Dumps" in the May 2003 *Sun* and "The Granodiorite Pair Statue from the Thutmose Workshop" in the issue for December 2003.) During the 2009 season I finished registering the fragments (including a few hundred relief pieces from the South House Dump).

Tracking down exactly where some of these reburied pieces were found has been a challenge. My search has taken me to the Ägyptisches Museum in Berlin to examine the field records of the German expedition, and to the photographic archives of the EES. The latter contains images of eight of the North House Dump pieces, with indications of find spots within the Great Palace by room.

Although I have spent much of my time in the workrooms dealing with statuary and relief fragments, I occasionally have the chance to walk around the ruined buildings. Almost invariably I have found at least one little piece of worked stone, and occasionally something more spectacular turns up. Naturally it is especially pleasing and important to find a piece that no one has previously noticed in roughly the place where the statue from which it came originally stood. Of the dozens of surface finds I have made, here are three fragments that were particularly exciting, each from a different area of the city.

The Great Aten Temple

The GAT was first excavated by Howard Carter, working in association with Flinders Petrie in 1891-92. Carter found many shattered pieces of statuary from the temple's sanctuary, mostly made of indurated limestone, quartzite, and diorite. A considerable number of these made their way to the Metropolitan Museum of Art, although others can be seen in the Louvre, the Brooklyn Museum, and elsewhere. The GAT was more thoroughly excavated by the EES in 1926 (the sanctuary and other buildings at the eastern end) and 1933 (the front portion and service buildings to the south).

In 2004, Marsha Hill, a curator at the Met who has worked extensively with the GAT pieces there, came to Amarna for a research visit. She and I walked over the temple, since she wanted to see the context in which the fragments had been found. I had never had a chance to do more than see the temple from the front end. From the road it looks unpromising, with few features apart from the excavators' spoil heaps visible. Given that the building had been investigated twice, we were not expecting to find any pieces.

As it turned out, we found dozens of them. Many were simply small border pieces or chips of quartzite with a hieroglyph or two. The latter may have come from the great stela that stood in the area in



Figure 11: Blue Crown Fragment

front of the sanctuary, other pieces of which have previously been collected. A few of the pieces, though, were more significant.

I spotted my favorite among my own finds of that day when I saw some little white hieroglyphs sticking up out of the sand. The fragment (Figure 11) turned out to be the back of a blue crown and the top of a cartouche on a back pillar. It probably comes from a small indurated-limestone statue of Akhenaten, perhaps a third life-size (15.4 x 8.7 cm). There is evidence from the temple and the Great Palace for statues of the king on this scale holding offering tables, so this piece may come from such a figure. Given how denuded the Great Temple was, such a fragment may be the only surviving evidence for the existence of a particular statue.

The Kom el-Nana

This is the modern name of a substantial temple at the southern end of the Royal Road, well beyond the reach of the South Suburb residential area. Recent research by team member Jacqueline Williamson has turned up evidence that seems to confirm the building's identification as a sunshade temple of Nefertiti. It was investigated briefly in 1963, when the Egyptian Antiquities Organization had a series of trenches dug. The work turned up a small number of statuary fragments and some decorated blocks. During the late 1980s and early 1990s, the EES expedition excavated the site in more detail, finding more material of the same kind.

The Kom el-Nana still, however, has not been fully excavated. On two separate visits, I spotted pieces of purple quartzite fragments from roughly life-size statues. One was simply a piece of lower leg, the sort of piece that has been common among the statuary finds at Amarna. The other (Figure 12) was far more unusual: the middle section of a right foot from a composite statue (9.3 cm high by 7.3 long). Within pharaonic history, composite statues, consisting of heads, arms, and feet with tenons designed to fit into mortises in pieces of stone representing garments, are unique to Amarna. The most familiar pieces of this type were a group of unfinished female heads discovered in the Thutmose workshop and now in Cairo and Berlin. The Kom el-Nana has provided several completed composite pieces found near where the original statues stood.

The foot is the first Amarna composite piece discovered on which any adhesive material survives. Some of the gypsum concrete originally used to glue it to a base in a contrasting stone clings to the surface of the rectangular tenon on the underside, including a dollop that must have gathered in a chip in the mortise. This new evidence helps answer speculation as to how—or even whether—the pieces of composite statues were assembled.



Figure 12: Foot from a composite statue – Kom el-Nana

A Possible Workshop

In 2009 Barry Kemp asked me to examine an area where he had noticed a large number of dark hardstone chips on the surface. This area, which has never been excavated, lies about 200 meters south of the Small Aten Temple and a short distance west of a large private house familiar to visitors because it has a modern viewing platform beside it. The main feature of this vicinity is a large well depression. Across a considerable surface, stretching perhaps a third of the way around the well on its northeastern rim, there are many pieces of dark purple quartzite and granodiorite, as well as a few large chunks of granite and travertine (commonly referred to as alabaster). A small portion of these had worked surfaces, though these were mainly sides that had been hammered flat. Some very deteriorated pieces of indurated limestone might be the remains of statues' back pillars. Their presence indicates that a considerable number of hardstone objects were made in this area: perhaps stelae, statues, altars, vessels, or architectural elements like uraeus friezes or balustrades.

One clue may come in a piece (Figure 13) that I found while walking over the site, a small piece of limestone containing a sketchily carved ear (ear 9.4×4.5 cm, overall dimensions 11.2×7.3). The lobe, which had been the only part protruding from the sand, has weathered to a light brown, but otherwise the piece is in pristine condition. It is complete rather than broken off an unfinished statue. The underside is flat, and the edges have been chiseled to roughly shape the piece in preparation for the carving of the ear.

The ear might be a votive piece, especially given its proximity to the Small Aten Temple. If so, it might either be a piece used by a private individual in worship or a product of a workshop in the area of the scatter of chips.

Alternatively, it might be a practice piece made by an artist in such a workshop. I am inclined to favor this interpretation. For one thing, the ear is not shaped like votive pieces containing ears that have been found at Amarna, which tend to be wide at the top and taper to a small lobe. The limestone ear is unusually long in shape, and it tapers relatively little from the upper rim to the lobe. The distinctive shape, with the back of the rim nearly straight, resembles that of the ears on the East Karnak colossi. This ear is also over life-size. If a sculptors' workshop existed in this vicinity, it might have included the creation of statues, colossal and otherwise, for the Small Aten Temple. The ear and the scatter of chips suggest that future excavation might reveal a workshop attached to the temple.



Figure 13: Ear found near the Small Aten Temple

Where Did Amarna's Stone Blocks Go?

by Barry Kemp

Beginning in the reign of Horemheb, the stone blocks that had been cut to a standard size, the talataat blocks, and which had been the standard material for building parts of the temples and the heart of the Great Palace at Amarna, were methodically taken down and transported to be re-used as building material at other places.

Some broke in the process, leaving fragments behind. Many thousands were shipped to the city of Hermopolis (El-Ashmunein) across the river.

In a small temple of Rameses II (Figure 14) a whole wall of re-used talataat blocks can still be seen standing, though in a terrible condition as dampness from the soil brings salt to the surface. Many are probably foundation blocks or come from the undecorated cores of thick walls and pylons, but here and there decorated surfaces are visible.



Figure 14: View of the small temple of Rameses II beside the modern village of El-Ashmunein, built very largely of Amarna Period talataat blocks.



Figure 15: Wall showing the bottom of a cartouche with thick convex surrounding band characteristic of the Amarna Period.

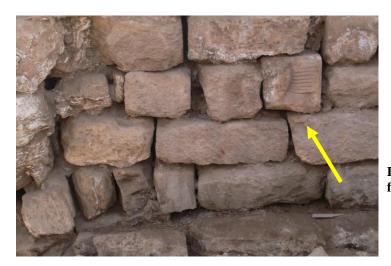


Figure 16: Detail of cartouche from Fig. 15



Figure 17: Fragment S.2560 in store at Amarna, from excavations at Kom el-Nana. It appears to show a man standing beside a wooden lattice-work container of the kind shown on Nile cargo boats.

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