In Search of a Future Companion

Digital and Field Survey Methods in the Western Nile Delta

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1. Introduction

After reading the *Companion to Ancient Egypt*,[1] it occurred to me that despite its authoritative scholarship and hefty 1,352 pages, it contained virtually no discussion of regional settlement and paleoenvironment.[2] Consider that eleven chapters of the *Companion* are for the decorative arts, five for language, but just two for settlement. These two chapters focus on exemplars of urban form and planning in the Pharaonic and Classical eras, respectively.

Compare this work with the *Companion to the Archaeology of the Ancient Near East*[3] from the same publisher, which offers *seventeen* chapters (counting the introduction) on regional settlement, urbanism, and human-environmental dynamism. Turn to another region in the Mediterranean[4] or the Near East,[5] and one finds regional survey-derived archaeological data intertwined with historical, cartographic, remote sensing, and physical scientific evidence to describe the delicate interplay of *longue durée* settlement patterning and the natural world. I wondered why discussions such as these are missing from fundamental survey

1 LLOYD, 2010.
2 TRAMPIER, 2012.
3 POTTS, 2012.
4 E.g., CHERRY et al., 1991; BARKER/HODGES/CLARK, 1995; GILLINGS/SBONIAS, 1999; CHERRY, 2003.
5 ADAMS, 1981; AMMERMAN, 1981; BINTLIFF/DAVIDSON/GRANT, 1988; WILKINSON, 2003.

volumes like Lloyd's *Companion*: A wealth of epigraphic riches?[6] A lingering divide between anthropological archaeology and Egyptology?[7] The perceived and real logistical challenges that working in the Nile floodplain poses versus the low desert fringe?[8] Disciplinary momentum? Or is it simply that the semantics of the book titles – and thus content – differ? That is, would things have been different if the book were titled "Companion to the Archaeology of Ancient Egypt"?

Let's look at this a different way. Where is the discipline of Egyptology/ Egyptian archaeology (using the terms interchangeably) focusing its collective gaze, such that the two *Companion* volumes might be so different in content? The SCA official website from 2010 offers a representative snapshot of archaeological activity in Egypt to address this question. I geocoded and parsed the list of 239 projects published on the website that year, noting each project's location and the nationality of its director's home institution. Here is an example of one project's record: "Qubbat Afafendina, Old Cairo. Agnieszka Dobrowolska, Netherlands-Flemish Institute, The Netherlands".

Twenty-four countries, including two projects with Egyptian co-directors, were represented in the SCA list (figure 1, left). Overall, France had the highest representation with fifty projects, a quarter of which were in Luxor/Thebes and 18 % in Saqqara. American directors chaired forty-two projects, about a third of them in Luxor. Great Britain had just one project in Luxor at KV 57, with five of its twenty-five projects in Saqqara. The remaining top ten countries had sizable investment in Luxor and Saqqara as well.

Figure 1 (right) shows the geographic distribution of projects. As the country breakdown suggests, Luxor/Thebes contained the most (n=60), followed by Saqqara (24) and Alexandria (18). Together with Aswan (9), Cairo (9), Giza (7), and Abydos (7), these seven places constitute almost 60 % of the whole of foreign-funded effort. Enlarging this sample to include the entire Memphite (+ Dahshur, Memphis, Abu Rawash, Ma'adi, Helwan, and Abusir) and Amarna clusters (+ Sheikh Ibabda, Deir el-Bersha, Kom el-Ahmar, el-Amarna), the total rises to 65 %. Well over half of the projects listed were concerned with recording and conservation of monuments, and half of the total focused primarily on mortuary practices, such as tomb epigraphy and cemetery excavation.

Certainly the SCA list, and so figure 1, has some slight omissions. One of the largest is Egyptian-led projects. While it would be nice to have public records of

6 Meskell, 2006.

7 Lustig, 1997.

8 Van den Brink, 1988; Von der Way, 1991.

these, anyone working in the country knows they are not readily available. Yet even adding in such omissions or having an up-to-the-minute list from 2015, it is doubtful the picture would change drastically. Based on my limited experience, I suspect that more Egyptian-led projects would see better coverage of floodplain salvage work by Delta inspectorates around developing towns.

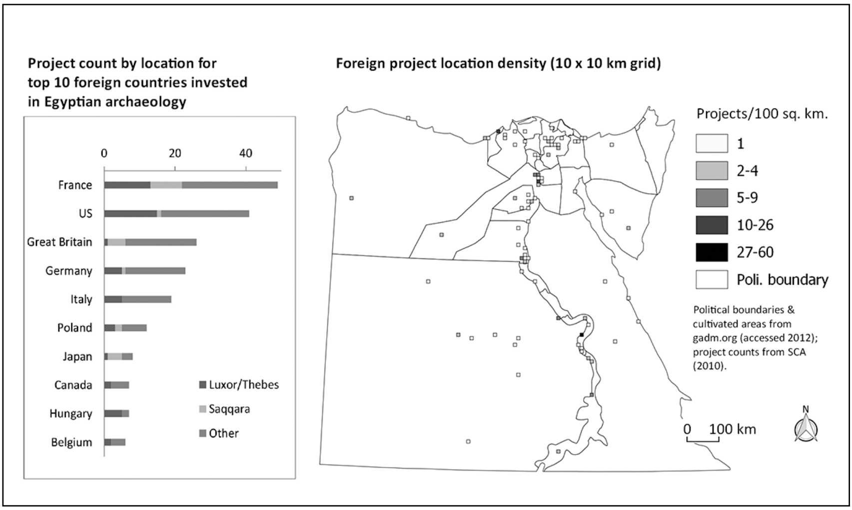

Figure 1. (left) Project count by country of origin and areas of interest for top foreign-institution-affiliated, active projects in 2010. (right) Geographic distribution of these projects.

2. The Delta floodplain in Egyptology

With this uneven geographic distribution, it is not surprising that less than 20 % of the projects on the list actively investigated settlement. Because our discipline concentrates its intellectual and financial resources largely on the landscapes of the powerful and the dead, our understanding of the places where people lived and relationship with their local environment remains primitive. The Nile Delta floodplain – a place where the majority of Egypt's population has lived and continues to live – remains largely overlooked, despite its vast potential and warnings about destruction of its archaeological contexts.[9]

9 VAN DEN BRINK, 1987; BIETAK, 2009.

Several projects in recent decades have worked to address this imbalance, conducting combined archaeological and geomorphological surveys around Qesna,[10] Tell el-Muqdam,[11] Tell Tebilla and Middle Egypt,[12] Kom Firin,[13] Kom Khawaled,[14] Memphis,[15] and along the shores of Lake Maryut,[16] to name a few. The Delta floodplain west of the Rosetta branch and north of the ancient confluence of the Rosetta and Canopic branches (hereafter, the "western Delta") has seen its share of survey too, particularly the Naukratis survey[17] and Wilson's Western Delta Survey[18] shown in figure 2.

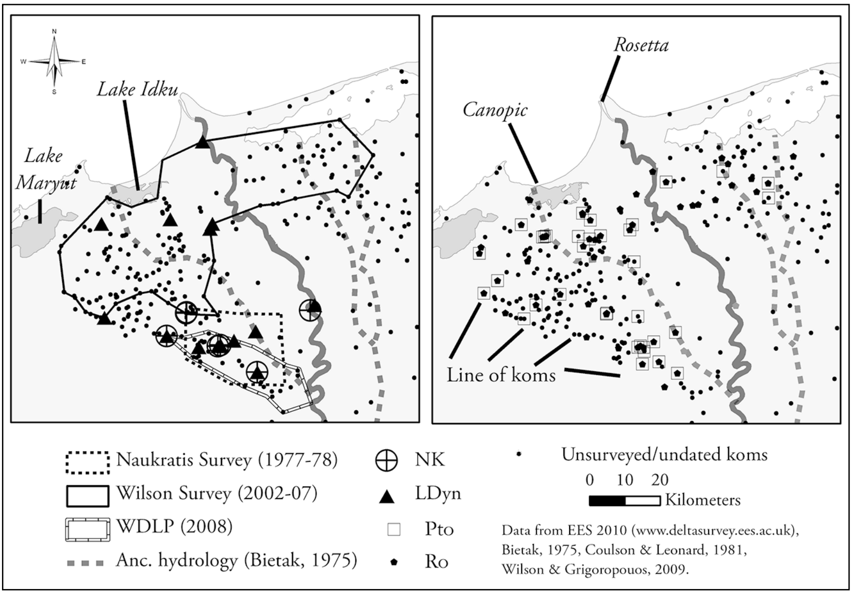

Figure 2. Location of EES Delta Survey koms *and previous surveys in the western Delta.*

10 Rowland/Wilson, 2006

11 Redmount/Friedman, 1997.

12 Parcak, 2005.

13 Spencer, N., 2008.

14 Sinclair, 2006

15 Lutley/Bunbury, 2008.

16 Blue/Khalil, 2011.

17 Coulson/Leonard, 1981; Id., 1982; Coulson/Leonard/Wilkie, 1982.

18 Wilson/Grigoropoulos, 2009.

The Egypt Exploration Society's Delta Survey has catalogued some 638 *kom*s and *tell*s in the floodplain by collating scholarly research and plotting points from British Survey of Egypt (hereafter, SEGY) maps.[19] New Kingdom (NK), Late Dynastic (LDyn), Ptolemaic (Pto), and Roman (Ro) period *kom*s as dated by previous survey work are shown in figure 2, as is the location of the Western Delta Landscape Project (WDLP) in the southwestern Delta discussed in this paper.

When I began investigating the western Delta, I geocoded the EES Delta Survey data using latitude/longitude coordinates published on its website, consulting the map for any emergent patterns (see figure 2). On my mind was Butzer's notion that ancient floodplain settlements nestled on elevated areas, such as river levees, to mitigate impacts from the annual inundation.[20] Through much of Egyptian history, the Nile and its distributaries also provided a vital transportation system for ferrying goods and people. Arguably the choicest spots for settlement in the Delta would have been elevated mounds or levees adjacent to artificial or natural waterways. Scrutinizing the *kom*s of the western Delta, I imagined the lines of ancient waterways by mentally connecting these islands of humanity.

Through this examination, it became clear that a series of previously unmapped channels connecting dozens of *kom*s lay far to the southwest of the Canopic branch. Deeper investigation of satellite imagery and historical maps provided stronger evidence, prompting fieldwork to confirm observations and collect additional information. It was the search for these channels and a desire to characterize and date settlement in this region that led to the WDLP. Through a case study of Kom Qamha, I offer this paper to summarize the interplay of remote sensing data, surface collection of artifacts, geomorphological study, and historical cartography to assess settlement and paleoenvironment in the first millennium B.C. I contend that, contrary to previous assessments and disciplinary momentum, surface (i.e., non-excavation) techniques that work well for other parts of the Mediterranean can also provide repeatable results for the Egyptian floodplain. The project was cultivated under the aegis of the Durham University mission to Sa el-Hagar, directed by Penelope Wilson, though any views voiced are my own.[21]

19 Spencer, A., 2008.

20 Butzer, 1975; Id., 1976.

21 For a fuller treatment that surveys several dozen *kom*s, the reader is referred to Trampier, 2014.

3. Kom Qamha: A case study of WDLP survey method

Work on the Western Delta Landscape proceeded generally in four phases from spatially coarse-grained to fine-grained information. In the first phase (digital source review), the EES Delta survey data and Shuttle Radar Topography Mission (SRTM) imagery provided sketchy details that prompted a more detailed inspection for channel traces and *kom* boundaries. In the second phase (initial GIS analysis), channel traces were fleshed out on Corona and Landsat satellite imagery and Survey of Egypt maps from the early twentieth century. Changing *kom* extents were mapped using these two sources, as well as Quickbird-2 satellite images. In the third phase (fieldwork), several methods – surface collection on and off-*kom*, topographic survey, and targeted coring across channel traces and historic *kom* extents – provided new information on soil character and material culture distribution. In the fourth phase (post-fieldwork analysis), laboratory and detailed GIS work analyzed diagnostic artifacts and sediments. These efforts provided novel insights into 1) the spatial disposition of human and natural activity from diagnostic ceramics and optically stimulated luminescence (OSL) samples on channel soils, 2) the sedimentological character and distribution of riverine and human-made soils, and 3) periods of *sebakh* removal and *kom* destruction.

3.1 Phases 1 and 2: Digital source review and initial GIS analysis

No one remote sensing image or historic map provides a complete solution to defining archaeological areas of interest or finding traces of buried channels. Rather, they are most effective when used in combination. In this study, for example, an examination of a coarse resolution, colorized SRTM image[22] and EES site locations prompted closer inspection in several areas. This led to mapping a hypothetical series of relict channels west of the Canopic branch through iterative visual examinations of the SEGY maps and Corona satellite images,[23] especially in those spots where the SRTM showed visible curvilinear mounding indicative of a former waterway.

22 For details, see Id., 2014, p. 69–71.

23 Corona satellite imagery have proven their worth many times over in archaeology because their temporal coverage in the 1960s and 70s predates changes that have fragmented the historical landscape (Galiatsatos, 2004). In our work they provided a level of detail sufficient to distinguish sandy mounds of *kom*s and cropmarks

Kom Qamha (EES Delta Survey No. 710, SCA el-Beheira Register No. 100263) is located between the el-Hagir and Firhash canals and about 2.5 km downstream of another large settlement mound, Kom el-Barud (see figure 3). Kom Qamha and Kom el-Barud lie tucked in between a bright sandy ridge to the northeast and stable dunes intermixed with fields to the southwest. In comparing a 1970 Corona with a Digital Globe Quickbird-2 image from the last decade (see figure 4), one notices that the mound of Kom Qamha has shrunk significantly in forty years. About half of the mound on the western side has been lost to clandestine field cutting by local farmers, shrinking its size from 4.6 to 2.5 ha.

The *kom*s are connected by a series of curvilinear pools on the SEGY map that have corresponding cropmarks in a declassified Corona satellite image.[24] These "Corona channels" appear as darkened, curvilinear fields varying in width from 110 to 130 m that wrap around the south and west of Kom Qamha (see figure 4, left). The Quickbird image (see figure 4, right) retains remnants of the cropmarks as two large ponds to the southwest of the *kom*.

To put these observations in context, a detailed, inland knowledge of the dynamic, Holocene Nile branches remains woefully incomplete. Based upon sedimentary sequences collected around Lake Maryut, Warne and Stanley posited that a fresh water channel or channels had flowed from the southeast and drained into the lake during the Classical and Medieval periods, or possibly earlier.[25] However, their core logs nor earlier cores published in during the Geological Survey of Egypt provided sufficient evidence to trace this channel upstream.[26] Subsequently, Flaux et al. support for the idea that inland channels southwest of the Canopic supplied historical Lake Mareotis with freshwater, sketching these channels to the southwest of the Canopic on their overview map.[27] Forays at

that have since been obliterated or obscured by human activity. Corona frames DS1111–1025DF013 to DF016 and other historical maps were georeferenced to a Landsat ETM+ image within ESRI ArcGIS 9.1. These imagery were graciously provided free of charge by the Center for Ancient Middle Eastern Landscapes (CAMEL) at the University of Chicago (http://oi.uchicago.edu/research/camel). Subsequent to this research, researchers at the University of Arkansas published the Corona Digital Atlas, enhancing portions of the CAMEL archive to offer georeferenced Corona coverage of much of the Middle East (http://corona.cast.uark.edu; Casana/Cothren, 2013).

24 Wilson, 2000.

25 Warne/Stanley, 1993.

26 Ministry of Commerce and Industry/Attia, 1954.

27 Flaux et al., 2012, fig. 1.

Kom el-Hisn[28] and Kom Ge'if[29] have collected more detailed geomorphological information on inland channels in the western Delta. At Kom Firin, Spencer and Hughes independently recognized the importance of the series of curvilinear pools on the SEGY maps that preserved a seemingly older hydrological system.[30] Hamroush drew a similar conclusion working from Kom el-Hisn.[31] Wilson has identified portions of the Canopic/Agathodaemon branch through a combination of satellite imagery prospection and coring.[32]

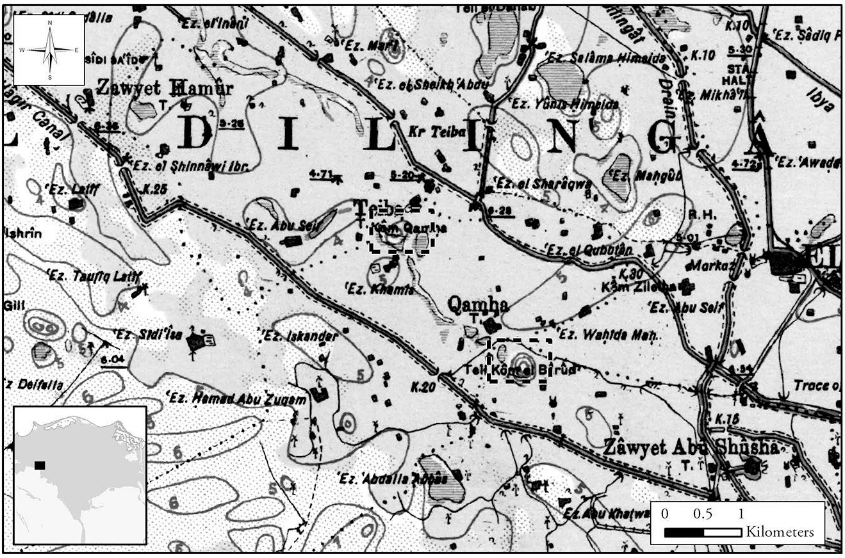

Figure 3. Kom Qamha, Kom el-Barud, and surrounding territory on the SEGY Kafr el-Ziyat sheet. Note the curvilinear pools that connect the two koms *and continue to the northeast (Coulson and Leonard, 1981).*

28 Buck, 1990.

29 Villas, 1996.

30 Spencer, N., 2007; Hughes, 2008.

31 Hamroush, 1987.

32 Wilson, 2006; Id., 2011; Wilson/Grigoropoulos, 2009.

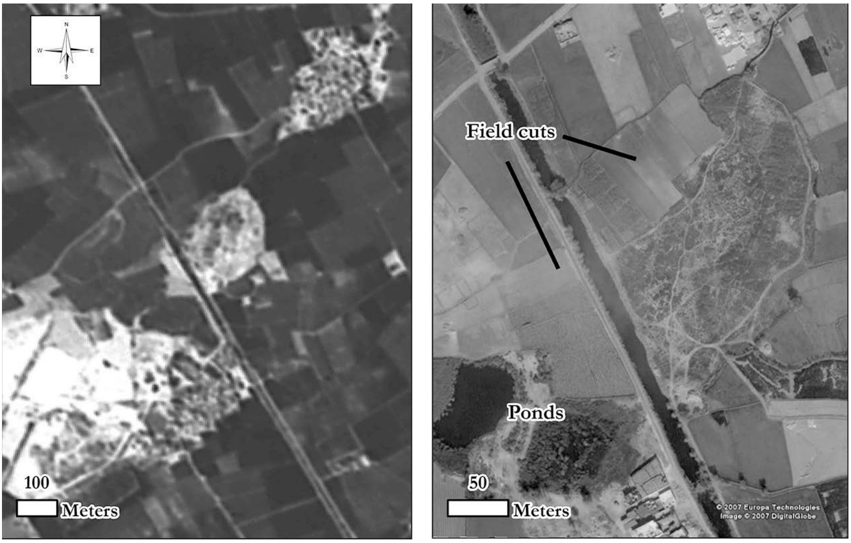

Figure 4. Kom Qamha on a Corona image from 1970 (left) and on a Quickbird-2 image from the early 2000s (right). The kom has shrunk to slightly over half its size from active field cutting. To the south and west of the kom on the Corona are curved field boundaries and dark cropmarks suggesting an ancient channel (USGS EROS. © Google © Digital Globe).

3.2 Phase 3: Fieldwork

Fieldwork included surface collection, coring transects that targeted Corona channels and koms, and topographic survey. Space is too limited here for a consideration of Kom Qamha's topography, though see Trampier, 2014.

Based upon trends observed in regional surveys within the Middle East and Mediterranean,[33] it was hypothesized that ceramic density would remain most concentrated within intensively occupied zones atop *kom*s, even if they had been disturbed. Furthermore, density was suspected to taper off at the edges of ancient human habitation/activity and then drop off rapidly to a relatively low, background ceramic scatter.[34] This work was in part designed to test Bailey's assertion that "large scale field surveys are in all probability not worthwhile in the cultivated areas of Egypt",[35] though it did not fully embrace the probabilistic

33 Ammerman, 1981; Bintliff, 1988; Cherry, 2003; Wilkinson, 1998.

34 Cherry et al., 1991.

35 Bailey, 1999, p. 218.

or total coverage sampling method that may have been implied by his remarks. Surface collection units (CUs) were systematically gridded at 50 m intervals over a zone buffered at least 100 m beyond modern *kom* boundaries and often on the portions of the *kom* still visible on Corona satellite imagery (discussed below). A circular "dog-leash" CU with a diameter of 10 m was centered on each grid point with the aid of a Garmin V handheld GPS.[36] The size of the unit was chosen primarily because it would require fewer units to place overall. In retrospect, the sampling unit should have been much smaller (2–5 m radius) to allow for wider spatial coverage; too much time was spent counting hundreds of artifacts in the large sampling units. More often than not, the actual CU location was slightly shifted to accommodate mature or fragile crops and inaccessible areas. All cultural materials larger than 2 cm in length not embedded in the ground or in architecture (ceramic, wood, stone, etc.) were collected, counted, and weighed. Ground visibility and vegetation cover estimates provided a sense of each CU's effectiveness. Diagnostic sherds were retained for drawing and analysis of fabric, shape, date, and function, with all artifacts being repatriated at the end of the season. Surface collection was overseen by Jennifer Starbird.

Surface collection at Kom Qamha was challenging in that the mounds were thick with high halfa grass, camelthorn, and trash. All sorts of trash – plastic bottles and bags, paper, syringes, and even sewage – formed large piles on the northwest and north of the mound. These obstacles obscured visibility to an average of 50 % in all CUs. Density maps of surface ceramics were created in an effort to investigate their spatial patterning. The distribution and ceramic density (in kg/100 m^2) of the fifteen CUs at Kom Qamha are shown in figure 5 (left). In general, high sherd density (as measured by either weight or count) at Kom Qamha lay within the modern *kom* and/or Corona mound boundaries (i.e., the former edge suggested by the Corona). Mean density was 83.4 sherds or 1.6 kg/100m^2. The largest density was 354 sherds or 8 kg/100m^2, and the smallest had none. It would not appear to be a coincidence that the densest CU was located on a field cut into the Corona mound boundary, whereas the smallest density CU was about 100 m east of the mound's eastern edge. Two CUs to the northwest of the Corona mound boundary exhibited densities equivalent to those within the boundary, suggesting that in the past, the mound (or at least human activity) extended at least this far northwest.

36 Binford, 1964; Sinclair, 2006.

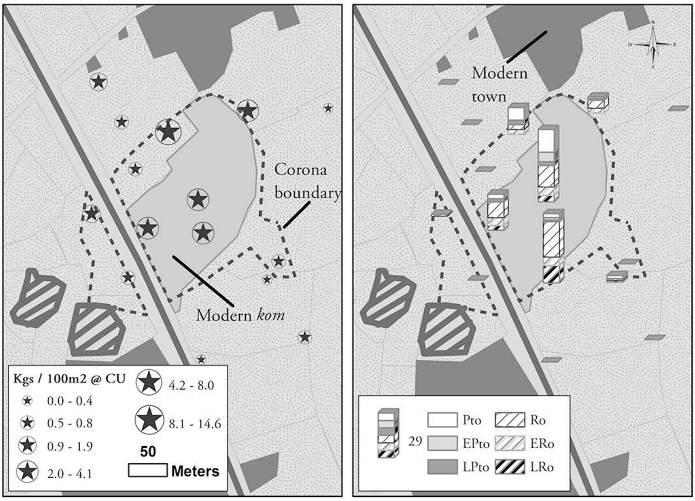

Figure 5. Distribution of CUs on Kom Qamha and their sherd densities in kg/100 m² (left). Distribution of dated ceramics on the kom *(right). Bar heights scaled to example shown in legend (29 units per bar height).*

Comparing these results with the other CUs collected at this *kom* and eight others studied in this project puts things into perspective. It was found that the ceramic densities of CUs placed on the modern *kom* as compared with the densities of CUs within the Corona-derived, historical *kom* extent were *not* significantly different according to an independent, two-sample t-test ($p > .05$). Yet there *was* a significant difference in density according to an independent, two-sample t-test ($p < .05$) between CUs made within the Corona and modern mound extent (n=72) and those made beyond it (n=33). Based on this information, it was theorized that the Corona historical *kom* extent often coincided with the limits of intensive human activity and occupation in antiquity. In this scenario, field cutting, *sebakh* removal, and other destructive activities had obscured but did not fully distort the archaeological record.

Geomorphologist Willem Toonen and the author planned coring transects (see figure 6) to investigate the components of hypothetical channels (e.g. distal floodplain, levees, channel bed deposits) and neighboring *kom*s to estimate the depth, extent, and nature of historical settlement and natural developments. A Garmin V GPS unit was used to position cores in the field. With the aid of an Edelman-style bucket auger provided by Penelope Wilson and the EES, cores were drilled up to a depth of 6.5 m in 10 cm intervals. Soil characteristics such as texture, organic remains, color, grain size, calcium/iron content, lamination, sorting, compaction, and cultural and natural inclusions were recorded.

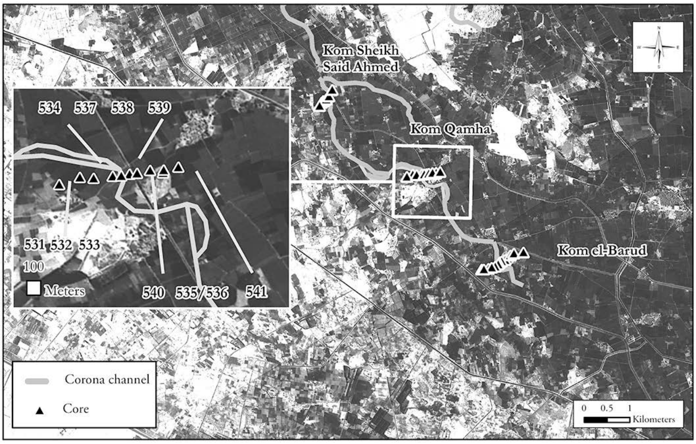

Figure 6. Coring transects at Koms Qamha, el-Barud, and Sheikh Said Ahmed.

3.3 Phase 4: Post-fieldwork analysis

After fieldwork, lab analysis of surface artifacts provided a sense of the historic periods and activities represented at Kom Qamha. Detailed examination of subsurface soils and artifacts provided new insights into the natural history of the *kom* and its hinterland, as well as *kom* destruction and *sebakh* removal.

Other authors working in agricultural lands have remarked on the relatively stable distribution of surface sherds with respect to subsurface remains. The distribution of artifacts in the plow zone is "smeared" by farming activity, for instance, but the bulk of sherds remain concentrated.[37] That being said, dated surface artifact distributions cannot always provide precise details about every activity at a site, including n-transforms such as erosion, weathering, sedimentation, and animal disturbance or c-transforms like structural recycling, ad-hoc sherd removal, and *sebakh* removal.[38] Surface observations are also just that – surficial – and merit subsequent testing by excavation.

37 DUNNELL, 1992.

38 SCHIFFER, 1975.

Abbreviation	Period or Subperiod Name	Time Period
Pto	Ptolemaic	Early third – Late first cent. B.C.
EPto	(Subperiod) Early Ptolemaic	Early third – Early second cent. B.C.
LPto	(Subperiod) Late Ptolemaic	Late second – Late first cent. B.C.
Ro	Roman	Late first cent. B.C. – Late seventh cent. A.D
ERo	(Subperiod) Early Roman	Late first cent. B.C. – second cent. A.D.
LRo	(Subperiod) Late Roman	5th – Late 7th cent. A.D.

Table 1: Portion of periodization adopted for ceramics in this study (Grigoropoulos 2009)

Kom Qamha produced 88 datable sherds. No New Kingdom, Third Intermediate Period, or Late Dynastic components were found (see figure 5, right). Rather, activity appeared to range from the Early Ptolemaic to Late Roman, following the ceramic periodization of Wilson and Grigoropoulos.[39] Diagnostics included imported and domestic fine wares such as Eastern Sigillata and African Red Slip Ware, Ptolemaic cooking vessels, and a bevy of imported and domestic transport amphorae.[40] One of the well-represented periods was Pto, the bulk of which occurred in the center of the extant mound, to the north, and to the southeast. A smattering of LPto occurred, though all but three were tentatively dated and/or dated to multiple periods. EPto did have a slightly lesser showing than LPto, and most of its firmly dated and multi-period diagnostics came from a CU in the center of the mound. ERo, Ro, and LRo ceramics clustered in the north half of the mound/Corona mound boundary. As ubiquitous as LRo ceramics may seem elsewhere in Egypt, it is important to note that it was only found in the center of the *kom* in limited quantities.

The two coring transects that intersected the Corona channels to the southwest of Kom Qamha and nearby Kom el-Barud (see figure 6) produced evidence for a dynamic channels and the ancient settlements' positions atop river levees, echoing Butzer's observations. In general, "[t]he entire cross-section [of Kom Qamha] show[ed] a fining upward trend, in which the coarse sands [were] first replaced by finer sands and finally transform[ed] into loam and clay dominated

39 Wilson/Grigoropoulos, 2009, Table1.

40 The reader is referred to Trampier, 2014 for the full ceramic analysis by Aude Simony.

deposits".[41] The geogenetic profile (see figure 7) summarizes probable human and natural origin and function of lithological groups.[42]

Given their depth, extremely poor sorting, and coarse fragments, the lowest meter or more of the sedimentological profile had probably originated from a Pleistocene braided channel. Its upper boundary was difficult to discern (as indicated by the dotted lines on the fluvial bed facies), and soils were highly calcareous. Core 532 provided some evidence of a boundary in the form of slight calcretion and plant remains from presumed growth on a stable soil. Above this layer, most deposits were Holocene-era, coarse and poorly sorted fluvial bed sands and moderate to poorly sorted levee sands and loams (located above the dotted lines). Both sudden abandonment and gradual channel siltation were present in the same location. For example, on either side of Core 534 one sees the saddle shape indicative of river levees, but in the center of the saddle where the channel bed would have been, there was almost no transition from coarse to fine sediments. Toonen suggested that the fine clays settled out of the pool that was left when the channel was abandoned (possibly from an upstream avulsion).[43] Just to this channel's east was a later phase of the channel, a saddle shape centered approximately on Core 538. This core showed a gradual transition toward gradually better sorting and finer sediments, suggesting that it had silted up over time. Accompanying drops in the water table at the low points of these saddles suggested differential patterns of water drainage based on the underlying soil matrix. Such differences in drainage would yield visual differences in crop health (depending upon the crop); the darker cropmarks on the Corona suggested that vegetation flourished here under such conditions.[44]

All of these developments preceded the formation of the *kom*. The mound seemed to have formed on the banks of an even later channel that had migrated east in a point bar system, as suggested by the coarse sandy body in Cores 539 and 540. The loams and medium sands of the channel levee provided a slight elevation as the base on which people first gathered. Coring had to be stopped in Core 535 due to thick, impenetrable clayey deposits (probably mudbrick). Just a foot over, material culture continued down in Core 536 to very top of the sandy clays. This channel was probably also operational during the Ptolemaic and Roman periods, given the scattered ceramics in its profile that may have resulted

41 Toonen, n.d., p. 33.

42 For a detailed presentation of soil facies, the reader is referred to Trampier, 2014, p. 185–93.

43 Toonen, n.d., p. 35.

44 Trampier, 2005.

from erosion of the *kom*'s southwest edge. Interestingly enough, preliminary analysis of OSL samples taken at the top of one of its levees and dated using optically stimulated luminescence indicate a minimum age of 800 b.p. and an average age of ~2200 years b.p.[45]

The geogenetic profile may also show evidence of sherd-laden *sebakh* being spread on fields, such as in the sherd-dense plow zones of Cores 537, 539, and 541. Core 540 was located at the northwestern edge of the Corona mound boundary; the repeated finding of sherds in this core and its location supported the argument that the channel had eroded the edge of the *kom*. Furthermore, there was an unusual concentration of ceramics in 538 *below* the level of the channel in 540. Since Core 538 had been placed adjacent to a modern canal, the disturbance caused by the continuous dredging of this canal may account for these ceramics and organics.

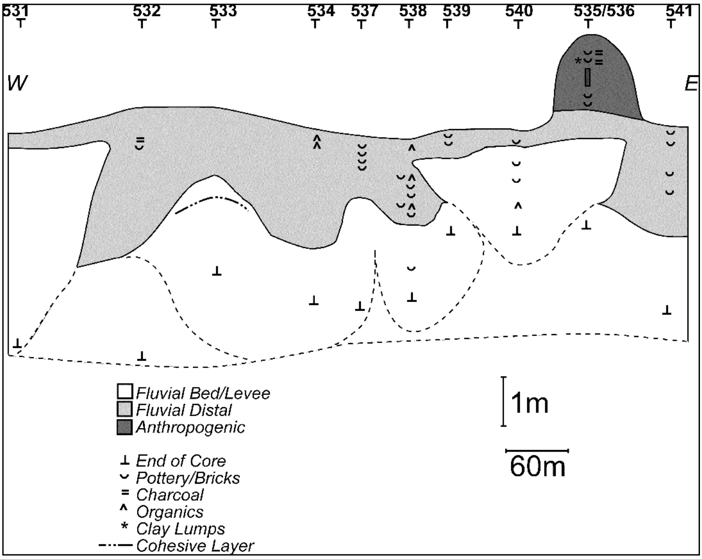

Figure 7. Geogenetic reconstruction of Kom Qamha (Toonen, n.d.).

45 Personal communication, Willem Toonen June 5, 2011.

4. Conclusion

Kom Qamha provides a good example of the complementarity of all of these datasets to hypothesize about former site extent while contextualizing this information within a broader study of the region's cultural and natural landscape. Simply put, much can be learned from sites in Egypt that would otherwise be considered "destroyed" or "lost." EES Delta Survey and SRTM imagery provided the basis for the first phase of hypothesizing and information collection. Comparing SEGY maps, Corona photos, and Quickbird-2 imagery proved an efficient second phase for collating historical changes to the landscape. In this instance, one could see on the Corona that the *kom* was probably once much larger than it is today. Surface collection and subsurface coring in the third phase corroborated this observation, suggesting that relative sherd densities of CUs within the Corona-derived mound extent were much higher than outside of it. In the fourth phase, mapping concentrations of surface ceramics by historical period also provided a sense of how small-scale activity here in the Early Ptolemaic subperiod grew to more widespread or intense occupation of the mound in the Early Roman subperiod, dwindling to smaller clusters in the Late Roman subperiod. Coring evidence corroborated observations made on the surface, as the transect revealed not only the *kom*'s development atop a Holocene river levee, but also deep cultural strata in areas where the mound had and had not been plowed under. Augering also provided subtle details on the development of several relict channels relative to the historical occupation. Based on survey conducted here and at other *kom*s, the WDLP has detailed several channels in the southwestern Delta which were active during the New Kingdom, Late Dynastic, Ptolemaic, and Roman periods.[46] Insights such as these for Kom Qamha and other *kom*s are intended as foundational data for new efforts into diachronic investigation of evolving political and economic institutions, settlement, and Nile distributaries through additional survey, testing, and data recovery in the Delta floodplain.

4.1 Writing a future Companion

The WDLP builds upon a durable trend in Egyptian archaeology of regional survey that integrates geoarchaeological, archaeological, textual, and GIScientific methods to arrive at a holistic study of a region.[47] Regional survey

46 Trampier, 2014, p. 205–212.

47 E.g., Parcak, 2005; Id., 2007.

in the Nile floodplain could have a bright future in Egyptian archaeology; a glance at figure 1 provides an idea of how much ground remains to be covered. The papers from this conference's own proceedings underscore the notion that targeted, interdisciplinary techniques can develop provocative, productive narratives of cultural and natural landscapes with minimal disturbance to archaeological contexts. One common thread is that satellite remote sensing and GIScience approaches are becoming almost indispensable for foundational information and organizational aids. Likewise, detailed understandings of local geomorphology can work hand-in-hand with artifact studies and philological insights. In that vein scholars working in the Delta have observed paleochannels of the Nile from Shuttle Radar Topography Mission (SRTM) data[48] and Landsat data.[49] It has become common practice to use remote sensing and historical cartography for prospection of ancient rivers, and to test their existence, explore their sediments, and date the channels through coring.[50]

Surface collection, while challenged by issues of artifact visibility, *kom* destruction and capping, and over-representation of later periods,[51] still offers a unique opportunity for Egyptian archaeologists to get the lay of the land before starting to dig. There is much to be learned in Egypt from combining surface work with targeted, small test excavations. By comparison, I spent several years in the U.S. Southwest and Missouri on an array of cultural resource management research projects. In one project in California in 2012, I directed several months' worth of surface collection, hand and machine-aided excavation, feature mapping, and soil sampling with complementary faunal, radiocarbon, obsidian sourcing, and several other lab studies. In that time we recorded on the order of *dozens* of artifacts (mostly stone tool fragments), fewer than *ten* datable cultural features, and encountered largely negative results in the lab work. By comparison the average Egyptian archaeologist encounters an embarrassment of riches in the sheer volume and range of expression in material culture, even when limited to the surface. In an eastern Nile Delta project, our team worked over a seven-week period to map features exposed by SCA salvage excavations; surface areas covered by the California and Egypt projects are roughly comparable. In that time we recorded *tens of thousands* of artifacts, *hundreds* of dated features, and produced over a *dozen* fruitful specialists' studies. This is not a value judgment on either country or its past cultures but a comparison of

48 USGS, 2003; Stanley/Jorstad, 2006.

49 Wunderlich, 1989; GLCF, 2004.

50 Graham, 2010; Hillier/Bunbury/Graham, 2007; Rowland/Strut, 2007.

51 Trampier, 2014.

scale. Even so large scale excavations have become the norm, not the exception in Egyptian archaeology, and regional survey until the past few decades has remained marginalized.[52]

The SCA 2010 list suggests that survey and settlement archaeology in the floodplain largely continue to take a back seat to studies of mortuary practices, epigraphy, and monuments. In no way does this statement question the quality of scholarship of current projects in Egypt, yet these circumstances continue to have direct consequences on how Egypt regards and administers its archaeological land. An October 2011 piece in *Ahram Online* quoted Dr. Mostafa Amin, then newly appointed Secretary General of the SCA, as saying that "lands declared free of monuments or artefacts will be offered for investment". He continued that "lands housing movable artefacts will be declared open for investment after all authentic objects have been removed to museums".[53] This may have been a pragmatic move to pay down the SCA's massive debts and a response to development pressures.[54]

Still, the language of this report is all too familiar, for it recalls the rhetoric of Ministerial Decree 43 made over a century ago.[55] This decree specified that once each and every antiquity was extracted from the *sebakh* comprising a mound, its *sebakh* could then be levied and sold as fertilizer or a source of saltpeter for gunpowder. The decree listed every *kom* or *tell* designated for *sebakh*, inspectorate by inspectorate, concentrating especially on the Delta. Some 545 mounds in all were sifted and carted away partially or completely, including some of the largest *kom*s in the western Delta. *Sebakh* extraction had no doubt happened earlier, but not previously on such a scale.[56] In some ways, the humbler manifestations of human cultures – broken and salty sherds, ashy deposits, windblown sand lenses, ancient earthworks – are denied legitimacy and a place in a culture's and a discipline's narrative when they are demoted to such a binary state: "antiquities" vs. "*sebakh*;" "archaeological land" vs. "lands declared free of monuments or artefacts."

The *Companion to Ancient Egypt* has some missing chapters, in large part because Egyptology as a field has missed some opportunities. Hopefully it is clear from the humble example of the WDLP and others working in the floodplain archaeology community that the cultivated lands offer numerous possibilities for

52 Id., 2014.

53 El-Aref, 2011b.

54 El Aref, 2011a.

55 Egypt, 1910.

56 Bailey, 1999.

piecing together past and present cultural and natural landscapes with minimal destruction for the sake of science. Perhaps after ten or twenty years, we can anticipate an edited update of the *Companion* that provides a few new chapters that move towards greater geographic and disciplinary balance. At the very least, a new chapter on diachronic settlement patterns and paleoenvironment would be a good start.

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