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An Excavation and Geophysical Survey in the Central Valley of the Valley of the Kings

Afifi Rohim Afifi and Glen Dash

Introduction

Between 2007 and 2011, the Egyptian Supreme Council of Antiquities (now the Ministry of State for Antiquities) undertook a comprehensive set of excavations and surveys in the Valley of the Kings. The initial season in December 2007 heralded the first excavation in the Valley by an all Egyptian team of archaeologists. The mission, conducted under the supervision of Dr Zahi Hawass, then Secretary General of the Supreme Council, consisted of Afifi Rohim Afifi as field supervisor and team members Eltayeb Mohamed Elkhodary, Ahmed Mohamed el-Lathiy, Ahmed Ali Mohamed, Hamada Abdel Moeen Kellawy, Mohamed Abdelbadie, Abdelghafar Wagdi, and Ahmed Hemada. Within the scope of the excavation, permission was granted to Glen and Joan Dash of the Glen Dash Foundation to undertake a targeted geophysical survey. In this paper we will discuss our preliminary findings in and around the ‘Central Valley’ of the Valley of the Kings, an area bordered by KV 8 (Merenptah) at its northwest, KV 55 (the Amarna Cache) at its northeast, KV 11 (Ramesses III) at its southwest, and KV 17 (Seti I) at its southeast.

Purpose of the work

We had several motivations for resuming exploration in and around the Central Valley. One was the mystery posed by the ‘Cairo Ostracon’ (JE 72460). According to Thomas (1977, 209), the ostracon describes the location of the tomb of Isisnefert, probably the mother of Merenptah and a wife of Ramesses II, or perhaps the daughter of Ramesses II and wife of Merenptah. The inscription states that the tomb was established during the construction of the tomb of the ‘generalissimo’ (presumably Ramesses II), and describes its location with respect to a ‘willow’, a feature known as ‘the water of the sky’, the tomb of the ‘greatest of seers Meryatum’ (presumably KV 5), and the tomb of Ramesses II (KV 7). We thought that the most likely location for this tomb was in the rock bay between the tomb of Ramesses II and Merenptah along a water channel Howard Carter had partially cleared (Romer 1981, 304–312).

Secondly, we wanted to further investigate theories proposed by Stephen Cross and previous geophysical work conducted by Hirokatsu Watanabe for Nicholas Reeves. Cross (2009, 5–20) theorized that flooding events soon after the burial of Tutankhamun had sealed his tomb and perhaps others, still undiscovered, nearby. Watanabe’s ground penetrating radar work revealed
many unexplained anomalies in the Central Valley (Reeves 2008, 1). Finally, we wished to continue the work of previous explorers in this area, including Theodore Davis and his teams, Howard Carter, Otto Schaden, and Nicholas Reeves.

To facilitate this work, we divided the Central Valley and its surrounding region into several research zones (Fig. 1.1). The first of these zones extended from the base of the escarpment above the tomb of Merenptah to the Valley floor along the water channel. We divided this research zone into three areas, designated areas A, B, and C. To the south and west we set aside a research zone between KV 10 (Amenmeses) and KV 11 for ground penetrating radar survey only and did not excavate it. This helped to keep the tourist pathways open to the south and west. Our third research zone was the Central Valley proper which we explored using a combination of conventional excavation techniques and geophysics.

**Mission planning**

We began our efforts by studying the work of earlier explorers to the extent their reports were available. Collectively, Davis’ teams and Carter uncovered two sets of “workmen’s huts” in

![Figure 1.1. The region surveyed was divided into areas A, B, and C, the Central Valley proper, and the zone between KV 10 and KV 11. Image courtesy of the Ministry of State for Antiquities.](image-url)
the Central Valley which flanked what Carter called a “deep water course” (Carter 1921, 1) (Fig. 1.2). We later established that the base of this water course lies about 10m beneath the current grade. Carter found KV 62 (Tutankhamun) beneath one of the workmen’s huts at the western edge of the Central Valley. The Amenmeses Project, under Otto Schaden, later identified additional huts at the southern edge of the Central Valley, and found KV 63 under one of those (Schaden 2008, 231).

Most of the tombs in the Valley of the Kings were built into cliff faces. For this reason, early explorers, including Davis, had a tendency to follow the bedrock faces down to their bases in their search for tombs. Once they reached a level below what they thought had been flooded in ancient times, they stopped. Even if a tomb was found, they thought it would have been flooded and its contents destroyed (Davis 1908, 3).

One exception was the discovery of KV 55 by Edward Ayrton working for Davis in 1907. Working just south of KV 6 (Ramesses IX), Ayrton (1910, 7) pushed through a layer of cemented limestone chips – likely the product of ancient flooding (Cross 2009, 11) and then through a clean layer of limestone fragments to find KV 55 cut into the nearly horizontal bedrock below the fragments. This was the first of the Eighteenth Dynasty tombs found in the Central Valley, all of which turned out to have the same basic characteristics – they are cut into relatively horizontal tiers of bedrock and are found under strata deposited or cemented by the action of water. In the case of KV 62 and KV 63, workmen’s huts were built on top of this layer, further capping them.

In planning our geophysical work we decided that our best course of action was to use ground penetrating radar to trace the profile of the subsurface bedrock. The cliff faces bordering the Central Valley terminate in relatively horizontal tiers of bedrock which, in turn, border the deep water channel. These bedrock tiers would serve as strong radar reflectors and hence good radar targets. Atop the bedrock tiers we could expect to find one or more layers of material either deposited by the action of nature or man, and, perhaps, additional workmen’s huts.

Mission geophysics

We established seven ‘geophysical survey areas’ for radar survey (Fig. 1.2). The first, geophysical survey area 1, lay between KV 10 and KV 11 (Ramesses III). To prepare for this portion of our survey, we reviewed the work of the Amarna Royal Tombs Project (ARTP) which had conducted excavations to the north and south of this area (Reeves 2002, 1), and the work of the Amenmeses Project which had excavated the very easternmost portion of this area and the region to the east of KV 10 (Schaden 2008, 231).

ARTP site 1 was located just to the north of geophysical survey area 1 and extended from KV 56 (‘Gold Tomb’) to KV 9 (Ramesses VI). There, in the topmost three meters, the ARTP found material dumped by Theodore Davis’ teams and by Howard Carter. Careful screening of the material by the ARTP resulted in the recovery of gold leaf, mummy linen, and decorated ostraca, among other things. Beyond three meters in depth, the ARTP encountered workmen’s huts which they were able to link up with those mapped by Carter. These huts were built on one or more bedrock steps or tiers which descended into the water channel. Pottery and ostraca allowed the ARTP to date the latest of these huts to the Twentieth Dynasty, specifically to the period between Ramesses III and Ramesses VI (Reeves 2002, 1).

ARTP site 3 was located to the south of the area we selected for survey. According to their preliminary report, site 3 was “rich in finds” especially near KV 11 where Giovanni Belzoni
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had established a camp, apparently leaving behind material excavated from KV 11 and KV 17 (Reeves 2002, 1).

In their search for foundation deposits in front of KV 10, the Amenmeses Project encountered two clusters of workmen’s huts built on bedrock tiers flanking the entrance to the tomb. KV 63 was found beneath one of those (Schaden 2008, 231).

We surveyed geophysical survey area 1 using a GSSI SIR-2000 radar system employing a 200MHz antenna. We used standard techniques to map it, moving the antenna along parallel transects running from south to north and recording the data from each transect in a separate computer file. The survey began at the eastern edge of the area and required 13 transects in all (Dash and Afifi 2009a, 1). Figure 1.3 shows some of the radar sections from this area. The radar data from transect 2 revealed three bedrock tiers in the subsurface. Along transect 4, two meters to its west, we again saw tiers, along with an anomaly which we have designated anomaly A. It appeared eleven meters along the traverse at a depth of three to four meters. This anomaly may have been caused by multiple radar reflections off a metal pipe that ran through the area. However, metal pipes tend to generate characteristic responses to radar waves and this response was different. It might also have been an artefact of the ARTP site 1 operations in the area. According to the available data, though, the ARTP site 1 operations did not extend this far south. Therefore, this could be a feature of archaeological interest, perhaps a substantial workmen’s hut or even the entrance to a tomb. On the other hand, the radar image was indistinct,
1. An Excavation and Geophysical Survey in the Central Valley of the Valley of the Kings

Figure 1.3. Results of our radar survey from the zone between KV 10 and KV 11. Images by Glen Dash.

This vertical slice taken along Transect 2 clearly shows three tiers.

Two meters to the west, along Transect 4 we see the metal pipe at the surface and Anomaly A below it.

Along Transect 12 (the western edge of the survey area) the tiered structure of the bedrock is still in evidence with Anomaly B below it.
and we were not able to determine whether it was caused by a feature resting on the bedrock tier, a penetration through it, or both. A second anomaly, anomaly B, was located near the end of transect 12 and could also be of archaeological interest.

We also completed radar surveys of geophysical survey areas 2 through 7. Most of the region encompassed by these six geophysical survey areas was subsequently excavated. Since we discussed the results of those excavations elsewhere, we need not discuss the geophysical findings here (Dash and Afifi 2009c, 1). However, there were two significant subsurface features in those areas that we could not completely investigate through excavation. First, due to tourist traffic, we could not completely clear the northern end of geophysical survey area 3. Here we detected what may be an eastern extension of huts uncovered by Carter. Second, we established that at least the northern end of the Rest House (and the Inspector’s Office which once stood to its north) was built upon fill, not bedrock as we had originally assumed. While it might stand to reason that this area was cleared to bedrock by earlier explorers, we have no evidence of that in the archaeological record. Therefore, what lies under the Rest House remains a mystery. Because it was built on a slab of reinforced concrete, we were unable to image beneath its floor.

Excavations in areas A, B, and C: the water channel

In the spring of 1914, Theodore Davis wrote Henry Burton, asking him to turn his attention to the bay between KV 7 and KV 8, an area which had become choked by debris from previous excavations. However, time and finances kept Burton from the task (Romer 1981, 293). Working for Lord Carnarvon, Howard Carter initially probed the area in 1917 (Romer 1981, 304). In 1920, Carter returned to it and cleared much of the area down to cemented flood layers and in the process found a remarkable cache of 13 alabaster vases from the reigns of Ramesses II and Merenptah located just above the opening to KV 8 (Romer 1981, 309–312). According to Romer (1981, 310) “These splendid vessels were probably the most beautiful things that Carnarvon had so far found in all his fifteen years’ experience of excavation and Lady Evelyn insisted on digging them out from the flood layers that held them, with her own hands”. As was the custom of the time, the jars were divided between Carnarvon and the Egyptian authorities, and six of them became part of Carnarvon’s private collection at Highclere. After their discovery, Carter had high hopes of finding a tomb in this area and began to cut through the flood layers in front of Merenptah’s tomb. However, he found only a few tools and a workmen’s hut. Carter then turned his attention elsewhere, leaving much of the area between Merenptah and Ramesses II incompletely excavated.

We sought to complete Carter’s work by undertaking a systematic clearance of areas A, B, and C. Our initial examinations revealed that the ancient Egyptians carefully designed and sculpted a water channel that ran from the base of the escarpment to the west of the tomb of Merenptah to the Valley floor (Fig. 1.4) (Dash and Afifi 2009b, 1; Hawass et al. 2010, 61–66). Within the channel, small dams had been constructed, presumably to control and direct the flow of water. Near the entrance to the tomb of Merenptah we uncovered a small basin cut into the bedrock which may have been used to collect water for daily use.

We also encountered the hut described by Carter in area B at an elevation of 180.57m ASL. We found two limestone walls, one running 3m from east to west and the other 5m north to south. The natural bedrock formed the western side of the hut. A circular 0.30m-wide pit, 0.22m in depth, was cut into the bedrock floor of the hut, and may have been an emplacement for a water jar (Hawass et al. 2010, 63).
Above the hut in area B we encountered many large, irregular boulders sunken into the debris. It was unclear to us whether they were placed there deliberately, or had fallen naturally from the cliff face above. In area C, just above area B, we found 26 such boulders.

One of the goals of our mission was to make a thorough epigraphic record of the graffiti in this area. Two of the known graffiti, Černy 280 and Černy 307, mention that the vizier Userhat had established a tomb for his father, the vizier Amennakht, in this area (Hawass et al. 2008, 60). We relocated and rerecorded those inscriptions along with many others. We also recorded at least 20 new inscriptions, including four on a huge standing boulder in the middle of the area (Figs 1.4–1.5). We are in the process of studying these new inscriptions and plan to report on them in future publications.

To the north and west of the standing boulder we found a narrow passage cut into the bedrock enclosing a flight of ten steps. Its function is unknown (Hawass et al. 2010, 65).

Figure 1.4. A: the water channel as photographed from the escarpment looking east towards the Rest House. The large boulder in the center, supported by wooden beams, contained numerous graffiti. B: the water channel after its clearance photographed from the Valley floor and looking to the west towards the Tomb of Merenptah. Images courtesy of the Ministry of State for Antiquities.

Figure 1.5. New graffiti recorded by the expedition. The inscription was found on the large standing boulder visible in Figure 1.4. It appears to have been authored by the vizier Userhat. Image courtesy of the Ministry of State for Antiquities.
The Cairo Ostracon

According to Thomas (1977, 212), the Cairo Ostracon states that a ‘willow’ stood 13m from KV 7 and 16m from KV 5 (sons of Ramesses II). This would place it along the present tourist path between the two tombs. The tomb of Isisnefert was described as being 104m from KV 5. While we have no way of knowing whether the author of the ostracon was describing a linear distance to the tomb or was describing the distance he had to walk over the pathways to get there, a linear measurement would place the tomb of Isisnefert near the current location of KV 8. As for the ‘water of the sky’, it may be tempting to associate it with the water channel we cleared. Unfortunately, the ostracon places the bottom of the ‘water of the sky’ much farther away, 233m from the tomb of Isisnefert.

However, the ‘water of the sky’ may be the description of a geological feature, not a place. Thomas (1977, 214) describes two graffiti, Černý 3012 and Černý 3013, which she believes locate the ‘water of the sky’ referred to in the Cairo Ostracon above the tomb of Bay, KV 13. However, she also notes that graffito Černý 1736 refers to another place as the ‘water of the sky’, this one being beyond the tomb of Amenhotep III in the Western Valley (Thomas 1977, 215). Thus, there may have been many places termed the ‘water of the sky’ in the Valley, places where waterfalls formed and were considered sacred. The water channel we cleared may have been one of those.

Excavations in the Central Valley proper

Having cleared the water channel, we began to excavate the Central Valley proper, in the centre of the present day tourist path and directly over the workmen’s huts originally found by Davis’ teams (Romer 1981, 305) (Fig. 1.6). Our purpose was to remap the huts using modern excavation and survey techniques and then to probe beneath them. We found, however, that previous explorers had not stopped at the flood layers here as expected but had instead already probed through the floor of the huts to the bedrock below.

Our surveys revealed that the western groups of huts were constructed at a higher elevation than the huts to the east. All the huts were originally constructed above flood layers. We found evidence of reuse and extensions in the eastern group of huts, whereas the western huts seem to have remained as originally constructed.

Figure 1.6. A: the Central Valley proper excavation taken from above KV 9, looking east. B: the same area photographed from the south. Photographs by Glen Dash.
Notable finds

Notable finds from the areas we excavated included a partial faience shabti of Seti I in typical form with hieroglyphic inscriptions carved in three horizontal bands (Fig. 1.7). We also recovered a finger ring in scarab form in area B. The scarab is set on a swivelling bevel and has a wire of gold passing through it, winding around the hoop on both sides. The hieroglyphs are finely formed and well inscribed. A number of alabaster sarcophagus fragments attributable to Seti I were also recovered (Fig. 1.8). The sarcophagus and several pieces of the smashed lid were purchased by the Sir John Sloane Museum, London, and the recovery of this material will enable further reconstructive work on the lid to take place.

Figure 1.7. A: a partial faience shabti for Seti I. B: a scarab finger ring recovered from area B. Images courtesy of the Ministry of State for Antiquities.

Figure 1.8. Fragments from the sarcophagus of Seti I. Images courtesy of the Ministry of State for Antiquities.
Conclusion

Among other things, our excavations cleared the rock bay between KV 7 and KV 8 which Howard Carter had explored but had never fully excavated. We relocated the hut Carter identified and cleared the bay to bedrock, finding a well sculpted water channel with dams and catchments, apparently for water collection. We rerecorded the graffiti here and found at least 20 new inscriptions. In the Central Valley proper, we re-exposed and remapped the workmen’s huts found by Davis’ teams and Carter.

Our surveys confirmed that a deep water course cut through the Central Valley of the Valley of the Kings in the Eighteenth Dynasty. The deep water course was flanked by bedrock in horizontal tiers. The Egyptians of the Eighteenth Dynasty cut at least three tombs into those tiers, KV 55, KV 62, and KV 63. Through our efforts and those of our predecessors, most of the Central Valley has now been cleared, but at least one section remains – between KV 10 and KV 11. Our geophysical surveys indicate that features of significant archaeological interest may be found there.

Notable finds from the excavation included shabti fragments, sarcophagus pieces, and fine jewellery.

Bibliography


