HERAKLES PROJECT: Classical Boiotia through the *GIS*

Dr. José Pascual

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1. *GIS*

Since 1991 the Universidad Autónoma de Madrid, with financial support from the Spanish Ministry of Education and Culture and the private company Ontex Peninsular S.A., has been carrying out a research project, the *Herakles Project*. Although the project includes other areas of Greece such as the Isthmus of Corinth, Attica, Phokis and East Lokris, its main objective is the application of Geographical Information Systems (*GIS*) to the study of ancient Boiotia. Here we give a brief report of some of the results of the work to date.

The project is based on the maps produced by the Greek State on a scale of 1: 200.000 and 1:50.000. To use Geographical Information Systems, this series of maps first has to be converted into a digital format, that is, put on the computer. In the second phase of the *Herakles Project*, we then transferred all the available information to the microcomputer: ancient evidence, archaeological data, intensive field survey, historical topography, aerial photographs and our personal observations, field notebooks and photographs. Obviously the *GIS* software facilitates entering and editing data, as well its organization and the eventual sorting and plotting. We encountered many difficulties, especially in defining ancient boundaries, which we have to recognize are only approximate, but once the digital conversion had been completed we had:

1. A new, high precision computer-generated map.

2. A map where we could determine any point with the same degree of accuracy.

3. A map that could be reproduced in an infinite number of times, every time the same, to replace traditional, less accurate cartography.

4. We could combine and superimpose unlimited sources of evidence and numbers of "layers" on a single map, and will be able to add any other information that might become available in the future.

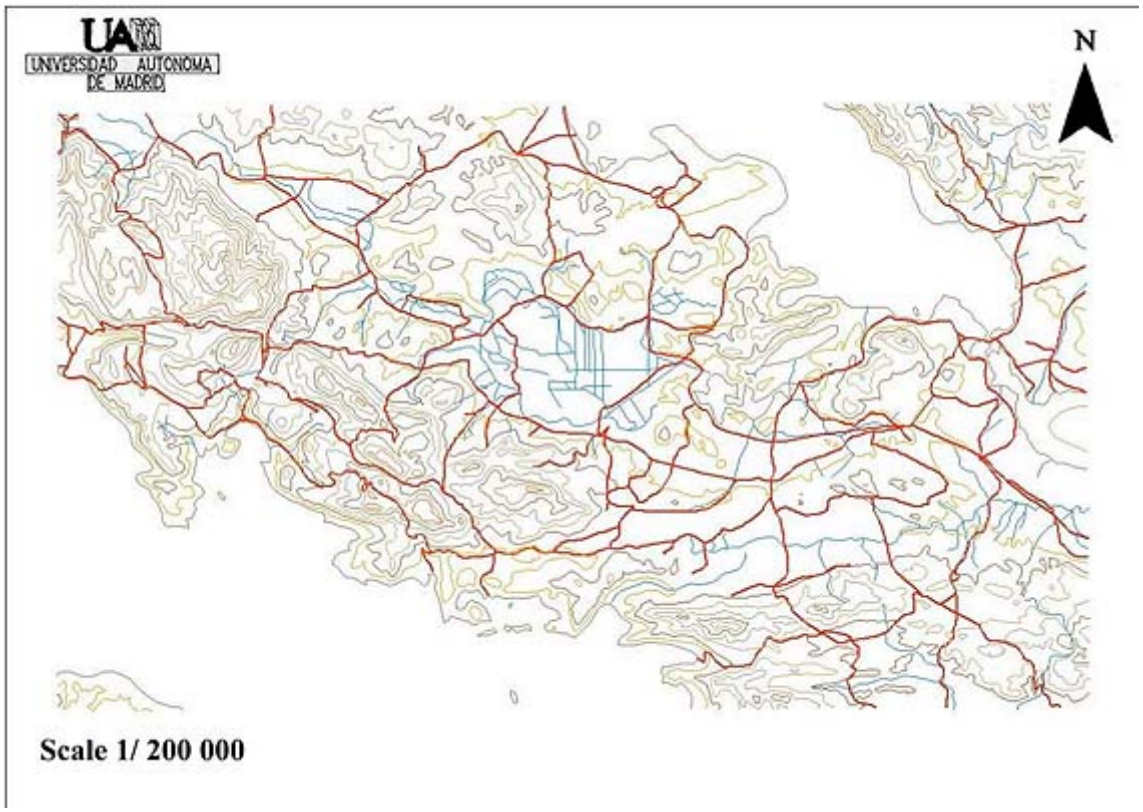

Figure. 1. Boiotia and Central Greece (hypsometry, hydrology and modern routes)

5. We can store hundreds of maps and data on a single computer and plot them out in any size and on any scale, defining smaller zones, or adding others, enlarging, etc., virtually at a moment's notice. The layers can be assigned different colours or line weights, and associations that would never have been noticed on the standard maps in the past can be readily distinguished.

6. We could both display maps in two or three dimensions and introduce or delete information for a particular purpose at any given time, producing maps to meet our needs. For example, we can

introduce elements no longer present in the modern landscape such as lakes, allowing better reconstruction of the ancient territory.

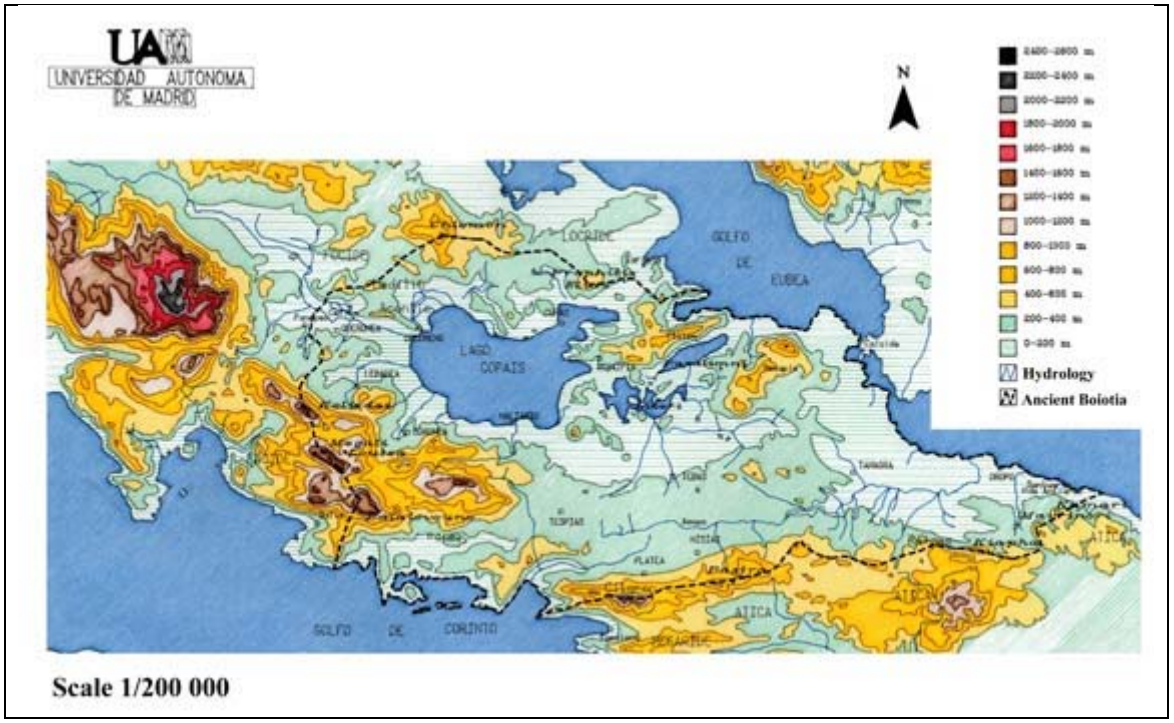

Figure 2. Boiotia and Central Greece (Ancient Boiotia and Lake Kopaïs restored)

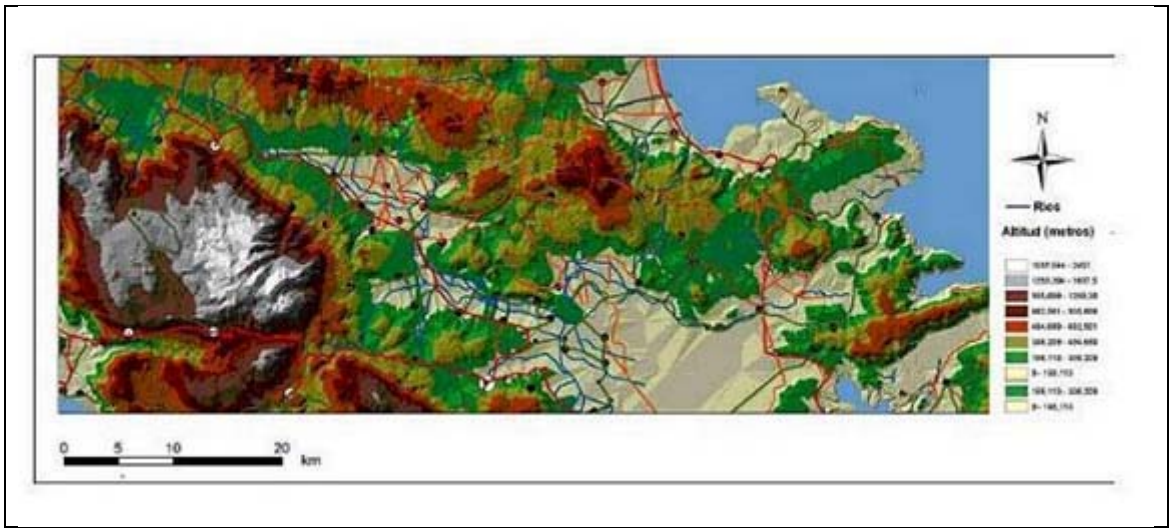

Figure 3. West of Boiotia in 3D

7. One of the most obvious applications was saving time. We have substantially reduced the time it takes to make maps. We can now measure areas, perimeters, distances, water courses, contour lines,

etc. and do it with quantities of data, speed and reliability impossible to obtain using traditional cartography.

8. We can calculate viewsheds, decisive not only for providing an insight into ancient battles but particularly for understanding the defensive system of a *polis*.

To deal with the frustrating lack of information facing the ancient historian, *GIS* have three features we could describe as extraordinary: the ability to handle a vast amount of data with a high degree of accuracy in a very short period of time. So we have a base map that becomes another and important source for historical research.

This valuable amount of information can be used to study the three primary objectives of our research project:

1. A more precise analysis of the Geography of Boiotia and its historic constants. Of course, it is practically impossible to describe the ancient geography of an area, but the *GIS* allows us to get closer to it.

2. The occupation of the territory and distribution of the population, initially only in the classical period

3. The size of the Boiotian *poleis*, their territorial structure and their relationship with the Federal State

2. The Boiotian environment

Boiotia is a roughly ellipsoidal or diamond shape. Its west-east axis is 100 Km long and is twice that of that of the approximately 40 Km. between the Northern and Southern boundaries of Boiotia.

Boiotian borders are generally clearly defined by the sea and by a series of mountain ridges that separate Boiotia from the neighbouring states. Ancient Boiotia occupied 2,816 Km^2 with a perimeter of 326 Km, an area of 2,818 Km^2 and a perimeter of 338 km if we include the small islands of the *Domvraina* Bay in the south. However, this was not the total area of the Federal State or its useable land during specific periods of history or times of the year. So we would have to deduct from this area, depending on the period, Oropos (some 158 Km^2) and, depending on the season, the area occupied by the three lakes – Kopais, *Likeri* and *Paralimni* – that covered part of the West of Boiotia between November and March. This leaves about 2,400 Km^2 which, nevertheless, made Boiotia one of the largest Greek States, similar to Attica (ca. 2,450 Km^2) or Elis (2,660 Km^2).

The presence of Lake Kopais, covering 234 Km^2 at that time, the largest lake of Greece, and its seasonal changes was one of the major features of the Boiotian Geography in Antiquity. Lake Kopais was a good example of a fluctuating karstic lake, almost drying up in summer due to surface evaporation. We can ignore other changes that occurred over the centuries, such as the degradation of vegetation, the variation of the river courses or changes to the coastlines, but without introducing the possible size of Lake Kopais or describing its environment it is impossible to get an accurate picture of living conditions in ancient Boiotia.

Figure 5. Lake Kopaïs, now drained, from Orchomenos

Together with Lake Kopais, the two parallel large mountain ridges that cross Boiotia from northwest to southeast represent the other two major features of the relief. The so-called Southern Barrier Mountains, which roughly corresponds with the Helikon, include 192 km^2 over 600 meters high. The Northern Barrier Mountains are more discontinuous and lower; only 45 km^2 of these mountains are over 600 meters.

Figure 6. The Sourthern Barrier (Helikon) from Haliartos

Figure 7. The Plain of Chaironeia with the Northern Barrier behind

A simple analysis using *GIS* provides accurate evidence that Boiotia was far from being a mountainous region. None of it is over 1,600 m. high and the area within Boiotia that we could consider mountainous, that is, over 600 m., amounts to 273 Km^2, which is only 9.7% of Boiotia's entire area. 293.1 Km^2, 10.40%, is between 600 and 400 meters and 2252.7 Km^2, nearly an 80% of total, is between 0 and 400 meters. These figures are exactly the opposite of the Greek average, where an 80% of the territory is considered mountainous or semi-mountainous.

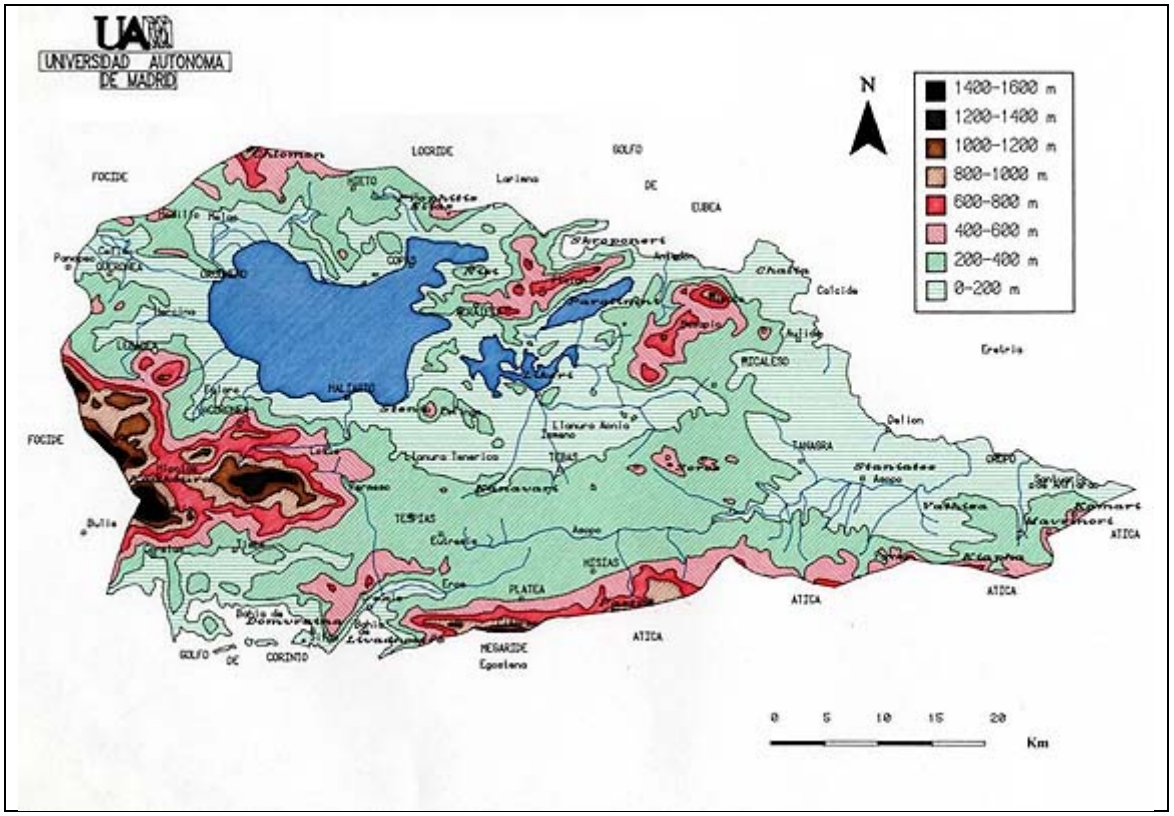

Figure 8. Hypsometry (Map)

ALTITUDE	EXTENSION (sq. Km)	PERCENTAGE (%)
1401-1600	6.226	0.22
1201-1400	15.599	0.55
1001-1200	41.256	1.46
801-1000	81.470	2.89
601-800	130.143	4.62
401-600	293.100	10.40
201-400	980.736	34.80
0-200	1,190.136	42.23

Figure 9. Hypsometry (Table)

Lake Kopais and the two mountain ridges divided Boiotian relief into four major zones: the mountainous areas, the coastal plains of the Corinthian Gulf, the Euboian Channel and the two great basins of the Kopais and Thebes.

The mountains, from the point of view of their altitude, the area they cover and population were of little importance in Boiotian life. Settlements of any size, except perhaps farms, were not found in the mountains. The coast plains of Boiotia occupied some 452 Km^2, 16% of Boiotia's total area. The shores of the Corinthian Gulf cover an area of 235 km^2, similar to the northern coastal plains, around 217 km^2, although those in the north are richer and those in the south drier. They are nearly all poorly connected with the hinterland. The small size of the coastal plains also indicates their scarce political and economic importance. They had a small amount of cultivable land capable of supporting few people. This is demonstrated by the fact that none of the capitals of the eleven Boiotian *poleis* at the beginning of the Fourth Century B.C. were on the coastal plains. Thus the heart of Boiotia was inland, and consisted of the Kopais and Thebes basins. The Thebes basin would have occupied 1,059 km^2, 38% of total Boiotia, while Kopais accounted for about 1,044 km^2, or 37%. As it was once said, Boiotia is essentially an inland country ringed with mountains.

But this similarity was only apparent. The lakes, Kopais, *Likeri* and *Paralimni,* took up much of the surface area of the basin, reducing its 1,044 km^2 to 780. The three lakes shaped the typical landscape of western Boiotia, which in the winter was an impenetrable amphibian world of swamps, marshes and lagoons, bristling with rushes and reed beds, the realm of islands and numerous springs and caverns. It was a domain of malaria, asthma and rheumatism. Here, in the Boiotian lakes, during the winter season, the farmer became a fisherman, hunter and gather. The richest and most fertile area of Boiotia was undoubtedly the so-called Theban basin, its extensive plains were effectively the granary of Boiotia.

In conclusion, the environmental conditions and also its own historical evolution made Boiotia a peculiar region. Unlike most of Greece, the mountains were not significant or important, although they did make communications difficult between the coast and the hinterland and contributed to Boiotian isolation from the sea. The small coastal plains lacked good ports and were unable to support a large population. So the ancient Boiotians lived mainly in the East and South, around what we could call, in Greek terms, large plains, whereas in the watery world of the north and west, in the area of the lakes, Kopais, *Likeri* y *Paralimni*, the main element that marked its existence was water, not because of its shortage, but, great paradox within the paradoxes in Greece, particularly because of its abundance. Flatter, wetter and more fertile that usual in Greece, Boiotia was an overwhelmingly continental region. Moreover, in essence, it was a world divided into two, between the lakes, the West of Boiotia, around Orchomenos, and the great plains of the East and South.

3. Boiotian Settlement

Using *GIS* we can try to reveal some of the characteristics of Boiotian settlement. Thus, we can establish a relationship between altitude and settlements. First, the vast majority of the ancient sites are located below 400 m. Only *Evangelistria* is located between 400 and 600 m and only Askra, Hippotai and *Milia*, the last probably a farm, are over 600 m. The reason for this has to be found in the especially favourable conditions of the Musses Valley and the high plateau of *Koukoura,* which provided sufficient resources for communities to survive here. These few exceptions do not invalidate the general rule: Boiotian settlement was normally below 400 m, so perhaps we should consider the areas over 400-600 m as semi-mountainous areas without settlements in Antiquity.

The settlements are distributed practically 50/50 between 0-200 m (33 sites) and 200-400 m (27 sites) but they mainly seem to be concentrated either side of the 200 m contour line. Thus a very clear conclusion can be drawn: the ideal altitude for a Boiotian settlement was around the 200 m. contour line.

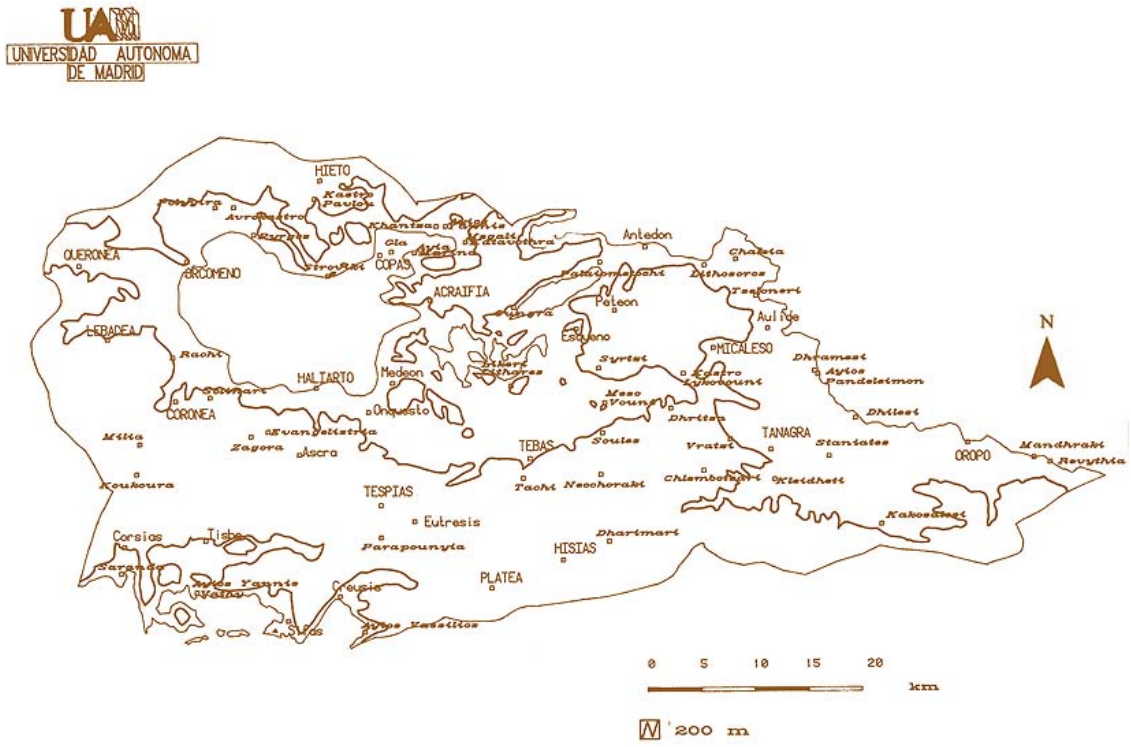

Figure 10. Ancient settlements and the contour line of 200 meters.

The distribution of the settlements shown by *GIS* can also give us a fairly accurate idea of their concentration. In fact, they seem to be around the edges of valleys and plains, in the foothills bordering the plains themselves or on the promontories rising in the middle of the plains. All sites need accessible water sources but the main feature of Boiotian settlement was the desire to leave as much land as possible free for cultivation and maintain visual control over their own territory.

Figure 11. Ancient Koroneia from the East.

4. The size of Boiotian *poleis*

According to the *Hellenika Oxyrhynchia* (19.373-405, 1-4), in 395 B.C. the Boiotian Confederacy included eleven federal *poleis*: Tanagra, Thebes, Thespiai, Hysiai, Koroneia, Haliartos, Lebadeia, Chaironeia, Akraiphiai, Kopai and Orchomenos.

Using *GIS,* based on several sources of information we can trace the boundaries of the Boiotian *poleis* (it has to be recognized that the line is usually a hypothetical one), measure the resultant areas and classify the Boiotian *poleis* by size into three different categories.

a) Small *poleis*. Akraiphiai, Chaironeia and Hysiai, which each had an area of around 50-60 km^2 (to be precise, ranging from 47 to 57 km^2) and a perimeter of between 32 and 35 Km. They each covered approximately the 2% of the Federal territory. Due to their small territory these *poleis* had a precarious existence. In terms of their economic self-sufficiency, their usable territory was reduced by their neighbours, and although they might work their territory intensively, none of them needed to create even a secondary settlement to make better use of the tiny area available for cultivation. In the political field, they were threatened by the adjacent states and lost

some of their territory, as in the case of Akraiphiai, which saw the shrine of Apollos Ptoios near to the city occupied by Thebes, or lost their political independence for periods of time, as happened to Hysiai and Chaironeia.

Figure 12. Chaironeia. Fortifications from the South.

b) Four *poleis* had an area of about 100 km^2 and formed what we could call medium-sized Boiotian states: Haliartos (88 Km^2), Koroneia (117), Kopai (116) and Lebadeia (127). Except for Kopai, whose territory was very irregular because the Northeast Bay of Lake Kopais cut deeply into its territory, the perimeter of these *poleis* was between 44 and 49 km. Each of them accounted for from 4 to 5% of the total area of the Boiotian Confederacy.

Figure 13. Kopai from the South-East.

c) The other *poleis* can be considered relatively large: Orchomenos, with 196.265 Km^2, was twice the average area; Tanagra, with 245.65 Km^2, over twice the average, and Thespiai with 447.358 Km^2 covered more than 4.5 times the average territory for a Boiotian *polis*.

Figure 14. Orchomenos. Hellenistic Fortifications.

d) Finally, Thebes, with 907.612 km^2, nine times the average, was a great *polis*, unusually large. It covered a third of the total area of Boiotian Confederacy and is the *hegemonic* polis of the Confederacy.

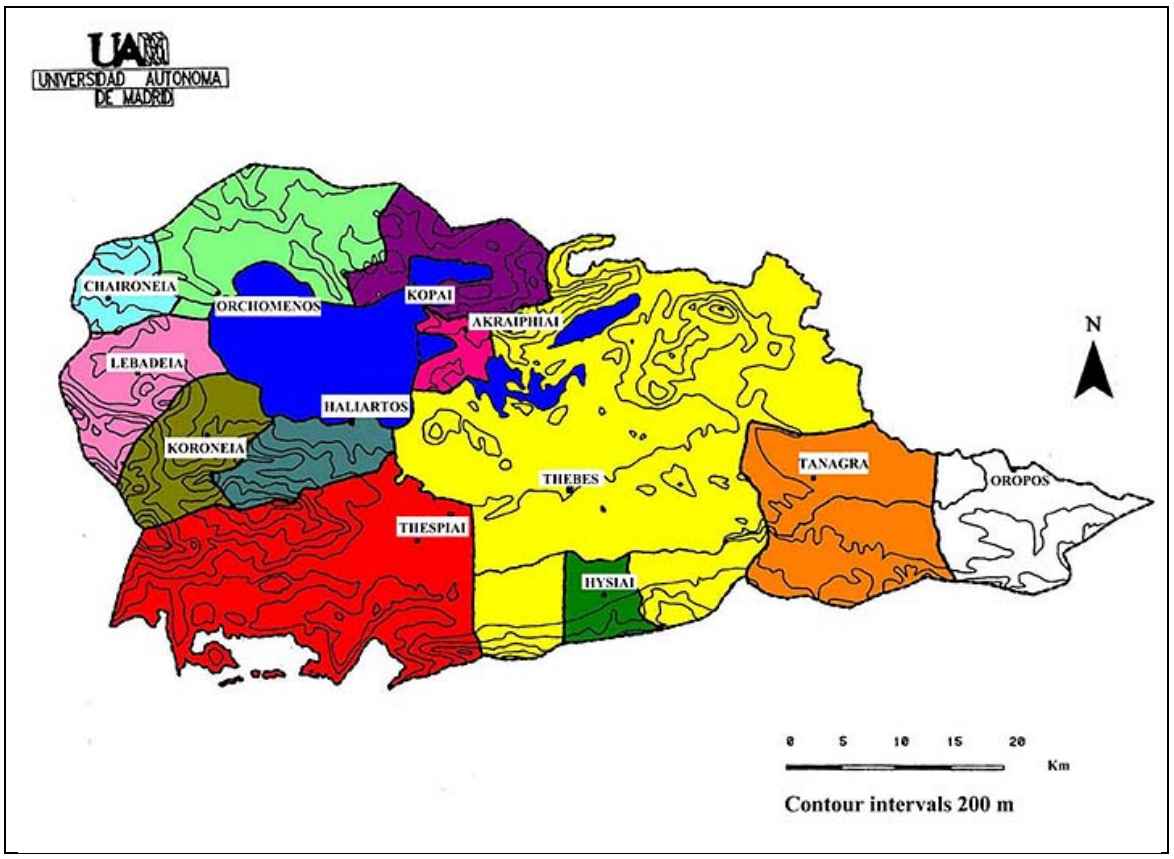

Figure 15. Ancient Boiotia in 395 B.C.

FEDERAL *POLEIS*	AREA (in sq. Km)	PERIMETER (in Km)	PERCENTAGE (100% = Confederation)
SMALLS			
ACRAIPHIAI	47.027	34.594	1.959
HYSIAI	50.968	33.805	2.124
CHAIRONEIA	57.351	32.229	2.390
MEDIUM SIZE			
HALIARTOS	88.066	43.767	3.67
KOPAI	116.141	76.719	4.84
LEBADEIA	125.866	49.009	5.24
KORONEIA	116.777	47.596	4.89
LARGES			
ORCHOMENOS	196.265	73.907	8.18
TANAGRA	245.650	67.409	10.24
THESPIAI	447.358	135.470	18.64
HEGEMONIC			
THEBES	907.612	191.439	37.82

Figure 16. Boiotian federal *poleis*

Thus, in Boiotia, the average area of a *polis* was around 100 km^2. This was enough to ensure the survival of a *polis* with a sufficient level of economic self-sufficiency and continued political independence. With a smaller area, the *poleis* of 50-60 km^2 had a precarious economic and political existence. It was necessary for a city to have al least 200 km^2 to be considered, in Boiotian terms, a leading power and 1,000 km^2, like Thebes or Corinth (with 948 km^2), to be considered a great Greek State.

5. The relationship between the size of Boiotian *poleis* and federal organization.

At the beginning of Fourth Century B.C., the Boiotian Confederacy was basically organised into districts (*meros*), of which there were eleven, which served as an electoral and fiscal unit and as the basis for military recruitment. Each unit or district had a duty to provide one Boiotarch, the most important federal official, sixty bouleutai or federal councillors, one thousand hoplites, a hundred horsemen and a certain number of judges. Each unit made the same financial contribution. These eleven districts were asymmetrically distributed amongst the eleven *poleis* that formed the Federal State: four districts corresponded to Thebes, two to Thespiai, one to Tanagra; two to Orchomenos and Hysiai, probably distributed 1 2/3 for Orchomenos and 1/3 for Hysiai; Lebadeia, Koroneia and Haliartos formed a single district and Chaironeia, Kopai and Akraiphiai also shared control of one district.

Although the division of Boiotia into districts and the attribution of the districts to the various *poleis* was based fundamentally on a demographic assumption - the number of adult males that could be hoplites and horsemen - and not on the size of its territory, we can begin with a working hypothesis: in agrarian societies the relationship between population, economic resources and territory has to be very close. This would permit us to investigate the possible territorial size of a Boiotian district and the relationship that might exist between that size and the various Boiotian *poleis*.

If we calculate the available land of the Boiotian Confederation to be 2,400 Km^2, Theban territory would account for 908 km^2, 37.8% of total. With its four districts Thebes provided the 36.36% of federal contributions. If we divide its territory into four districts, each district will have an average size of 227 km^2. Thespiai, with an area of 447.358 Km^2, had 18.6% of the land. With two districts it ought to contribute 18.19% of the federal obligations. The average size of its two districts was of 224 Km^2. 9.1% of the federal contributions were demanded from Tanagra and, with its 246 Km^2, it occupied 10.2% of the territory. The shared district of Akraiphiai, Chaironeia and Kopai had to provide the 9.09% of federal charges and its total territory came, by adding the three *poleis* together, to about 221 Km^2 and accounted for 9.2% of the total. In the same way, the Confederacy demanded 9.09% of the federal contributions from Lebadeia, Koroneia and Haliartos between them, and their territory, taken together, was some 331 Km^2, accounting for 13.8% of the federal territory. Orchomenos and Hysiai had a combined area of about 247 km^2, 10.3% of the federal territory, and their two districts had to contribute 18.18% of the federal charges.

FEDERAL *POLEIS* AND DISTRICTS	**AREA (in sq. Km)**	**PERCENTAGE (100% = Confederation)**	**FEDERAL CHARGES (%)**	**MEDIA (of District in Km)**
THEBES (4)	907.612	37.82	36.36	226.90
THESPIAI (2)	447.358	18.64	18.18	223.68
TANAGRA (2)	245.650	10.24	9.09	245.65
ACRAPHIAI CHAIRONEIA KOPAI (1)	220.519	9.19	9.09	220.52
LEBADEIA HALIARTOS KORONEIA (1)	330.709	13.78	9.09	390.71
ORCHOMENOS HYSIAI (2)	247.233	10.30	18.18	123.62

Figure 17. The relationship between the Boiotian *poleis* and federal organization

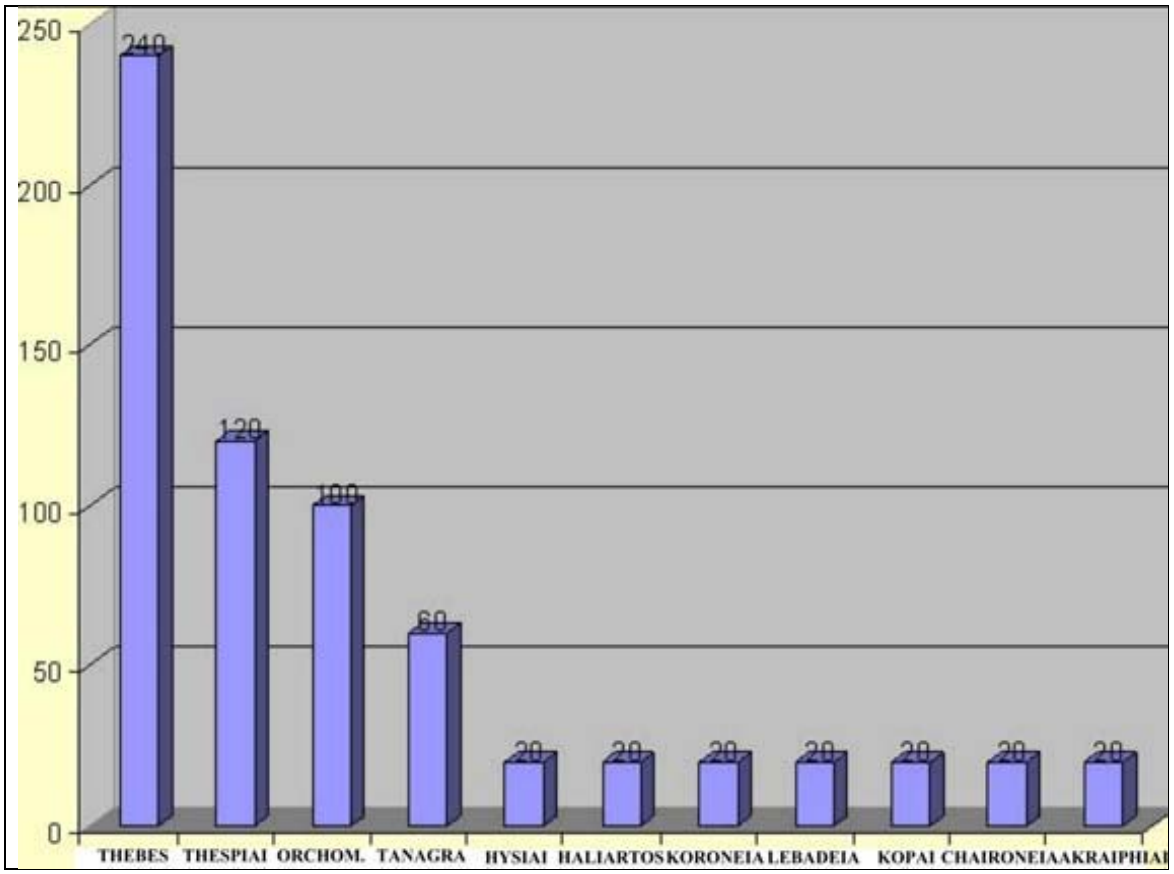

Figure 18. The federal Council of the Boiotian *Koinon* (*poleis* and number of *bouleutai*)

Hence there is a close correlation between the size of the *poleis*' territories and their contribution to the Federal State. This correlation only breaks down in the case of the shared district of Haliartos, Lebadeia and Koroneia and the two individual districts of Orchomenos and Hysiai. The main reason for this was the Theban policy of trying to weaken its main rival, Orchomenos. According to Thucydides, Chaironeia still belonged to Orchomenos in 424, and between that date and 395, was divided to form the districts of Akraiphiai and Kopai. After this, Orchomenos' charges were increased considerably so its territory (196.265 km^2), already subject to the normal obligations of a single district, also had to contribute 2/3 of another district, that of the small *polis* of Hysiai (which occupied some 50 Km^2), which only contributed a 1/3. It is understandable then that, apart from other considerations (ancient animosity, wars, etc.), the Orchomenians were dissatisfied and defected from the Confederacy in 395. Before 424, the five *poleis* around Lake Kopais – Lebadeia, Koroneia, Haliartos, Kopai and Akraiphiai – probably formed two shared districts; these had to provide an 18.18% of the federal charges and their total area, some 494 Km^2, accounted for 20% of the Confederacy's total territory.

There is also a close relationship between population and territory size. In Boiotia, an average area of 225-250 Km^2 was sufficient to support around two thousand five hundred male adult citizens: one thousand hoplites, one hundred horsemen and a similar number of social classes under the hoplite census, to which we have to add males between 18 and 20 years and those over 60. However, that size and number of citizens was far beyond the possibilities of the small and medium-sized Boiotian cities, which is why the Confederacy only demanded a third of a district. This leads us to suggest that Boiotian small and medium-sized cities, with an area of between 50 and 100 Km^2, had a citizen body of a thousand, or one thousand five hundred at the most, adult male citizens.

6. Hierarchization and distribution of secondary settlements in the *chora.*

We can now advance the hypothesis that the distribution of settlements within the territory of each *polis* is not arbitrary but forms a group ordered by different elements within which structured and hierarchical relations are established. The control and hierarchization of a territory are precisely two of the basic elements that define the *polis* as a state.

First, we can try to establish a relationship between the total area, the perimeter of a territory and the number of secondary settlements that exist in the *chora* of each *polis*. None of the small Boiotian *poleis*, Chaironeia, Akraiphiai and Hysiai, has a secondary settlement in its *chora*, what proves that the whole territory, to varying degrees and intensities, tended to be exploited directly from the centre or *asty*. Only in the case of medium-sized *poleis*, with an area of 90-100 Km^2, do we can find secondary settlements.

Ideally, the best territory would be one that is circular, where it would be possible to reach all the cultivable land from one single point. In Boiotia, the ideal relationship would be where the perimeter is only between 30/40 % of the area (34.69 Km from the total area of 96.6 Km^2). If a territory had a long perimeter and its territory was an irregular shape, in addition to the problems of defence involved, the *polis* was driven to multiply the number of settlements to reach all the cultivable land or to leave vast tracts uncultivated. Kopai is a case in point. *Poleis* of a similar size, such as Koroneia with Alalkomenai/*Solinari*, *Rachi* and *Koukoura* (probably ancient Hippotai) or Haliartos with *Zagora-Evangelistria*, *Seïdi* and Onchestos (village),

have three settlements, but Kopai has five (*Stroviki*, *Pyrgos-Ayia Marina*, *Megali Katavothra*, *Ayios Yannis* and probably *Gla*) and this is due to the fact that its perimeter is long and its territory a very irregular shape because the Northeast Bay of Lake Kopais penetrated deeply into it. Lebadeia has no secondary settlements in its territory for two main reasons: the most distant parts from the *asty* are so steep that a settlement would not be profitable here, and communication with the *asty* is easy enough to reach these resources.

Nevertheless, since the relationship between population and territory is not as flexible in an agricultural society as in modern industrial economies, there must be approximately the same population whether concentrated or dispersed. Even if all the cultivable land were worked, the population would increase only moderately and cannot exceed certain limits. Therefore, if we distribute approximately the same population amongst a greater number of secondary settlements, both these and also the *asty* itself will have to be smaller than a *polis* that tends to have a concentrated population. Thus, for example, the size of the secondary settlements such as the one belonging to the *asty* is smaller in Kopai than in other *poleis* of a similar size.

As has already been demonstrated by the *Cambridge/Bradford Expedition*, the *chora* of a Boiotian *polis* is organised in a series of hierarchized settlements on the basis of their distance, size and importance and can be systematized in the following way:

1. The *asty* of each *polis*, actually a vast complex formed by the acro*polis*, the *asty* in the strict sense, i.e., the space between the acro*polis* and the walled enclosure, and the extraurban complexes: suburbs, *necropolis*, adjacent farms and shrines.

2. We will pay particular attention to what we could call regional centres (actually in many times *syntelic* poleis, dominated by other *poleis*). At least in Boiotia there are a series of intermediate settlements that, because of their size and importance, cannot be considered simple *choria* or *komai* but evidently do form an *asty* of a *polis* either. We can list nearly a dozen of these intermediate centres: Hippotai, Askra, Hyettos, Thisbe, Korsiai, Siphai, Mykalessos, Anthedon and Aulis.

Figure 19. Siphai (*Alikí*) on the South Coast, a *syntelic* polis of Thespiai

These centres have a number of characteristics: they are a considerable distance from the *asty*, they are large: at least 5 ha., all or most of them were walled, they are the centre of that we might call the region or district, and most of them were at some time politically independent.

a) Sites between 1 and 2.5 ha that represent the normal area for secondary settlements such as villages or hamlets (*komai* or *choria*) and which were not normally walled.

b) Farming-type settlements that usually occupy half ha.

c) Rural shrines, some of which are as much as 4 ha.

d) And finally, rural *necropoleis* that cover a small area (about 2,000 m^2)

7. Hierarchization and uses of territory.

The economic exploitation of the *chora* had a primary goal: to make the *polis* self-sufficient by obtaining from its own territory the resources essential for its survival as a political, social and

economically viable state. So economic uses of the territory not only had to be hierarchized and diversified, but also complementary.

There is an economic heartland in each *polis*, a valley or plain located near a settlement that occupies a central place in relation to the territory of the *polis* as a whole. Depending on their distance from this economic heartland, the mountain slopes and the low hills on the border of the cultivated plain provided grazing for livestock, wool, leather, milk products, bones and also honey, and in a limited way, dry crops (for example olive groves). In most cases, the mountains are furthest away from the *chora*, and do not act simply as a boundary, but played an indispensable role because they supplied the *polis*, as part of a system that aimed at self-sufficiency, with a number of important resources, such as stone, firewood, wood for buildings, hunting, and sometimes, metals. Paradoxically, without the mountains it would have been difficult for a largely self-sufficient independent community to exist.

Finally we can say that on average, in Boiotia, the area between 0-400 m above sea level accounts for 70% of the territory of a *polis*, the area of low hills (400-600 m) accounts for 15% and the mountains in the strict sense (600-1600m) for another 15%.

POLIS	**0-400 (%)**	**401-600 (%)**	**601-1600 (%)**
CHAIRONEIA	94.77	4.76	----
HYSIAI	56.14	25.59	18.26
AKRAIPHIAI	99.77	0.22	----
KOPAI	85.60	13.18	1.22
KORONEIA	44.50	10.98	44.98
LEBADEIA	57.25	11.68	30.26
HALIARTOS	50.68	15.94	33.39
ORCHOMENOS	83.59	13.31	3.00
TANAGRA	92.39	6.83	0.79
THESPIAI	64.10	16.67	19.23
THEBES	85.67	9.21	5.09
MEDIA	**74.05**	**11.74**	**14.21**

Figure 20. Territories of the Boiotian *poleis* and altitude

In conclusion, profiting from all the information that can be gleaned from the surviving ancient literary and other historical sources, we can apply new methods and working instruments such as historical topography, intensive surveying and using Geographical Information Systems that offer an unique way of approaching the analysis of the territorial, demographic and economic structures of the *polis* and provide us with an unprecedented opportunity to explore the true diversity and wealth of Greek world. And in this way the Boiotian studies can provide a model for other areas of Greece such as the Isthmus, Attica, Phokis and East Lokris.