

By NIKOS PANAGIOTAKIS *archeologist*

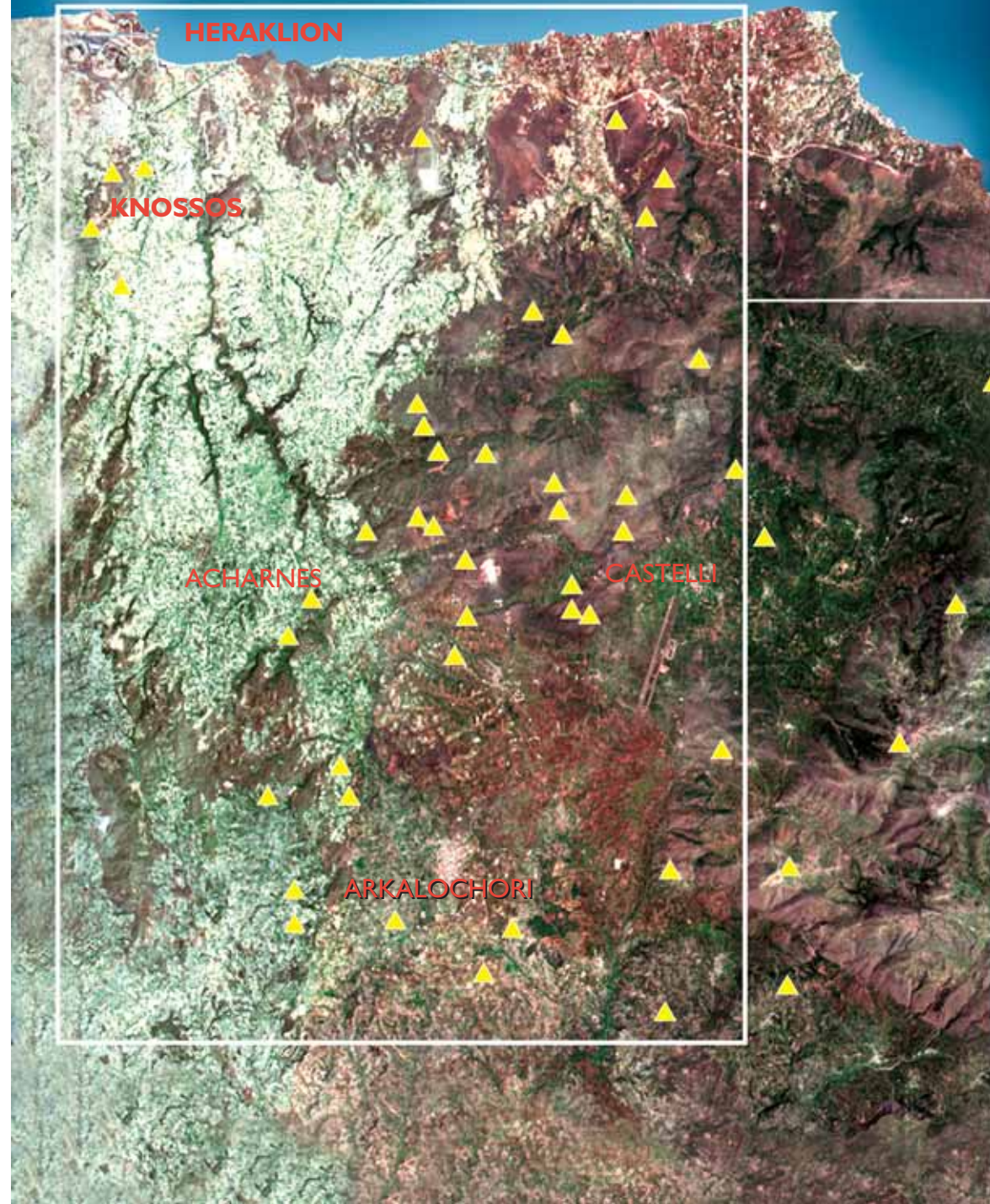
Photography by
YIORGOS PATROUDAKIS

THE OLDEST COMMUNICATION SYSTEM IN EUROPE

SOROI

THE MINOAN
FRYKTORIES

The Minoan Communication system



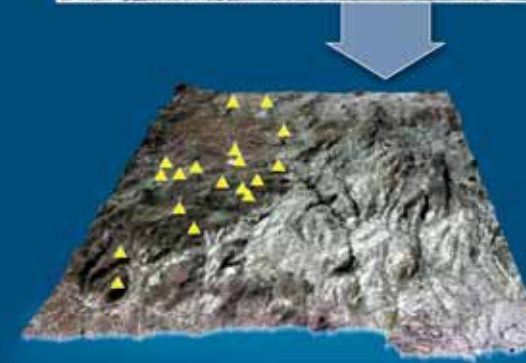
SOROI
are marked
in yellow

THREE - DIMENSIONAL ILLUSTRATION

On the large
map, to the left,
can be seen

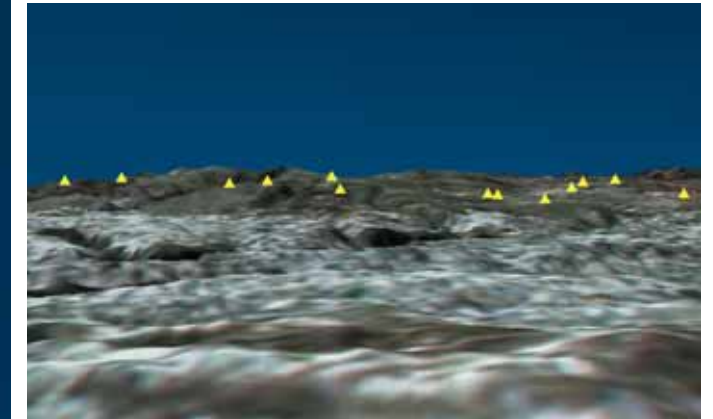


clearly the area
of Heraklion
Plain, where the
archeologist
Nikos
Panagiotakis
contacted
superficial
research. Below,
part of the
anaglyph that
has been
processed and
illustrated in
three
dimensions.

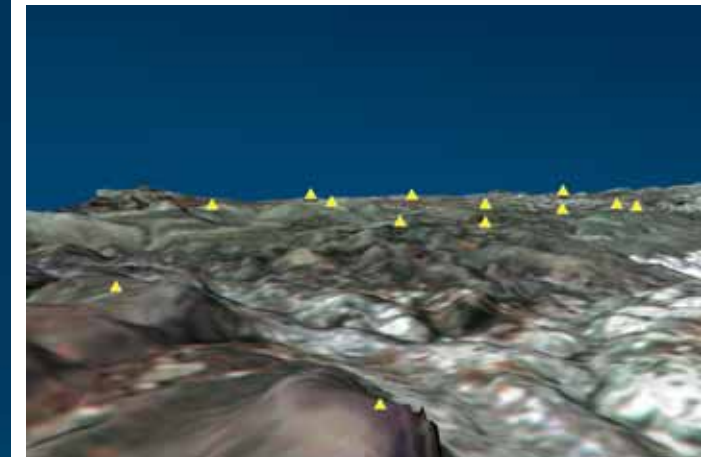


THE SATELLITE IMAGE

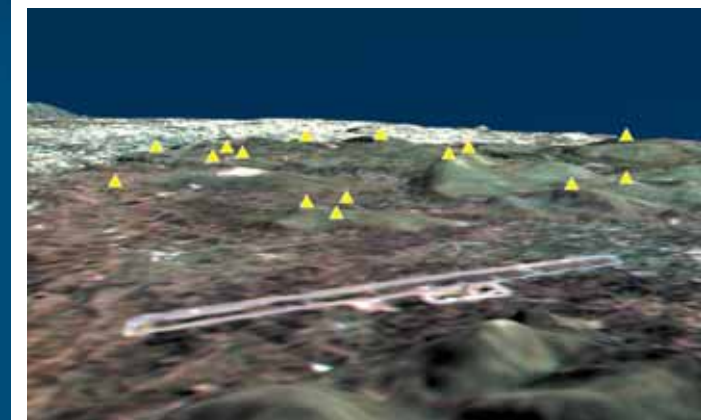
comes from the French satellite TV channel SPOT 4. Land survey has been accomplished through the digitalization of curves of the same height, taken from topographical maps of the Earth; the scale is 1:50.000. The image was processed at the Geology Department of the University of Athens, branch of Dynamic Tectonic and Applied Geology, by Manolis Vassilakis, as part of his doctoral research, entitled "The tectonic order of Central Crete using systems of telematic survey and GIS", supervised by Geology Professor Dimitris Papanikolaou. The images were processed in such a way that natural coloring is rendered through spectrum analysis.



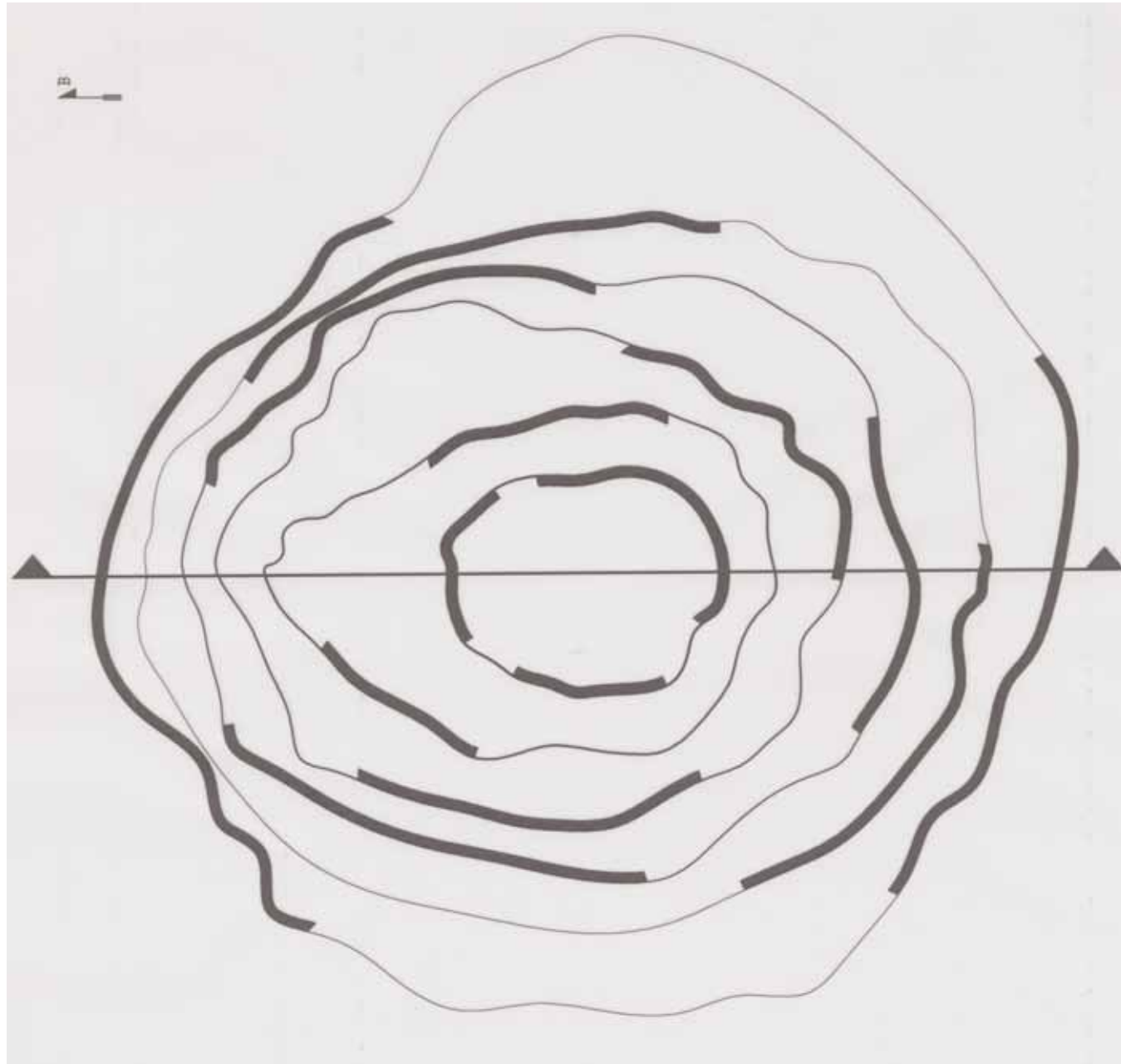
WHICH SOROI COULD BE SEEN FROM THE TEMPLE
AT THE PEAK OF YOUHTAS MOUNT



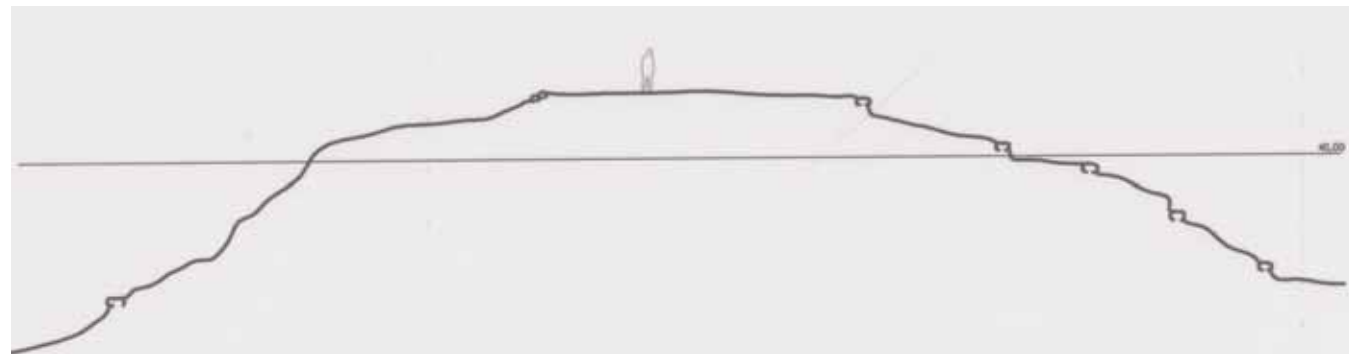
WHICH SOROI COULD BE SEEN FROM EDERI



WHICH SOROI COULD BE SEEN
FROM THE MOUNTS OF LASITHI



Pantelis Soros. Thick lines: visible walls. Thin lines: presumed continuation of walls. Scale: 1: 2000



Right: Soroi are structures shaped as truncated cones, created by rubble walling and earth in layers that are atop hills or crests.

Below: obsidian. Tools and cooking vessels made of stone or obsidian prove Soroi's everyday use.

Learn more about Pediada Project:
www.ims.forth.gr/joint_Projects/Pediada/about.htm/



*Bannum, your servant.
 Yesterday, I departed from Mari and spent the night in Zuruban. All the Benjaminites sent messages with fire. From Samanum to Ilum-Muluk, from Ilum-Muluk to Mishlan, all the cities of the Benjaminites in the area of Terqa replied with the same signs and to this moment I haven't been able to interpret them. I will try to interpret them and I will write to my Lord. Let the guard of the city of Mari be intensified and let my Master not exit the gate.*

The oldest communication system, based on the transmission of messages using fire and described in the letter above, comes from the archives of the palace of Mari (present Syria) and dates to the beginning of the 2nd millennium B.C. (c 19th century). The system worked with fire signals (sent using torches) and was used to quickly transmit codified messages.

A communication system, based on the same principle – conveying messages using fire, has been discovered by the author for the first time anywhere: not merely referred to in archives but actually recognized on the ground, in central Crete. The system was identified in an intensive archaeological survey in the Pediada region, which is the hinterland of the two most important Bronze Age palatial domains, Knossos and Malia.

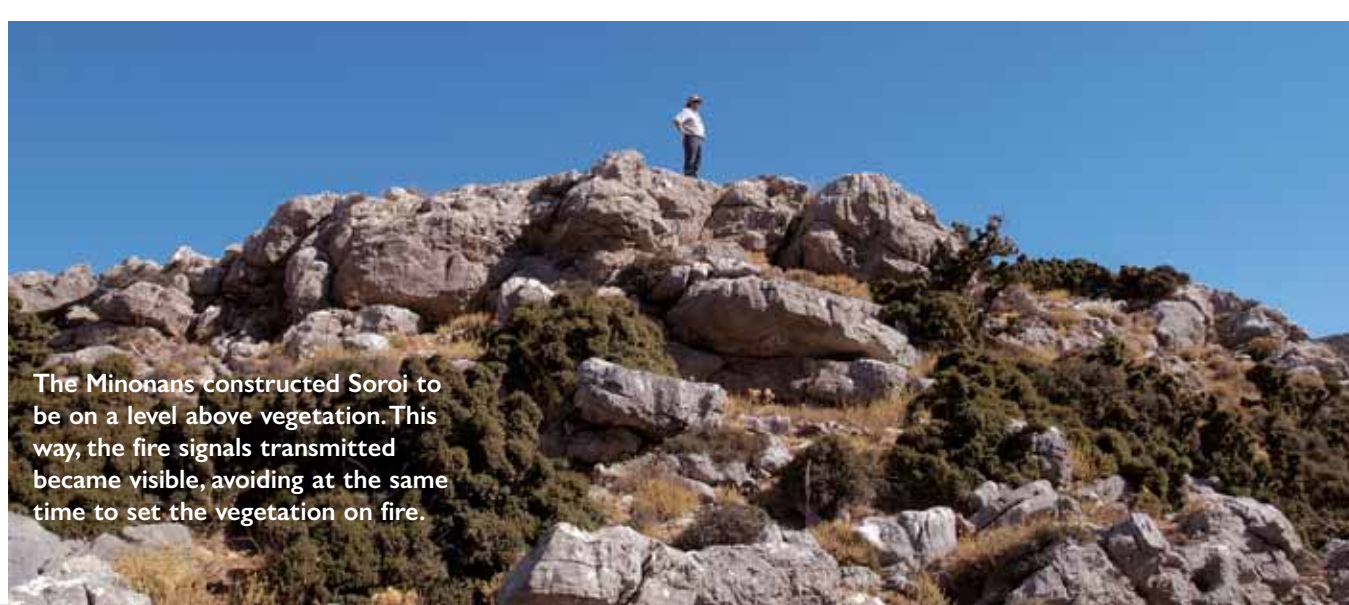
The survey brought to light a large number of archaeological sites, among which Galatas, where a palace has now been excavated by the archaeological service.

The great number of the archaeological sites of all periods identified through this survey is due, in my opinion, to the geographical position of the Pediada region – at the crossroads connecting the north sea with the south and east Crete with the west; it is also due to the fertile land of the Pediada, its mild climate and its good water resources.

The identification of the communication system was achieved through painstaking field research that included the recording of archaeological sites from the Neolithic period to the early 20th century A.D., as well as collecting the toponyms of the region. Work on the geomorphology and geology (by Dr Ch. Fassoulas), hydrogeology (by Dr M. Kritsotakis) as well as the study of the soils (by Prof. J. Chapelle) and of the present vegetation (by Dr A. Kayiambaki) have all also contributed to understanding the Pediada and why it was chosen as a place to live. All the archaeological sites have been recorded using modern systems such as GIS (by Dr A. Sarris)

Letter from the palace archives of the city of Mari, found on a clay tablet in the palace of king Zimri-Lim (1730-1700 π.Χ.). Amongst the approximately 20,000 tablets (discovered in 1935-1938 by André Parrot), written in cuneiform about 5,000 letters were written by the Amorites (Semitic nation). On the communication system described in the letter; see G. Dossin 1938, 'Signaux lumineux au pays de Mari' in *Revue d'Assyriologie et d'archéologie orientale* 35:174-186.

The Minoans constructed Soroi to be on a level above vegetation. This way, the fire signals transmitted became visible, avoiding at the same time to set the vegetation on fire.



The Vigla Soros. To the right, one can clearly see a burned layer of ground. Below, arrows point to the rubble walling that kept the ground from spreading, and the altimeter of the Geographical Service, a very common finding atop Soroi. The points selected by the Minoans were the most elevated ones and of the greatest strategic importance.



What actually attracted my attention and eventually lead me to the identification of the communication system was the repetition of the toponym Soros (soroi, in plural). From the start I realized that they were archaeological sites, since they were associated with pottery sherds; it was, however, only years later and after I had checked a large number of the spots with that toponym that I came to understand their function. Soros means in Greek a pile; and indeed a soros looks from a distance like a pile of soil (hence the toponym). Now that I have recorded a large number of soroi and have also examined a few that have been partly destroyed I can conclude that they were certainly man-made constructions in the shape of a truncated cone. They consisted of rubble walling and earth. The walls are in fact semicircular strengthened by others arranged radially from the centre of the truncated cone. They are found on the top of hills or ridges. Their base diameter varies from 5 up to as much as 40 metres; their height also ranges from 2 to 6 metres.

Many parameters helped me realize their function: first their topography – always on the top of hills or ridges with extensive views and always associated with contemporary settlements; and second the existence of layers of ashes and red, hard-baked clay fragments. In fact it was the ash and the hard-baked clay that made me think of large pyres and it was then that I recalled Homer and Aeschylus.

Aeschylus: Agamemnon (lines 1-9):

Watchman: O gods! Grant me release from this long weary watch. Release, O gods! Twelve full months now, night after night Dog-like I lie here, keeping guard from this high roof On Atreus' palace. The nightly conference of stars, Resplendent rulers, bringing heat and cold in turn, Studding the sky with beauty - I know them all, and watch them Setting and rising; but the one light I long to see Is a new star, the promised sign, the beacon-flare To speak from Troy and utter one word, "Victory!"

(lines 278-316):

CHORUS: Well, then, when was Troy captured?

CLYTEMNESTRA: In this very night That brought to birth this glorious sun.
 CHORUS: What messenger Could fly so fast from Troy to here?
 CLYTEMNESTRA: The god of fire! Ida first launched his blazing beam; thence to this palace Beacon lit beacon in relays of flame. From Ida To Hermes' crag on Lemnos; from that island, third To receive the towering torch was Athos, rock of Zeus; There, as the blaze leapt the dark leagues, the watch in welcome Leapt too, and a twin tower of brightness speared the sky, Pointing athwart the former course; and in a stride Crossing the Aegean, like the whip-lash of lightning, flew The resinous dazzle, molten-gold, till the fish danced, As at sunrise, enraptured with the beacon's glow, Which woke reflected sunrise on Makistos' heights. The watchman there, proof against sleep, surprise or sloth, Rose faithful to the message; and his faggots' flame Swept the wide distance to Euripus' channel, where Its burning word was blazoned to the Messapian guards. They blazed in turn, kindling their pile of withered heath, And passed the signal on. The strong beam, still undimmed, Crossed at one bound Asopus' plain, and like the moon In brilliance, lighted on Cithaeron's crags, and woke Another watch, to speed the flying token on. On still the hot gleam hurtled, past Gorgopis' lake; Made Aegiplanctus, stirred those watching mountaineers Not to stint boughs and brushwood; generously they fed Their beacon, and up burst a monstrous beard of fire, Leapt the proud headland fronting the Saronic Gulf, To lofty Arachnaeus, neighbour to our streets; Thence on this Atreid palace the triumphant fire Flashed, lineal descendant of the flame of Ida. Such, Elders, was the ritual race my torchbearers, Each at his faithful post succeeding each, fulfilled; And first and last to run share equal victory. Such, Elders, is my proof and token offered you, A message sent to me from Troy by Agamemnon.

Translation by P.Vellacott, (Aeschylus, The Oresteian Trilogy, The Penguin Classics).





RUBBLE WALLING
Round and radiate rubble walling contains the ground. This walling is more obvious in Soroi that are almost destroyed due to human interference.



EARTH
It has been moved here from neighboring areas. In most cases it is red due to the fact that the area's core mineral is grey Tripoli limestone.



ATOP PEAKS OR CRESTS
All Soroi control strategic passages and lay atop hill peaks or crests. They are all shaped as truncated cones.



NEXT TO SETTLEMENTS
As proven through the extended superficial research very near or around each Soros a Minoan settlement existed.

MAIN FEATURES OF SOROI

HOW THE SYSTEM WORKED



BAKED CLAY
In Soroi, we find many – small and big – pieces of baked clay, created through the baking of the "floor" by fire.



LAYERS OF BURNED EARTH
In most Soroi where illegal excavations have been conducted (allowing us to examine their stratigraphy) burned layers can be observed.

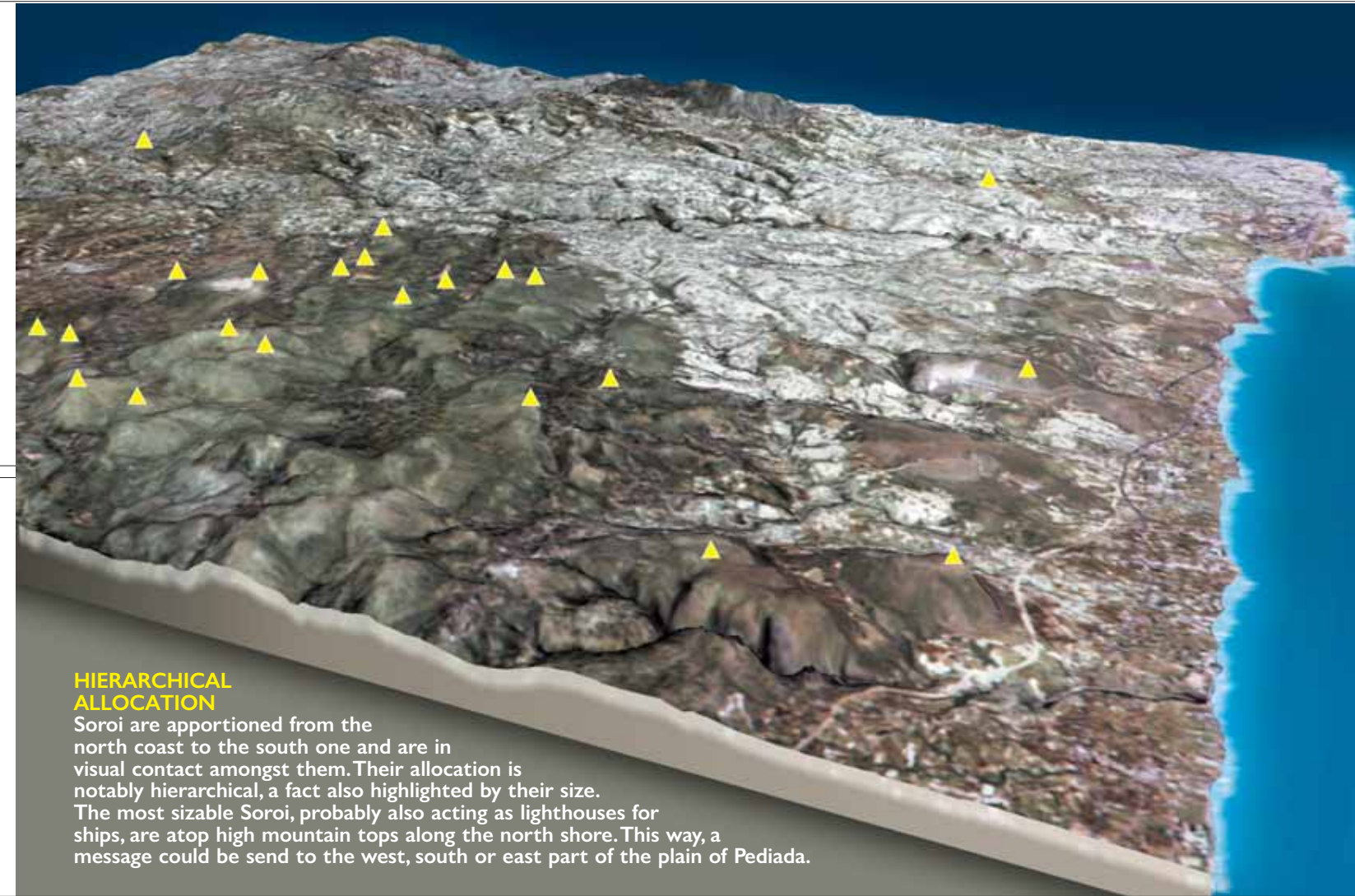
THE TOPONYM
One of the most serious indications that led N. Panagiotakis to the great discovery was the usage, up until today, of the word "Soros" (literally "Pile") in a great number of positions with common characteristics.



TRACES OF VESSELS
Fragments of Minoan vessels of everyday use are found in Soroi, mainly of the period 1900-1700 BC.



TRACES OF TOOLS
Many pieces of tools made out of stone or obsidian have been found in Soroi. "Communication bases" were always manned...



HIERARCHICAL ALLOCATION
Soroi are apportioned from the north coast to the south one and are in visual contact amongst them. Their allocation is notably hierarchical, a fact also highlighted by their size. The most sizable Soroi, probably also acting as lighthouses for ships, are atop high mountain tops along the north shore. This way, a message could be sent to the west, south or east part of the plain of Pediada.

In Classical Greece there were watch and **signal towers called fryktories (from fryktos = torch) forwarding messages** with torches, using a basic code, see J.R. McCredie, 1966, Fortified Military Camps in Attica (Hesperia Supplement II). Princeton. American School of Classical Studies at Athens: 89, 117-120. It is very important, however; that Aeschylus (525-456 BC), when he refers to the fall of Troy that happened approximately in 1230 BC, he describes not only the use of torches, which were used in his time, but also of fires.

As our tragic poet describes, the message that Troy was taken reached Mycenae in one single night, thanks to fire! A chain of watch towers on the tops of hills and mountain ranges with visual contact transmitted the message.

A similar system existed in Classical Greece and even in the most recent past.

The newly identified Soroi recall the watch towers referred to by Aeschylus. Of course the soroi in Crete are earlier than those of Aeschylus, since they have been mainly associated with pottery dated to the First Minoan palace period (1900 – 1700 B.C.). They were constructed on the top of hills and ridges in such a way as to make sure that the flames could be visible from neighbouring soroi; the fire once lit was kept isolated on the top of the soros specifically created for this purpose - well above the surrounding vegetation so that the fire could not spread.

The soil used to construct and cover the soros is red, a type usually occurring naturally with the bed rock on the hilltops and ridges where the soroi are found. It contains about 60% of clayey materials: thus when mixed with water it provides a perfectly suitable top, used as the 'floor', for the pyres. The fires themselves baked the clay hard and with time it has become fragmented – the fragments can now be seen scattered on the top and sides of the soroi.

Soroi are distributed from the north coast (where the most important ones are) to the south: all have visual contact among themselves. In fact there is a hierarchical order in their distribution. The ones along the north coast are bigger. Because of their position they may have had a dual function: one, to transmit messages to the smaller soroi in the hinterland (which could in turn pass these messages onto others further inland) and two, they could send messages to the islands beyond the north coast and also assist navigation by acting as beacons for boats approaching from the north. It is also worth pointing out that on or by many soroi, modern communication system stations have been installed; in fact on one of the largest soros at Ederis, by the north coast, can still be seen the large satellite dishes of the

When someone died in the island of Gavdos (off the Sfakia area in south Crete) and there was no priest to perform the funeral ceremony, they would communicate with the priest of Sfakia about the funeral, using fire. My warm thanks to the classical scholar Mr. Zacharia Smirnaki for this information and for his overall help, especially with the toponyms of the Pediada.



The Soros in «Anemosikia» position, in Moshos. It is the Soros closer to the palace of Malia. The view from there is amazing, just as the pottery found on site.



The Soros in «Flehtro» position.



The Soros of the "Viglaki" position. This Soros is actually part of the village Kalo Horio. It is in visual contact with the Soroi of "Sabathianou" (1), "Damianou" (2), "Amigdaliou" (3) and "Aulis" (4).



The Soros in "Anemosikia" position, in Moshos. It is the Soros closer to the palace of Malia. The view from there is amazing, just as the pottery found on site.



Below, the Soros in position "tou tsouli to mnima" ("the tomb of tsouli"). A Soros of great strategic importance, since it controlled the passage from Pediada to the plateau of Lasithi.



American base at Heraklion.

Soroi are also found by many passes and routes; some actually lie on either side of a route and on occasion so close to one another that messages could be sent by voice or mimetic gestures during the day. This suggests that these soroi were used on an every day basis as 'watch towers' perhaps to safeguard the transportation of goods during the day and to guard the settlements nearby during the night.

Messages could thus be transmitted by voice, gestures and fires, depending on the time a message had to be sent and on its importance; in bad weather when messages could not be sent by fire, the distance from one soroi to another could be covered by runners.

Minoan settlements are to be found close below a soroi or at least nearby so that all settlements were connected or had visual contact with at least one soroi. The fact that soroi were part of everyday life for the Minoans can be deduced by the existence on and around soroi both of pottery of everyday use such as cooking pots, and also of stone and obsidian tools.

It is an important fact that an unprecedented number of First Palace period sites were identified through this survey and that most of them were closely connected with soroi. Could the increase of sites during the First Palace period be suggestive of new-comers? If so, could they have brought the communication system with them? These are questions that we can put forward but cannot answer at present.

One major question also remains concerning the Minoans of central Crete and their closely knit communication system: what was the relationship among the settlements that were part of this system? Were they enemies, fearing one another? Or were they friends, all perhaps of the same stock, guarding their settlements and property against probable enemies coming from the sea? This second idea sounds more plausible since the largest soroi were located along the north coast; the Minoans of the Pediada moreover shared pottery produced on the Pediada or at the palaces of Knossos and Malia; they worshipped their gods on at least six peak sanctuaries held communally (also identified through the survey), where too they lit fires; in fact some of the peak sanctuaries may have been

part of the same communication system.

The communication system seems to decline during the New Palace period (1700-1450 B.C.). Perhaps a good road network (evident in the Pediada) and a reliable naval power along the coasts may have made this dense and closely knit communication system of the First Palace period not necessary. The large, central peak sanctuaries that carried on, especially Juktas and Kofinas (being visible from all the Pediada settlements) could have functioned as soroi when necessary.

The decline of the soroi during the New Palace period and a further increase of the settlements that are now found even along the north coast are suggestive of a vital change. More effective security was offered to the people of the Pediada during the period of the New palaces. The original small settlements had grown into larger centres; new smaller ones spread everywhere, especially along the roads leading to the palaces. The large mansions identified in association with some settlements may have been the seats of Palace officials now responsible for the transportation of the Pediada goods to the Palaces and their harbours. In return the Pediada enjoyed luxury products: some made at the palace ateliers, some imported from abroad and passed on through the palaces.

Although the communication system was first located by us in the Pediada region, it is now clear that it spread all over Crete. But is it possible that it was a Cretan phenomenon only? I am positive that many soroi are still waiting in the islands and the mainland Greece to be identified. By identifying any such, we may hopefully understand the relationships the Minoans had outside their island, especially during the First Palace period.



The Soros in "Anemosikia" position, in Moshos. It is the Soros closer to the palace of Malia. The view from there is amazing, just as the pottery found on site.

