



# **RESTRUCTURING THE SETTLEMENT PATTERN OF A PERAEAN *DEME* THROUGH PHOTOGRAMMETRY AND GIS: THE CASE OF PHOINIX (BOZBURUN PENINSULA, TURKEY)**

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**Received: 25/04/2014**

**Accepted: 19/07/2014**

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## **ABSTRACT**

The archaeology world has been in a trend of exploring the rural landscapes often inseparable from the periphery of urban localities. The *deme* of Phoinix, lying in the countryside of the Bozburun Peninsula (in SW Turkey) is a quasi-coastal rural habitat where the way of implantation of the settlement components quite conceals the typical aspects of a *chora*. This paper aims to reconstruct the settlement pattern and explain the change process of the long unattended *deme* of Phoinix as well as the basic motives behind its spatial organization during the Classical and Hellenistic periods.

The discussions hereunder are based on the results of the field campaigns carried out in 2009-2012<sup>i</sup> and the data insofar as analyzed through the application of photogrammetric study and GIS. The results have revealed that the built areas, which are made up of only 2% of terrain, occurred up to 200 m where the slope values reached 30° over *terra-rosa* soil cover, regardless of aspect. The overall silhouette, as highly affected by the fragmented environments, has put forward that the Classical *deme* transformed itself into a dendritic pattern extending as far as 1.3 km as it grew into the Hellenistic era.

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**KEYWORDS:** Phoinix, Remote Sensing, Spatial Organization, Hellenistic, Change

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## 1. INTRODUCTION

Originally incorporated into the Carian territories, the Classical Bozburun Peninsula (Fig.1) is oftentimes cited as the Carian Chersonesos. Neighboring the Cnidian Peninsula, it soon lies at the opposite of Rhodes. Due to the physical setting being far from more attractive locations in the Aegean, few sites within the borders of the Peninsula (hereinafter referred to as the "Peraea") have been thoroughly identified to date. Hence, it is one of the potential regions which offer quite opportunities to run an eye over the village type organizations- the so-called *demes* and the network they formed since the Classical era.

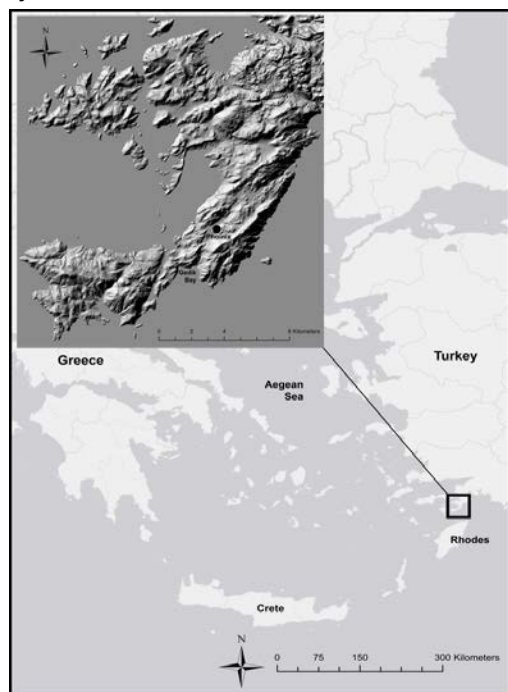


Figure 1 The location of Bozburun Peninsula and Phoinix

When the Peraea had to change its status into being a dominion of Rhodes, it became the land of Hellenized native communities (Hansen and Nielsen 2004) and a shareholder as well as a periphery of the Island, in the early Hellenistic period. This is understandable through various patterns (e.g. the coinage, assemblages onto which the Rhodian eponyms were inscribed, numerous epitaphs and inscriptions relating to economic, political and cultural relations between Rhodes and the Peraea (also infer-

able from particular fragments about the place of residence, e.g. a philosopher of Rhodes, Airedales, is echoed to have resided in the *deme* of Phoinix (Von Gäaertringen 1912)) promoted by the scholars (Grose 1929; Head 1963; Head 1968; Tuna and Empereur 1989; Bresson 1991; Doğer and Şenol 1996; Aydaş 2010).

Phoinix, being the least disturbed *deme* in the Peraea, is a mini laboratory which reveals about the extent and limits of *demos* (Fraser and Bean 1954; Jones 1987; Aydaş 2010) based settlements within the socio-spatial context. It was possibly attached to Kamiros (Meyer 1925; Fraser and Bean 1954; Robert 1983) along with the introduction of a new *deme* system (based on the *ktaina* practice of the three old *poleis* (Ialysos, Lindos, Kamiros) of Rhodes which might have rolled around the synoecism process of the Island in 408 B.C) on the mainland or the revival of old Carian territorial forms of administration. There is possibility that the *demes* and the Island could have had long recognized organic, perhaps merely amicable relations (but greatly in the economic sense) before the Peraea's full integration into the "colonial" sphere of Rhodes, dating far back to the Archaic era (Aydaş 2010). In the course of Rhodian control, any type relation could have had expression in the settlement pattern and new ways of living in Phoinix and the other *demes* of the Peraea. However, a core of truth is to be sought in the physical constraints posed by the environment.

## 2. METHODOLOGY AND LIMITATIONS

The results of this paper are biased toward the spatial processes of the long time ignored site of Phoinix. Along with the display of survey data attained during the "extensive" surveys, the interpretations greatly benefit from the techniques used in aerial archaeology. The research utilized different scale maps and aerial photographs produced by the Turkish General Command of Mapping in 1971-2009; and the digital soil map obtained from the

Turkish Ministry of Agriculture (MOA). In the first phase of the indoor study, the aerial images were oriented to real ground coordinates. Then, a digital elevation model (DEM, with 5 meters grid size) was generated with the help of Inpho Match-T software. Using this digital elevation data, high resolution (50 cm) orthophotos of the *deme* were created with Inpho OrthoBox. The field data (relevant to the ancient structures) as well as the supplementary data obtained through photo-geology and those collected from the orthophotos in the form of vector data, formed the next background for a vector dataset to be manipulated in Map Info Professional 10.5 version and ESRI ArcGIS 10.0.

The pitfall of the study arises from the scope of the formal permission, impeded for conducting a systematic survey. At the same time, the lack of diagnostic pottery caused growing difficulties in dating. On one hand, great variations in relief, thus physical limitations caused time straits and imposed difficulties to access some more promising spots for settlement. The problem was tried to be tackled with the help of aerial views. Down-slope displacement of settlements and off-site pottery densities could not be studied, either. Despite strong natural indicators like paleosol and pedological features, microanalyses were not opted for. A problem with the digital soil maps is that they display the recent soil characteristics. Also, some basic components of these maps were found to be incomplete about land use. This research puts forward some basic assumptions at the same time. The vast majority of the agricultural terraces where degradation is observed must have survived from the Hellenistic period. Those which have been in-use recently (over the last 40-50 years) may be intrinsically misleading; they can obscure the patterns of land use in the past. Arising from the lack of historical research and chronological weaknesses about the terraces but as highlighted by the farmsteads, a selective approach in favor of the Hellenistic debris has been greatly taken. It has also been postulated that the real mag-

nitude of agricultural production and the way of spatial organization at the “urban” and rural levels did not continue into the Late Roman periods.

### 3. THE BACKGROUND ON PHOINIX

In the thick volume on the inventory of the Archaic and Classical *poleis*, Hansen and Nielsen (2004) provide a full version of the updated pre-Hellenistic settlements, none of which, except Amos and the whole Peninsula forming a *polis* in the 5<sup>th</sup> century B.C, are individually characterized as a *polis* in the Peraea. Falling to a non-*polis* status (Flensted-Jensen 2004), Phoinix covers a considerable area within the borders of modern Taşlıca Village, which is quite a rocky terrain in the Peraea. The ancient *deme* center was situated in the former Fenaket Village, which is ca. 2.5 km SW of Taşlıca (Fig.2). Originally, this place has been called under various names, one of which was Rumevlek (Burgett et al. 1984). The Lower Fenaket, known locally as Sindili and remarkable with numerous megaron dwellings (Özberk 2004), was completely occupied by the Turkish groups until the 1950s when the Greeks abandoned the area within the process of compulsory population exchange between modern Turkey and Greece.

Although nothing has remained today, we are informed of the abundance of epigraphic evidence, often datable to the 5<sup>th</sup>-3<sup>rd</sup> centuries B.C. The *deme* was previously identified with names marking Φοινική from a 3<sup>rd</sup> century B.C inscription detected in the neighboring site of Loryma (Fraser and Bean 1954) and an inscription (5<sup>th</sup>-4<sup>th</sup> century B.C) found in the house of a native in the Upper Fenaket (Bresson 1991). Dürbach and Radet (1886) pinpoint Phoinix as one of the main settlements in the Peraea; *Phenikeh (not situated on the coastline), ... “a egale distance des deux rivages de la peninsule, au fond d’un sorte de cirque tres encaisse.* Fraser and Bean (1954) associate Phoinix with B/Karayüksek Dağ (536 m) but were admittedly pinpointing the peak behind the *Acropolis*.



Figure 2 Megaron dwellings in the *deme* center at Fenaket

Although no demotic has been witnessed up to now, the inscriptions have disclosed that Phoinix had a fortified *Acropolis* on top of a hill between the Lower and Upper Fenaket which seemingly corresponds to modern (double peak) Hisartepe. The authors suggest that the *Acropolis* could have been the center of Prinari Bay (Pınarlıbükü/ Pınarbükü, modern Gedik Bay) or ancient Tlos (possibly Gelos) which was a Hellenistic and Roman site. Despite the fact that a location has been appointed to Tlos, no consensus has been reached on a precise name, apart from its identification with a mountain called as Tracheia (Koresos) by Foss and Reger (2000). On writing about a Hellenistic epigramme from Lycia, Robert (1983) distinguishes between two similar ethnics in reading. Accordingly, Tloans of the Peraea could have belonged to the lineages of Phoinix as attached to Kamiros since they appeared in the list of *damiourgoi*, priests with demotics. Considering the use of sub-ethnics in the Peraea and the mention of Tloans on fragmentary materials (Fraser and Bean 1954; Bresson 1991) found in the *deme*, it could be that Phoinix was a conurbation of *komai* one of which was formed by the Tloans or the lo-

cals were called under the same ethnicon. No matter, the acknowledgement of the *deme* needs to be based on the territorial borders named as Phoinix. In accordance with what has been conveyed by the scholars, Tlos possibly corresponds to the site of Gedikçukur near the coastal area of Gedik Bay where new contextual evidence (revealing particular significance for the rural type architecture in the chora- two remarkable size farmsteads) was recovered during our surveys.

In view of different types of masonry, the 5<sup>th</sup> century B.C is a *terminus-post quem* for the ramparts of the *Acropolis* (Flensted-Jensen 2004). The earliest inscriptions from the 3<sup>rd</sup> century B.C mention a *damos*, a *naos* of Dionysos, a *prytaneus* along with the priests of Athena and Zeus Polieus associable with this *deme* (*I.Peraia*; Bresson 1991; Flensted-Jensen 2004). The Island of Elaeoussa/ Kızılada (where, according to Plutarch, the “*Athenian fleet of 180 triremes*” landed in the Chersonesos (4.Lysander.9)) lies at the opposite side of Taşlıca, about 120 stadion away from Rhodes and/or 4 stadion away from a robust fortress, which we now think it as being the *phrourion* mentioned by Strabo (14), in Phoinix. Some

newly introduced evidence that is relevant to our surveys involves the site of Kaledağ (Oğuz-Kırca 2014) associable with a military character fortress/ the *phourion* addressed. The edifice, whose perimeter measures ca. 1 km, is enclosed with undisturbed ramparts forming a trapezoidal plan. The site occupies an area of ca. 5 ha (See Fig.10).

Up on the *Acropolis*, Dürrbach and Radet report a huge Hellenistic stele showing a list of numerous names where the vast majority belonged to the same ethnic. These were the donors to meet the construction expenses of a temple dedicated to Dionysos, which was not foreign to Rhodes (1886).<sup>ii</sup> In writing: “*Il etait situe sans dout sur l’acropole de la ville, et au-dessus du rocher ou est grave notre texte*”, the authors call attention to the temple on a rocky platform nearby the stele (*ibid.*). Based upon such information, we are now able to offer a location for an edifice in the domain depicted

(Fig.3,A-B), which is distinguishable by a small *temenos* area in the midst of which lies a huge cistern and, remarkable with some parts of the base walls of an architectural debris. In the same way, the traces of an elite structure (nowhere mentioned before and not that far from a rock-cut throne-like chair) offering a suitable place for settlement draws attention with a privileged position within the boundaries of the inner fortress (Fig.3,C-D).

This hypothetical residence, if not that of Nikasimenes (a prytane commemorated through a dedication found in the northwest of the *Acropolis* and datable to 250-100 B.C, re-reported by Bresson 1991) could have originally belonged to a local ruler/prytane. The *Acropolis* reveals a two-tier fort system (Fig.4). The inner fortress, identifiable with the *diateikhisma* walls, is accessible via a few rock-cut stairs near the fortress gate which is located to the north.



Figure 3 Miscellaneous evidence from the *Acropolis* (Hellenistic stele (A); Large cistern in a *temenos* area (B); Elite residence? (C); Rock-cut throne of a prytane? (D))



Figure 4 Perspective view of the ramparts of the Acropolis

All the ramparts lie in the NE-SW axis and continue ca. 300 m in the same direction. The perimeter of the outer fortification is ca. 770 m; that of *diateikhisma* walls measures ca. 510 m. The coursed polygonal, and irregular and/or ashlar walls (which seem to reflect the “changing military and urban conditions of the 4<sup>th</sup> century B.C”, Akarca 1972) draw up the outer boundaries whereas the *diateikhisma* walls, which generally display higher silhouettes, appear in coarse masonry worked with small size, polygonal, tightly arranged

stones. Six cisterns (including the cistern enclosed with the *temenos* walls mentioned) constructed at regular intervals were also documented at the top level. Two *bastions* were traced over the shallow terraces- one situated near a large rock-cut cistern in the NE and the other in the SW. The total area of the Acropolis measures ca. 2.6 ha, taking into account the additions during the Rhodian rule. Yet, we opt to remain skeptical for its plan (Fig.5) unless an alternative layout is brought at some time in the future.

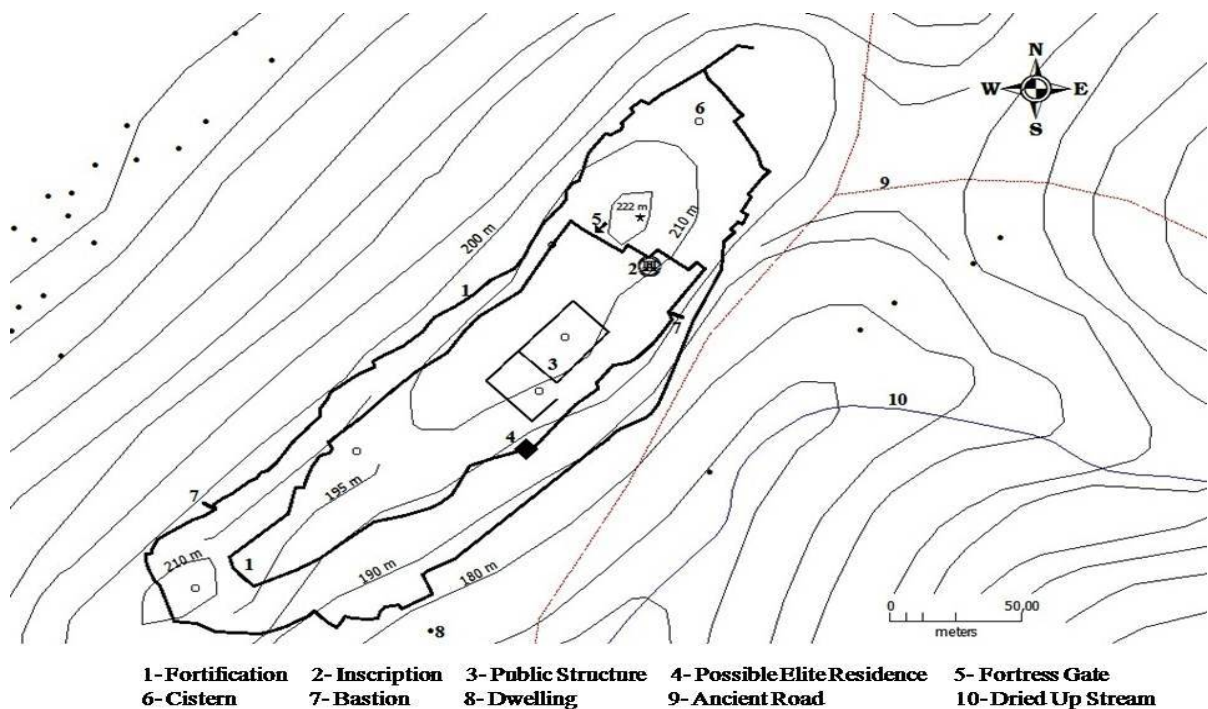


Figure 5 Plan of the Acropolis

About half km away from the *Acropolis*, the ruins of a “chapel” appear on a huge block of a temple, originally dated to 250/101 B.C. At the entrance, left to the gate lento, “ΑΓΟΛΛΩΝΟΣΓΕ” - Apollo is readable. The uncertainty remains concerning the last two words in that this type of writing is neither known to be from Rhodes nor any other place familiar with the cult. Sharing the same period, another divinity was commemorated on another wall echoing ΕΛΕΙΘΥΑΣ (Ilithye), in the same epigraphic character attributable to Apollo (Dürnbach and Radet 1886). This cult, also associable with Artemis, is uniquely found in Lindos on the Island (Bresson 1991). To Homer, she has connection with the women in childbirth (11.271) and is occasionally linked with Crete (Burkert 1985). Whatever the case, the current names of the two cults appearing on the walls suggest the Hellenistic era.

#### 4. SETTLEMENT AND TOPOGRAPHY

##### 4.1 *The Question of Settlement in the Core and the Chora*

Turning to the Lower settlement, we see that the fragments (particularly those found in Fenaket), which have been dated to the 4<sup>th</sup>- 2<sup>nd</sup> centuries B.C, are quite informative about the degree of Hellenization in the region, though a vast majority are attributable to the sepulchral inscriptions (Bresson 1991) that are often an issue of onomastic study. Although, the number of inscriptions relating to the community life is few, some epitaphs have disclosed hints about the connection of the *deme* to the *polis* of Kamiros, e.g. a dedication made to Herakles (perhaps to a magistrate) and found in Prinari recalls similar occurrences in Kamiros. A Hellenistic funerary block (250/201 B.C) grabbed from the northern walls of the *Acropolis*, has been reported to bear a dedication to a winner in a sporting activity (*vainqueur à la lutte aux Pythia*), in the category of children. Accordingly, Boulakles, a member of possibly an influential family of Phoinix, was commemorated (*Ibid.*). These instances appear to be the elu-

cidators of social stratification in the *deme* life. As a matter of fact, the situation is not so fortunate in terms of the knowledge promoted for regular settlement. Notwithstanding, Jones underscores some unique evidence about the internal organization of the residential quarters when he mentions that an archon was honored for constructing a/part of a dwelling area (ἀνδρῶν) (1987). It is beyond doubt that the content of any additional evidence can help the consolidation of knowledge about the socio-environmental habitat of the *deme*. What we shall herein offer to discussion is a data set consisting of numerous dwellings. However, this paper is not descriptive on their e.g. individual dimensions or contextual evidence attributable to each. It shall rather look at their form of settlement (nucleated or dispersed in the generic terms, Hansen 2004), forms of habitation (first, second and third order sites, *Ibid.*) and size of the land they occupied affecting the entire settlement pattern.

Some ruins scattered over the plain area of Sindili beneath the *Acropolis* and compact settlement formed by the megaron dwellings (See Fig.2), make Phoinix of value. Evidently, the *deme* must have possessed suitable land for a lavish zone of occupation hereabouts. Planned with stepped entrances generally facing the S-SE, the megarons in the *deme* center reflect functionality. Elongated rooms with hearths, thick walled facades, small windows, courtyards, protruding chimneys, and roofs with earthen membrane (Başoğlu 2004) are widespread at the Lower settlement, with some certain exceptions. Few distinguished samples with larger dimensions are visible at higher elevations approaching the *Acropolis*, as well. A traveler-researcher on archaeology and history, Umar (1999), contemplates that numerous potsherds could have belonged to the anterior districts of the *deme*. His emphasis on the remains of an *agora* with the ruins of walls between the *Acropolis* and Fenaket (1999) can spark some new debates, in order to configure the *deme* plan although there appears almost no a wall or

parts thereof, currently. Notwithstanding, the problem arises with what he depicts as the exact location for the *agora*. Hearing from the scholars to this point, we have also come to realize that there are problems concerning chronology and domains of settlement in Phoinix.

Before passing on to a relational topic, a mention of some other spatial components of the *deme* needs to be outlined. Of particular interest in the context of sepulchral space is the *necropolis* lying in the south of Taşlıca. Although few remained in the countryside, the isolated tombs (e.g. the two *sarcophagi* overlooking a terraced terrain and recalling an equivalent previously dated to the 4<sup>th</sup> century B.C or 2<sup>nd</sup> century A.D and re-reported by Bresson 1991), which were recorded not that far from the *necropolis*, could have been related to a declaration of ownership. Looking at the form and type of construction and similarities shared with some of those (which began to appear in the mid-4<sup>th</sup> century B.C) reported from Hellenistic Caria (Henry 2011), another possibility seems that these express the longing for the remote ancestral links at times of the Rhodian or the Roman suzerainty.

Two newly documented structures, possibly having a meaning in the public context, are the slightly bossaged *isodomic* wall series that were traced in the SW and NE of the *Acropolis*; the wall remains lying at the plain level of Sindili and the other in the opposite area which falls to the south of the *necropolis*, respectively.

#### 4.2 Evidence for Settlement

Of the foremost indicators for a sedentary life often comes out in the form of utilitarian remains. The *chora* of Phoinix is a mini workshop to become familiar with local pressing installations which often recall the *mola olearia*. Such presses were often worked in the environs of *deme* centers and *poleis* in the Mediterranean where the agricultural areas often stretched toward the core settlements. The idea of quick transportation to the “export” centers (e.g.

Bybassos/Hisarönü) or harbor facilities (Held et.al. 2009, 2010) must have been the essential criteria. On the implementation of pressing out of the urban areas, an explanation in view of the land characteristics has been made by Diler (1994) in that the rocky areas were suitable for press construction in the *chora* (*Ibid.*). In many parts of Caria, they were often placed near a water source for easy treatment (Paton and Myres 1898). Similar sites were found during our campaigns but the press stones were seldom documented to be undisturbed (See Fig.6,B). They often stood single, addressing self-sufficient economies in order to serve a limited territory.

A second group of data directly related to settlement is owed to the ceramic evidence albeit we are not quite satisfied with their present situation. Nonetheless, the “potsherds” make up a critical part of the chronology. Although each sector of the *deme* was checked, we have poor chronological control on various surface assemblages. Density variations in the off-site artifacts posed problems for interpretation, as well. All we can say is that the sherd scatters broadly address the late Classical and early Hellenistic periods, however Roman and Byzantine fragments were also recorded. In other words, the evidence is quite weak for the pre-Hellenistic periods; only a few Classical body fragments with black glaze were retrieved around the *Acropolis*. Also, their current conditions are worse than those of the Hellenistic and Roman samples. On average, the newly recorded potsherds (See Fig.6,C-D) bear semblance to those dated to the end of the 3<sup>rd</sup> century B.C- beginning of 2<sup>nd</sup> century B.C. The mushroom rim, round base amphorae (typical of the late Classical period) and stamped handles were of special attention as many scholars reported veritable evidence (Grace 1953; Tuna and Empereur 1989; Tuna 1990; Doğer and Şenol 1996; Georgopoulou 2005; Cankardeş-Şenol 2006; Held et.al. 2009) from the Peraea.





Figure 6 Views from topography and evidence relating to settlement (Degradation of agricultural terraces (A); Sample of a press bed (B); Samples from ceramic assemblages (C-D); Ruins of large farmsteads (E-F))

The single handled amphorae are possibly the Rhodian imitations (Georgopoulou 2005) but we have no sample for the double barreled handles (with which Halicarnassus is a well-known *polis* (Briese 2005)). The sites where *terra sigillata* have been documented, if not all exposed to the down-slope displacement of artifacts, mark the late Hellenistic-Roman periods. Phoinix is also devoid of in-situ inscriptions in the *territorium* today but a fine piece (previously mentioned stele) obviously addressing more than 70 names (*I.Peraia*), is already available at the *Acropolis*. When the current and secondary data (including the great corpus of epigraphical material) is reassessed, the imprints of Rhodes are discernable through various contexts including the Greek names associable with the Rhodian administrative and priestly institutions. Turning to a primary concern, divergent evidence for the settlement structures/components, either forming small clusters (near the core or in the *chora*) or a compact settlement attributable to the Lower settlement at the foot of the *Acropolis* were documented at the field. To put it differently within the context of forms of settlement, the environs of the *Acropolis* are

affiliated with complex-nucleated settlements, which are, in the most case, associated with the plain area. On the contrary, the *chora* is occupied with dispersed settlements linkable to an intensive use of the terraces of economic value. Our data set consists of a total number of 9 farmsteads (all newly documented; two large size (Fig.6,E-F), one medium and six small farmsteads) and 251 dwellings (mostly the megarons) or the ruins thereof. Except the nucleated settlement area encompassed by the Lower and Upper Fenaket, those revealing a “megaron dwelling” cluster character and nowhere published before were found and documented in 5 main sites which are: Çakallık, Bahçakise, Kaynarlık Tepe, northernmost of Gedikçukur and Dağyeri. Also, some more single “dwelling”s, whose locations are deemed non-significant for this text but were inevitably put to use for the spatial analyses, need to be underlined. Having a rightful precedence over the rural structures in the *chora*, the two large farmsteads, which were discovered in Gedikçukur in the S and in the E of Burgaz Tepe nearby the *Acropolis*, could have been temple-farmstead complexes (a phrase presumptively used hereby, in view

of various inscriptions from Caria and Rhodes, mentioning the habit of e.g. leasing, managing, auditing land by the temples and; their active roles in the agrarian affairs (Dubois and Hauvette-Besnault 1881; Fraser and Bean 1954; Fraser 1972; Osborne 1987)). An additional site (where no sherds could be traced) was discovered

in Gökçalça. Here is a site (Fig.7) where any diagnostic material could have been deposited in deep layers of earth. It appears to go back to an earlier period, possibly to the pre-Classical era (Figs. 8, 10).



Figure 7 The positioning of Gökçalça site (A); Views from the dwellings (B-D)

An exception regarding the large size farmsteads is imputable to a newly recorded but yet inadequately studied structure, falling to the inland SE of the *Acropolis* (E of Karayüksek Dağ), facing the northern shores of Rhodes. Hence, it is compulsorily left out of the scope of this paper. Similar data is awaited to be assessed in the near future. Pursuant to the locational data, the chronological classification in line with the settlement areas is given in Fig.8, at present.

### 3.2 Selection Criteria for the Loci of Settlements

Parallel to how Jeskin describes (1998), a settlement like Phoinix would be very much dependent on the coast with a good harbor. It would not stand on the immediate shore but possibly a mile away, ap-

proaching inland (“usually on a raised position”) to protect itself from the attacks of raiders and pirates. The choice of place also has connotations for communication, hence visibility and healthy environments. In ancient times, raised topographies enabled the settlements to stay away from dampness and mosquitoes of the low-lying marshlands. Decisions of settlements were sometimes the products of permanent water or underground reserves but a fertile land was often the greatest motive (*Ibid.*). These are helpful for seeking out the social and physical habitats, through a holistic approach. Hence, there is a need to look into the environmental factors and man-created processes which come to the foreground in the *territorium* of Phoinix.



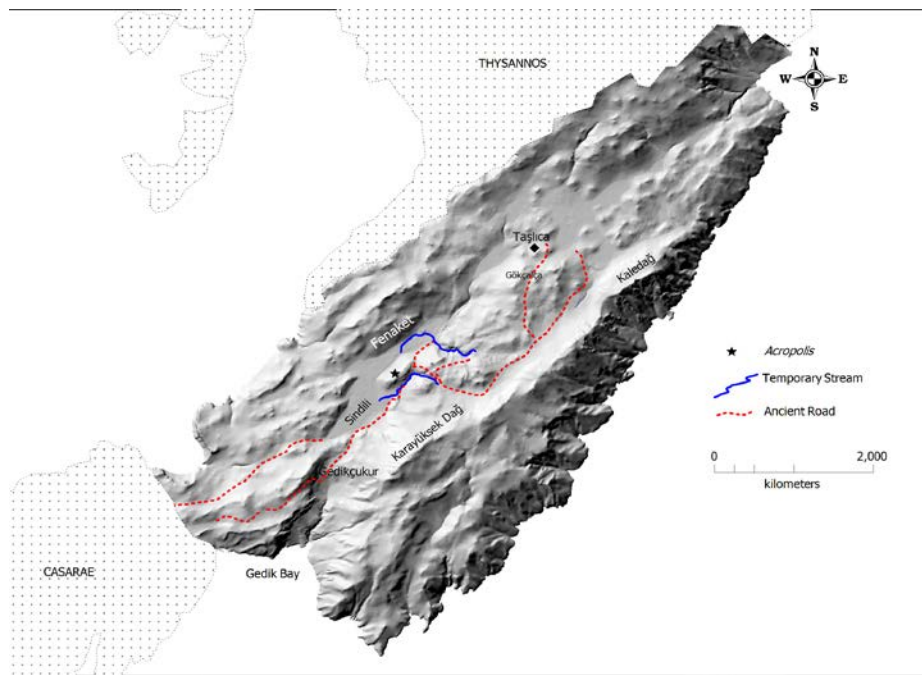


Figure 9 Major streams and road network surrounding the Acropolis

A reality is that vegetation can have impact on landscape development. We are not assertive whether deforestation and erosion ever had caused considerable changes, particularly in the southern part of the Peraea. Remaining skeptical about what Held puts forward for the neighboring site of Loryma (Held 2001) that it underwent a deforestation process, we also ponder if similar conditions and a semi-arid regime like the present case prevailed in the region, in which case it would be inseparable from the *territorium* of Phoinix. Apart from the level areas with which Phoinix is familiar, the rest of the land is exceedingly undulated and barren. There are clear marks for land degradation (Fig.6,A), however, due to the climatic conditions; we can barely suggest that dense forests mastered the *territorium*. Whether this happened or not, has no effect on the present because the current situation offers the long-term survival of vegetation dominated by the shrubs and broad-leaved trees, in part. On aggradation and degradation, the situation of Phoinix is open to debate as to whether and how the long-term “slopewash accumulation on hillslopes” and erosion occurred at the end of the Bronze Age and continued thereon

(Bintliff 2000). Although terrace systems can leave trace of evidence for geomorphic-climatic inferences, there is always a risk in seeking relations between the application of traditional techniques and litho-stratigraphic and chronological research (Rapp and Hill 1998). As of the current situation, the landscape in Phoinix must have undergone regressions led by erosion (majorly across the tectonic zone), hoe cultivation on fertile soils, and even by grazing. Degradation of land is a problem for almost the whole Peninsula. For Doğaner, the terrain in the southern part is nonproductive and this caused the stockbreeding be the prime source of economy (1999). Regardless of the connotations arising from degradation in terms of agriculture, livestock or any other, we can safely note that the highest erosion rates caused by the wind effect were recorded in two plain areas: Sındılı and the west of the *isthmus*, by MOA. In line with what Bintliff (2011) stresses, the tendency of soil to move toward coastal plains and lowlands, which are often associated with rich mineral soils (*Ibid.*), also finds place in Phoinix. To express differently, the fertile soils can be traced in the near and distant *chora*, at the same time. It is still difficult to enounce pe-

dodiversity but actually, four types of soil are peculiar to the *deme* (See Fig.21). Typical of the Mediterranean, *terra rosa* soils (TR) have the greatest share on the land. The other is *terra rosa* and brown soil (TR&B) which is observable in the N, NE and E of the *deme* whereas the colluvial soil (C) cover corresponds to Sindili where the degree of erosion is the maximum. The final category is formed by the bare rock and rubble (BR&R) type in the southern environs of the *Acropolis*.

### 3.4 The Indispensable Element (Water) and Networks of Communication

Presumably, Phoinix lacked permanent surface water in the ancient times. By looking at the surface morphology, we come to realize that the *deme* is full of dried up waterlines reaching the coastal area and fading away in the uplands. Between Karayüksek Dağ and Kaledağ and partly the rugged terrain limiting the western coasts, there appear numerous dried up streams which begin from Taşlıca and run down to the northern sector of the temple dedicated to Apollo. Two streams (See Fig.9) run across the heart of Phoinix. The first one is traceable in the east of the *Acropolis*, and the other runs across the valley in the east of the said temple.

Due to the geological character and the sun-drenched climate, the inhabitants used underground water and constructed plenty of water features. Many cisterns and wells lie in the *deme* center and the *chora*. Regarding the entire Peraea, the number of water works is conspicuous in Phoinix. Irrespective of the chronological sequence, the northernmost sector of the *Acropolis* abounds in wells which are still in use. As some scholars presuppose, rich numbers of well clusters address a location which acted as a base for the livestock, pre-industrial activity and agriculture (Cavanagh 2000) while rainfall was often used to catch water in sternes (cisterns) and loutses (open cisterns) for dry the seasons (Forbes 2007). What is known about Fenaket and the vicinity is that similar constructions were used for the beasts in the beginning of the

20<sup>th</sup> century. Relevant to the practice, the northern sector seems to have been active in the post-Hellenistic period, in view of the quite visible crosses inscribed onto the facades of some wells. We, however, lack a systematic study which is normally expected to be centered on e.g. the techniques of well construction or cistern typology, all over the region. A commonality might be explored on account of the connection of Phoinix with the *polis* of Kamiros which has a reputation with its water features and, perhaps the adoption of some elegant Kamiran variances in the Peraea.

Land form structures make up a matrix comprising linear patches shaped by water and fauna and that usually indicate actions across a landscape; mosaic landscapes appearing as patches of e.g. vegetated or non-vegetated areas; trails relating to the movements of wildlife; and roads and stream corridors worked by the people. Human contact patches often occur by dumping, excavation, plowing, planting, deforestation, artificial water storage, etc. Although their boundaries can hardly be determined (Bell 1999) in Phoinix, the vast majority of them were seemingly created for the agricultural terraces. Some appear to have been clenched by the fauna effect, most probably the *capra* (*genus*).

Roads, preferably well-established networks affect the development of landscapes, hence the settlement pattern over time (White 1970). Ramsay (1902) writes that "roadways were few, and migrations were confined to known lines" in Asia Minor (*Ibid.*). The situation is somewhat unfortunate in the *territorium* of Phoinix; no arterial road is visible on the *Atlas of Classical History* in the Peraea. The only thing remarkable is the trade network of the Classical world which flew from over Rhodes to the west and the east. Except those given on the main arterial routes within the borders of Phycus (modern Marmaris), the catalogue of milestones presents no specific remnant of an ancient road in the vicinity of the Peraea (Talbert 1985), either. In the 7 m long Tabula Peutingeriana (13<sup>th</sup> century A.D), showing the

main Roman roads from Spain to India, only "Lorimna" is marked in western Asia at the opposite side of "Insula Rhodos" (www.euratlas.net 2011) while no main arterial road is noticeable. However, agreeable with Benter (2010), the roads connecting the fortifications and the sacred places and sometimes ending at small bays of the Peraea (*Ibid.*) are observable in Phoinix, as well. No matter what types of land were traversed (in all directions), a network of pathways reached all the parts, making a course compatible with topography and travelling across the shortest distance.

The ancient road is the longest route (ca. 10 km followed during the surveys; the estimated length is 15 km) travelling in the NE-SW direction and connecting Phoinix to Casarae. As soon as it reaches over the borders of Casarae on the *isthmus*, it makes a sharp turn toward the SW *chora* of Phoinix in the opposite parallel direction, runs up to the *Acropolis*, passes by the eastern slopes and ends up near the temple erected in the name of Apollo. The optimum route it follows is visible along the tectonic zone where a considerable amount of land it surpasses corresponds to the natural corridors and/or the extensions of the largest depression of Sindili. With all the discrete routes traced, this must have been the primary communication network (See Fig.9). Another one, which begins from the terrace wall of a large scale farmstead (coded O20A00526) in the E of Burgaz Tepe, passes by the lowlands and makes a sharp turn as soon as it reaches the eastern sector of the *Acropolis*, travels to further inland east and heads toward Kaledağ in the NE. The final observation is; a discrete ancient trail beginning from Gökçalça Tepe is connected to the *Acropolis*.

A means of communication can also be examined in terms of marine contact although we have no visible traces of an ancient port. The two bays suitable for anchoring and easy transportation of the goods lie in the S-SW. It might be that the northeastern bay had contact with the *phrourion* (Fig.10) on Kaledağ. This spot could have eased the transmittal of logistic

and civic services to or from the northern neighbors considering the distance effect.

### 3.5 Man-manipulated Land

The sloping grounds and the hillsides were successfully operated by terracing in Phoinix. Inspired from the Roman farming, the systems of production could have involved multi-form (e.g. single, special or mixed) practices. By looking at the modern indicators (few olive plantations) in the *chora* and referring to the literary evidence in the Peraea, particularly from the reports on Amos and Loryma (e.g. pressing equipment, farmsteads, inscriptions relating to the land leases and slavery, products raised for trade, (Bean 2000; Fraser and Bean 1954; Held 1999-2002), we can safely allege that the terraces (mostly the "stepped" (Rackham and Moody 1992) type) were the main target areas for man's manipulation (See Fig.6,A). On account of the requirement for heavy capital, the institution of slavery, as White (1970) brings to forth, must have participated within the process. Terraces acted as the interfaces between social and economic life. Like Methana in the Peloponnese (Osborne 1987; Forbes 2007), the ruins of dwellings are recognizable with clearly defined plots in Phoinix. Several dwellings could have rested on a single terrace wall; a single dwelling could have possessed the same size plot as a result of inheritance of a dowry. Presumably, crops like wheat, barley, oat or legumes were cultivated over the *skala* (Forbes 2007). However, the vast majority of terraces must have been deployed for vine and olive as validated by numerous ceramic assemblages (Grace 1953; Cankardeş-Şenol 2006; Tuna and Empereur 1989; Tuna 1990; Doğer and Şenol 1996; Kuban and Saner 1999, 2005; Held 2001, 2005; Diler 2004; Doğer 2004; Benter 2010). At the same time, conspicuous land marks of the agricultural terraces lie in the *chora* and the vicinity of the *deme* center. Easily recognizable, the upper limits of the terraces are interrupted by the limestone boundaries. The terraces lying below 300 m seem to have enabled easy access to the tempo-

rary streams and underground water. Furthermore, many of them (particularly near by the dwellings) display that threshing

was done within the easily recognizable boundary walls of the *alonia* (threshing circles (Wallace 1997-2000).

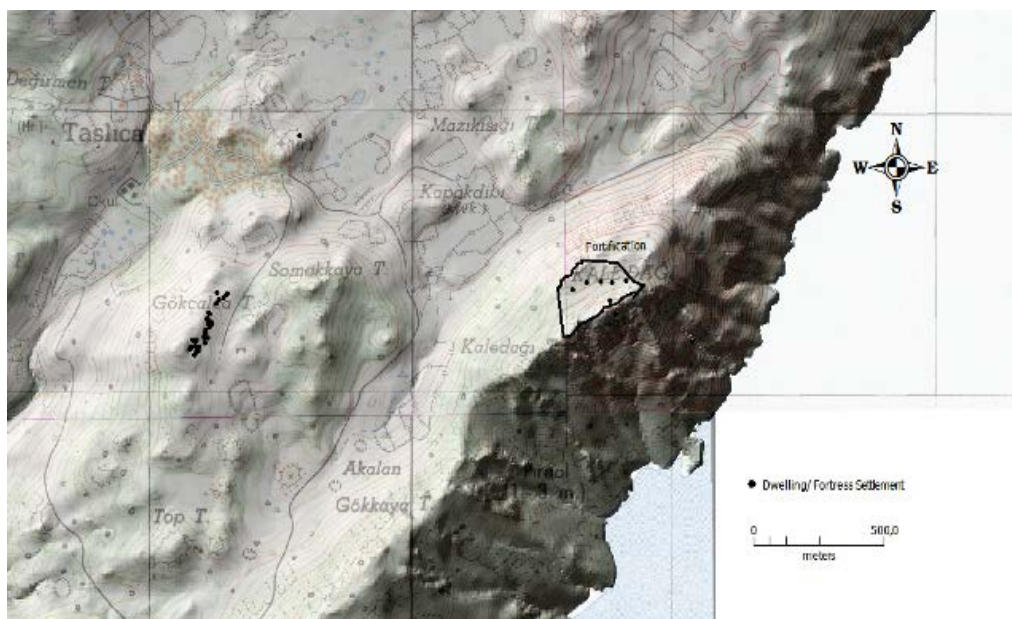


Figure 10 The *phourion* on Kaledağ and the early settlement at Gökçalça

A comparative reading might be made from the case of Antikythera where the terraced fields, which highlight some very typical aspects of the Mediterranean landscapes, were studied through the development of spatial models. A common ground for the long deployed terraces in the Mediterranean basin seems to be owed to the “periods of near complete abandonment” both in Antikythera (Bevan and Conolly 2011) and Phoinix, regardless of period and that such terraces are quite helpful for tracing the patterns of exploitation. On the other hand, Bevan and Conolly are quite agreeable with their concern on the problem of directly dating of the ancient terraces in the scholarly world (*Ibid.*). Although this paper shares similar worries, we give preference to being contented with an approach analogous with some specific Cretan surveys. As Wallace (1997-2000) points out, historical indicators like *alonia* alongside the cultural studies can shed some light on the changes pertaining to land use over the last couple of centuries on the island. Whether the span of time greater than that is applicable to Phoinix is

full of questions, though. However, when the proximity of the rural structures to the terraces and their strong physical connection via an ancient road network is reassessed, our approach can conceal an appropriate reason to associate our dataset with the terrace relics, over at least the two *millennia*. The quantitative techniques used for the analysis of terraces of Phoinix may seem inadequate for those who are much involved with introducing new models, e.g by using various variables, measuring soil losses through classification of the terrace patterns, seeking out correlations or carrying out regression studies (see Bevan and Conolly 2011). Bearing in mind the rightfulness of any criticism for our case, we choose to leave the floor to a future study which can take an advantage on the laboratory scale research and further contribute to the issue. But, there is one more point not to be dismissed since Bevan and Conolly (2011) make a stress to the lower effect of terraces on the soil loss. Obviously, the conditions of Antikythera cannot be copied to Phoinix but the positioning of marginal terraces over the steep topogra-

phies in Phoinix is worth pondering. Additionally, that the terraces' "strong co-dependency with the built structures" on the island bears meaning encourages us to tentatively come up with an *a priori* argument (for Phoinix) specifically raised for the Hellenistic era, in light of the vessel fragments that were overwhelmingly traced over, also across the marginal, terraces exceeding 200 m (see below) unless new studies reveal exceptional results for Phoinix.

## 5. ANALYSIS

Three types of vector datasets (point, line and polygon) measured by using a handheld GPS were digitized in MapInfo Professional 10.5 software (in the Universal Transverse Mercator Projection System, Zone 35) and were converted to ArcGIS.Shp format, due to the richness in visual quality and easy handling of the 3D analyses. To proceed with the analysis phase, slope, aspect and visibility maps were created from the DEM (already containing the elevation values). The elevation, slope and aspect analyses inquire into the distribution of settlement structures and terraces with respect to the ground elevation values classified for each 50 m.; slope values classified for 10° intervals; and positioning toward eight directions, respectively. The final analysis pertains to the range of visibility of the *Acropolis* from the peak point.

### 5.1 Elevation, Slope and Aspect

The elevation of the ancient dwellings on top of or along the slopes of *Acropolis* changes between 129-204 m while the maximum value all over the *territorium* is 440 m with the minimum being 43 m. The majority of the settlement structures are situated at 100-200 m except in the case of lofty Kaledağ and Gökçalça in the N-NE and the inland area in the E of the *Acropolis*. About 75% of the dwellings and 50% of the farmsteads are situated at 100-200 m. The eleva-

tions for any terraced area range between 50-400 m but more than half lies at 150-300 m where the greatest percentage is shared by those lying at 200-300 m. The slope values display that the vast majority of the settlement structures (88% of the dwellings and all the farmsteads) are situated between 0-30°. With such values attained from the slope analysis, the terrace dwellings are allegeable to be compatible with the topography in the vicinity of the *Acropolis* and that the degrees may reach 40-60°. When it comes to the farmsteads in the *chora* and the one (O20A00526) in close vicinity to the *Acropolis*, we can state, all are situated on relatively plain grounds whether it be near the base of a valley or a stream bed. For the agricultural terraces, slope values seem to have occurred up to 70° in which case more than 60% of them measure 10-30° and that the latter category must have been preferably cultivated.

The positioning of the majority of dwellings brings forth the issue of aspect. 29% of the dwellings face SE, 14% of them is oriented toward the S and 13% face the NW. On the contrary, the majority of the farmsteads, which are situated in the SW sector, face the W and SW. When compared to compact patterning in close vicinity of the *Acropolis*, individualism preponderates in the *chora*. The "rural" structures/ namely the farmsteads might have preferred to maximize the sunlight since they are often situated near the cultivation areas. Interestingly, no straightforward direction can be posed for the agricultural terraces. What may at least be articulated is that, about half of them (43%) revealing a contra-fault situation- supposedly pertinent to "land use", faces the NW and SE. A plausible explanation is that any piece of arable land, higher up the fault line (the line stretching across Sindili where maximum erosion rates were measured), was exploited all over the *territorium* of Phoinix (Figs.11-15).



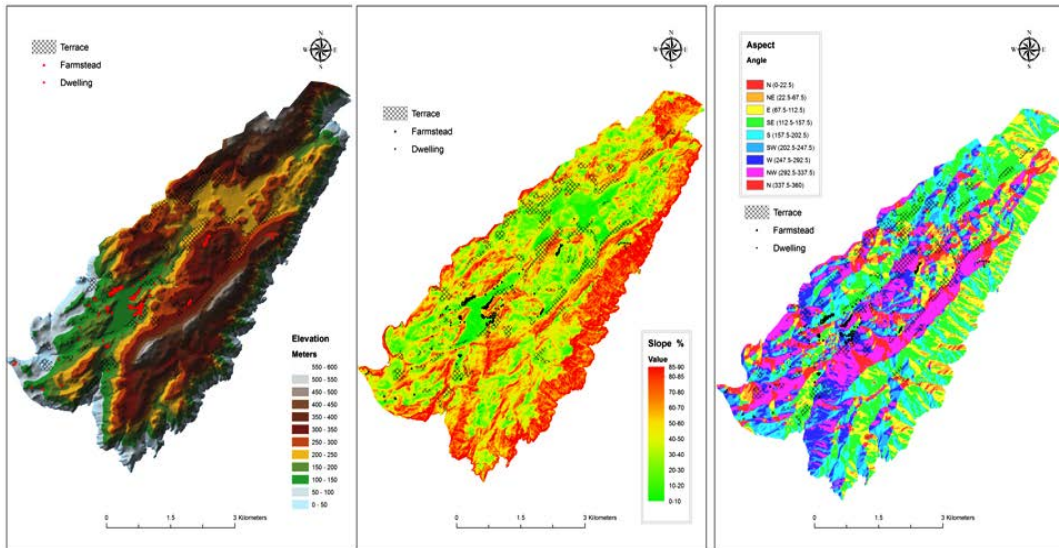


Figure 11 Elevation, slope and aspect maps of Phoinix

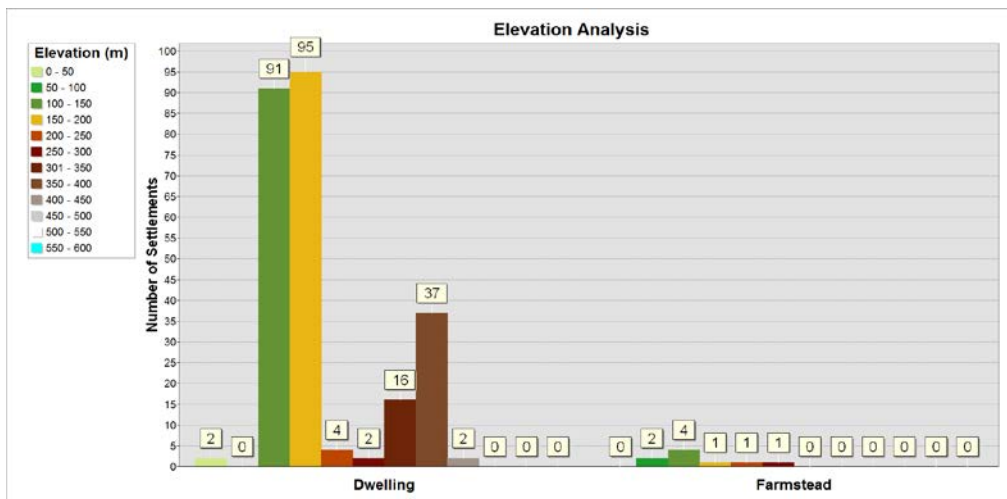


Figure 12 Histogram of elevation analysis of settlement structures Phoinix

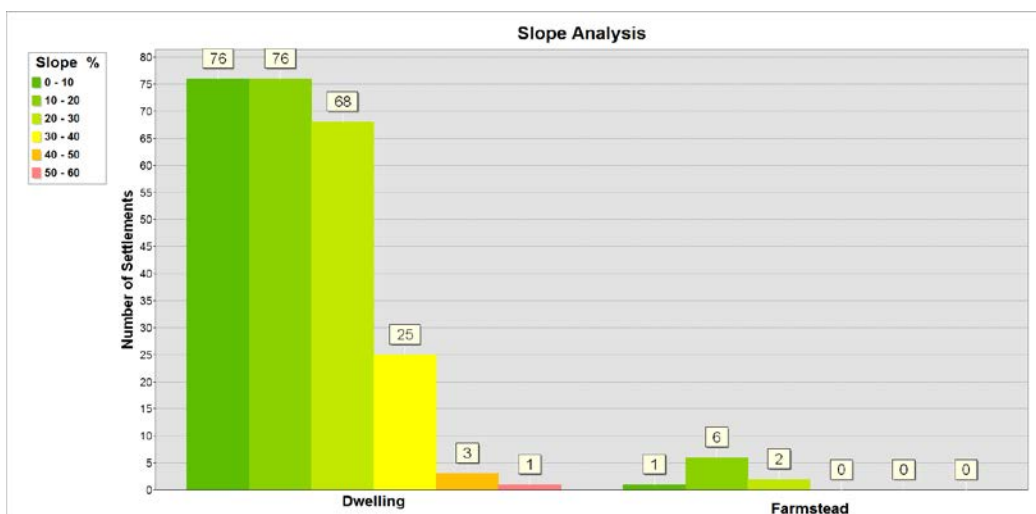


Figure 13 Histogram of slope analysis of settlement structures in Phoinix

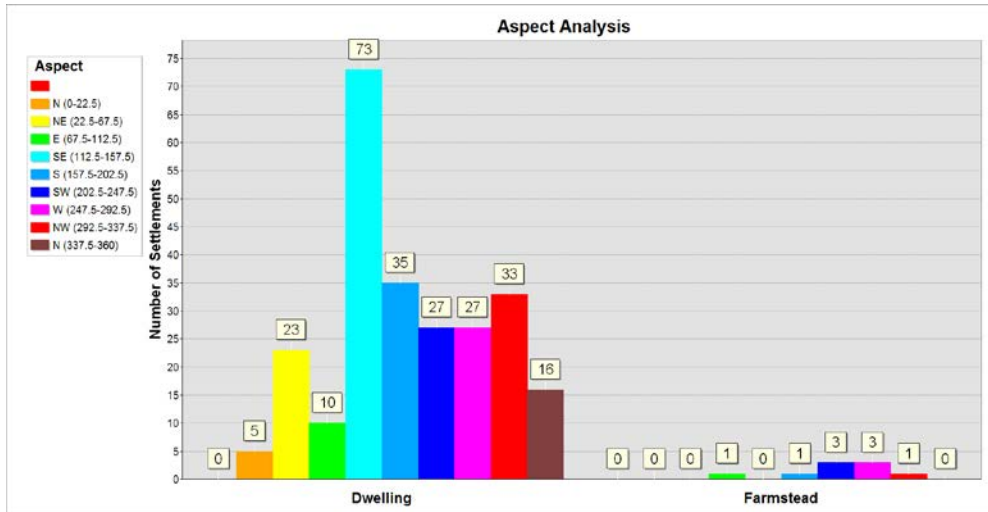


Figure 14 Histogram of aspect analysis of settlement structures in Phoinix

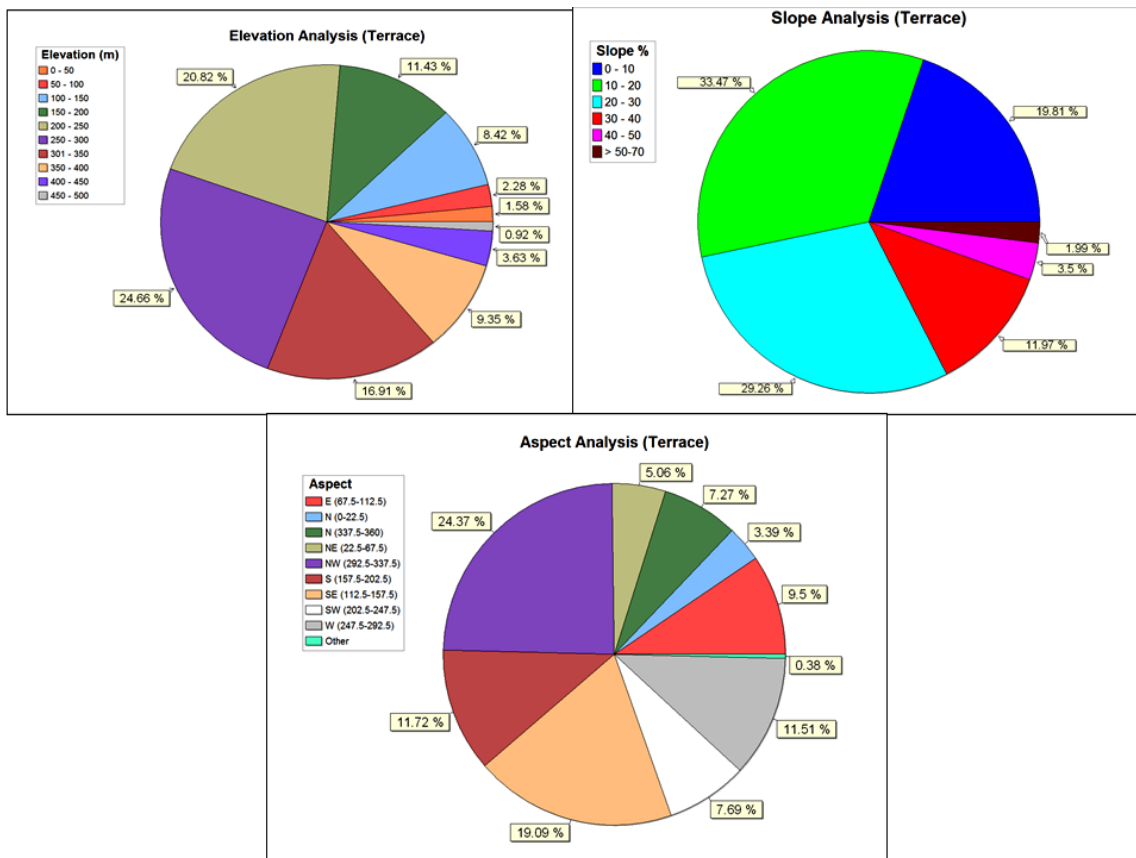


Figure 15 Pie-charts of the elevation, slope and aspect results of terraces in Phoinix

5.2 Visibility of the Acropolis and Distance Analysis of Settlements

Regarding the territories of Phoinix, the *deme* measures ca. 9 km in the NE-SW direction; its width is 4.5 km on average. The narrowest sector in the NE is interrupted by the undulated terrain and this part of

the *deme* grows into a tight silhouette, suggesting unavailability for settlement.

Visibility, which has a strong connotation for defense and surveillance of the agricultural fields in the periphery, affects communication per contra the pressures exerted by the geomorphology. Reminiscent of Paros (Sevenant and Antrop 2007) to an

extent, the cone-shape Karayüksek Dağ behind the *Acropolis* divides the land creating isolated valleys, eventually affecting visibility and the settlement pattern. Unsurprisingly, the sites where line of sight is the highest relate to the fortified areas and a *pyrgos* (on top of Burgaz Tepe), throughout the *deme*.

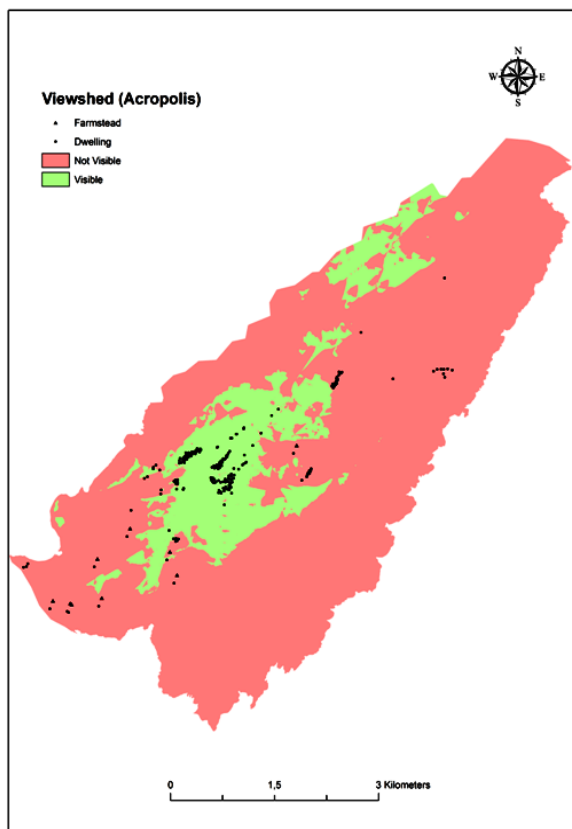


Figure 16 The visibility map of the *Acropolis*

Given in Fig.16, the viewshed of the *Acropolis* does not go beyond 2 km in the N-NE sector. The vast majority of the dwellings are within the viewshed of the *Acropolis*; all the farmsteads, per contra, are invisible from the *Acropolis*, which may be interpreted as being that they all relate to the *chora*. The farthest distance, which may be included within the optimum catchment area of the *Acropolis*, measures ca. 1.3 km. We have no strong reason to continue with a similar analysis for each of the farmsteads as their positioning, highly affected by the topographical constraints, are rather dependent on the nearest suitable land for agriculture. Also, it is hard to suggest that

the pseudo-cluster of “isolated” farmsteads can yield positive results, though may appear to be constructed at some regular intervals (distances changing between ca. 200-700 m) in the SW *chora* (See Fig.8); however, these must have enjoyed more a favorable position on the course of the ancient road.

The density of settlements is extremely high in the close vicinity of the *Acropolis*. This is also favored with the growing number of pressing installations. Unsurprisingly, there is a positive correlation between the number of dwellings and the water features. A vast majority of them are equipped with cisterns/wells constructed at less than 200 m distance. Based on the spherical buffer width distance, the designation of the compact settlements or clusters of dwellings marks centration, lying not more than 1.3 km distance from the *Acropolis* and occupying a total area of ca. 50 ha (disregarding the waste land but limited to the area where the settlement data (also linked with the presence of tiny Classical fragments albeit being still rare, Fig.17) has been attained) at the extreme. The number of dwellings gradually decreases as they move away from the core. Yet, the majority is situated 1 km away at most. The exceptions, e.g. the fortress settlement of Kaledağ in the NE, are refuted for the criteria set above (1.3 km) although they can make up notable cluster of some “simple” dwellings or barracks.

Any farmstead in Phoinix has a connection to a dwelling or cluster in the *chora* or to a dwelling in the *deme* centre. The closest distance of farmsteads to either type is 289 m while the farthest is around 1.2 km. The situation is explainable with practical supply to a market demand. Although one of them (O20A00526) falls into the fixed criteria of 1.3 km, the rest of the farmsteads lie on or nearby the ancient road, which is supposed to have ensured connectivity to the nearest “urban” cluster.



Figure 17 Traces of evidence for the Classical settlement within an area of 50 ha (View from the base walls of a dwelling (A); The façade of 5<sup>th</sup> century B.C walls at the Acropolis (B)); Samples of potsherds recorded within the same zone, at the bottom (e.g. Fragments of black-glazed ware on the top-left corner, suggesting the Classical period; Sample of a mushroom rim amphora on the top-right corner, suggesting the late Classical period)

## 6. LAND USE

Extensive land use is concentrated along the NE-SW, beginning from Taşlıca and stretching down to Gedikçukur (Fig.18). Except the unique environmental determinants (particularly the topographical constraints) for both, the diversification in the land use of Phoinix is reminiscent of some various landscapes in Crete (Wallace 1997-2000), which primarily finds expression in the agrarian land alongside grazing.

That a nucleated identity may have strong emphasis on the political organization (Osborne 1985) leads us the way to appoint the *Acropolis* to the first order settlement which is complemented with the lower settlement. Another discussion might be raised considering the forms of habitation: the Lower settlement bears semblance to the second or third order settlements (often found in its *chora*) in the method of construction. In other words, it was not simply the location of complex settlements limited

to the environs of the *deme* center and observable within a buffer zone of 1.3 km but the common architectural fashion often shared by the second and third order groups. Anyhow, each component of the complex settlements is associated with terrace walls planned in an orderly manner and the ownership of plots is extremely clear, including the terraced enclosures and *alonia*. The dispersed patterns publicize identity in the second and third order settlements. The clusters corresponding to 5-20 dwellings, and the small scale *aule* or large isolated farmsteads situated out in the *chora*, fall into this group. That is to say, the majority of clusters stand close to the *deme* center while these clusters seem to act as an interface between the farmsteads and the *Acropolis*, situated on or nearby a pre-defined road network. Regardless of type, a strong communication network was ensured via pathways and ancient routes between any order settlements. Closely relat-

ed to communication, indeed, the issue of visibility is arbitrary in view of the forms of habitation. The farmsteads situated on higher grounds in the *chora* are able to see

the agricultural areas. Slightly different, the second order clusters often face the *Acropolis* and the coastal band in either way.

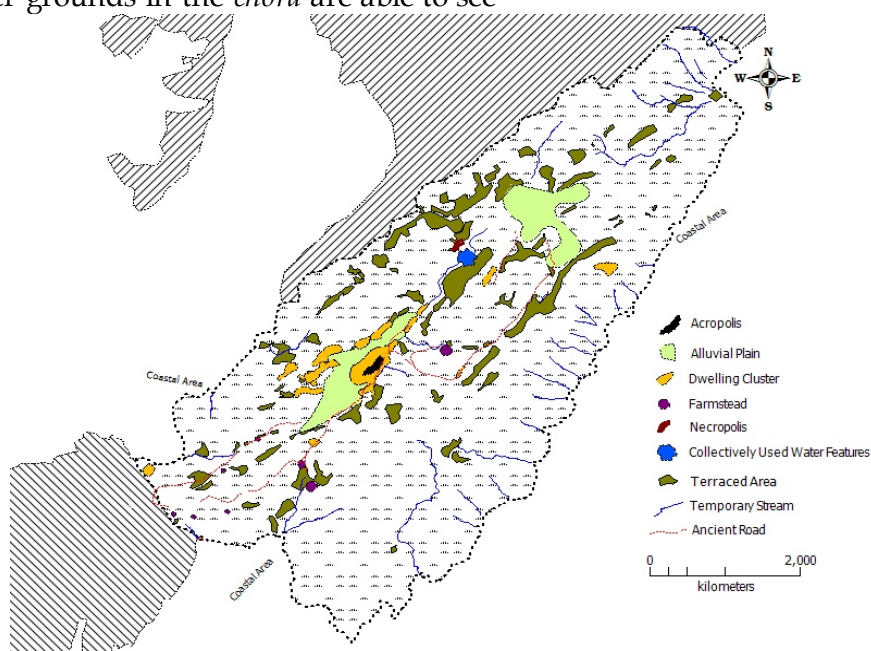


Figure 18 Land use in Phoinix

The category on the land use breakdown is given in Table 1 where the first row is consumed by the land suitable for agriculture. Two sub-categories are under question. As the modern practices show and that the issue is frequently attested through literary evidence (recently by Diler 2004), the plain areas, presumably used for cereal cultivation must have made up the greatest percentage of the agrarian land. The colluvial plain of Sindili and the flat grounds covered with *terra-rosa* soils in the N-NE of modern Taşlıca fall into the first sub-category. For the second sub-category, outstanding indicators come out as the over-exploited terraces where olive and vines were supposedly cultivated and the orchards were planted.

It is postulated that the territorial boundaries of Phoinix would not have been below 28,24 km<sup>2</sup> (excluding Elaeousa). The way of territorial assignment to each *deme* and their sizes in the Peraea is discussed in a future article which is underway. Based on the photogrammetric study of terraces and some current data obtained from the MOA (particularly per-

tinent to the plain/depression areas suitable for agriculture), it has come out that 340 ha of land was possibly fixed to the agrarian activity. Out of 2824 ha, 12 % of the land is attributable to this category. The second category is attributable to (i) the built areas which were classified according to the order of settlements where the second order clusters generally possess catchment areas between 0.5-5 ha, (ii) a group of water features possibly non-detachable from the daily life activities in the N, (iii) the space reserved to the deceased and (iv) the “manufacturing” sector.

A complete reference acquired through the Amian inscriptions (in the Peraea) has shown that leasing small plots was widely applied for 1.8 and 0.7 ha (Rhodes and Osborne 2003). Irrespective of their catchment areas, the size of the farmsteads in Gedikçukur (the large one coded as O20A00519 and another one overlooking this structure and having a slightly large/medium size) and the E of Burgaz Tepe (O20A00526) prove some parallels with the values mentioned.

Table 1 Land Use in Phoinix (ha)

Type of Land	~ Area (ha)	Percentage (%)	Remarks
<b>LSA</b>			
Alluvial Plain	131		
Terraced Areas	≥ 209		Min. value assessed as 209 ha
<b>Total LSA</b>	<b>340</b>	<b>12</b>	
<b>BA</b>			
First Order Settlement	~ 27.6		<i>Acropolis</i> & Lower Fenaket
Second & Third Order Settlement	~ 30.7		Fortress settlement at Kaledağ included; Gökçalça site excluded
Water Features	~ 4		
<i>Necropolis</i>	≥ 0.5		Min. value assessed as 0,5 ha
"Industrial"/Workshops	<1		Min. optimum value assessed as 0,1 ha
<b>Total BA</b>	<b>63</b>	<b>2</b>	
<b>LFG-A/WL</b>	≤ 2421		Including maquis and harsh terrain, max. value assessed as 2421 ha
<b>Total LFG- A/WL</b>	<b>2421</b>	<b>86</b>	

LSA: Land Suitable for Agriculture

BA: Built Area

LFG: Land for Grazing

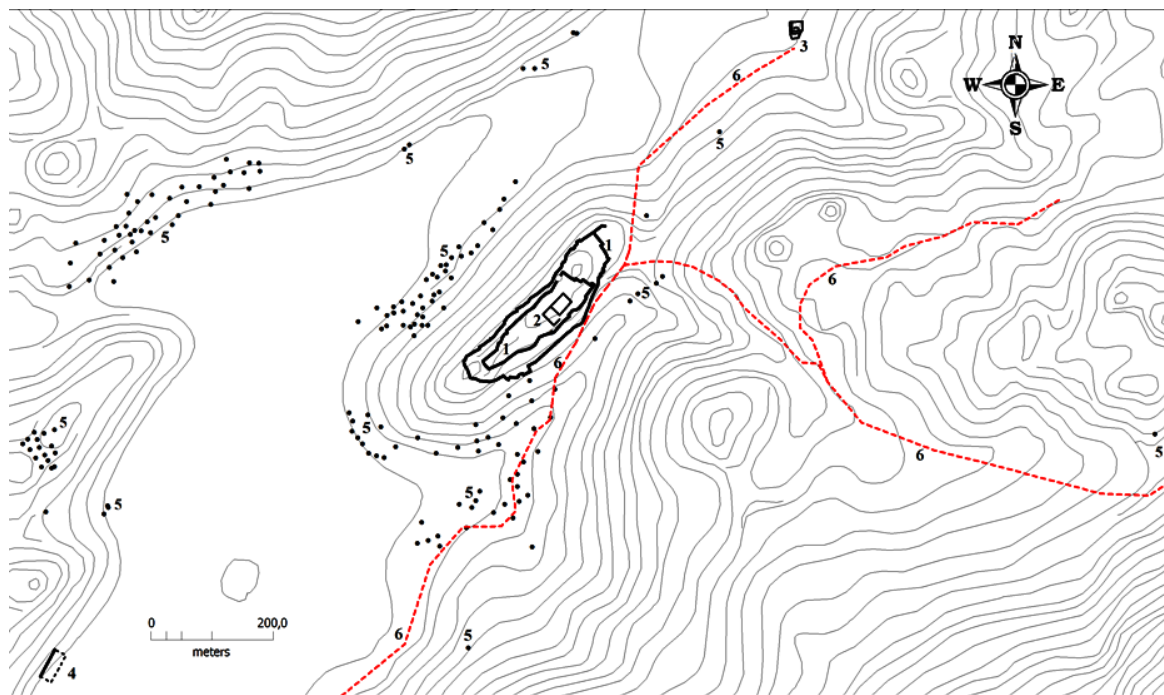
A/WL: Abandoned/ Waste Land

Except these big cases, the extent of the boundaries necessary for daily maintenance (within the "domestic" context including e.g. nearby press stones, adjacent cultivable land) of the farmsteads change between 0.1- 0.3 ha on average, somehow testifying the average values emphasized by Alcock (2007). When the built areas, all resting on terrain enriched with *terra-rosa* soils are considered, the smallest share of land rounding up to 2 % is attained. As offered by the vast majority of land, the final category needs to be outlined in favor of the land for grazing or non-functional areas which correspond to 86% of terrain, having the greatest share. Such lands could have replaced the gaps in part, with e.g. *eschatia* (Carter et al. 2004), herding stations for extensive grazing or remained inert.

## 7. LAYOUT AND PLANNING

The construction of numerous ancient fortifications was bound up with topography (Akarca 1972). The *Acropolis* is the strongest nominee for having constituted the backbone of the man-made environment. Hence, it draws up the core of the general

plan (Fig.19) with the ramparts. It appears that the *isodomis* walls (NE and SW) drew the limits of civic administrative boundaries which now appear to have ended up with the *necropolis*. However, slight traces of outer fortification walls travelling the lower slopes of the *Acropolis* at Sindili level, and so detected through the aerial images, might be inspiring for reconstructing an alternative plan. Unless systematic excavations are conducted, we can never be certain whether the Lower settlement was walled at the foot of Hisartepe. Notwithstanding, all we can trace about these walls are shown in Fig.20 (the traces of outer wall relics where the red marks represent the nodes), regardless of period. On the other hand, the physical proximity of the Hellenistic walls (in the SW) to the SW *chora* may suggest the active use of a possible logistic/urban service route running from the *isthmus*. Having an ancient road pass across hereabouts corroborates the idea that this part of Phoinix could have acted as a nexus for the economic activity or been a lively area for the foreign travelers.



1- Fortification 2- Public Structure 3- Temple of Apollo 4- Public Structure 5- Dwelling 6- Ancient Road  
Figure 19 General plan of the *deme* center of Phoinix

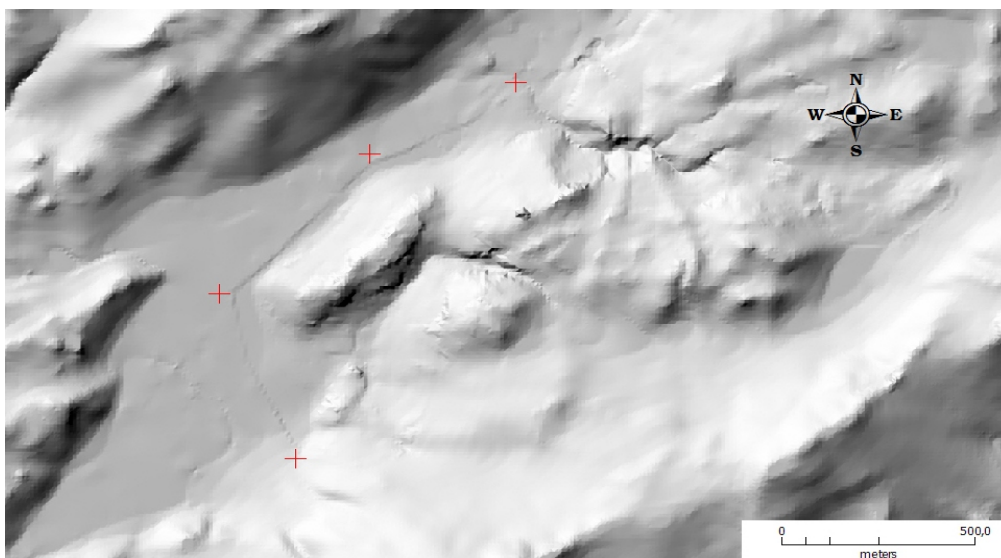


Figure 20 Traces of outer fortification walls around the *Acropolis*

Smart landmarks for fair vision of visitors and tradesmen approaching the city were widely applied in antiquity (Bilde 1999). As the degree of disturbance is high all over Phoinix, it is difficult to suggest a precise spot for an *agora*. However, and slightly different to Umar (1999)'s proposal, it could have been somewhere around Sindili, in the west over the plain area where the modern trackway passes by. There is a need to reason out the close

proximity of the *isodomis* wall range (SW) to the remnants of a public structure lying at this spot which could have had relation to an *agora*.

Midway between the *necropolis* and the *Acropolis*, the *naiskos* dedicated to Apollo is representative of a rural sanctuary. Recalling that Apollo Erethimios is often found in Rhodes, we cannot know whether the temple was associated with an "agro culture" but it could be a native equivalent

or an inherited deity from a genuine Caria in that adoption of a variant during the Hellenization process could be an answer. On the other hand, its physical location between the *deme* center and the *chora* may recollect a compromise between the “urban” and the rural. When wrapped, the site plan of Phoinix is a refined version of the Carian *polis* of Alinda (Bean 2000; McNicoll. 1997) which was a nexus for Mausolus’ expansionism in the late Classical period and was the autonomous Hellenistic site (Marchese 1989) down to the Roman period. Inspired from the fortified Hellenistic sites in the north, we may also commentate on the design of the components of the *Acropolis* by revisiting the arrangement of water features, gates, walls and *bastions* within the outlying area of the *Acropolis* in Körteke (Marchese 1989) and; the layout of different phase walls in Kuyruklukale in the Carian Mylasa, where the pre-Hellenistic walls were replaced by the outer walls in the upcoming period and that the cisterns and administrative spaces were planned in the middle space (Akarca 1972; Bean 2000).

Planning conceals functionality. Either situated on moderate slopes or slightly elevated grounds, the manner of planning the farmsteads suggests that they could easily master the agricultural terraces. The density of small farmsteads increasing in the SW *chora* is explainable with a “capillary diffusion” (Alcock 2007) as a consequence of possibly the Roman invasions in the countryside. That no notable farmsteads appear in the N-NE may be that the fields were patrolled from over natural platforms, e.g. the watch tower visible on top of Sulukale Tepe facing modern Taşlıca. Disregarding the problems on dating, such towers could have functioned as part of the agricultural sector in the Hellenistic and post-Hellenistic period. The two large size buildings, which were part of a solid plan, require attention by the same token. The orientation of Phoinix towards the most advantageous corridors and the idea behind easy shipment of goods and services to some predetermined locations in a way

favors the presence of capital, work force, production, storage, distribution and feeding capacity. Linkable with the economic matters, presumably, the *deme* aimed at ensuring security in the distinct parts of its *territorium*. We may also see no reason why these large/ publicly audited complexes (which were perhaps managed by the *oinotamias*, Alcock 2007) should not have been part of a distribution economy or the by-products of a monopoly or state (possibly Rhodes) imposed regulations.

Barely associable with the Hellenistic period but likely for the upcoming period, one may well choose to refer to what Alcock (2007) states on the ineffective position of elite domiciles in the countryside. The monumentality of elite residences in the countryside during the Roman times was in fact some few representations of the coming period by the beginning of the 1<sup>st</sup> century B.C. Villas almost reproduced nothing outside the core production areas. If so, the distinctive and large size farmsteads in Phoinix- when seized by the Romans in the last phase- might also be taken in a broader context and assessed with regard to the creation of a new fashion (*Ibid.*) and way of living, once in the Peraea.

Further related to the *chora*, various evidence on the processing platforms mark the designation of individual or collective workshops which aimed at domestic production and/or overseas trade, mainly between the 3<sup>rd</sup>- 2<sup>nd</sup> centuries B.C. Despite much evidence roaming around the countryside, the presses recorded in the vicinity of the *Acropolis* seem to be the best indicators of the agrarian way of living (whether self-sufficient or not) such that a systematic policy was not necessarily implemented out in the *chora* but took precedence in all the parts available.

No concrete assessment regarding the existence of public buildings in Fenaket (if not all constructed in the later periods) has been made up to now. The ancient Phoinix could have been planned taking into account the integrity of public areas in the vicinity of the *Acropolis*; the ruins of an edifice with the *temenos* walls at the top (con-



nected with the Dionysos cult?), the *naiskos* dedicated to Apollo, the ruins of a possible public structure associable with the *isodomic* walls (SW) at Sindili (pertinent to an *agora?*, an open gathering space, etc.), and the other potential works which vanished over time. Despite the distance factor, the *isodomic* walls (NE) almost meeting the *necropolis* in the far N, may be incorporated to this list. When considered in conjunction with a broader *deme* network, the coalescence of public spaces and the outlook of Phoinix may be completed with the large size rural structures in the *chora*.

The dynamics of land and the environmental disturbance regimes are best reflected through terrace systems. Reminding Methana (Forbes 2007), the terrains of Phoinix abound in small plains. The landscape ultimately affected the agrarian life and the settlement pattern. Compatible with topography and geology, the terrain suitable for agriculture reach the upper limits of the hills where the limestone begins; an exception involves the defensive structures. Place to place and typical of the Greek patterns, the debris of terrace wall relics and pre-defined boundaries of plots show clear ownerships based on the equal distribution of land, both associable with *insulae* of dwellings in the *deme* center and some farmsteads or clusters in the *chora*.

Although the layout of megarons might have greatly varied from region to region, even within a region, the transformation of the simple plan dwellings- as accorded with the perceptible Classical catchment area of the *Acropolis*- into elongated spaces with additional rooms may be reinterpreted in favor of the changes in the socio-economic structure (Lang 2005) or the necessities brought by the population pressures in the Hellenistic era. Though is difficult to tackle from the aspect analysis, it seems that about one third of the dwellings facing the SE minimized the adverse effects of sunlight radiating from the terrain during the hottest times of long summers in such an arid environment. Despite the varying positions of the compact settlements near the *Acropolis*, the manner of constructing

the living quarters in the form of terrace settlements seems to have eliminated the additional effects on those facing the W. Further on architecture, the masonry schemes can be informative. Osborne (1987) explicates that the Classical and Hellenistic techniques of constructions were time-consuming and costly. Well-designed stones were often used in publicly owned entities. The use of local stones on such buildings was an expression of financial power or a declaration of self-sufficiency (*Ibid.*). As it maintained a *deme* status, one should not, however, expect, e.g. sophisticated wall remains at all parts of Phoinix but many samples hint at the Hellenistic era albeit divergent masonry techniques traced in the *deme* center and the *chora*. What is left at hand is, apart from those of the *Acropolis*, the two slightly bossaged *isodomic* Hellenistic walls (in the NE and SW), which have the potential to evoke new discussions for the future studies.

Relevant to the settlement decisions that are highly affected by water, we can note, similar cases were valid for the extensively occupied sites which had physical proximity to "rich alluvial soils, water and lines of communication" in northern Caria in the prehistoric times, as well (Marchese 1989). Well observable on the large size farmsteads and the compact settlements situated near the stream beds, a permanent water source was an indispensable aspect. For those which have a disadvantage from the point of a natural water source, the impact of water is discernable through man-made installations. Briefly, the cisterns and wells must have been planned in view of the settlement behavior but irrespective of the settlement type.

A close relation between the soil matrix and vegetation, and the built areas is highly reflected through the designation of dwellings in Phoinix. The choice of settlement considering the fertile land is so clear that except in a few cases, all types of settlements were constructed on typical *terra rosa* soils (Fig.21) in which case no random settlement is attributable to ground effect. Although aspect was a determinant factor

in their orientation, terracing could be applied anywhere blank and preferably below 300 m. That about half of the terraces face the NW and SE is explainable with the orientation of Phoinix in the contra direction. Terracing was not limited to the close environs of the living quarters; it was ap-

plied in the opposite sectors of the settlement zone at the same time. Obviously, new agricultural lands deviating from the original axis were exploited effectively. Communication, on the other hand, was vital for the maintenance of a one-body *deme* despite the topographical constraints.

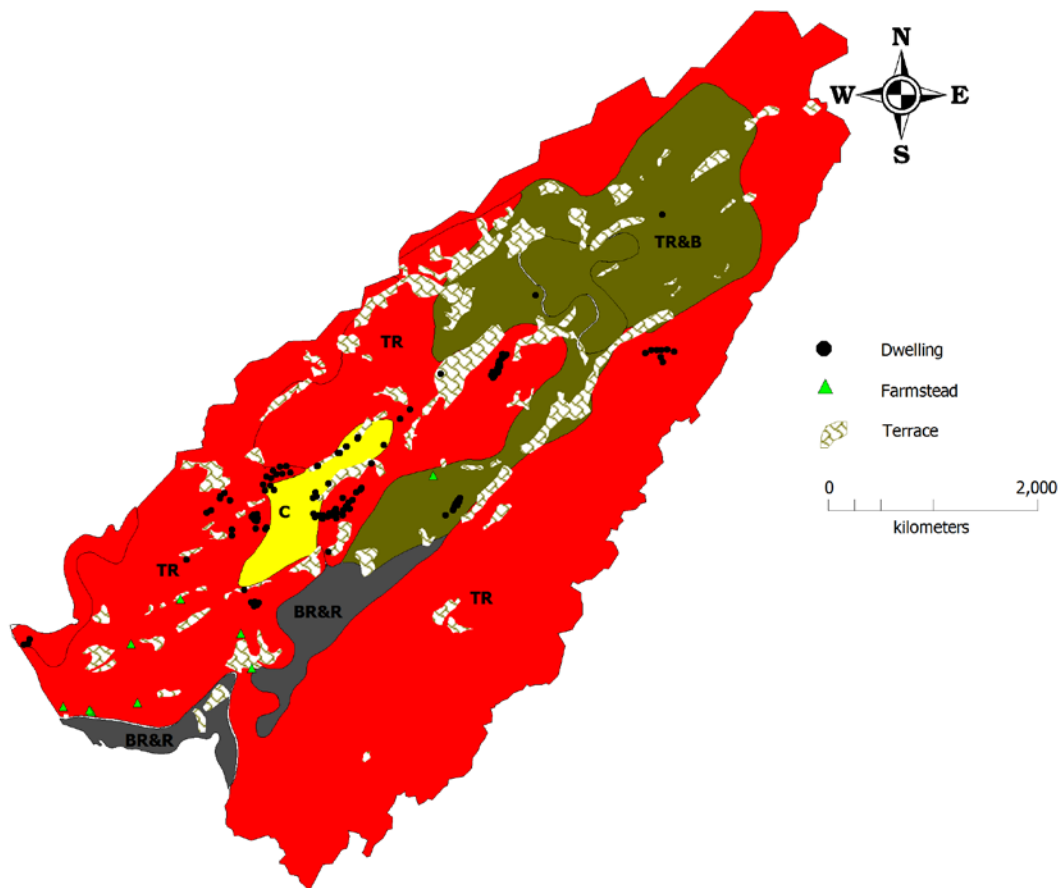


Figure 21 Relation of settlement to *terra-rosa* soil

## 8. CHANGE

It seems that Phoinix experienced a development process from a core to the countryside over time. A pending question is "Where was the core settlement?" It could well have been different from where the *Acropolis* now stands. Also, enquiries about the problem of period are to be included in the list. The list can be expanded posing the most difficult: How did it happen? These are rather difficult to answer.

A tentative approach may be based on the spatial relations of the *chora* and the *deme* center and interpreting in light of

them. As spatial processes relate to miscellaneous criteria like relational positioning, spacing, clustering, size, function, distance, land use, settlement pattern, accessibility (Nystuen 1968), we may further rely on some specific questions like: "How far and through which process has any displacement taken place in the vertical dimension? What is the relationship between off-site and in-site and subsurface and surface scatter? (Bintliff and Snodgrass 1988).

Large scale surveys conducted in the Boeotian lands have shown that 7 Geometric, 23 Archaic and 76 Classical and early Hellenistic settlements were used actively

(Snodgrass 2000). Given these realities, there could have been more to chase knowledge about the earliest/original settlements of Phoinix in which matter the foremost site to ramble through appears to be the environs of Gökçalça, a site heralding pre/Classical patterns (if not a short life dispersed settlement) and an enclave where micro morphological techniques might be a good solution for studying the long-term change.

The NE sector is expected to be one of the original zones which may give insight of the significant shifts from small scale dispersed settlements that could have taken place during the pre-Classical era. Although social factors are often attributable to lowlands presenting nucleated forms of settlement, episodic erosions, overexploitation of resources or catastrophic changes, e.g. in the case of Markiani (French and Whitelaw 1999) could have occurred. Gradual changes are often explained by inquiring into social factors which also seek their place under the Marxist approaches. To Southall (1998), the transition from kinship relations to the ancient modes of production from Crete and Mycenae to the Classical Greek city-states over half a millennium took place resulting from the forces and relations of production (*Ibid.*) It would not be unusual that the Peraea could have witnessed something similar.

Within the economic context, Phoinix has lots of things to say. The function ascribed to this *deme* needs consideration in terms of the positioning of different order sites and their familiarity with the agricultural, even pastoral lands. Potsherd scatters and typical architectural features show that the settlement, thus population trends experienced a peak in the Hellenistic period. Although we find complex settlements around Sindili, attribution of a compact setting to the entire *deme* is out of question, owing to the fragmented nature of terrain. It may then be suggested that the real "urban" core and the center of attraction emerged at the *Acropolis* and close surroundings.

Although the peak of development is more or less attributable to the Hellenistic and post-Hellenistic period, there is still a possibility that shifts from a Classical settlement was experienced in the near environs of the *Acropolis* as the potsherds suggest (See Fig.17). Hypothetically, the *phourion* at Kaledağ could have co-existed while the *Acropolis* was already there. As the sporadic habitat and the dispersed patterns make up the foremost outlook in all directions of the *Acropolis*, which has a connection zone with Kaledağ, the sphere of influence of the *Acropolis* must have been greatly geared toward the SW (Fig.22). However, a search for new water resources (underground water) could have encouraged the late dwellers to move toward the N where evidence for a substantial ancient settlement is almost absent.

## 9. FURTHER DISCUSSION

Similarities in shape and internal rhythm give clues for pattern analysis (Bell 1999) in any kind of settlement. As dispersed settlement patterns provide flexibility in the social relations, they may conceal clues for the forms of elite control in Phoinix or elsewhere in the Peraea. However, this should not lead to the idea that the strength of the *chora* had firm grounds for full independence. It seems that the improvement of the reflexes of the *chora* with the proliferation of various habitation units was an inevitable result of the agricultural booms and flexibility in the administrative patterns during the Hellenistic period. Contrary to Thasos where the communication lines, especially in the countryside were weak (as elucidated by Osborne) and that the center was occupied by the administrative staff and people were divorced from the core (1987)), there was, physically, no strict control in the *chora* of Phoinix, and the hybrid populations co-residing with wealthy/elite groups (as is quite evident through various inscriptions (*I.Peraia*)) survived into later periods.

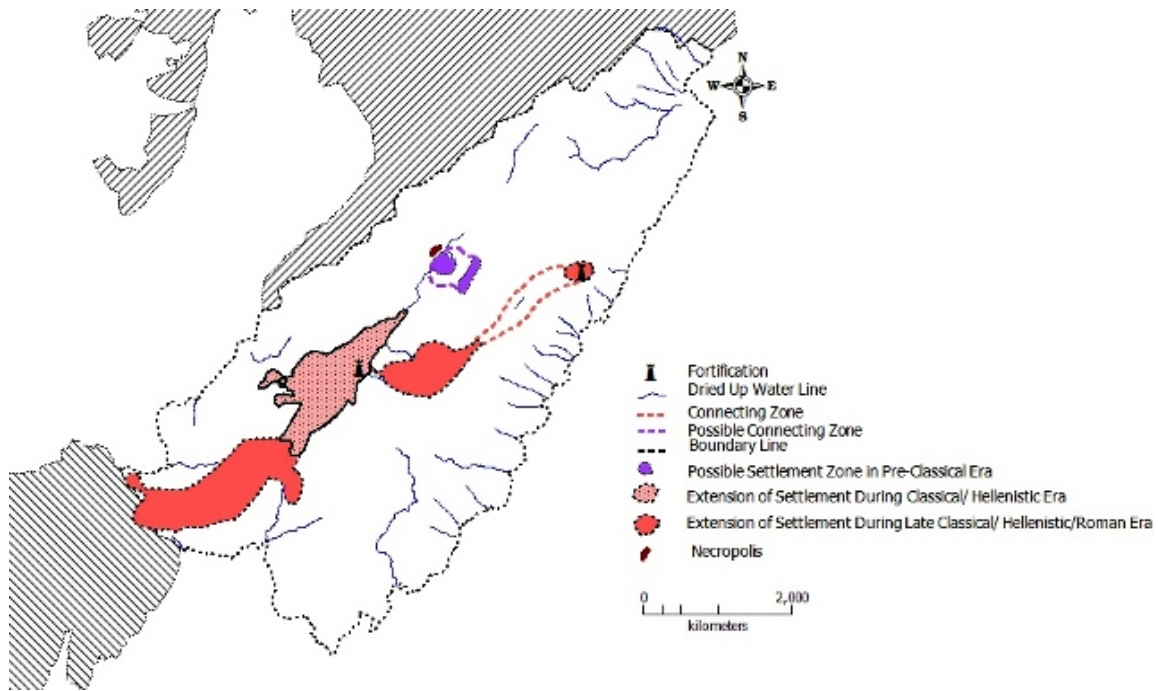


Figure 22 Change process in the settlement of Phoinix

## 10. CONCLUSION

Although we need verification in respect of the political borders of two neighboring *demes*- Phoinix and Thysannos, the environmental attributes suggest a vivid setting for Phoinix; it developed in the NE-SW axis according to topography within the natural limits. The dynamics of the landscape ultimately caused the *deme* to be transformed into a dendritic (similar to what Tuna suggests for period B of the Cnidian Peninsula (Tuna 1990)) pattern over time such that fragmented land-holding stretched from the *deme* center outwards and represented an agricultural efficiency all over the *chora*.

The sites lying between 100-200 m elevations and having slope values of 0-30°, over *terra-rosa* soils were the most preferable for the settlement areas intermingled with agriculture. Except the territorial extensions of Taşlıca, the N-NE part of the *deme* is almost blank; the earliest compact settlements (expressible with seasonal movements?), presumably pre-Hellenistic, could have rested thereabouts on the raised grounds, maintaining safer and defensible positions with high visibility, as may also

be reinforced by the poor number of surface material and highly disturbed ruins over the inland enclaves. However, the fortress settlement at Kaledağ gives clues about a permanent settlement over a broad time span. In summation, the NE sector could have been perceived as the robust segment in the planning process. A reality is that, the density of settlement markedly increases away from Taşlıca. Further in the S and SW, various deposits alongside some other strong indicators address a denser zone of occupation regardless of the *deme* center and the distant *chora*. The surface fragments and secondary evidence show that this part of Taşlıca survived during the Classical, Hellenistic and the post-Hellenistic era. Upon the changing socio-economic conditions that could have had grounds in the political atmosphere, thus arising from the population pressures, the range of settlement far exceeded 1.3 km, overriding the nucleation around the *deme* center- the *Acropolis* and bringing a remarkable degree of flexibility and a dispersed outlook to the *chora*, during the Hellenistic era.

## ACKNOWLEDGMENT

I express the highest gratitude and appreciation to the General Directorate of Antiquities and Museums of the Ministry of Culture and Tourism of the Turkish Republic for having granted the survey permission for the fulfillment of the Ph.D. dissertation entitled, "The Rural Settlement Pattern of the Bozburun Peninsula During Classical and Hellenistic Periods", for the years 2009-2012. This paper has been basically drawn up by reviewing the sixth chapter of the mentioned study. I also offer warm thanks to the authorities of Marmaris Museum for their constructive attitudes before the start of each campaign. Additional thanks go to the associated personnel of the General Command of Mapping, Piramit Fotogrametrik Hizmetler ve Bilişim Teknoloji Ltd. and METU-BAP, for the acquisition of the maps, technical assistance in photogrammetric operations and financial support, respectively.

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[www.euratlas.net/cartogra/peutinger/index.html](http://www.euratlas.net/cartogra/peutinger/index.html). Accessed (2011). sect.IX.

<sup>i</sup> The basic methodology applied under the purposes of the research was extensive survey, compliant with the permission(s) given by the Turkish Ministry of Culture.

<sup>ii</sup> Also see Shear, T.L. (1913) Inscriptions from Loryma and Vicinity. *The American Journal of Philology*, vol. 34, No:4, 451-460, for the corrections.