TÆSP

Troodos Archaeological and Environmental Survey Project

Field Report, 2001 Season

Department of Archaeology, University of Glasgow

2001

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Look N over Katydhata Village, Skouriotissa Mine and The Karkotis Valley

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Field Report, 2001 Season

By

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2001

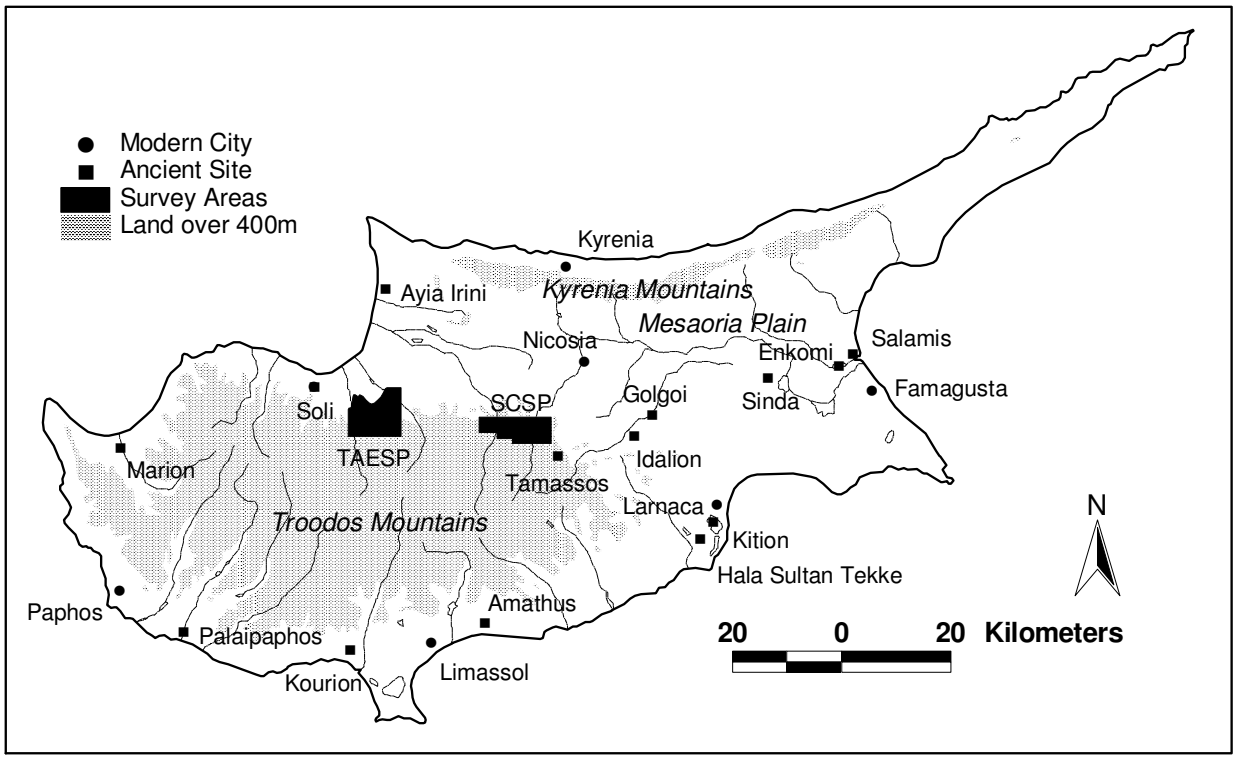

Figure 1:

Map of Cyprus showing the TÆSP and SCSP Survey Areas.

Map: Paul Pelosi

1.0 *Introduction*

The Troodos mountains with their fertile and copper-rich foothills have a history of at least 9,000 years – almost as long as people have been living on Cyprus. The Solea Valley and the region to its east, on the northern edge of the Troodos, have a cultural history of more than 4,000 years (Figure 1). This history is fragmentary, as surprisingly little archaeological or historical research has been carried out there. The Cypriot archaeologist Menelaos Markides excavated about 100 Bronze Age tombs near Katydhata in 1918, and during the 1920s miners at Skouriotissa discovered the tools and galleries of their Roman predecessors. Apart from that and recent rescue excavations by the Department of Antiquities of some Archaic to Roman tombs between the villages of Linou and Evrykhou, the area remains largely untapped by archaeological or geomorphological exploration.

We plan to fill this gap with a broad range of archaeological, environmental, ethnographic and historical research. The Troodos Archaeological and Environmental Survey Project is directed by Dr Michael Given (University of Glasgow, Scotland), Dr Vasiliki Kassianidou (University of Cyprus), Prof A Bernard Knapp (University of Glasgow, Scotland), and Prof Jay Noller (Oregon State University, USA). We held a preliminary season during the summer of 2000 to develop and test our methodology and carry out reconnaissance in the survey area (Given *et al* nd). TÆSP's first full field season ran from 25 June to 31 July, 2001, with an international team of some 28 students and specialists from Scotland, Cyprus, Australia, Canada, Denmark, England, France, Ireland, the Netherlands, New Zealand, and the USA (see Appendix 1). This will be followed by two more seasons in 2002 and 2003, a study season in 2004, and prompt publication in both monographic and electronic form in 2005.

It would be impossible to run a project of this size and complexity without the help of a huge number of people and institutions. Our current funding comes from the Institute for Aegean Prehistory (USA), the Council for British Research in the Levant (London, UK), the Carnegie Trust for the Universities of Scotland, and the Society for the Promotion of Roman Studies (UK). We are very grateful to Dr Sophocles Hadjisavvas, the Director of the Department of Antiquities, for the permit to carry out archaeological research, and to the Geological Survey Department, the Forestry Department and Astra rent-a-car for their support. The Cyprus American Archaeological Research Institute in Nicosia, particularly its director Robert Merrillees and secretary Vathoulla Moustoukki, has given us continual help and encouragement.

Most of all we wish to thank the people of our survey area, especially the community of Tembria and its president Andreas Stylianou, who have generously allowed us to use the splendid Tembria school for our headquarters. Warm thanks also go to the community of Kalliana and its president Christakis Polykarpou, and to Georghios Georghiou, Zenonas Hadjiaryirou, Panayiotis Loppas, Eleni Papapetrou, Constantinos Xydas, Artoulla Konstantinou, and all the many other people who have given us help and hospitality.

After giving an overview of our project goals and methods, this report will summarise the results of our fieldwork in five different areas, and then give a series of brief reports from project specialists.

1.1 *Project Objectives*

The overall objective of the Troodos Archaeological and Environmental Survey Project (TÆSP) is to integrate intensive archaeological survey with a range of analytical techniques designed to help us understand the relationship between human activity in the landscape and its environmental setting. Many of our research questions are reflexive in construction, as much of our investigation of this particular 'landscape' involves the mirroring of social and natural lines of enquiry. Our use of the concept 'landscape' involves its manifold and ever evolving and expanding meanings (Ashmore and Knapp 1999). Hence, inherent in our research questions is an inquiry into the very concept of landscape, as it and perceptions of it have changed across the northern Troodos through time.

Research Questions

1) How is social organisation manifested in the landscape? Are the settlement patterns, site hierarchies and communication networks revealed by survey data the physical indicators of social organisation?

2) What alignments of environmental factors, such as physical landforms, biota and surface water, are associated with different types of social organisation? On what spatial and temporal scales?

3) What long-term impacts do changes in land use and land cover have on social structures? How persistent and on what scales are the impacts of mining, pastoralism, agriculture, forestry and other human industries? How have hill slopes and river valleys influenced, and been influenced by, these activities?

4) What can we learn about the nature and development of resource exploitation, eg agriculture and the mining and production of copper? How do these relate to social and economic structures, and how do their technologies of production change through time?

5) To what extent can we improve our understanding of local modes of production, trade, and social organisation through spatial and fabric analysis of utilitarian pottery?

6) What impact do imperialism and other external political or economic domination have on the landscape? How does the landscape, in turn, influence imperial power and local resistance?

7) How can intensive field survey be combined with ethnography, documentary history, architectural analysis and oral history to advance our understanding of the interaction between people and their landscapes in recent times?

1.2 *Project Methods*

The core component of our methodology is the survey unit, which we investigate in continuous transects across the survey area. Each survey unit is defined by a geomorphologist, and is then traversed by five fieldwalkers spaced five metres apart. A survey unit in a transect is typically 25 m across and between 30 and 100 m long. The team members count all artefacts and record geomorphological and ecological data. They then make a representative selection of the artefacts, which in the case of the pottery is based on each fieldwalker collecting one of every type of pottery sherd, tile, etc. This means that with five fieldwalkers, a particularly common pottery type in a survey unit could be represented by as many as five rims, five body sherds, five bases and five handles.

The next main level of recording consists of the intensive investigation of particular foci of human or ecological significance (Places of Special Interest or 'POSIs', in some ways the equivalent of 'sites'). Typical POSIs include discrete pottery or lithics scatters, isolated rural structures, and soil sections showing sedimentation episodes with stratified pottery. After initial recording on a form, we usually return and employ various gridding, mapping and sampling techniques for more intensive investigation.

We also examine broader areas of importance (Special Interest Areas or 'SIAs'; identification numbers prefixed 'TS'). These SIAs are typically a few hundred metres across, and include a variety of different periods, features and artefact types. Typically, they have several POSIs within them, which are investigated in their own right. Our core methodology in SIAs consists of 'block survey', which involves the layout of contiguous survey units covering a much larger sample of the SIA than would be done by means of a transect. Block survey is accompanied by detailed geomorphological mapping, geobotanical assessment, and the recording of specific features within the SIA. All the data from the survey units, POSIs, and artefact analyses, are entered into the project's database and linked with the GIS for map production and spatial analysis (see reports on the database and GIS below).

The field teams are supported by a large and varied staff of disciplinary specialists. Collections of artefacts and related materials are examined by a team of specialists with extensive experience in Cypriot material culture. Dr Vasiliki Kassianidou (University of Cyprus) leads teams in the detailed recording and sampling of slag heaps and the collection of other archaeometallurgical materials. We plan to compile a major database of 400 samples of archaeometallurgical material collected during the project, analysing them with a Scanning Electron Microscope, X-Ray Fluorescence and X-Ray Diffraction, and Inductively Coupled Plasma – Atomic Emission Spectroscopy. Representative samples of pottery collected from the survey units have been processed by Kristina Winther Jacobsen (University of Copenhagen) and Joanita Vroom (University of Leiden). Study of our chipped stone collections is carried out by Dr Carole McCartney (Lemba Archaeological Research Centre, Cyprus), who is focusing on changes in tool types, technological organisation and raw material exploitation.

Environmental, architectural and other non-artefactual data are the subject of a diverse group of specialists. Neil Urwin (University of Sydney) uses satellite imagery and geobotany to enable remote detection of sites, create a land use map, and map potential fuel sources for copper smelting. In the architectural survey, we aim to catalogue enough buildings to analyse variability by region, function and social stratification, and to examine and record traditional building techniques (Ian Evans, Architectural Historian, Sydney). Sevina Zesimou (Architect, Limassol) is using architectural, archaeological and ethnographic data to document the water management and irrigation system of the Karkotis Valley, which has its roots in the Medieval

period. The historical archaeology programme conducted by Tracy Ireland (University of Sydney) integrates the project's pottery, architecture and land use data with historical documents and photographs. Marios Hadjianastassi (University of Birmingham) is researching the documentary sources of the Ottoman period and carrying out oral history interviews, whilst Dr Stelios Stylianou (University of Washington) is conducting an analysis of our international, interdisciplinary research project as a sociological phenomenon in itself.

2.0 *Fieldwork Results*

The TÆSP 2001 field season was rich in results that help to expand our knowledge of the northern Troodos, specifically, and Cypriot archaeology more generally. During the 2001 season we surveyed 250 Survey Units and 221 Geomorphological Units; counted 16,708 sherds, of which we collected and analysed 8,921 (53%); recorded 8 Special Interest Areas (Figure 2), 62 Places of Special Interest and 94 Building Units; took 1,857 photographs; entered this information into the project database and began its analysis on the Geographic Information System (GIS); and carried out a wide range of other artefactual, archaeological and environmental studies.

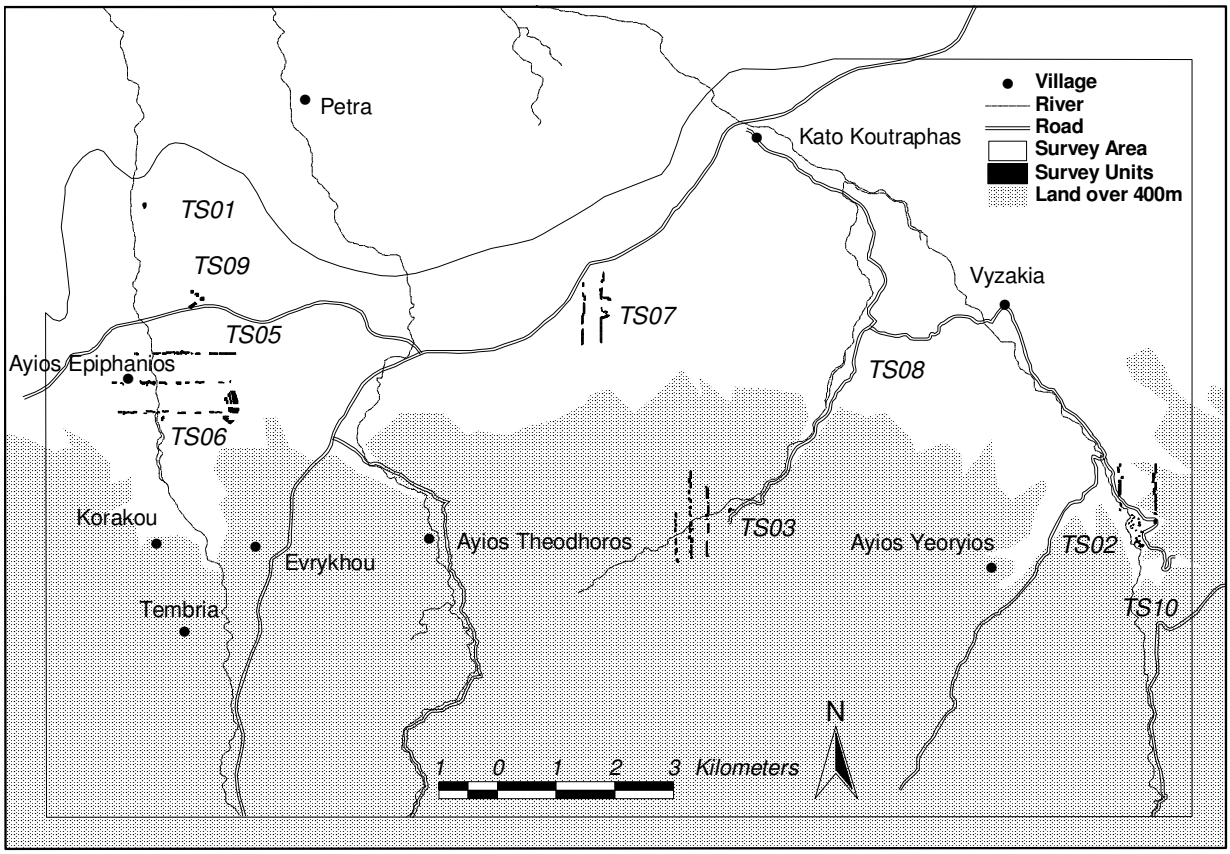

Figure 2:

Map of the TÆSP Study Area with transects and Special Interest Areas.

Map: Paul Pelosi

2.1 *TS02: Roman Smelting and Settlement at Xyliatos Mavrovouni*

Team Leader: Angus Graham. Geomorphological Intern: Paula Barry. Archaeometallurgy: Vasiliki Kassianidou. Pottery: Kristina Winther Jacobsen. Rock of Ayios Kyriakos: Alexis Boutin.

POSIs: TP006, TP017, TP022-TP025, TP047
Geomorphological Units: GU0617-GU0640, GU0659-GU0661
Survey Units: SU0012, SU0614-SU0640, SU0659-SU0660

Xyliatos *Mavrovouni* was designated a Special Interest Area (SIA) following the identification during the 2000 preliminary season of a slag heap, a complex system of fields and field walls, and abundant pottery in the surrounding area (Figure 3). The locality name 'Mavrovouni' or 'Black Hill' clearly refers to the slag heap. The aims of our work here in the 2001 season were to investigate all traces of archaeometallurgical activity, carry out block survey of the area, map geomorphological and anthropogenic features, and analyse the pottery and other artefacts. We also put the area into its context by carrying out two survey transects to the northeast (TT503500E) and northwest (TT503500E) of the SIA.

Figure 3:

TS02 – Xyliatos Mavrovouni. View from the southwest, with Memi spoil heap in the backgrou,d the Rock of Ayios Kyriakos at its base on the right, and the slag heap centre left.

Photograph: Chris Parks

Xyliatos *Mavrovouni* is situated in a landscape consisting of river terraces, a series of flat treads and steep risers formed through fluvial processes. It is located on a terrace between two river channels, with extensions to the east across lower hill slopes. The larger river channel, the Lagoudhera, is located on the western side of the terrace, and has been the primary geomorphological agent in shaping this landscape. Channel bottoms, and locally risers and hill slopes, are underlain by the Upper Pillow Lava bedrock, which underlies the whole area and hosts the metalliferous ores of the Memi Mine. Terrace treads are covered by 30–100 cm of sediment (sandy, cobbly boulder alluvium) derived from upstream sources. The river terraces were anthropogenically manipulated and maintained over the course of tens of centuries with a complex and impressive series of retaining walls up to 2.5 m in height. Within the walled terraced fields we find soils almost fully covered (95%) by organic A soil horizons (cultivated soils), which greatly contrasts with the 20-60% cover on nearby transects.

The dominant feature in the landscape of Xyliatos *Mavrovouni* consists of the spoil heaps from the Memi mine, and these act as an anthropogenic boundary on the SIA's east side. The main river channel marks the natural boundary to the west, while the northern limit consists of the meeting of the two channels. The southern boundary is marked by bulldozed terraces, which have modified the landscape so dramatically that this area is no longer meaningful in archaeological terms.

The core of our field methods consisted of block survey across the SIA (Figure 4). As we moved northwards and the density of pottery increased, we decided to sample each field that had sufficient ground visibility by surveying 5 x 25 m strips. This allowed greater resolution in our spatial analysis, was consistent in terms of collection methods with the larger survey units in the less dense parts of the SIA, and provided a sufficient sample of pottery distribution data. As work progressed we decided to do some survey units on the far side of the eastern channel, as there were some large alluvial terraces that would have been suitable areas for cultivation in the past.

As was the case elsewhere in the survey area, the team geomorphologist assessed each potential survey unit to ensure it was reasonably free from major erosion or sedimentation; as a result surface artefacts are likely to be approximately *in situ*. This process was accompanied by the standard recording of geomorphological units. In Xyliatos *Mavrovouni* we also carried out extensive geomorphological mapping of natural and anthropogenically manipulated features, including rock piles, fields and field boundaries. The various types of retaining walls built into natural risers and field boundary walls on level ground were of particular interest, with a wide range of materials and methods. These included bedrock, uniform river boulders, cobbles, pebbles, pottery chinking, slag cakes, concrete and oil drums.

Block Survey Results

At the southern end of the SIA, survey units SU0639 and SU0640 were located on recent alluvial terraces close to the present riverbed. The pottery from these units was chronologically mixed, with a few pieces of Late Hellenistic to Roman material but also modern brick and burnished ware. The low density of material suggests that we were close to the edge of concentrated land use. As these units mark what is physiographically the extent of readily usable land south of the slag heap, it is likely that this may be the southern boundary of the ore processing area during the Roman period.

Anthropogenic rock piles are one of the most striking features of the Xyliatos *Mavrovouni* landscape. One of the larger of these in the southern part of the SIA (TP047 = TP025.PU03) is marked on the 1925 cadastral plan (XXIX-50) as the church of Ayios Kyriakos. The church is mentioned by Goodwin (1978: 176), along with 'some habitation of long standing' in the area. The rock pile contained late Roman tile and other tile fragments of inconclusive date. We would argue, however, that the site of the church was not on this precise spot, as the rubble pile is in the corner of a field plot and bounded by a riser to the south and the west. It is more likely to have been located in the field somewhere nearby; its remains would have been removed to the edge of the field during field clearance for cultivation, perhaps by mechanised means. Rock piles just to the south and west of this pile (TP047) contained similar pottery materials.

The survey units immediately surrounding the TP047 rock pile (SU0639, SU0659-SU0661) were dominated by Medieval to Modern material, including finewares and cooking pots. Of these, only SU0661 had Roman material, which consisted of six tile and amphora fragments from a total count of 67. An additional set of finds in the units immediately east and northeast of the rock pile (SU0659-SU0661) consisted of 41 pieces of plaster presumably associated with the church, three of which are painted with various shades of green, blue and red.

About 220 m to the north of the ruined church is the slag heap. A series of small survey units were investigated to its south (SU0614-SU0622), and yielded anomalously high densities of material. This particularly applied to the unit nearest the slag heap (SU0622), which contained 749 sherds in 252 sq m (almost three sherds per sq m, with 80% ground visibility not taken into account). Figure 4, by contrast, shows the number of *collected Roman sherds*

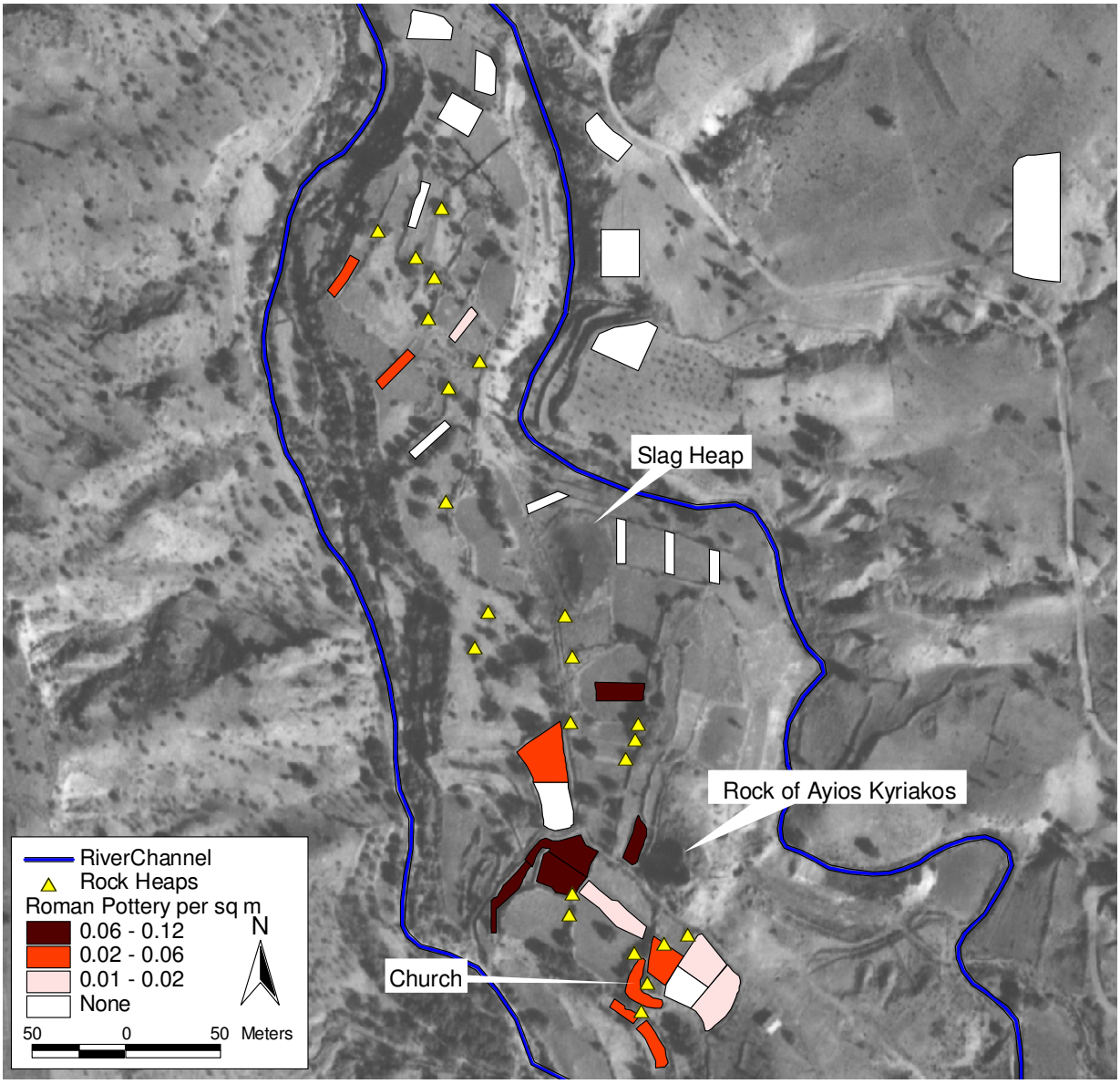

Figure 4:

TS02 – Xyliatos Mavrovouni. *Map showing rock heaps and survey units with density of Roman pottery.*

Map: Paul Pelosi

per square metre; in the case of SU0622, 248 sherds were collected, of which 47 were securely identified as Roman and appear in the GIS analysis. Of the other 201, however, all but three could also be Roman.

This unit also contained a notable concentration of cobbles on the surface, and rubble piles were recorded on the southern boundary of the field. We suggest that these may be the result of field clearance of former structures in the immediate vicinity of the slag heap. The pottery is almost all Late Hellenistic to Roman, with several types of fine wares; one survey unit (SU0619) has nine types of fine ware. Other wares include cooking pots, light and heavy utility wares (for pouring, transport, storage, etc), pithoi and tile. We would argue that the pottery evidence from this central area of TS02 represents the core of activity during the Roman period with regard to the processing of copper ore mined nearby.

The three units surveyed in the large field directly east of the slag heap (SU0623-SU0624, SU0631) showed a marked drop-off in slag and pottery, going from west to east. Activity in this area appears quite low. The units to the north of the slag heap (SU0625-SU0630, SU0632-SU0634) had very low sherd densities. The northernmost units at the confluence of the two river channels have densities far lower than what might be attributed to manuring. The pottery present was mainly of Medieval to Modern date. It seems clear that this area was not a focus of human activity during the Roman period, in contrast to the area south of the slag heap. One possible explanation is that the smell and pollution caused by smelting activities prevented settlement or agriculture in the area (cf Barker et al 1999: 262-269).

In this same area north of the slag heap, however, there are large rock piles, some of which may have been formed through the clearance of earlier structures to produce suitable plots for cultivation. The lack of pottery in these rock piles may be partially because of sherds falling through gaps in the large boulders, but without any pottery at all it is hard to say conclusively that these derive from structures. The only clear evidence is one small stone structure (TP023) which, judging by its masonry, is Medieval or later.

On the eastern side of the east river channel we surveyed three units (SU0635-SU0637) in order to test our assumption that there would be agricultural fields in the surrounding area to support the intensive mining and smelting activity during the Roman period. The densities in this area, however, were extremely low, even with moderate ground visibility, and would be difficult to attribute to a general background scatter due to cultivation and manuring. The same applies to the two north-south survey transects to the northeast and northwest of the SIA: only four units had Hellenistic-Roman material, with a total of ten pieces (SU0602, SU0653, SU0654, SU0658). This is at least partially due to the very poor visibility conditions in these two transects, with an average ground visibility in TT503000E of 18% and in TT503500E of 27%.

The pottery from the block survey of Xyliatos *Mavrovouni* included one Iron Age fragment, but the great bulk of the material dates from the Hellenistic to Late Roman periods. The earliest identifiable sherd is dated to the 1st century BC, but one fragment of Black Slip might be earlier. There is no identified pottery of the 2nd and 3rd centuries AD. The Late Roman material starts in the late 4th century AD and continues into the 5th and 6th centuries. The latest pre-Medieval sherd dates to the late 6th or early 7th century, but one light utility fragment is very similar to Phocaean ware Form 10C, which is dated in the first half of the 7th century. Other wares include an unusually wide range of cooking pots (Figure 5), light and heavy utility wares, pithoi and tile.

The pottery suggests that the habitation of the Roman settlement at Mavrovouni flourished in the 5th to 6th centuries AD. The character of the settlement is not unlike that of the Late Roman village of Kalavasos *Kopetra* in southern Cyprus (Rautman 2000: 317-331), though considerably smaller and probably less prosperous. At Kalavasos *Kopetra* three churches were built during the 5th to 7th centuries, and at Mavrovouni there was at least one church, though its original date is yet to be determined. The painted plaster fragments may aid this process. A much larger variety of table ware and transport amphorae has been identified at Kopetra, with imports from Africa, the Aegean, Asia Minor, Gaza, Palestine, and Egypt (Rautman 2000: 321).

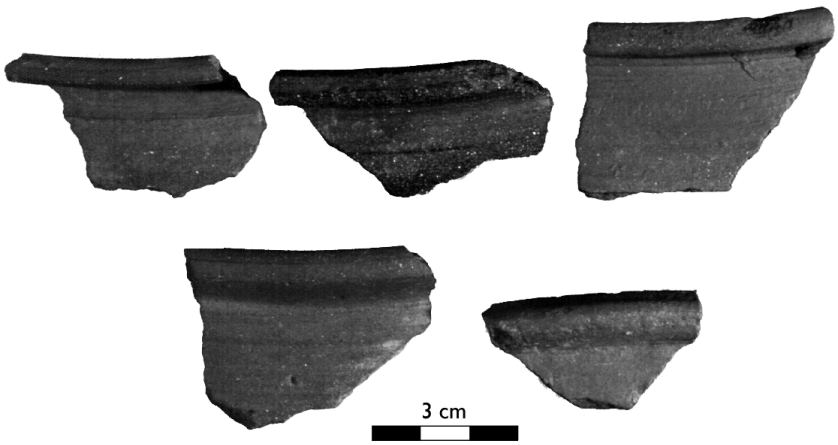

Figure 5:

Range of Late Hellenistic to Roman cooking ware rims from Xyliatos Mavrovouni *(TS02). Clockwise from top left: TIP0057, TIP0048, TIP0058, TIP0082, TIP0059.*

Photograph: Chris Parks

The Cypriot and Phocaean Red Slip table wares at Mavrovouni are the standard Late Roman table wares in Cyprus in that period. The amphorae appear to be predominantly local, and so far we have only identified a few fragments of LR1 amphorae, which were popular during that period elsewhere in Cyprus. This may attest to a generally different distribution of pottery in northern Cyprus. The proximity to the slag heap suggests a mining settlement, but as has been demonstrated at Kalavasos *Kopetra* this could have been combined with metal working and agricultural activities. There are no finds – very little glass and no worked metal – to indicate any elite habitation at Mavrovouni, but modern cultivation has disrupted the surface considerably and further investigations would require more extensive study, such as geophysical survey or excavations.

TP006: The Slag Heap of Xyliatos Mavrovouni

The slag heap of Xyliatos *Mavrovouni* lies close to the modern mines of Memi (0.5 km to the southeast) and Alestos (1.5 km to the southwest); it was first visited in the preliminary season of 2000. During that initial visit the slag heap which gives the area its name was recorded by a sketch plan and by a preliminary section drawing. During 2001 the slag heap was recorded in detail as part of the work in TS02.

The slag heap has been extensively quarried in the recent past and is, therefore, only partly preserved. The quarrying, however, has produced a number of sections that enabled us to investigate the stratigraphy of this anthropogenic deposit. A total of three Archaeometallurgical Units (AU) were designated, each of which is a section through the same slag heap but with a different orientation. None of the sections reaches the base of the slag heap, and so any chronological indicators provided by pottery or radiocarbon will correspond only to the later phases of the smelting activities.

The two smaller sections (TP006.AU01 and TP006.AU02) were drawn using normal archaeological drawing techniques. These techniques, however, could not be applied to the larger section (TP006.AU03), which was neither perfectly straight nor vertical. Instead we took digital photographs of the section and used *CorelDraw* to trace the layers of the slag heap directly onto them. Once the drawing was prepared we returned to the field for final corrections, numbering and description of the layers and for sample collection. The location of the samples were indicated on a printed draft of the drawing and then entered on the digital version of the drawing. We are fully aware that some distortion will occur due to the use of a photograph, which shows the section as a perfectly flat surface, although it is not. Nevertheless, for our purposes the distortion is not significant, because we are only looking for trends in the construction of this slag heap. Furthermore, the relatively small size of the slag heap at TP006 enables us to test this new technique, which will probably be our primary method of recording the truly immense slag heaps of Skouriotissa (TP007) in the 2002 season.

The slag heap of Xyliatos *Mavrovouni* consists of layers of slag fragments in varying sizes, as well as complete slag cakes (Figure 6). The size of the slag cakes suggests a date in the Roman period. This observation is based on their similarity in shape and size to slag cakes from the slag heaps recorded during the Sydney Cyprus Survey Project in the mining area of Mitsero, all of which were radiocarbon dated to the Late Roman period (Kassianidou 2002). Only one sherd – from the top, disturbed layer of AU01 – was collected in the stratified layers of the slag heap. This is a non-diagnostic sherd deriving from a light utility ware of the historical period (in other words anywhere from the Archaic period to modern times). However, we have collected numerous samples of charcoal that will enable us to date the smelting activities more accurately (bearing always in mind that the samples come from the upper part of the slag heap and so correspond to the last part of the use of the smelting area). We intend to use the samples for wood species identification that will offer us information on the type of wood the ancients smiths preferred to use in their smelters.

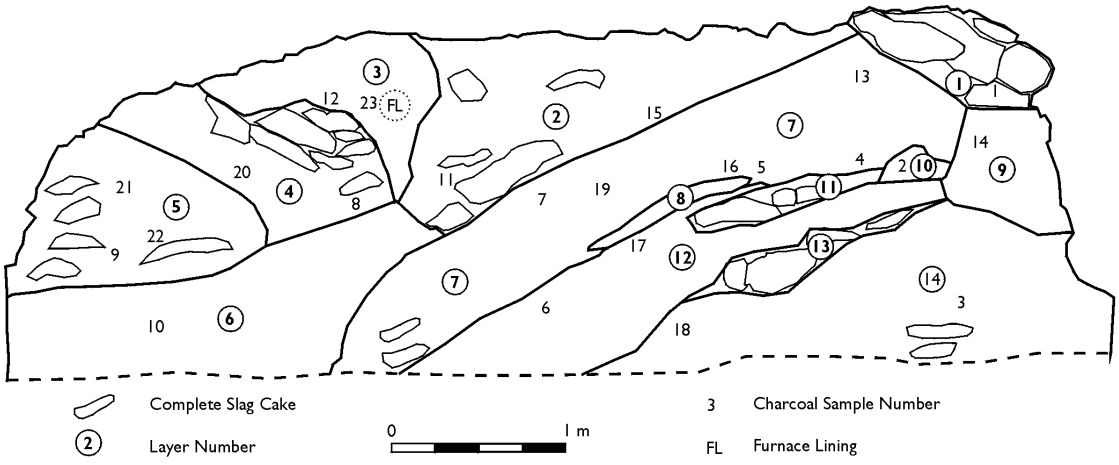

Figure 6:

TP006.AU03. Section drawing of the slag heap at Xyliatos Mavrovouni, *showing successive episodes of slag dumping, complete slag cakes and the location of charcoal samples.*

Drawing: Vasiliki Kassianidou

Apart from the slag, we have also collected furnace material, mainly slagged stones but also slagged clay furnace lining. None of the pieces enables us at this stage to reconstruct the shape and dimensions of the furnace, but once again they act as chronological indicators, because such material was collected solely from the Late Roman slag heaps of the Mitsero area during the Sydney Cyprus Survey Project (Kassianidou 2002). No tuyère fragments were collected.

The most extensive of the three sections recorded is the south-facing one, defined as AU03. A total of 14 different layers have been identified. The inclination of the layers shows that the slag was initially dumped from the west and later the orientation of dumping changed to the east. A number of the layers (eg Layers 6, 10, 12) consist of slag crushed to small fragments, whilst others (eg Layers 7 and 9) consist of both medium and large pieces of slag (eg Layers 1, 2, 3, 4, 5). A number of complete slag cakes lie within these layers or form distinctive layers, and it is their orientation which best indicates the direction of the dumping episodes.

The fact that the slag heaps of this period often consisted of layers of crushed slag was also first noted during the Sydney Cyprus Survey Project. Crushing slag was a necessary step in early metallurgical processing, especially before the use of bellows and fluxes, as the metal was often trapped in the viscous slag (Tylecote 1987: 300). This is not what one would expect of metallurgical workshops dating to Late Antiquity, and indeed the analyses of slags from the heaps of the Mitsero area showed that the slag contains very little copper. Clearly the separation of metal from the slag does not seem to be the motive. We argued, therefore, that perhaps the reason behind the crushing was to achieve a more efficient disposal of the waste by creating a more stable heap that might also serve as a working floor (Kassianidou 2002). Presumably the slag was crushed on stone mortars, examples of which have been found in the heaps of Mitsero *Kouloupakhis* and Mitsero *Sykamies*, along with stone grinders. No such mortars have been yet been identified at Mavrovouni.

We know from our work at Mitsero that one of the technological developments of the Roman period was the intentional use of manganese fluxes in the smelting charge. We expect, therefore, that future chemical analyses of the slag samples collected will detect manganese. If this is the case, however, we will need to consider the origin of the manganese ores, as the area of Xyliatos, unlike that of Mitsero, has no important umber deposits (Carr 1960: 46). We also need to consider the origin of the copper ore, because modern geological reports and exploitation have shown that the orebody of Memi, which is the closest to the slag heap of Mavrovouni, consisted of pyrites, a non-cupreous ore. It is the mine of Alestos that was a copper mine and perhaps we should look there for the source of the copper ore smelted at Mavrovouni.

The samples of slag and charcoal collected will be studied in the future in order to answer some of these questions.

TP017: The Rock of Ayios Kyriakos

Between the ruined church and the slag heap at Xyliatos *Mavrovouni* is a striking outcrop of pillow lava, some 25 m in diameter and 7 m high. According to local farmers, this is known as the 'Rock of Ayios Kyriakos', named after the church of Ayios Kyriakos that lay 35 m to its south (see above). This rock dominates the local landscape: the road linking Vyzakia to Xyliatos; the spoil heaps of Memi mine and the ancient smelting at Mavrovouni; the intensive cultivation of the spur between the two river channels; and the route to the ancient adits and shafts further south at Xyliatos *Ayios Kyriakos* (TS10). The extensive view from the summit of the Rock encompasses each of these features, and the Rock can easily be seen in return. In this way, the Rock is reflexively both a vantage point and a focal point.

Extensive areas of exposed bedrock along the southwestern, western and northwestern faces of the Rock are probably the result of water erosion. The northern and southeastern faces have gentler slopes than elsewhere and exhibit more vegetation; these were probably the main access routes to the top of the Rock. The soft pillow lava is prone to fracturing, which has resulted in numerous natural niches. This tendency has been exploited in the southwest corner of the Rock, where a large depression has been created, 1.5 m in diameter and 1 m deep. The regularity and curve of its rear surface and its very flat floor suggest that this niche was artificially created, perhaps taking advantage of a natural form of the mould of a lava pillow. Here we also found traces of mineral pigments in red, yellow, white and orange.

On the Rock, we recorded 24 pottery and tile sherds of indefinite historical date, two ancient pan tiles (probably brought up from surrounding fields), innumerable slag fragments, probably transported recently from the slag heap, and modern remains such as shotgun cartridges, rubber, plastic, paper, concrete and metal. The lichen that appears on one side of most pottery and tile sherds suggests that they have not been substantially moved or disturbed for decades, at least. The top is more extensively vegetated and has a gentle slope, thus making it the most stable environment on the Rock. It is probably for this reason that an unusual concentration of artefacts, including the largest amount of pottery, were found on the top. In the same area is a wall, the sole piece of architecture on the Rock. The one course of visible stones is oriented northeast/southwest, and is approximately 50 cm wide and 2 m long. It is composed primarily of rounded small boulders and cobbles from a river, with limestone, small cobbles, heavy utility pottery sherds and tiles used as chinking.

The imposing figure of the Rock of Ayios Kyriakos looms just to the north of the church, separated from it by a dirt track that was once part of the Vyzakia-Xyliatos road. Today, the Rock is a physical index of the church that exists only as a mental image; in this way, its presence and the transmission of its name through generations keeps alive the local history whose physical remains have been forgotten. By contrast, the Rock's association with metallurgical features *via* transportation routes helps explain artefacts which survive physically, but whose original functions and meanings have faded from the collective memory. The Rock's interactive role in the natural and cultural landscape is vital to understanding how people have perceived and used this valley over time.

TS10: Ancient Mining Adits at Xyliatos Ayios Kyriakos

Once we finished recording TP006, the slag heap at Xyliatos *Mavrovouni*, we turned our attention to the surrounding area and specifically to the nearby mine of Memi. Our aim was to investigate the mine and ascertain whether there were any remains of ancient mining activities. Walking inside one of the terraces of the open cast, we observed a conglomerate of marl, gossan and charcoal, which looked very similar to the materials collected at the Agrokipia mine near Mitsero, from what we had identified as ancient spoil heaps. Looking up it was obvious that they had fallen from a much higher terrace that forms the north wall of the open cast.

In an effort to gain access to this higher level we drove to a highly cultivated area with well built agricultural terraces lying to the west of the open cast. From the dirt road we made our way up through some older and not so well preserved terraces that form the west wall of the mine, to the terrace with the remains of the spoil heaps. This is a highly bulldozed surface where small modern spoil heaps of pyrites can be seen. Although we located the source of the conglomerate it was unfortunately not *in situ* but had been moved around by the bulldozers. Thus although the material may have been ancient, the context was no longer available. Nonetheless this effort enabled us to identify another Special Interest Area, one where we believe ancient adits have been preserved in a gully lying just west of the open cast.

We discovered these adits beneath the open cast. One of them was later given the POSI number TP051, and is one of five adits and two vertical shafts that riddle the area. Team East, which was working in this area and had finished the block survey around TP006, took the task of recording these adits, to which we will return next year. We drew and photographed them, and prepared a topographic map of the area showing their relative positions. It is interesting that all the adits were cut in the contact zone between the fanglomerates and the pillow lavas at a location where there were probably mineral veins.

The largest of the adits, TP050, is completely blocked with fallen boulders from the fanglomerate roof. Using a long bamboo pole, however, we could ascertain that the adit extends to a depth of at least 5 m. The roof has intense red and yellow ochre colours, as well as evidence of fire, something we observed in other adits. This pattern could be interpreted as showing evidence of fire setting, a process by which fire is lit in close contact with the rock and is left to burn for a long period of time. Water is then thrown on the hot surface of the rock, which cracks due to the heat shock. The technique is described by Pliny (XXXIII, 21) and Agricola (1950: 118-120), and was well known in antiquity. On the other hand, the fire might have been lit by a shepherd or hunter seeking refuge in the adit.

The adits are trapezoidal in shape. The best preserved example is TP054, approximately 1.7 m and 1.2 m wide at the entrance. Its depth is only about 1.5 m. This adit lies below the other three which form a group. As well as the adits we also recorded two perpendicular shafts with parallel sides, one on the west side of the galley and one on the east. They are not cylindrical, nor perfectly vertical, giving the impression that they are following a vein rather than being used for access to a lower level.

Taking into consideration all these points, ie the size and shape of the adits and shafts, we suggest but cannot prove that they are ancient. The problem in dating lies in the fact that underground mining was one of the techniques followed by modern industry as well, and it is only later that open cast mining methods were employed. However, these adits cannot possibly have been modern, as they are too small and limited in depth. In fact, their size leads us to believe that they may even be earlier than the Roman slag heap of TP006.

One other explanation should also be taken into consideration, namely that these were ancient exploratory adits. As argued above for TP006, the modern mine of Memi produced only pyrites, the iron sulphide ore which in modern times is used in the production of sulphur. It is possible that small deposits of chalcopyrite also existed but they were exhausted in antiquity. However, the size of the slag heap shows extensive production and, as argued above, the ore smelted at Mavrovouni may in fact have derived from the mine of Alestos. The ancient adits at Ayios Kyriakos have to be interpreted in this light. Either they are early, perhaps prehistoric, in date and were used to extract limited amounts of chalcopyrite, in which case we should also look for an earlier smelting site, or they were Roman in date but were just exploratory. When the miners realised that the ore was not appropriate for copper production they abandoned their efforts.

We plan to return to this SIA next season and to conduct a survey of the surrounding areas in an effort to identify any earlier smelting sites, although we realise that this is one of the most altered landscapes in the entire the survey area.

Transport Routes

The most likely transport route in and out of the mining area was by the valley of the Lagoudhera River heading north towards the Mesaoria Plain. Any export of copper would probably have been northwards to a transhipment point on Morphou Bay, most likely at Soloi where two ancient breakwaters have been located, and where Pseudo-Scylax (103) in the mid-4th century BC mentions a winter harbour (Leonard 1997: 173). Unfortunately transect TT503000E, which ran through the valley to the north of the SIA, produced no material which might throw light on the exact location of this transport route.

The 1925 cadastral map records a dirt road on the east side of the Laghoudera River, running through the river valley from Vyzakia to the confluence of the channels at the north end of TS02. This then fords the eastern channel and again follows the present track southward towards the west side of the slag heap. Just to the south of the slag heap we see clear evidence of not just a modern day dirt road but also perhaps something older. This feature (TP024) has been recorded as a path approximately 1.25 m wide with a western wall that appears to have a short section of facing. This path continues approximately 115 m to the south, where according to the cadastral map it branches into two routes, one to Xyliatos to the southeast and the other to Kannavia to the southwest. The Xyliatos route passes up between the Rock of Ayios Kyriakos and the remains of the church, and continues through the area now covered by the spoil heaps of Memi mine.

The path to Kannavia initially heads southwest and follows the western boundary wall of the field plot containing SU0617. After heading south for a few more metres it fords the western channel. We believe we have located this ford on the basis of the boulders in the riverbed. These boulders have clear watermarks with exposures above the water level, which would make ideal stepping-stones. From there it runs very close to the western side of the gully with the mining adits (TS10), on its way towards Kannavia.

Conclusion

It is clear that there are several distinct areas of human activity within TS02. The evidence from the area in the southeast part points to a predominance of activity from the Medieval period onwards. The central area to the south of the slag heap shows strong evidence of settlement during the Roman period, whilst the pottery reveals a wide range of fine wares, tablewares, heavy utility and storage vessels. The evidence to the north of the slag heap reveals little activity during the Roman to Medieval periods, suggesting that this area only realised its potential as fertile land for cultivation in more recent times.

Further study of TS02 is clearly needed. Much of the western side of the area was not surveyable because of very poor ground visibility, as these fields seem to have been abandoned. We intend to conduct survey units here in future seasons if conditions permit. Another goal for the future is to investigate any association with the ancient mining adits at Xyliatos *Ayios Kyriakos* (TS10), just 200 m further up the valley to the south. This area has a few units suitable for survey on the west side of the river channel, although many of the terraces on the east side have been bulldozed and are therefore unlikely to be intact enough to repay surveying. We also hope to carry out more survey in the valley to the north, with the aim of demonstrating or disproving that this was the route by which copper was exported from the mines and smelting site of Xyliatos *Mavrovouni*.

2.2 *TS07: Abandoned Settlement of Kato Koutraphas Mandres*

Team Leaders: Erin Gibson and Heather F James. Geomorphological Interns: Adina Gleeson and Mitzy L Schramke. Architecture: Tracy Ireland and Heather F James. Pottery: Joanita Vroom and Kristina Winther Jacobsen

POSIs: TP008, TP018, TP021, TP026-TP028
Building Units: BU0005-BU0043
Geomorphological Units: GU0335-GU0338
Survey Units: SU0009-SU0011, SU0344-SU0354

Mandres is an abandoned settlement today located within the territory of the village of Kato Koutraphas. In recent years, the National Guard has used this former village for military exercises, which has resulted in the substantial degradation of the built remains. Mandres' role as a seasonal settlement has been discussed by Ionas (1988: 20) and Given (2000: 218). It was used by villages higher in the mountains, such as Tembria and Kalliana, to grow grain, and to harvest and winnow it. Because of this the settlement possesses an unusually high number of threshing floors in proportion to the number of houses. During the 2001 field season we carried out a detailed structural analysis of the houses surviving on the site, fieldwalked the settlement and its immediate surroundings, surveyed two transects west of the settlement, and mapped the geomorphology of the area. We also conducted a number of interviews with people who remember the settlement when it was occupied.

Figure 7:

TS07 – Kato Koutrafas Mandres. View from the north.

Photograph: Chris Parks

The village of Mandres is located on the obvious boundary between the Mesaoria plain and the Troodos, at the confluence of two unnamed tributary gullies, and had developed on a series of alluvial terraces (Figure 7). The local pillow lava bedrock is visible in limited outcrops on many of the terrace treads. With a 280-metre elevation above sea level, it is in a level and breezy location, surrounded by numerous level alluvial terraces ideal for agriculture. Inhabitants of Mandres used both the natural alluvial terraces and the risers during development and construction of their dwellings, threshing floors and agricultural fields. Agricultural fields and threshing floors are situated on the terrace treads, and use the risers as divisions between them. Structures within the village centre were built on top of the treads and into the risers. In most of the surrounding agricultural fields the risers have been recently ploughed over, creating one large agricultural field instead of several smaller ones. Other activities have taken place since the village has been abandoned. The paths and roadways have been altered by bulldozing, while a major area of threshing floors to the east of the village has been incorporated into a large ploughed field.

The structures consist of a central, nucleated village with a number of streets, and 14 outlying structures surrounding this core settlement. The site has been mapped on the project GIS, with layers recording the morphology and physical characteristics of the structures. The settlement was divided into building units that were numbered and mapped on a GIS layer. Each unit was classified according to its building style, which resulted in a fairly even spread of the different styles of construction. Two such styles are of note. The *makrinari* style building unit is a narrow rectangular unit, which can generally be roofed by a single row of joists, while the *dikhoro* is double width structure requires a supporting beam and posts to roof the wider internal space (Ionas 1988: 47-48). Questions remain regarding whether these distinctions in construction style imply any chronological differences or whether they are derived from differing village or family practices.

We also investigated the (apparent) phased development of the village and of individual structures by looking at the stratigraphy or superposition of structural elements. Analysis of buildings yielded information on how the village grew and how the density of occupation in the nucleated settlement unit became intensified. Preliminary results indicate that the first or oldest surviving structures tended to be of stone, although there is at least one exception to this. The more marginal sloping gully walls around the settlement were built upon later as space became more limited. These later structures tend to be of mudbrick. Oral informants tell us that the outlying structures belonged to goatherds, whereas the farmers lived in the central village.

Preliminary work on the pottery shows that much of the material from the settlement itself is earlier than the expected 19th-20th century date. Apart from two Hellenistic and one Late Roman sherds, the earliest material in and around the structures is 15th century, whereas there are nine pieces from the 16th century and a further 27 Ottoman pieces (compared to 143 Modern). These precise dates are derived from fine wares, though at this early stage of our analysis many of the utility wares also seem to be pre-20th century, or at least they make use of forms which had gone out of use by that period elsewhere in the survey area. Several of the 15th/16th century pieces are incorporated into mud brick walls (eg BU0021.SE02, BU0021.SE05, BU0022.SE01, BU0024.SE04). One 18th/19th century piece was imported from Çanakkale in Turkey (BU0030.SE03), and an 18th century tobacco pipe fragment was found on the roadway, along with sherds of the same period (TP021.PU10).

Figure 8:

TS07 – Kato Koutrafas Mandres. *Map showing riser, and Survey Units with Medieval to Modern pottery.*

Map: Paul Pelosi

While one team was examining the settlement itself, another team carried out two north-south transects to the west of the settlement (TT495750E and TT495500E). Because of the large quantity of straw still lying in the stubble fields, however, these transects were disappointing in terms of results. With visibility generally at less than 10%, the one or two sherds found in most survey units were meaningless, though they do suggest that with better visibility we would find a range of useful material here.

More successful was a limited area of block survey in a strip of reasonably clear fields on the eastern edge of the settlement (Figure 8). There has been a certain amount of ploughing over features such as field boundaries and threshing floors, and ploughing has also transported material out of its immediate context. In general terms, however, the distribution of the material is very intriguing, with a notable concentration of Hellenistic and Roman material in the centre of this area, and Modern material to the north and south.

2.3 *TS09: Prehistoric Bronze Age Settlement and Cemetery at Katydhata Laonarka*

By Alexis Boutin and Paul Pelosi. Team Leader: Heather F James. Geomorphological Intern: Mitzy L Schramke

POSIs: TP035, TP037, TP040, TP044
Geomorphological Units: GU0060-GU0063, GU0073, GU0093
Survey Units: SU0071-SU0078, SU0099-SU0104

The brief survey carried out at Katydhata *Laonarka* during the 2001 season was undertaken with two main goals in mind: (1) to locate and record the various cemeteries excavated in the area during the past century; and (2) to attempt to locate their associated settlements, whose whereabouts were still unknown. Åström (1989) has published Markides' excavations of the Bronze Age necropolis in 1918 on the basis of the latter's notebooks, but the topographical information was insufficient to establish the precise location of the cemetery without intensive work on the ground.

A prominent ridge of Upper Pillow Lavas east and south of the modern village fitted the general description in the publication of Markides' work (Åström 1989: 8-9): we began our investigations there (Figure 9). At the foot of the northeast slope, we discovered a significant scatter of Red Polished sherds (TP035). We fieldwalked several survey units, which produced a significant amount of Red Polished sherds (some with white incised concentric circles and lines) and substantial numbers of bone fragments that have yet to be identified. The foot of the slope appears to have been bulldozed quite extensively in modern times, resulting in large piles of dumped earth and deep cut sections into the bedrock and soil. These deep cut sections facilitated our discovery of a possible ancient pit in the wall of one cut (TP044).

The pottery scatter at TP035 was examined by Robert Merrillees (CAARI), who also looked over the entire pottery assemblage so far collected. He regarded the eastern side of the ridge as well-suited for a settlement, given that this area would be protected from the elements by the ridge and its gentle slope in a southwest direction toward the nearby river. In addition, Merrillees suggested that the generally small size of the Red Polished sherds, the wide variation in sherd thickness (suggesting a wide range of functions) and the remarkable consistency of the Red Polished assemblage indicated that TP035 was more likely to be the location of a Prehistoric Bronze Age (PreBA) 2, or Early Cypriot IIIB – Middle Cypriot I) settlement than a cemetery. It is most likely that somewhere within the area of TS09 is the settlement associated with many of the Bronze Age tombs excavated by Markides.

Figure 9:

TS09 – Katydhata Laonarka. *Map with part of Katydhata village (left), POSIs, and survey units with Bronze Age Pottery.*

Map: Paul Pelosi

The next area to be examined was an olive grove to the southeast of the original scatter, where a number of Red Polished sherds had been observed. The three survey units examined toward the south end of the grove (SU0076–SU0078) produced a total of 222 collected pieces of PreBA pottery, representing an overall count of perhaps three times that much, including what was left in the survey units. It was immediately clear that the quantities of pottery being recovered diminished noticeably as the survey units moved eastwards away from TP035. It is noteworthy that the sherds collected from survey units around TP35 and in the olive grove were almost exclusively Red Polished ware, although there were also one, much later Mycenean sherd and a few White Painted and Black-on-Red Iron Age sherds.

The remaining task of our brief examination here was to attempt to define the extent of the possible settlement. We did so by surveying farther into the olive grove, at the more northerly end. We immediately noticed a difference in the content of the assemblage, as the amount of modern pottery increased drastically compared to the quantity of Red Polished wares. Based on all of the survey work in the olive grove and a largely unfruitful, cursory survey of tomato fields farther north, it appears, *prima facie*, that the highest concentrations of Red Polished ware are in the middle section, along the western side nearest the ridge.

Overall the areas with the greatest concentration of Red Polished sherds were TP035 and the olive grove. These areas are separated by a distance of about 60 m. This apparent separation, however, may result simply from the creation of a heavily cultivated field and modern dirt road between what could have been a single ancient activity or settlement area. Also of interest is the fact that possible human remains were only found in TP035, in close association with the most complete and elaborate piece of pottery found thus far (a body fragment of a Red Polished III gourd juglet with white incised circles and lines). This could indicate a burial with more proximity to the main settlement than we are accustomed to expect in the PreBA. Nonetheless, it remains the case that all of the ancient tombs found so far are on the western side of the ridge, within about 200 m of each other along the main road.

Several contemporaneous sites have been excavated in the foothills of the northern Troodos mountains. Ambelikou *Aletri*, approximately 8 km northwest of Katydhata near Morphou Bay, dates from the early part of the Middle Cypriot period (PreBA 2). The site has produced evidence for the exploitation of nearby copper ores and copper smelting during this period (Merrillees 1984: 7). The Middle Cypriot settlement of Alambra *Mouttes,* located about 45 km southeast of Katydhata, is probably slightly later than that at Ambelikou *Aletri* (Coleman *et al* 1996: 335). Tombs dating to 2300/2200 BC, however, allude to an earlier settlement at the site during the latter part of the Early Cypriot period (Coleman *et al* 1996: 327). Marki *Alonia*, located approximately 35 km east of Katydhata, was occupied throughout the Early Cypriot period and was abandoned by the early part of the Middle Cypriot (Frankel and Webb 1996: 2). As with TÆSP sites discussed earlier, the pottery assemblage at Marki *Alonia* is characterized by an abundance of Red Polished pottery (Frankel and Webb 1996: 113).

TS09 clearly holds considerable potential for further investigation and much more work remains to be done around Katydhata itself. In addition, intensive survey units around the potential settlement area should help us to identify the boundaries of the settlement more precisely. More intensive exploration within the village itself and along the western side of the ridge, as well as local interviews, should allow us to locate more accurately additional ancient tombs. The distribution of such tombs could provide valuable clues for locating and/or confirming potential settlement areas. All of this will be a high priority in the 2002 season.

2.4 *Asinou Valley*

Team Leader: Erin Gibson. Geomorphological Intern: Adina Gleeson. Pottery: Joanita Vroom and Kristina Winther Jacobsen. Architecture: Tracy Ireland.

Transect	*Geomorphological Units*	*Survey Units*	*POSIs*
TT496800E	GU0358-GU0368	SU0382-SU0395	TP061
TT497000E	GU0300-GU0315	SU0300-SU0320	TP062
TT497250E	GU0343-GU0357	SU0368-SU0381	

SIA	*Name*	*Description*	*POSIs*	*Geom Units*	*Survey Units*
TS03	Nikitari *Asinou*	Abandoned village	TP016		
TS08	Nikitari *Kapsalia*	Panayia Phorviotissa & area	TP030	GU0339	SU0355-SU0364
TS12	Nikitari *Khalospitiaes*	Pottery scatter; Ayios Ioannis	TP039		SU0365-SU0366

POSIs outside transects and SIAs: TP033, TP034, TP038, TP066

The Asinou valley south of Nikitari is famous for its early 12th-century painted church dedicated to Panayia Phorviotissa. Much work has been done on the frescoes and architecture of this world heritage monument (Stylianou and Stylianou 1985: 114-140), and a team from Dumbarton Oaks led by Annemarie Weyl Carr is currently finalising the church's definitive publication. TÆSP's aims in working in this valley were to put the church into its landscape context, and to investigate all aspects of human activity in the valley and surrounding mountains. Our work quickly showed that the whole valley has been busy with inhabitants, farmers, goatherds, worshippers, foragers and others for at least 500 years. Abandoned villages and church ruins dominate the landscape of the Asinou Valley. Even within the limited geographic area investigated this summer, we examined three churches and three settlements. The Asinou River valley provides a good communication route northeast onto the plains, and further routes are known to Kato Koutraphas *Mandres* (TS07; see above) and Ayios Theodoros.

As elsewhere in the survey area, our essential strategy was to do a series of survey transects cutting across the valley, block survey in Special Interest Areas, and more detailed recording at specific structures and dense artefact structures. During the season we did three transects and three relatively small SIAs, and briefly recorded three churches, three settlements and a masonry forest cairn. In addition we began the architectural recording of the recently abandoned Asinou village (TS03), which we aim to finish next season.

One methodological innovation to overcome the problem of poor ground visibility in survey units covered with pine needles was to use a rake to clear circles of 2 m in diameter, every 20 m. After considerable experimentation and discussion, we decided that the method which gave us the best topographical and geomorphological control, as well as being the quickest to carry out, was to do them along the central transect line running through each survey unit (cf van de Velde 2001). As a total of 107 such circles only increased our pottery count by seven, we may need an alternative solution to the problem of poor visibility in mountain survey.

The clearest result of the transects was that the pottery is concentrated towards the valley bottom (Figure 10). It is very striking that the limit of the pottery seems to coincide with the forest boundary, imposed by the British colonial forestry officials in the late 19th century to exclude goatherds and woodcutters (Given 2002). This correlation needs further assessment, particularly because of the visibility problem within the forest, but it certainly applies to known settlements in the area. The only abandoned settlement that we know of within the forest boundaries is Ayios Yeoryios *Aspri* (TP066), 4 km south of Asinou and 960 m in elevation. This clearly dates to about the 16th century, well before the imposition of the boundaries.

We designated the area round the church of Panayia Phorviotissa as a Special Interest Area (Nikitari *Kapsalia*; TS08), and in addition to examining the church and its enclosure we carried out block survey in the terraced almond grove to its north and west. The church is situated on a spur 130 m east and south of the principle drainage channel (Argaki ton Rotson), in a prominent position clearly visible from throughout the valley.

In the almond grove north and west of the church, the diabase bedrock is overlain by alluvial and colluvial sediment. This has been terraced, with walls constructed on the terrace risers. There is a certain amount of artefact movement because of ploughing, but the terraces help to keep the sediment and the artefacts on the hill slope. We carried out ten survey units within the orchard (SU0355-SU0364). Apart from two Late Roman fine wares and seven tile fragments that could be Archaic to Roman in date, the earliest material found in these units was 15th century. There were 26 fine ware fragments from the 15th to 16th centuries, all of them made in Cyprus. Very few modern pieces were recovered; most of the material dates to the Medieval and Ottoman periods.

The abandoned village of Asinou lies 550 m to the southwest of the church of Panayia Phorviotissa, on a high spur above the river. This settlement, which we termed Nikitari *Asinou* (TS03), consists of an integrated group of some eight dwellings, with a complex history of infill, reuse and recycling of structural elements. Most of these dwellings are built of stone rather than mud brick, and consist of two rooms. Only one has been restored and is still habitable. The reuse of relic walls in extant structures suggests that a period of abandonment or reduced occupation preceded the phases represented by the extant physical remains. Large numbers of sherds and tiles are incorporated into the building fabric, with extensive tile chinking in stone walls and sgraffito sherds in the mud plaster. There are also two goat folds, a paved threshing floor (TP016), and two unpaved threshing floors. According to Panayiotis Loppas, the local forest fire watchman who lived in the village as a child, it was mainly a pastoral settlement, though barley was also grown; the village was abandoned progressively in the 1950s and 1960s. We aim to do a complete architectural and archaeological survey of this settlement in the 2002 season.

A dense pottery scatter lies 100 m below and to the northwest of Asinou village, on a series of terraces just above the river (Nikitari *Khalospitiaes*; TS12). We put in two survey units (SU0365-SU0366) on two constructed terraces currently used as orchards. Sheet wash is minimal on the hill slope and the terraces have helped to trap sediment, so apart from plough disturbance the artefacts are more or less *in situ*. The pottery from the survey units is of particular interest, and includes an impressive range of forms from the Ottoman and Modern periods. These include pithoi for storage, *tianistres* (frying pans) and water jug fragments. Especially interesting are two *dana* fragments, a local vessel used to collect wine or oil from the press (Ionas 1998: 52, 57). The *dana* fragments along with the *pithoi* indicate the settlement produced their own crops. Survey unit SU0387, 240 m to the west, contained sherds of the same fabric, which is probably a mountain fabric like that of Phini. The range of types and forms of the pottery from TS12 indicates a habitational site, and the locality name, *Khalospitiaes* or 'ruined houses', suggests that oral tradition remembers a settlement here.

In the northern bank of the river immediately opposite these two survey units is a wall of ashlar limestone blocks (TP039). About 10 m of this wall are exposed, with 4 to 5 courses showing, and its orientation is 46°. It probably had a rubble core, though about 70 cm of sediment has been deposited on top, so the thickness of the wall has been obscured. The masonry is clearly of too high quality to belong to an agricultural terrace or retaining wall, and both local memory and the cadastral map know this structure as the ruins of the church of Ayios Ioannis. Why it should have been built at the same level as the river bed is not known, though the presence of the river presumably explains its unusual orientation. We plan to carry out a geomorphological investigation of the alluvial terrace that contains it.

Other Places of Special Interest that we investigated in the Asinou Valley include the following: the ruins of Stavros church (TP033) on a hilltop 330 m east of the church of Panayia Phorviotissa; a system of check dams, probably constructed by the colonial Forestry Department (TP034); the abandoned settlement of Mandres tous Jerenides (TP038); a series of abandoned houses and threshing floors at Pera Yitonia (TP061), presumably of the same period as Asinou village; a masonry forest cairn, which is the only surviving example of the original forest boundary markers (TP062); and the abandoned settlement of Aspri (TP066), which we were shown by Panayiotis Loppas.

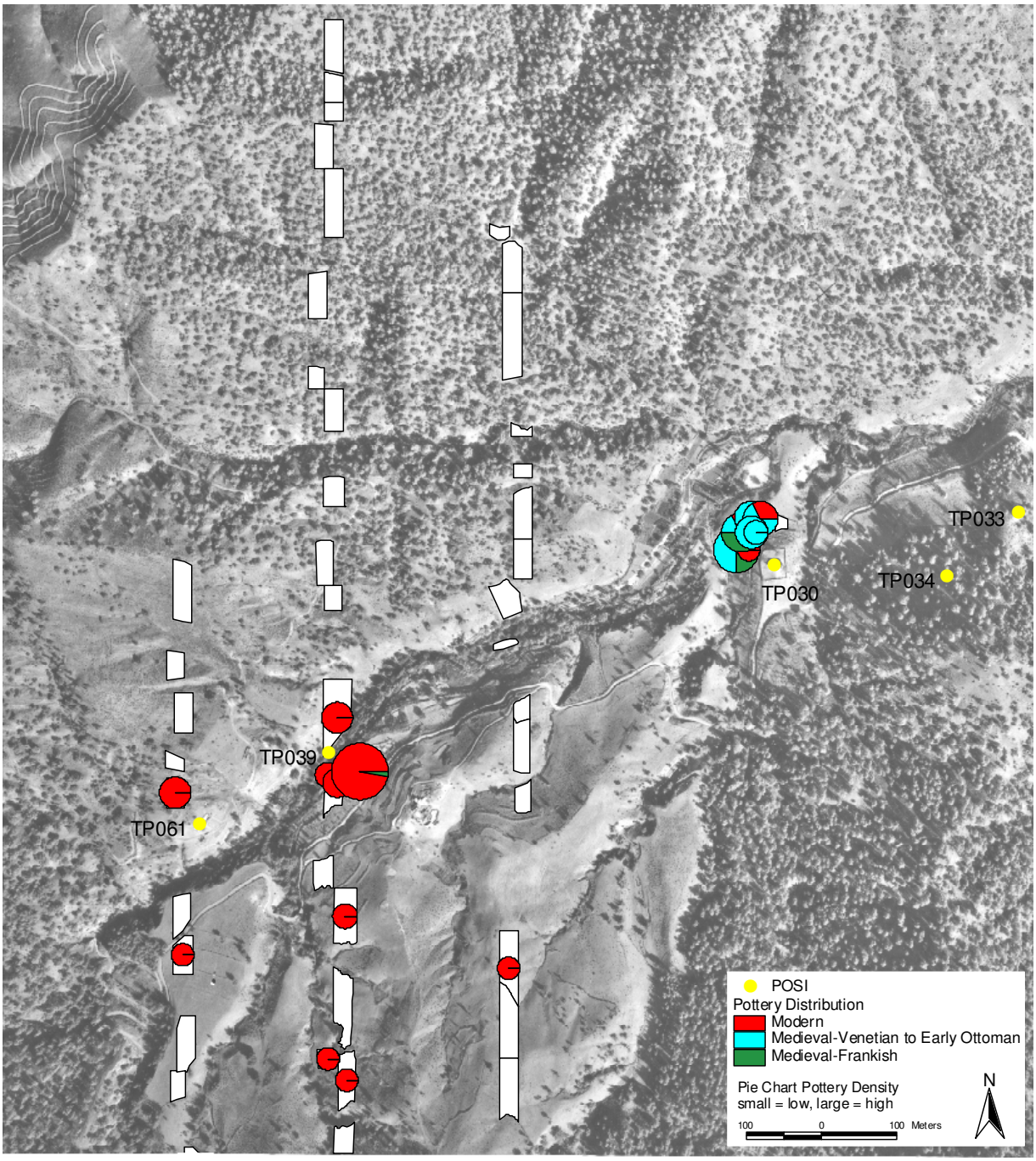

Figure 10:

Asinou Valley. Map showing POSIs and survey units with Medieval to Modern pottery.
Densities range from 0.01 sherds per sq m (smallest pie-chart) to 0.51 sherds per sq m (largest pie-chart).

Map: Paul Pelosi

The Asinou valley has clearly been a rich area of settlement, resource extraction and religious worship for at least 500 years. Our transect survey in the valley bottoms, along with visiting prominent monuments and using local oral information, has produced a wide range of useful and relevant data. We will continue this work during the 2002 season, along with an examination of soil management practices in the area. We are also beginning to see some interesting patterns of off-site artefact distribution in the area as a whole. To carry this further, we need to develop our methodology for dealing with the mountain slopes and their problems of low visibility, difficult access, and levels of material culture which are often very low but still significant.

2.5 *Central Karkotis Valley*

Team Leader: Heather F James. Geomorphological Intern: Mitzy L Schramke. Pottery: Joanita Vroom and Kristina Winther Jacobsen

Transect	*Geomorphological Units*	*Survey Units*	*POSIs*
TT3880000N	GU0007-GU0029	SU0014, SU0018, SU0020-SU0039	TP010, TP013
TT3880500N	GU0049-GU0059, GU0065-GU0072	SU0060-SU0070, SU0079-SU0086	TP011, TP032
TT3881000N	GU0030-GU0047	SU0040-SU0059	

POSIs outside transects: TP029, TP036

The rich agricultural and mineral resources of the Karkotis Valley have clearly stimulated large-scale settlement and resource extraction for at least 4,000 years. As well as the known Bronze Age cemetery at Katydhata and the prominence of Roman mining at Skouriotissa, we know from population surveys that this section of the Karkotis Valley was well-populated in the Medieval and Ottoman periods. Taking the villages from Katydhata in the north to Tembria in the south, there were at least 385 *francomati* (free tenant farmers) in 1565, 228 heads of households in 1826, and a total population of 1,993 in 1881 (Papadopoullos 1965: 123–124; Grivaud 1998: 468–470).

We walked three east-west transects across the Karkotis valley 500 m apart, in the vicinity of the villages of Kato and Pano Phlasou (Figure 11). Each of these transects started and ended in the igneous foothills of the Troodos mountains, although 84% of the geomorphological units consisted of anthropogenic terraces developed on alluvium of the Karkotis river and its tributaries. Grains, citrus and olives are the common crops, which are rooted in soils whose texture is consistently characterised by sandy loam. Fields are larger and more rectilinear in shape on the eastern side of the river compared to the central and western areas. Field boundaries are mostly earthen walls, although older olive trees within the earthen walls commonly have dry stone walling around their base. Locally, dry-stack stone walls are present along fields, with only significant concentrations east of Kato Phlasou.

Preliminary analysis of the pottery from the three transects indicates that while all periods from the Prehistoric Bronze Age to the Modern period are represented, sherds from the earlier periods are too few and dispersed to locate the presence of early settlement, though it presumably did exist. The distribution map shows a significant increase in the Roman material at the eastern end of the transects, near the main road, which may reflect the presence of the tombs in the hills to the east of the road (see also Special Interest Area TS11, below).

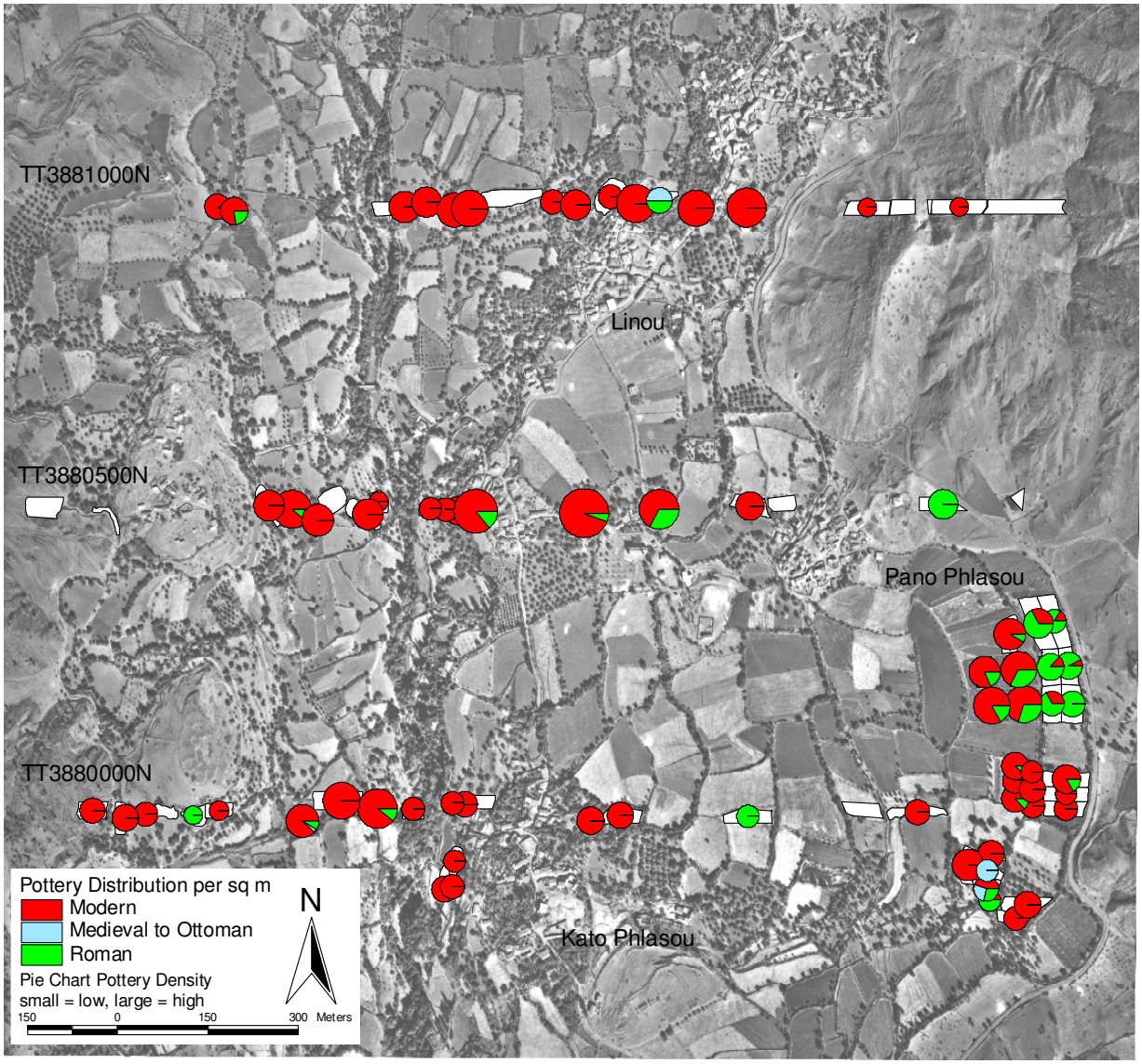

Figure 11:

Karkotis Valley. Map showing villages and survey units with Roman, Medieval to Ottoman, and Modern pottery.
Densities range from 0.01 sherds per sq m (smallest pie-chart) to 0.54 sherds per sq m (largest pie-chart).

Map: Paul Pelosi

Several sherds of Medieval and Ottoman fine wares allow some relatively precise dates. There were a few 16th century sherds from SU0023, SU0024 and SU0031 in the southernmost transect. In the central transect there was a sherd from the late 14th or 15th century (SU0060), and an imported 19th-century sherd from Apulia in southern Italy (SU0069). In the northerly transect there were three late 15th/early 16th-century sherds (SU0046, SU0045, SU0052), and in SU0045 there was an imported sherd of the late 19th century from Turkey.

Also relevant to the Medieval and Ottoman periods is a POSI consisting of a terrace with a series of old olive trees (TP011). According to our geobotanist's preliminary dating scheme, these range in date from between 350 and 600 years old. The pottery from the immediately adjacent SU0022 included three pieces of 16th-century green monochrome painted ware, plus another 36 pieces which could not be dated any more precisely than 'Historical' (ie Archaic to Modern). These data suggest cultivation across much of our part of the Karkotis valley in the Medieval and Ottoman periods.

We carried out block survey at an area on the eastern side of the valley with unusually dense scatters of Roman and Medieval/Ottoman pottery (Phlasou *Dodekaskala*; TS11). This consists of a series of fields and orchards in the eastern Karkotis Valley, on the oldest and most elevated of the alluvial terraces. The scatter of Roman sherds may be associated with a series of known looted tombs in the hills immediately to the east. The slope of the adjacent hill to the east is <20%, however, suggesting that the material is more likely to be *in situ* and just disturbed by ploughing, rather than being originally located on the hill and washed down by hillslope erosion. Surface soils are sandy loam with 10-20% medium-sized gravels, and have been relatively stable historically. The field divisions are all heavily vegetated earthen terrace walls, which appear to follow the natural alluvial terrace risers.

Preliminary survey in the northern part of Phlasou *Dodekaskala* in the 2000 season (SU0001, SU0003-SU0007) identified an area with a notable density of Roman pottery. A further five survey units to the west of these in the 2001 season (SU0094-SU0098) showed that the concentration of Roman pottery decreased sharply towards the west, whereas greater quantities of Medieval to Modern material are present. Another group of survey units 100 m to the south (SU0087-SU0093) exhibits similar spatial trends: only six Roman sherds were found in six units, whereas the Medieval to Modern material is greater in quantity and variety. This pattern continues in the southern group of survey units in the SIA, another 150 m to the south, with minor Roman material and relatively abundant Medieval, Ottoman and Modern materials (SU0013-SU0019). In particular, SU0018 contained four 15th-century and three 16th-century pieces, and SU0019 had a 17th/18th-century maiolica sherd imported from Tuscany. This material may well have derived from an estate house. In the 2002 season we hope to extend this block survey and investigate further these two relatively discrete scatters of material, one Roman and one Medieval-Ottoman.

Over much of central Karkotis Valley, by strong contrast, the pottery shows very few distinct concentrations of particular periods. This anomaly may be due to geomorphological processes. Even though preliminary, our geomorphic mapping reveals as many as six Holocene floodplain terraces. Near Kato Phlasou, flood chutes and bars tens of metres in dimension are present on the lower floodplain. Flooding of the river can simultaneously deposit material, which would have sealed earlier deposits, and erode material, which would then be redistributed downstream. The high numbers of modern sherds across the centre of the valley, and the restriction of earlier material such as the Roman pottery in Phlasou *Dodekaskala* to the valley edges is easily satisfied by the flooding hypothesis. Three sediment profiles were briefly investigated (TP010, TP029, TP032); we plan to do much more of this work in future seasons in order to resolve the timing and extent of flooding in the valley.

The team also investigated several other informative POSIs. The village of Ayios Epiphanios has largely been destroyed by the construction of an army base, which is now itself abandoned. There are some building foundations of the village still visible, one of which was recorded (TP046). Other POSIs include a modern field house (TP013) and a high revetment wall (TP036).

3.0 *Specialist Reports*

3.1 *Lithic Artefacts* by Carole McCartney

Chipped and ground stone artefacts were collected from each of the east, central and west transect areas of the project. The samples, while small in comparison to the volume of pottery, provide data on lithic distribution across the landscape, raw material utilization and the chronological development of lithic types in the north-west Troodos region of the island. Not all of the lithic material has as yet been fully processed, so remarks in this brief summary should be regarded as preliminary.

Lithic materials collected from each of the three transect areas follow the general trends visible in other artefact categories. The central area produced the smallest number of artefacts, which were widely dispersed across the survey blocks. Materials from the east block were more frequent, with the largest number of artefacts collected, perhaps understandably, from the arable lowland areas of the western block.

The majority of the chipped stone items were made from jasper and high quality chalcedony, some of which demonstrate the exploitation of primary resource material. This degree of jasper and chalcedony utilization in a landscape dominated by the pillow-lava terrain is expected, since these lithic materials occur within or in association with the lava formations. It is interesting, therefore, that Lefkara formation cherts of varying quality were found in the survey areas in spite of the distance to the nearest Lefkara formation outcrops. This suggests the possibility of exchange networks that would have provided the sites of the northwest Troodos region with Lefkara chert materials. Ground stone lithic production was not similarly restricted by the availability of workable stone, since local rock formations of the Basal group readily supplied the diabase, gabbro and micro-gabbro materials utilised, while sedimentary rock types were also readily available.

In terms of artefact type, chipped stone artefacts demonstrate the primary exploitation of large jasper blocks, and small chalcedony nodules, both of which represent the complete range of core reduction and tool manufacture. Artefacts made on Lefkara materials, however, are present only as unworked blanks and finished tools. Elements diagnostic of a simple core technology along with tools representing non-formal classes such as scrapers, notches and *ad hoc* utilized flakes would be at home in industries dating from the Chalcolithic. On the basis of the relative dating provided by the pottery finds, however, we should be able to begin to define the industries of the early historic periods, particularly Roman, that appear to have been abundant in the region. In addition, the recovery of a number of *dhoukani* 'teeth' indicates the potential of materials collected in the survey area for refining our understanding of the technology, utilization and distribution of this threshing 'industry' used until recent times on the island (McCartney 1993; Whittaker 1999).

Ground stone artefacts are represented by querns, rubbers, and grinding and pecking stones, all of which represent lithic forms typically associated with agricultural societies. Of future interest will be the possibility of defining ground stone materials utilized in association with mineral extraction and copper production.

3.2 *Architecture* by Ian Evans

The architectural study carried out in the survey area during the 2001 season included studies of individual buildings and building types. We also began research into the materials and methods employed by the builders of traditional structures in the survey area.

Information gathered on individual buildings was assessed and entered into the Project database, using recording parameters developed during the 2000 study season. The Building Unit form developed for this purpose provides space to note the location, setting, materials, date of construction (where available) and a description of each building recorded. The information is detailed and specific and will provide a useful record for present and future researchers working in this area. For example, the materials section of the form provides space to record the dimensions, number of levels, condition/stability, current and past use, and includes a breakdown of the various materials required to construct foundations, walls, flooring and roofing.

The manner in which the information gathered in this process is entered into the database enables us to search and use the data in various ways. For example, the data can be searched by date of construction, by a particular material (for example mudbrick), or for a building type such as water mill. We used these Building Unit forms in 2001 to record a variety of structures, including houses, churches, bridges, water mills, and in one case, a British-built railway station. Ninety-one structures were investigated and recorded in this manner.

Detailed examination and recording of traditional building techniques were conducted throughout the survey area. Particular attention was paid to techniques that are no longer used and where surviving examples are rare and fast deteriorating. For this reason we focused on ruined structures in the abandoned seasonal settlement of Mandres (TS07), the abandoned village of Asinou (TS03), and in the village of Kato Koutrafas.

Earth roofing is a prime example of a technique that is no longer used. It is many years since earth roofing in the traditional manner has been constructed in Cyprus, and the few examples known in the survey area are in poor condition. They cannot survive for more than a few more years, and hence are important evidence of an aspect of building technology which is fast passing into history. Surviving earth roofs at Mandres, Asinou and Kato Koutrafas were recorded by careful study, photography and sketches designed to illustrate the manner in which such roofs were constructed. We also collected samples of soil from surviving earthen roofs in Mandres and Kato Koutrafas. Analysis may throw light on the way in which the soil was prepared for roofing purposes, and may also indicate whether it was obtained locally or selected especially for the purpose and collected from a more distant source.

The architectural study of buildings in the survey area will be continued during further study seasons. The intention is to enhance the archaeological examination of the area by providing information on patterns of human habitation and village life during the more recent past.

3.3 *Historical Archaeology* by Tracy Ireland

The historical archaeology research design aims to interface closely with other aspects of TÆSP, to ensure that the contemporary landscape is contextualised in terms of its social, cultural, political and historical meanings. To this end we designed a new methodology to integrate historical, material and anthropological information into a geographic format, to promote diachronic comparisons as well as assisting in the analysis of temporal and geographic cultural and landscape patterns. Analyses of specific areas can be found in the fieldwork section of this report. This section gives an overview of the three main thematic goals: recording agricultural, industrial and ideational landscape features; hunting; and the landscape of colonialism.

Recording Agricultural, Industrial and Ideational Landscape Features

The fieldwork component focuses on three specific material aspects of the recent past: agricultural structures and features; industrial remains; and evidence of ceremonial and ritual use of places such as shrines. During the 2001 season we undertook detailed recording and analysis of two abandoned agricultural settlements, Kato Koutraphas *Mandres* (TS07) and Nikitari *Asinou* (TS03) (see above). An isolated rural estate house (TP014), located by Team East on a transect in the eastern survey area, was also planned and drawn by a team of students from Glasgow University.

The recording of the water mills of the Karkotis valley, in conjunction with project architect Sevina Zesimou and architectural historian Ian Evans, has been developed as a priority for the theme of agricultural/industrial evidence of the recent period. Seventeen mills have been located and recorded, including the still operational mill of Stelios Mylonas at Evrykhou (BU0047). The mills appear to date from a range of periods; one in Phlasou has an inscription with the date 1760. Further historical, architectural and technological research will be undertaken to establish the chronological parameters for the mills and in particular to develop an understanding of their place in the landscape and the networks of production and communications which interrelate them.

The location of roadside and other shrines and votive or sacred landscape features formed another focus for this season that will be developed further in 2002 with ethnographies and cultural mapping. Shrines are generally located on the roadside; six of these have so far been recorded in the study area. A tree associated with the church of Panayia Kousouliotissa 1 km southwest of Pano Phlasou is used for votive offerings to the Panayia, placed there to obtain the health and well-being of children. The tree is a eucalyptus, probably less than 20 years old. In 2002 we will contact people who tend and visit the shrines and other votive or sacred areas, to investigate their meanings and in particular the significance of their location in the landscape.

Hunting

Hunting is a very popular recreation in contemporary Cyprus. During the preliminary season in 2000, it emerged that in many parts of the survey area one of the most distinctive material patterns of modern cultural practice consisted of the used cartridges left behind by hunters. While modern pottery is being considered by the survey project, modern glass and other detritus were not considered to contribute substantially to research interests. The practice of hunting, however, draws together a number of themes and issues of interest in the context of landscape research: gender and environmental perception; issues of control and freedom in the landscape; culturally based philosophies of environmental management and conservation; and traditions of sport and subsistence hunting. Survey teams recorded cartridge distribution and density in all survey units, with a total of 4,281 cartridges, and preliminary GIS analysis shows some clear patterns. In the Karkotis valley, densities drop off distinctly near settlements, just as one would expect; moreover, a comparison of cartridge density with land use in Xyliatos *Mavrovouni* (TS02) showed that hunters seem to favour orchards and fallow fields over uncultivated areas such as garrigue.

It is essential that the material culture of hunting be contextualised with documentary and anthropological/ethnographic research. It is also hoped that a historical perspective on this activity, particularly through the British colonial period, will help to place in its wider social context the modern practice of hunting. We hope that an ethnography of hunting, and hunting places, will provide a window into an aspect of cultural practice that is very significant in the

Cypriot context and forms a particular form of knowing, moving through and using the landscape.

The Landscape of Colonialism

Another theme which we are developing is the landscape of British colonialism (British colonial period 1878-1960). How meaningful or transformative were British systems of landscape modification, environmental management, and the bureaucratisation of the social and physical landscape? A number of significant landscape elements relevant to this period have emerged: the opening of Skouriotissa mine in 1914; the construction of roads and bridges from the late 19th century; the opening of the Morphou-Evrykhou railway in 1914; and the development of protected forest management areas. It is also critical to examine the many cadastral, topographic and ethnic mapping exercises, which were so central to the British perception of colonial control.

Archaeology itself can also be seen as intimately related with colonialism. Kitchener, the young subaltern charged with the responsibility of mapping Britain's new colony, had an interest in archaeology and mapped the Cypriot landscape as an archaeological, historical and ethnic mosaic. Godfrey Gunther, the superintendent of the Cyprus Mines Corporation at Skouriotissa, co-funded the excavation of the prehistoric Bronze Age tombs by Menelaos Markides in 1918 (TS09; see above). Large numbers of local people, men and women, were employed by archaeologists, just as they were by the British road engineers.

Two bridges in the study area were built by the British, incorporating and re-cycling earlier Ottoman bridges. These are found on the Evrykhou-Korakou road and the Linou-Ayios Epiphanios road. The bridge between Evrykhou and Korakou (BU0045) is now abandoned and replaced by a modern, concrete bridge. In this the British road engineer Edward Nicholls faithfully reproduced the construction methods and style of the earlier structure. The other example between Linou and Ayios Epiphanios incorporated a small, humped, stone bridge, capable of carrying only foot traffic, within a much larger 3 arched stone bridge. The central arch was formed by an Ottoman pointed arch, while the subsidiary arches were round with typical colonial margined voussoirs. The British constructed many other bridges in the study area where none had existed, or where there had only been fords. The main road from Troodos to Astromeritis mostly followed an existing bridle track, and therefore re-emphasised what had been a familiar communication route through the landscape.

3.4 *Water Management* by Sevina Zesimou

The documentation of the water distribution system carried out in the 2001 season aimed to understand how the irrigation system is arranged along the banks of the Karkotis river, how the communities share the water, and how water is distributed into a variety of channels, diversions and check dams. This study includes activities and material structures from the Medieval period to the present.

The water sharing system covers the Karkotis river valley and its sides from the north face of the Troodos mountains at Kakopetria all the way northwards towards Morphou bay. The intricate water distribution pattern has created a parallel social system, involving community organisation centred around the use of water rights enforced by village committees. We collected oral accounts and held interviews with people involved with water sharing. It emerged that specially appointed water keepers, *nerofori*, are entrusted with the task of making sure that water is distributed according to a complex system of norms and individual

water rights. The *nerofori* themselves answer to the village mayors and appointed field keepers, the *tourkopouloi.* Water is thus distributed according to fixed quantities and for intricately determined time stretches. Neither the time of water flow nor the quantity of water are determined by conventional units of measurement, but have evolved over centuries and are an inextricable part of the social fabric of the villages which still use water in this way. One of TÆSP's goals is to provide a quantitative documentation in present-day units of measurement. Knowledge of the water system itself appears to be largely oral, memorised by the *neroforoi*, although a map of water rights was made in 1972 by the Department of Water Development of the Ministry of Agriculture and Natural Resources, based on these oral accounts.

The system's geographical layout consists of a network of primary and secondary canals which have branched off from specially defined points along the river known as *deimmata*. Each *deimma* determines to which village water is diverted, according to water ownership rights. The water is then channelled towards nodes defined as *kopses*, *gronthoi* or *moirasia*. From these nodes water is diverted either towards the next village or is dispersed along a final 'capillary system' of earth or concrete channels used to irrigate fields. Irrigation, however, is clearly not the only activity which uses this water. The large number and variety of water mills aligned along certain stretches of the river banks called for their documentation, which we conducted by filling out Building Unit forms (see sections on Architecture and Historical Archaeology above). Other related structures such as bridges (BU0045 and BU0046) were documented where they were deemed relevant for determining the importance of the mill in the infrastructure. For the mills, we recorded their methods of construction, the typology of the penstocks, the materials out of which each separate and distinct part was constructed, and specifically the length of the water race and the heights of the penstocks. Other documented features involved the use of plaster on the wall faces as a structural and decorative feature. In addition we continuously updated a glossary of oral terms used to describe aspects concerning water use and traditional architecture of the region. We hope that this will assist other researchers in improving their insights into the language, tradition and culture of the region.

By documenting 17 mills dispersed along the river an evolutionary pattern emerged involving earlier corn mills, early 20th-century cotton mills and industrial water-powered oil presses. At some stage, all the activities which could be powered by a single water-driven turbine, such as grain grinding, cotton cleaning, and oil pressing, were housed in structures called *havrikas* or factories, containing a conglomeration of early industrial equipment.

For next season, we will continue to develop our interdisciplinary approach, to integrate knowledge and expertise of other specialists on the team. The ability to collect data at such intense levels and to disseminate it immediately by means of the database enables a high level of comparison of the data and its speedy orientation with related fields of research. For example, there are geomorphological questions concerning two distinct patterns of mill locations. One involves the mills on higher ground, and questions arise as to why these are densely strung in a line along a certain stretch of the river bank. Why do the older mills appear to be on higher ground, and also mostly on the east bank, while more recent mills are closer to the river or over on the west bank? The second distinct pattern of mill location occurs in the flatter area east of Katydhata, where it appears that a line of mills is situated not

along the river but along an aqueduct taking water from the Karkotis valley and leading it towards Petra. We need to determine how this kind of activity of intense water use has affected the landscape over time. Geomorphological cross-sections of flood plains and alluvial terraces where the mills are situated will reveal how they are integrated into the landscape and impact upon it, and will demonstrate the level of their technological development. GIS mapping and analysis should help to reveal these changing patterns and their meaning within the landscape context.

3.5 *Communication Routes and Networks* by Erin Gibson

Archaeological survey is the optimal research environment in which to address issues of settlement patterning and communication across the landscape. It is for this reason that the study of roads, paths and other manifestations of communication networks has become a significant component of the TÆSP research project. The geographical diversity of the TÆSP survey area, with elevations ranging from 200 to 800 m, makes the study of communication in the area particularly interesting.

Roads and paths offer one way of tracing networks of communication across space. Roads and paths that have traversed this diverse landscape through time have left behind abandoned stretches of paved roads and bridges. Many of these bridges and old segments of road have been recorded, and the continued recording of such features will help to develop a cohesive picture of communication in the landscape.

The Karkotis Valley

The fertile Karkotis Valley is oriented north-south, and is part of the larger Solea Valley that runs from Morphou Bay inland to the Troodos Mountains. This connection to Morphou Bay via the Karkotis Valley cannot be underestimated for the export of resources. The Skouriotissa mine located at the northernmost section of this valley (also under intensive archaeometallurgical study by TÆSP) produced vast quantities of copper in the past. Therefore it may be assumed that the area between Skouriotissa and the Bay of Morphou was an important transportation corridor for the transport of supplies used to exploit this resource as well as the for the movement of the copper itself.

This river valley was a major route of travel, transport and communication between the coast and the Troodos Mountains. Roads skirted the valley side and passed through major villages such as Evrykhou. Many of the roads and paths in the Karkotis Valley seem to have been built upon earlier routes that were repaved or widened over time and therefore reaffirm well-established corridors of communication.

The Asinou Valley

Travelling southwest from Nikitari buses bring tourists to the famous 12th century church of Panayia Phorviotissa. Today this area is well visited and it is difficult to determine whether the church and the surrounding area drew such crowds in the past. Indeed the Kitchener map of the Asinou Valley shows many paths and roads following the sides of the Asinou River. Many of these lead northward along the river to the abandoned villages of Asinou and Jerenides. But paths also move east and west, thus connecting the Asinou Valley to the easternmost segments of the Karkotis Valley and westward to the Kannavia River Valley. Unfortunately modern forestry roads and firebreaks have made these routes difficult to locate through survey. A forestry nature trail from Ayios Theodoros to Asinou Village was established in the early 1990s. This trail follows the route of an older previously established network. Preliminary investigation of this route began in the 2001 season.

The Lagoudhera Valley

Like many of the roads in the TÆSP survey area, the roads and paths in the Lagoudhera Valley appear to follow the course of the river. The northernmost section of the Lagoudhera Valley was an active mining area in the past. Therefore transport into and out of this region was important with copper likely to have moved northwards along the Lagoudhera Valley to be exported at Morphou Bay. Indeed preliminary findings from TÆSP's 2001 season confirm that there were several paths and roads in the area around the slag heap at Xyliatos *Mavrovouni* (TS02). The report for this SIA discusses two routes of travel in this area – a Xyliatos route that runs southeast along the eastern branch of the Lagoudhera River, and a route that runs along the western branch of the river southwest toward Kannavia.

Architectural Forms and Oral Information

Transportation routes are not always explicitly marked by the presence of roads or paths. One of TÆSP's main goals is to find alternative means of learning about communication networks. Combining oral information, architectural forms such as khans, bridges, roadside shrines, roads, paths and tracks with historical literature and survey data on changing settlement patterns, we have the unique opportunity to construct a cohesive picture of communications in the landscape.

Kato Koutraphas *Mandres* (TS07) is located on the Mesaoria plain. Its role as a seasonal settlement and connection to the villages of Tembria and Kalliana has made it a fascinating part of this year's investigation of communication routes. Kitchener's 1885 map shows several roads passing close by the settlement, and it appears that Mandres was located on a major east-west road that linked the Lagoudhera Valley just north of Vyzakia to the Karkotis Valley and the village of Evrykhou. But these roads and tracks alone do not provide information about the relationship and movement of people between this seasonal settlement and its associated permanent settlements.

Through the interview of several elders from the villages of Tembria, Galata and Kalliana we learned that communication and transport routes extended far from the boundaries of the seasonal settlement. Grains grown at Mandres were brought back to the mountain villages of Tembria, Galata and Kalliana by cart and donkey along the paved road. But movement northwards from Mandres to Morphou Bay was also common as villagers transported wood and agricultural produce to be sold. Because the seasonal settlement did not have the facilities of a permanent settlement, people moved between Mandres and Koutraphas for school and church services. Through the integration of oral information, architectural analysis, and the study of communications and settlement patterns at Kato Koutraphas *Mandres* the TÆSP project will continue to gain insight into community and village formation.

Khans are the equivalent of a travellers' hotel, where travellers and their animals could rest; they were thus situated near main routes of travel. There are several khans in the Karkotis Valley. Two khans were located by TÆSP this season, one in Galata and the other in Kalliana. According to information gathered from elders in Galata and Kalliana (July 11, 2001), the khan in Galata was owned privately and farmers from Pitsilia and Marathas would stay there on their way to Morphou Bay to sell their produce. People also stayed at the Khan when they were waiting to have their grain ground. Recording the location of khans with oral information is proving to be a valuable source of knowledge about how people moved through and made use of the landscape.

3.6 *Satellite Imagery and Geobotany* by Neil Urwin

A landuse/landcover map of the study area was finalized during the 2001 season by completing the 'ground truthing' for the satellite imagery and aerial photos. The satellite imagery provided the basis for coarse thematic mapping in uninhabited areas where the major categories were forest (>20% pine density), three categories of batha (with decreasing levels of pine emerging above the surrounding vegetation) and cereals. In inhabited areas the aerial photography, although almost 40 years old, allowed the interpretation of categories of fruit trees/olives, crops, grain, grass/gorse, and villages. The satellite imagery classification was undertaken using *Idrisi* v 2.0. The aerial photography was visually interpreted by drawing polygons directly over the image in *ArcView*. The areas of coarse detail mapping and finer detail mapping were patched together, also using *ArcView*. The base projection for this map was the satellite image which had been georeferenced to the original topographic map sheets for the project area.

During this season, an extensive network of GPS readings at points identifiable on the satellite image were established. These readings were of two types:

1) generally spread over the project area;
2) clustered at particular areas of interest.

All GPS points will enable a re-sampling of the satellite image and all thematic classifications derived from it to be displayed at WGS84 (to be the project standard). Additionally, the clustered GPS readings will enable a reprojection of subscenes centred upon SIA/POSI areas with sufficient natural vegetation to warrant detailed geobotanical survey. The areas treated in this way during the 2001 season were:

1) TP006 (slag heap at Xyliatos *Mavrovouni*) and TP017 (Rock of Ayios Kyriakos)
2) TS10 (mining adits in canyon walls at Xyliatos *Ayios Kyriakos*)
3) TS09 (Bronze Age settlement and cemetery at Katydhata)

At these three areas, detailed botanical survey was undertaken using transects of multiple $100m^2$ quadrats ('NU' or geobotanical sampling units) to collect botanical data from all vegetated areas. The locations of transects were chosen to ensure that vegetation potentially influenced by soil or drainage factors associated with past uses (see TÆSP 2000 field report) was sampled, as well as areas not so influenced in order to provide a basis for comparison. In total, 35 sampling units were recorded in 13 separate transects for the three SIA/POSI areas. Data recorded comprised floristic identification, average plant height, and percentage of cover (density), for all species in each of the 'tree', 'shrub' and 'groundcover' strata. None of the data has yet been subjected to statistical analysis or signature development with the satellite image. However, observation during data collection indicated that:

1) the vegetation at TS10 (Xyliatos *Ayios Kyriakos*) showed detectable changes according to whether it was subject to leaching from the adit sites;
2) the vegetation associated with slag at TP006 (Xyliatos *Mavrovouni*) showed the same patterns recorded at similar SCSP sites;
3) any vegetation changes associated with TS09 (Katydhata *Laonarka*) were not apparent to casual observation (but may still be revealed by analysis).

Additional botanical surveys were undertaken at a number of cultural sites to provide data on their landscape context.

Dating Olive Trees

Data collection on olive trees continued. It was recognized early in the project that strict dendrochronology of olive trees was not feasible, but that it should be possible to devise an empirical relationship between tree morphology and tree age if enough individual tree ages could be determined. Data on tree age were derived from two sources:

1) counting growth rings in cut stumps;
2) historical records of tree ages.

At the end of the 2001 field season over 50 individual tree ages had been determined and corresponding morphology measurements taken. Although cut stump data tended to cluster in the 50-200 year range, a number of historical references (either anecdotal or association with a structure of known age) added data for much earlier ages. Morphology of each individual tree is represented by trunk circumference above root buttress level. The advantage of this parameter is that it takes advantage of the established relationship of an increase in girth with incremental growth and also evens out (over a long period) individual differences in horticultural practice, growing conditions and microclimate. We hope to establish from these data an approximate relationship between trunk circumference and age for trees within the Karkotis and Lagoudhera river valleys; this relationship could then be used as a field estimate for tree age. Already, the comparative aging of olive trees has allowed us to infer relationships between non-contiguous terraced landforms (TP011 and SU0022).

3.7 *Data Recording, Management and Manipulation* by Luke Sollars

TÆSP was aware from the outset that vast amounts of wide-ranging data would be produced during the lifetime of the project. In order to store them efficiently and manipulate them easily, all data collected in the field were entered into a relational database (TÆSP*Data*) constructed in *FileMaker Pro* 5.0. This software was chosen primarily because it runs on both PC and Macintosh computers. It was always our intention that the database should work efficiently for the project, not that the project's methodology should be dictated by the procedures of other surveys or the strictures of database designers and their technology. To this end the preliminary season (2000) was devoted to perfecting TÆSP's paper recording system; paper forms are, arguably, still the most economic method of recording field data. TÆSP's six tiers of data recording are reflected in the paper recording system that was established in 2000. With that foundation, the computer recording system was designed, constructed and tested by the database manager between the 2000 and 2001 field seasons.

The time and effort invested in developing the data recording and management system over the twelve months preceding TÆSP's first full season were amply rewarded – TÆSP*Data* was ready for data-entry from the first day in the field and, with very few minor adjustments, continued to serve the project throughout the season. The database was designed to make data-entry uncomplicated and to enable any project member to use it with a minimum of training. On-screen buttons make it possible to navigate between tables and operators seldom need to use the drop-down programme menus at the top of the screen with their profusion of commands, choices and potential for confusion and error. Data-entry forms appearing on-screen mimic the paper recording forms used in the field wherever possible, in order to reduce the need for interpretation or confusion as data are converted from written to digital form.

Although the database was ready for use at the beginning of the 2001 season, little work had been done on data-extraction. In order to ensure that our fieldwork and research dictated to the database and not the other way around, the types of information required and the format in which it might be extracted and presented were developed by the database manager during the season in consultation with the project's specialists and fieldworkers. This approach proved efficient and successful: data were exploited to the full from the very beginning of the season.

Databases are most efficient when dealing with lists and numbers, but in addition to generating vast amounts of these TÆSP also produced a large number of descriptive reports. Long passages of text are inefficient in a database and were discouraged in TÆSP*Data.* A parallel system of narrative notebooks was implemented to cater to this equally important method of data-recording.

Uniformity of data is vital to the smooth and efficient operation of a computer database – seven different spellings of 'payleolithik' make meaningful searches impossible. To ensure uniformity in TÆSP*Data* many terms entered into the database were reduced to codes and verified against validation lists stored in the computer or selected from drop-down menus or check boxes. The data were further verified during brief checks carried out as part of the daily backup routine and by a formal auditing procedure implemented, but not completed, during the latter part of the season. The confidence this gave us in our data meant that preliminary, on-going analysis carried out with the GIS could inform survey tactics later in the season.

The smooth operation of TÆSP*Data* required constant vigilance and attention to detail; the quantity of information collected made it necessary to enter data simultaneously on three computers, necessitating a daily compilation of data before the final backup and redistribution of files back to data-entry stations. The procedure was time consuming and carried with it the inherent threat of damaging or losing data. Through tight control, this was kept to a bare minimum and the demoralising process of data re-entry almost eliminated. However, minor differences between the computers meant that continual small adjustments were necessary for TÆSP*Data* to work to its full potential.

The less people have to copy and move data around, the less the risk of corruption or loss, and less time spent transferring data makes more time free for data-entry and extraction. An obvious way to streamline TÆSP's data-entry, management and manipulation would be to establish a computer network allowing work to take place at a multiple stations whilst data are stored in a single, central database. It became clear over the 2001 season that a computer network was essential if we wish to employ digital storage and analysis techniques to extent that we are doing. Built around a permanent server using portable computers as work-stations, a network would provide the flexibility to allow the easy sharing of data generated. And not only during a field-season: information that might be generated elsewhere could more easilty be integrated into the TÆSP system. Clearly the advantages of a network would spread far beyond the realm of the database making the sharing and organisation of all forms of data easy and efficient.

Communication is one of TÆSP's watchwords and the sharing of data a prime objective: thus it was disconserting to discover an incompatibility between the database and GIS programmes – *FileMaker* and *ArcView*. Transfer was possible but when efficient dynamic links were established the process slowed to an impractical crawl. It seems the most obvious solution to the problem is to change one of the software programmes. An alternative that has been suggested is that Access be used as a buffer through which data could pass between FileMaker and ArcView.

This one small hitch aside, TÆSP*Data*'s first season ran smoothly: data were entered with a minimum of confusion; the bare minimum of changes were required to its structure; and the record it accumulated was available for extraction throughout the season for consultation by project members and analysis by the GIS. Much of its success can be attributed to the resources devoted to the design and development of the database and that this process was carried out by archaeologists with computer skills rather than computer database designers from outwith the disciplines represented on the project. Reflecting the interdisciplinary nature of TÆSP, the database holds far more than archaeological information: it also incorporates data collected by archaeometallurgists, architectural specialists, geobotanists and geomorphologists. TÆSP*data* looks set to continue in this vein collecting these diverse data and making them easily available to all disciplines involved throughout the life of the project.

3.8 *Geographic Information System* by Paul Pelosi

In contrast to the database, the GIS system was fraught with problems during the first few weeks of the 2001 season. Some of these, such as the use of aerial photos and the incompatibilities with *FileMaker Pro* 5.0, were external problems, and could not have been foreseen. Others were due simply to the timescale involved in setting up the project's landscape analysis program within *ArcView* in such a brief period of time. In order for the full potential of the GIS/Database combination to be realised, the problems with the aerial photographs and database incompatibility must be addressed before next season. However, despite these drawbacks, data were successfully drawn from the database and joined to *ArcView*. This allowed preliminary analysis of incoming data 'in the field' and provoked considerable discussion, as we were able to map out current data, and in turn to adjust our field methodology and target promising areas in the light of these up-to-the-minute results. Such developments provide only a hint of the potential that a fully networked and integrated database/GIS system might offer, but it was an important and invaluable development in TÆSP's strategic planning methodology.

All too often analysis is neglected during the actual fieldwork, and is considered instead a 'post-season' task. A fully integrated system would literally be able to provide minute-by-minute updated analytical data, providing invaluable feedback for all specialists, team leaders and the directors, offering them on-the-spot information as to what is actually coming from the survey area, what aspects of their strategy need rethinking and what potentially promising areas merit revisiting. It is our intention to design, integrate and have such a system fully functional before the beginning of the 2002 season.

4.0 *Conclusion*

The results summarised in this report demonstrate that TÆSP has had a very encouraging first full field season. Our field methodology, based as it is on five seasons of experience during the Sydney Cyprus Survey Project, worked smoothly and in most cases was clearly appropriate to the study of the landscape and the material culture that both comprises and characterises it. Notable successes in methodology included the integration of a Geomorphological Intern into each survey team, and the problem-free operation of our large and complex database.

We can also claim finds and preliminary results highly significant for the history and archaeology of the Cypriot landscape. The Karkotis Valley has been the subject of intensive settlement, agriculture and copper mining for most of the last 4,000 years. The rediscovery of the Katydhata Prehistoric Bronze Age cemetery, and the probable identification of its associated settlement, will allow the full investigation of an area of major significance in the Bronze Age because of its association with the Skouriotissa copper mines. Xyliatos *Mavrovouni* is an excellent example of an intensive medium-scale copper production site of the Roman period. The wealth of archaeological material in the Asinou Valley demonstrates the importance of the steep-sided mountain valleys, a topographical zone which has been almost entirely neglected in Cypriot archaeology. Kato Koutraphas *Mandres* has turned out to be far more complex – and with a much longer history – than the 19th/early 20th century village we knew it to be.

We have also, of course, had our share of problems and challenges. The teething problems with the GIS will hopefully be solved when the combined resources of Oregon State University and the University of Glasgow are brought to bear on them. The ground visibility of much of the survey area was disappointingly poor, perhaps because of an unusually wet winter, and certainly because of the local agricultural practice of leaving straw in harvested fields. In some areas, such as the two transects west of Mandres, this situation meant that our results were little short of unusable, and in many cases we had to skip more fields than we surveyed. The best solution to this problem will be a season in the autumn, though this is hard to arrange because of academic logistics.

Our greatest challenge, resolutely faced by Team Central, was to come to terms with the poor visibility, difficult terrain and very low densities of material that prevailed in the mountains. We demonstrated without any doubt that there was intensive activity all over the mountainous part of our survey area from at least the Medieval period onwards. In the valley bottoms and the lower slopes, it was easy to find relevant material. Once we passed the boundary cairns and entered into the forest proper, however, intensive survey revealed little information. Instead, we relied on local information and the investigation of known sites and paths. Even clearing circles every 20 m gave us little extra information. Next season we will experiment with other methods, such as walking every ridge, spur and path, and targeting particular topographical and resource zones.

At the beginning of this report we set out our research goals (see page 4). To what extent are we achieving them, after the first of our three major field seasons?

1) It is premature to talk about site hierarchy and settlement patterns in the survey area, but our investigations of the Asinou valley and Kato Koutraphas *Mandres*, combined with ethnographic interviews, are revealing complex patterns of seasonal labour and residence during the Ottoman and early Modern periods; these patterns began to be transformed by the introduction of large-scale mining during the 1920s.

2) Each of the three survey areas investigated in 2001 represents a middle or end member in the range of environmental factors, as shown in Table 1. Environmental data collected in 2001 provide a robust context in which to make our first steps in associating social organisation with place.

3) We have already reached an important target in our investigation of land use in the survey area, with the completion of a land use map based on satellite imagery. Collections of environmental data, including plants and soils, were made along transects to identify and define type ecological areas. Geomorphological landforms and deposits created more than 15,000 years ago, remnants of a non-anthropogenic landscape, were mapped (albeit cursorily in the first instance) to provide initial distinctions between what landforms and deposits may or cannot have been influenced by human activities. Distinguishing between these two separate classes of land is critical to our assessment of the interaction between humans and the natural landscape.

4) Xyliatos *Mavrovouni* demonstrates the highly organised and efficient copper production of the Roman period, and future work at the massive Skouriotissa slag heap will help to contextualise that situation both regionally and, we hope, chronologically. Agricultural production and architecture in the Ottoman and early Colonial periods show complex and sophisticated strategies of resource extraction, with a high degree of mobility and an impressive knowledge of local and distant resources.

5) We have made a good start in investigating utilitarian pottery, found some interesting correlations of fabrics between different parts of the survey area, and discovered and took samples from a disused tile kiln (TP019). Thin section analysis of fabrics will take place following the 2002 season.

6) The impact of imperialism can be seen in the mass production of copper in the Roman period at Xyliatos *Mavrovouni* and Skouriotissa, alongside the complex of agricultural production and communications that it required. Similarly, we may be dealing with a series of Frankish-owned Medieval estates in the Karkotis Valley, whilst the negative impact of the British colonial forest department on the communities that depended on the forest is very clear.

7) Our work at Kato Koutraphas *Mandres* and in the Asinou Valley demonstrates decisively how fruitful it is to combine archaeological survey with architectural analysis, historical research and ethnographic interviews. During the last two centuries the relation between people and their landscape has clearly been highly complex and volatile, and dependent on a broad range of cultural and environmental variables. Only an interdisciplinary approach can hope to record, assess and integrate so many very different factors.

Next season we will focus on particular areas that will further enhance and help us to realise these research goals. The Karkotis valley between Linou and Skouriotissa forms one such area, particularly because of its Prehistoric Bronze Age and Roman material. We aim to accompany fieldwork in this area with a full recording and analytical programme at Skouriotissa slag heap. We shall continue work in the Asinou Valley and, ground visibility permitting, in the fields surrounding Kato Koutraphas *Mandres*. A new area of investigation will be the village of Ayios Theodhoros and the valley in which it is located, with particular attention to its communication links with Asinou to the east and Phlasou to the west. This aspect of our fieldwork will be combined with intensive geomorphological mapping and analysis, an expanded programme of ethnographic interviews, and continuing work on the artefacts, architecture, botany and water management system.

We had one other notable achievement this season, namely the good will, hard work and cheerful cooperation of our team of students and specialists. This was partly due to the wonderful meals produced by our cook Annie Evans, and to the warm welcome we received from the village of Tembria. Mostly, however, it is due to the commitment and enthusiasm of our participants, and the project is sincerely grateful to them all.

Figure 12:

TÆSP team members in the eastern part of the survey area, with the Troodos Mountains behind.

Photograph: Michael Given

5.0 *Appendices*

5.1 *Staff and Fieldwalkers*

Dr Michael Given	University of Glasgow	Co-Director; management; historic periods
Dr Vasiliki Kassianidou	University of Cyprus	Co-Director; archaeometallurgy
Prof A Bernard Knapp	University of Glasgow	Co-Director; prehistory, archaeometallurgy
Prof Jay Noller	Oregon State University, USA	Co-Director; geomorphology
Ian Evans	Architectural historian, NSW	Architecture
Marios Hadjianastassi	University of Birmingham	Ottoman records and oral history
Jean Humbert	Phlasou, Cyprus	Illustrator
Tracy Ireland	University of Sydney, Australia	Historical Archaeology
Dr Carole McCartney	Lemba, Cyprus	Lithics
Chris Parks	Indiana, USA	Photographer
Paul Pelosi	University of Glasgow	GIS; fieldwalker
Luke Sollars	University of Glasgow	Database; fieldwalker
Dr Stelios Stylianou	Intercollege, Nicosia	Sociology
Neil Urwin	University of Sydney, Australia	Satellite imagery and geobotany
Joanita Vroom	Leiden University, Netherlands	Pottery (Medieval-Modern)
Kristina Winther Jacobsen	University of Copenhagen	Pottery (Hellenistic-Roman)
Sevina Zesimou	Architect, Limassol, Cyprus	Architecture
Erin Gibson	University of Glasgow	Team Leader
Angus Graham	University College London	Team Leader
Heather F James	GUARD, University of Glasgow	Team Leader
Paula Barry	Galway, Ireland	Geomorphological Intern
Adina Gleeson	New Zealand	Geomorphological Intern
Mitzy L Schramke	West Virginia University, USA	Geomorphological Intern

Fieldwalkers. Alexis Boutin (University of Pennsylvania); Stephen Digney, Jessica Harrington, Cara McAllister, Lyndsay McGill, Efthymios Shaftacolas and Chris Timmer (University of Glasgow); Maria Dikomitou (University of Cyprus); Jon Poulsen (Copenhagen); Sophie Pullar (University of Sydney); and Emilia Vassiliou (University College London).

The following people visited and participated the project: Irene Klaver, Iphiyenia Pontiki, Charlotte Schriwer, Chris Thornton and Savvas Yeoryiou.

5.2 *Special Interest Areas*

TS01	Skouriotissa	Roman, Modern	Slag heap; mine and buildings
TS02	Xyliatos *Mavrovouni*	Roman, Ottoman, Modern	Slag heap; pottery; fields
TS03	Asinou Village	Ottoman to Modern	Abandoned village
TS04	Katydhata Village	Ottoman to Modern	Village
TS05	Linou Village	Medieval to Modern	Village
TS06	Phlasou Village	Medieval to Modern	Village
TS07	Kato Koutraphas *Mandres*	Ottoman to Modern	Abandoned village
TS08	Nikitari *Kapsalia*	Byzantine to Modern	Panayia Phorviotissa and area
TS09	Katydhata *Laonarka*	Prehistoric Bronze Age	Settlement and cemetery
TS10	Xyliatos *Ayios Kyriakos*	Roman?	Mining adits and shafts
TS11	Phlasou *Panayia Kousoulia*	Roman, Modern	Pottery & tile scatter
TS12	Nikitari *Khalospitiaes*	Medieval to Modern	Pottery; Ayios Ioannis

5.3 *Places of Special Interest*

ID	*Village*	*Locality*	*Easting*	*Northing*	*Plot*	*Description*
TP001	Ayios Epiphanios	*Apatoes 1*	489228	3880226		Shallow depressions, terrace wall of boulders
TP002	Ayios Epiphanios	*Apatoes 2*	489200	3881200		Ruined church
TP003	Phlasou	*Kourtellolaona*	490833	3880332		Ovoid mound with defined edges.
TP004	Evrykhou	*Atsas*	492712	3880646		Stone bridge on stretch of disused road
TP005	Ayios Yeoryios	*Alestos*	502100	3877000		Modern open-cast mine, with acid lake
TP006	Xyliatos	*Mavrovouni*	503260	3878020		Slag heap, extensive Roman pottery, rubble
TP007	Skouriotissa	*Vouppos*	489560	3883500		Large slag heap; remains of workshop floors.
TP008	Kato Koutraphas	*Mandres*	495900	3881700		Two threshing floors & associated buildings
TP009	Xyliatos	*Athasin*	503005	3878980	126	Three (possibly four) check dams
TP010	Phlasou	*Shaabanbeys*	489610	3880010	137	Sediment profile showing flooding episodes
TP011	Phlasou	*Limnes*	489588	3880415		Series of 4-5 very old olive trees on terrace
TP012	Phlasou	*Kalophlitidhes*	490155	3880005	253	Cement water reservoir
TP013	Phlasou	*Tenekidhes*	490080	3879990	253	Modern brick structure (storage?)
TP014	Xyliatos	*Athasin*	502910	3878800		Abandoned four-room house
TP015	Xyliatos	*Athasin*	502915	3878806		Threshing floor
TP016	Nikitari	*Alonia*	497075	3877825	46	3 threshing floors: 1 paved and 2 not
TP017	Xyliatos	*Mavrovouni*	503300	3877790		Rock of Ayios Kyriakos. Basalt outcrop
TP018	Kato Koutraphas	*Mandres*	495860	3881750		Outlying buildings 300 m south of Mandres
TP019	Ayios Theodhoros	*Vatherou*	492335	3879155	215	Tile and brick kiln
TP020	Kato Koutraphas	*Mandres*	495800	3882360	38	Three-arched colonial bridge
TP021	Kato Koutraphas	*Mandres*	495750	3881690		Mandres, central village area
TP022	Xyliatos	*Mavrovouni*	503200	3878010	268	Small, stone built structure, with two niches
TP023	Xyliatos	*Mavrovouni*	503195	3878005	268	Possible stone built enclosure
TP024	Xyliatos	*Mavrovouni*	503240	3877915	628	Stone built wall with possible pathway
TP025	Xyliatos	*Mavrovouni*	503300	3877750		Rubble piles
TP026	Kato Koutraphas	*Mandres*	495620	3881720		Outlying structures 100 m west of Mandres
TP027	Kato Koutraphas	*Mandres*	496020	3881720		Outlying structures and threshing floor
TP028	Kato Koutraphas	*Mandres*	495680	3881520		Outlying structure 200 m SW of Mandres
TP029	Linou	*Chankarena*	490032	3881444		Road trench with stratigraphy and pottery
TP030	Nikitari	*Kapsalia*	497575	3878280	88	Panayia Phorviotissa church and enclosed area
TP031	Nikitari	*Vouni*	497820	3879970	192	Abandoned settlement with church
TP032	Ayios Epiphanios	*Kangelia*	489410	3880485		Artificially cut terrace with sherds in section
TP033	Nikitari	*Paleolinos*	497900	3878350	46	Ruins of Stavros Church
TP034	Nikitari	*Paleolinos*	497805	3878250	46	Check dam system covering at least 5 gullies
TP035	Katydhata	*Laonarka*	489981	3882029	448	Concentration of bone & Bronze Age pottery
TP036	Phlasou	*Phinikia*	489630	3880330		High revetting wall near well.
TP037	Katydhata	*Laonarka*	489758	3881828	447	Rock-cut tomb
TP038	Nikitari	*Mandres tous Jerenides*	495600	3877100	83	Abandoned settlement
TP039	Nikitari	*Pera Yitonia*	496985	3878650	7	Ashlar wall from Ayios Ioannis church
TP040	Katydhata	*Laonarka*	489917	3882083	448	Fox-hole
TP041	Xyliatos	*Kato Kremasha*	503190	3878245		Platform with 2.5 m high retaining wall.
TP042	Xyliatos	*Mavrovouni*	503460	3878235		Possible collapsed structure
TP043	Ayios Epiphanios	*Konnergatis*	489210	3880525		Ruined building foundations
TP044	Katydhata	*Laonarka*	489970	3882037	448	Ancient shaft (?) truncated by modern cut
TP045	Ayios Yeoryios	*Athasi*	502750	3878800	68	Two room, rectangular, all stone structure
TP046	Xyliatos	*Mavrovouni*	503500	3877670	730	Collapsed adit
TP047	Xyliatos	*Mavrovouni*	503295	3877730	570	Ruins of the church of Ayios Kyriakos
TP050	Xyliatos	*Ayios Kyriakos*	503263	3877229	298	Ancient adit
TP051	Xyliatos	*Ayios Kyriakos*	503269	3877231		Ancient adit
TP052	Xyliatos	*Ayios Kyriakos*	503273	3877219		Ancient adit
TP053	Xyliatos	*Ayios Kyriakos*	503273	3877234		Almost vertical ancient shaft
TP054	Xyliatos	*Ayios Kyriakos*	503275	3877229		Ancient adit
TP055	Xyliatos	*Ayios Kyriakos*	503291	3877230		Ancient adit
TP056	Xyliatos	*Ayios Kyriacos*	503296	3877227		Ancient shaft
TP057	Xyliatos	*Ayios Kyriakos*	503340	3877320	71	Ancient prospection cut
TP058	Xyliatos	*Ayios Kyriakos*	503340	3877320	71	Ancient prospection cut
TP061	Nikitari	*Pera Yitonia*	496800	3877925	123	Abandoned village
TP062	Nikitari	*Ambelia*	497000	3878300	22	Masonry forest cairn
TP063	Katydhata	*Laonarka*	489885	3882005		Possible rock-cut tomb
TP064	Xyliatos	*Mavrovouni*				Geological section
TP065	Ayios Epiphanios	*Paleoklishia*	489200	3881200	247	Ruined church of Ayios Epiphanios
TP066	Ayios Yeoryios	*Aspri*	497170	3874160		Mountain settlement (16th century)

5.4 *Abbreviations and Glossary*

BU	Building Unit	Single coherent structure (eg house, shelter, khan)
GIS	Geographic Information System	Computer software (ArcView 3.2) for mapping & analysing spatial data
GU	Geomorphological Unit	Basic unit for recording geomorphological and topographical data
POSI	Place of Special Interest	Specific focus of intensive investigation (eg sherd scatter)
PU	POSI Unit	Collection unit within a POSI
SE	Structural Element	Structural element of a building
SIA	Special Interest Area	A broad and multi-facetted area of intensive investigation
SU	Survey Unit	Basic unit for recording and sampling archaeological data
TP	TÆSP POSI	Prefix for ID number of Place of Special Interest
TS	TÆSP SIA	Prefix for ID number of Special Interest Area
TT	TÆSP Transect	Prefix for ID number of Transect (line of Survey Units and Geomorphological Units across the landscape)

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