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## **Boeotian landscapes. A GIS-based study for the reconstruction and interpretation of the archaeological datasets of ancient Boeotia.**

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## Appendix II

### The geographical sub-regions of Boeotia

This appendix includes a brief general description of the geographical (sub-)regions individuated by Philippson in the chapter *‘Die Gebirge und Becken Boeotiens’* at the end of the section *‘Das ostliche Mittelgriechenland, außer Attika’* of his volume on *‘Das östliche Mittelgriechenland und die Insel Euboea’* (Philippson 1951), as illustrated in chapter II.1. He structures his account in six chapters, five of which are descriptions of geographical sub-regions of Boeotia, while the last (*‘Rückblick auf Boeotien’*) is a historical overview of the region. The geographical areas are the plain and foothills of Chaironeia, the Helicon district (West Helicon, Laphistion-Levadeia-Koroneia, East Helicon, South foothills of Helicon and the Korombili area), the Copais basin, the Mountains to the E of Copais, and Eastern Boeotia.

Descriptions mainly follow those given by Philippson (1951: 430-516), and are substantially comprised of a free translation of his text with some personal comments<sup>1</sup>.

#### a) the plain and foothills of Chaironeia<sup>2</sup>

The Kephisos river valley, coming from Phokis and flowing into the Copais basin, forms a series of basins or wider areas, the last of which is the plain where the modern village of Chaironeia lies on the site of the homonymous ancient polis. The plain has not, however, the form of a basin but rather of a depression which runs in an E-SE direction and opens into the Copais plain.

At its NW end, the NW-SE plain forms a wider area extending in a SW direction, towards the foot of Parnassos, where the modern villages of Davlia and Agios Vlasios are situated. The width of the plain is almost everywhere 3km. To the North the plain is bordered by the Parapotamus, the Karambousa gulf and the long wall of Dourdouvana/Akontion, a low javelin-shaped ridge (ca. 20km long) which runs along the plain until it enters the Copais basin by the village of Orchomenos. To the S the plain is bordered by a wide extended low mountain ridge which lies (in an E-W direction) below Mt. Helicon and constitutes its N foothills. The Southern mountain border of the Chaironeia plain is shorter (ends earlier to the W) than the Northern one (marked by the Akontion) and ends at the Kourpeiko promontory, next to the railway station of Levadeia, at the crossroads to Orchomenos. The Kourpeiko separates the plain of Chaironeia from the Levadeia valley, which already belongs to the Copais basin system and passes through the mountain surrounding Copais from that spot (see below).

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<sup>1</sup> *Passim* and especially in the section on Yliki and Paralimni lakes.

<sup>2</sup> Philippson 1951: 430ff.

### **b) the Helicon district<sup>3</sup>**

Helicon is the name that ancient Greeks gave to the West Boeotian mountain massif, and initially only to its Eastern section, namely Motsara, just above ancient Askra and the Valley of the Muses. It differs from other mountain chains of Attica and Boeotia, since it results from a system of parallel ridges with inner valleys. Helicon does not constitute a continuation of the Parnassos massif but, though formed by different lithologies, it can be considered a ridge jutting out from the S slopes of Parnassos. Helicon starts to the W with the line Triodros, Dystomon, Antikyra gulf, and continues 40km to the East to the Tertiary *Tafel*<sup>4</sup> of Thebes and the line Mazi-Neochori, which marks its E end.

The Helicon massif rises between the Copais basin and the S Boeotian coast to the gulf of Corinth. Between the mountain massif and the shoreline is a series of flat offshoots lower than the main massif to their East side, similar to those lying between Helicon and Parnassos, to the NW. The whole massif has an area of about 800 sq.km. Being long and wide (from 11 to 20km), it constitutes a natural barrier between the Copais and the S coast.

Within the massif, the line Koroneia-Steveniko pass constitutes a groove that cuts the Helicon massif into two parts (fig.1); the Eastern and the Western. This dividing line starts from ancient Koroneia, goes up to the Steveniko pass and, then, after the 730m high pass, turns towards Kakosi/Thisvi and Domvraina. The Helicon Western block is characterised by the presence of a series of ridges (18-20km wide) following a NW-SE direction, while the Eastern block (11-15km wide) generally follows an E-W direction.

Helicon, comprised of parallel ridges and limestone plateaus, certainly constitutes an obstacle to circulation and communication. Despite this, several physical mountain passes and inner routes can be recognised (see fig.2).

The long wide valleys and the limestone plateaus, as well as the numerous springs forming where limestone and schist meet, create more or less wide fertile areas in the mountains' interior.

The Helicon area can be divided into at least four sections, namely, according to Philippson: West Helicon, Laphistion-Livadeia-Koroneia, East Helicon, the South foothills of Helicon and the Korombili area.

#### **b1. West Helicon<sup>5</sup>**

The Western section of Helicon is marked by three mountain ridges that lie in sequence along a NW-SE direction.

The Northern ridge starts immediately to the S of the lower offshoot (*vorbergland*) behind Chaironeia (see above **a**). It is named after its highest peak (Dreviza/ Koliedes on the 1:200,000 *nomos* map – 1487m) and starts to the W of the line Triodo-Dystomo,

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<sup>3</sup> Philippson 1951: 434ff.

<sup>4</sup> *Tafel* is a South African word originally used to indicate a small plateau, a table mountain, in other words a rise with a flat top. It has been used in geology as a much more generic term referring to a flat(tish) geological formation. In Philippson it means plateau or tableland and can be very extensive.

<sup>5</sup> Philippson 1951: 435ff.

perpendicular to the Antikyras gulf. It comes up isolated, as a limestone block rising among schist formations that run to its W and continue into the Davlia/Chaironeia area (see above **a**). To the N, E and S of the ridge several routes run along valleys (see the 1:200,000 *nomos* map). The Easternmost of these routes, joining Levadeia with Kiriakion through the small upland plateau where the modern hamlet of Helicon is located, is marked by the col between the main part of the Northern ridge to the W and the smaller Kserovouni ridge to the E (see fig.2).

The Central ridge, named as Megali Loutsa on the 1:200,000 *nomos* map, rises SE of the Northern ridge and the valley where the Byzantine monastery of Osios Loukas is situated. Immediately above the monastery the ridge rises to its first level (879 to 995m), and then behind it a limestone hillside rises to reach the highest peaks (Megali Loutsa 1549m and Litharostrounka 1580m). Afterwards, a slope leads again back to another lower level (1380m) on the SE side, towards the small valley of Koukoura/Agia Anna in the middle of Helicon.

The Southern ridge lies to the S and SE of the central one. Its width varies between ca. 5km (at its W end) and ca. 7km (further E). It is formed by a strip of land to the N which dominates the valley of Kyriakion<sup>6</sup>, and another strip to the S that starts with the Tsiveri peak (1561m) and continues along a E-SE direction to a large pass<sup>7</sup> that marks the route between the Kyriakion area to the NW of the ridge and the villages on the S offshoot (*vorlanden*) towards the sea. To the East of this pass rises the Palaiovouna ridge (which marks the border of Boeotia, according to the definition I followed) with the highest peak of Helicon (1748m). From there to the N and NE the slope runs down precipitously until it reaches the Koukoura/Agia Anna plateau, while to the E the Roitsi peak rises between valleys and a pass at an elevation of 900m. To the SE the slope of Palaiovouna goes down to the village of Kakosi/Thisvi. The E end of the Southern ridge is exactly at the cross point of the lines (lying perpendicular to each other) of the groove Ag.Georgios-Koukoura/Agia Anna-Kakosi/Thisvi, which divides W from E Helicon, and that of the valley of Kakosi/Thisvi and Domvraina. To the S, the slope of the ridge is straight and quite abrupt, and almost immediately reaches the sea, while to the SW the slope forms a longer and wider offshoot (*vorlanden*), which at its end marks the Southern edge of the gulf of Zaltsa (see below).

## **b2. The Laphystion and the valleys of Levadeia and Koroneia<sup>8</sup>**

From Kserovouni ridge, the E part of the Northern ridge of Helicon mentioned above, an egg-shaped ridge projects towards the NE; this is Granitsa or ancient Laphystion, whose main peak is Prophitis Ilias (896m), which rises between the valleys of Levadeia and Koroneia and is connected with Kserovouni through a pass at a height of 560m. All its sides descend abruptly, except that to the East towards Copais, which is gentler. The road from the modern village of Ag.Georgios (in the *chora* of Koroneia) to Levadeia runs around the N edge of the ridge and passes the warm springs on a lower plateau of

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<sup>6</sup> The valley of Kyriakion is entirely outside the defined border for ancient Boeotia.

<sup>7</sup> Named Babilucci on 'La Carte de la Grèce' 1853.

<sup>8</sup> This section is entitled *Laphystion-Levadeia-Koroneia* in Philippon's book (1951: 444ff).

Granitsa/Laphystion, from where a traveller could see the whole fertile basin of Levadeia (1-2km wide, 5-6km long), which opens to the Copais at its Eastern end and is crossed by the Herkyna river.

The Granitsa/Laphystion ridge therefore marks the SE edge of the Levadeia *chora* towards the Copais, while the Northern edge, as mentioned above, is marked by the Kourpeiko. Levadeia, whose modern centre lies above the ancient polis, controls the road from Thebes up to Delphi and down to the Antikyra bay via the Tsoukalades pass, as well as the old inner route from Thebes to Chaironeia through the Kerata pass (fig.2) and the entrance to the route towards inner Helicon, through the pass behind the village of Sourpi.

To the East of the Laphystion lies another bay of the Copais basin, which runs 6/7km inside the Helicon massif and corresponds to the *chora* of ancient Koroneia. The bay penetrates the Laphystion and the Northern and Central ridge of Helicon (see above). The fertile basin is not a plain (the elevation range of the Koroneia valley is higher than that of Levadeia) but a *Tafel* made of soft young tertiary deposits. It is formed mainly by the valley of the Pontsa and its tributaries. Ancient Koroneia controlled the crossroads of the main route crossing the whole of Boeotia, following the Southern edge of the Copais basin, with the routes to inner Helicon. The Northern edge of the Koroneia valley is marked by the Granitsa/Laphystion, while the Southern one is marked by the rocky ridge of Libethrion/Tilphousion.

### **b3. East Helicon<sup>9</sup>**

The first main ridge of the Eastern section of Helicon is the Libethrion/Tilphousion, a mountain which on its W side reaches a height of 996m asl, and which marks the SW edge of Copais basin. The mountain was known as Tilphousion in ancient times, in relation especially with the Petra promontory, to its E end. The ridge can be considered a continuation of the Dreviza ridge, the Northern ridge of W Helicon (see above b1). The ridge runs on a E-W direction. The lithology of the W section towards the *chora* of Koroneia is limestone with rudist<sup>10</sup> (*rudistenkalk*) above schist, while on the E section, by Zagora/Evangelistria, schist formations emerge. The W section opens up on a small plateau at 879m, above the village of Koutoumula (modern Koroneia), where there are rich springs, then rises up to the Palaiothiva peak (873m) and descends down again as far as the Petra promontory jutting into the Copais basin. The E section descends from 600 to 450m into a wide schist slope that forms, SW of Haliartos, by the village of Mazi, a series of rocky peaks, the highest of which reaches the height of 700m.

The N edge of this mountain chain juts into the Copais with 3 promontories: the Western one is Petra, a limestone spur with a flattish top (288m); the central one is a schist promontory that encloses to the N the small bay with the village of Vrastamites/Ypsilantis; the Eastern one is the spur occupied by the acropolis of ancient Haliartos, which closes to the E the small basin with the village of Siachon/Petra.

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<sup>9</sup> Philippson 1951: 450ff.

<sup>10</sup> *Rudist* is a bivalve which is found in rocks from the end of Secondary and Tertiary period.

The second main ridge of East Helicon, higher and larger than the previous one, is the Zagora chain (Motsara on the 1:200,000 *nomos* map), which can be considered the continuation of Megali Loutsa, the Central ridge of West Helicon (see above). It is the Southernmost ridge of East Helicon, since the Paliovouna, the Southern ridge of W Helicon, does not continue into the Eastern part of the massif. The Zagora/Motsara ridge starts E of the Steveniko-Koukoura pass and the upland basin with the village of Koukoura/Agia Anna, as a limestone platform (at elevations of 1053 to 931m). Then the ridge is cut into two parts by a valley (at 700m) linking the village of Koukoura/Agia Anna with the Zagora valley. Afterwards, it continues to the E with a peak 709m high and then rises up to the main peak (1526m). From there, the ridge descends towards Palaiopanagia/Askri along an E-SE direction. The name Helicon was originally linked only to this South Easternmost ridge of the massif (Zagora/Motsara), just above the Valley of the Muses, which lies on its East side. In antiquity through the valley of the Muses, a road ran from Koroneia towards Thespieae and Athens, through the Zagora/Motsara ridge. The valley is marked by the Permessos river, which flows along to the modern village of Palaiopanagia/Askri and then bends to the W to end into the Domvraina basin.

#### **b4. The South foothills of Helicon and the Korombili area<sup>11</sup>**

Limestone formations characterise the S offshoot (*vorland*) of Helicon, towards the gulf of Corinth.

The W part of the Palaiouvouna ridge falls abruptly from 1100m asl to the Zaltsa bay. Two small valleys end in the interior of the bay, and create a small and isolated settlement chamber which belonged to the ancient Phokian polis of Voulis. To the S of the Zaltsa bay is the large promontory of Agia, after which the coast runs towards the SE with a series of gulfs and promontories and a very abrupt coastline (up to 800m asl), which continues as such until it forms a wider terrace above the sea facing the small islet of Alatonisi. Immediately afterwards opens up the Sarandi bay, where streams, valleys and small plains end.

The promontory between the Zaltsa gulf and Sarandi bay creates an area 6km wide between Helicon and the sea, formed by limestone plateaus (*kalkochflächen*). The border of ancient Boeotia must have run somewhere across it and perpendicular to the abrupt shoreline, most probably along the ridge projecting from Palaiouvouna towards the South (671m high – 1:200,000 *nomos* map). The S offshoot (*vorland*) of the Palaiouvouna ridge starts at an elevation of 800m asl (at the Domvous Monastery, SW of Palaiouvouna ridge) and then descends forming terraces at different levels (683m, 548m, 450m, 324m and a coastal terrace 100m high) down to the sea<sup>12</sup>. The whole area is without settlement today, except from some houses at Zaltsa, constituting a small fishing village. In antiquity the area belonged to the Phokian polis of Voulis, while the hinterland of the Sarandi bay belonged to Boeotia (with the area of ancient Korsiai and modern Chostia/Prodromos). The passages through Helicon to the Sarandi bay are quite difficult, and they were probably not used for trade, while from the Eastern Domvraina basin a route is open

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<sup>11</sup> Philippson 1951: 455ff.

<sup>12</sup> Philippson (1951: 455) describes each level carefully.

through an incision (320m high before an average elevation of the surroundings of 420m), at the E end of which lies the village of Chostia/Prodromos. From there a ridge runs perpendicular to the shoreline and reaches the Trachilos cape, above which is a flattish terrace 185m high<sup>13</sup>.

The Trachilos cape constitutes the Westernmost advanced end of the gulf of Domvraina, while the Easternmost is the Patima/Panagia cape, which is the S end of the Korombili mountain. In between the two, a line of small islets close the gulf (and probably mark the original shoreline). A peninsula with small gulfs starts from the Trachilos cape and projects Eastwards, and afterwards the coastline circumscribes the small bay of Vathy and then the wide gulf of Domvraina (12km SW – 4km NS), with slight anomalies and few small gulfs and harbours (Ag. Ioannis, Ag.Nikolaos, Aliko)<sup>14</sup>.

The gulf of Domvraina, and in general the coast along the gulf of Corinth which belongs to Boeotia, is separated from the inland by a long limestone plateau of karstic formation, parallel to the coast. This plateau is 269m high to the S of Domvraina, where a route opens up through an incision at a height of 150m, connecting the narrow and unsafe harbour of Ag.Ioannis with Domvraina and Thebes<sup>15</sup>, but it is 360m high at its East end, where it reaches the Korombili foothills. The plateau looks like a deserted landscape, with only some small depressions with low bushes, an ideal area for pasturage activities<sup>16</sup>.

Behind the plateau, towards the village of Domvraina, lies a closed polje (7km long and 2km wide), named after the nearby village. At the E edge of the basin lie the villages of Kakosi/Thisvi and Domvraina, very close to one another. Together with Chostia/Prodromos, they divide the area with fertile red soils formed above the limestone formations. The lower part of the basin (100m elevation) is a winter lake collecting water from the snow of Helicon and from the Askra river, which ends here<sup>17</sup>.

The basin to its N is bordered by the S offshoot (*vorland*) of Helicon, which is constituted by a limestone massif, from immediately to the E of Chostia/Prodromos up to the Thebes plain (Tertiary *Tafel*) below which Helicon disappears<sup>18</sup>.

The Domvraina basin constitutes the Western part of an inner karstic limestone depression that runs along the S foothills of East Helikon (Zagora/Motsara ridge) and is crossed by the Askris river. The Askris emerges from Helicon, in the Valley of the Muses, runs initially towards Thespieae and then, after Ellopiea, it bends and continues westwards to Xironomi and finally to the Domvraina basin, followed by a parallel road which crosses a series of valleys with fertile red soil, open fields and olive trees. The valley runs parallel to the limestone plateau to its South (see above), which lies (360m

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<sup>13</sup> By means of this jutting ridge/spur the width of Helicon increases (Philippson 1951: 456).

<sup>14</sup> In the whole gulf, the depth of the water is never more than 30m. For the harbours see Heurtley 1923/25.

<sup>15</sup> According to Heurtley (1923/25: 42-44) the commerce to/from Orchomenos and to/from the Peloponnese via the Steveniko pass went through the Domvraina basin.

<sup>16</sup> The area constitutes a winter pasturage area for people from Helicon (from Zagora/Evangelistria, for instance). For a geological description of the area see Philippson 1951: 460.

<sup>17</sup> See chapter II.3.10 (*Domvraina/Thisvi polje*).

<sup>18</sup> For a detailed geological description, see Philippson 1951: 460-1.

asl) between the foothills of Helicon and the sea, and continues also between the area of the village of Xironomi<sup>19</sup> and the Korombili ridge, covered by Aleppo pines. In fact, the ridge already belongs to the Kithairon massif, from which it is separated only by the narrow valley of the Livadostro river, which flows into the homonymous bay, between Korombili and Kithairon.

Philippson (1951: 462-3) notes how the Thebes-Domvraina-Ag.Ioannis road is ideal for appreciating the variety of landscape characters within a short distances, typical of the Greek landscape (and in particular of Eastern Greece, in our case). From the morphologically homogeneous human modified landscape of the Tertiary plain one gets to the hard karstic formations of the limestone massif, in which the cultivated plains with red soil, as well as a winter lake, emerge as oases with their large villages. Behind it one can admire the abrupt slopes of the massif covered with pine forests and marked by peaks still white with snow during the spring. Approaching the sea, between the inland areas and the coast, one can appreciate the deserted appearance of the limestone massifs in the dry Mediterranean climate of the Eastern Greek region. At the end of the trip the sea appears, made diverse and varied by the presence of small and larger gulfs and bays, as well as by series of small islets.

### c) the Copais basin<sup>20</sup>

The Copais basin, a tectonic depression of 350 sq. km. which opens up as a breach in the mountain structure of central Greece, was once partially occupied by a large marshy lake, part of a karstic circulation system, totally drained at the end of the 19<sup>th</sup> century. The morphological and hydrological characteristics of the basin, as well as the landscape of the surrounding areas, are described and examined in Appendix III (see also chapter II.3.1).

The main part of the basin is rectangular shaped, extending in a SE direction, 11 to 13km wide N-S and 21 to 23km long E-W. The long basin presents an irregular shape since along the edges of the depression a series of valleys opens up.

Its N edge can be considered as the continuation of the Chaironeia plain (see above). Along the N edge are two gulfs: Tsamali gulf to the NW, which opens up just behind the Akontion (Orchomenos ridge) and whose depth reaches a distance of 4km from Orchomenos, and the gulf of Topolia to the NE, 2 to 3km wide and 12km long, which opens up to the NE of the basin and runs in a NE and then E direction.

The E edge of the main basin (marked by the Ptoon and Phagas range) also widens up twice: first corresponding to Akraiphnion (formerly Karditsa) bay, and further to the South corresponding to the small gulf of Davlosis.

The S edge of the basin is marked to the W by the E part of Helicon with the gulf of Koroneia and the Tilphossion ridge, and to the E by the Tertiary plain of Thebes, which here lies at a height of 360m. Along the S edge runs a small terrace, 150m asl (55m above the Copais plain), to which also belongs the limestone acropolis of Haliartos.

To the SW the basin is bordered by the Laphystion range, and only between this and the promontory of Orchomenos is there an empty space (7km wide), where from the W the

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<sup>19</sup> Which is characterised by conglomerates with olives and vineyards.

<sup>20</sup> Philippson 1951: 466ff.



plain of Chaironeia and the basin of Levadeia open into the Copais plain<sup>21</sup>. Along the S and SW edge lateral valleys also open up, W of Haliartos and S of the Chaironeia basin, the lateral valleys of Koroneia and Levadeia.

Apart from the aforementioned bays, at a higher elevation level, the mountain circuit around the basin opens up in different places, allowing for routes (see fig.2) towards areas within or beyond Boeotia. Thus, the only real obstacle to circulation around Copais is constituted by the Helicon massif to the S. Only a low col of limestone with rudist (*rudistenkalk*<sup>22</sup>) separates the Copais basin, on its E side, from the NW edge of the Theban plain. It allows for two passages, today one is used by the road, the other by the railway.

#### **d) the Mountains to the E of Copais / the mountains between Copais and the Euboic sea<sup>23</sup>**

A quite low but abrupt and bare mountain formation separates the E part of the Copais basin from the Euboean sea and extends from the Skroponeri gulf to the S as far as the plain of Thebes, running transversally (W to E) to the NW-SE direction of the coast (fig.1). It creates an area of mountainous landscape which separates the plains of Copais and Thebes from the sea. While the NE edge of the Copais is only 6km from the Skroponeri gulf, the distance from the SE edge of Copais at Onchestos to the gulf of Vathy reaches 38km.

This mountain formation is divided into a Northern (ancient Ptoon) and a Southern part (Messapion chain: mount Phagas –SW- and mount Sagmatas/Ktipas –SE-) by the line (running SW-NE) formed by two lakes (Likeri/Yliki and Paralimni).

Ptoon-Skroponeri runs from Megalovouno to the Skroponeri gulf. At the W edge of Ptoon is the limestone with rudist (*rudistenkalk*<sup>24</sup>) formation of Megalovouno (558m asl). Below it to the North is the terrace of Kokkino, while to the S on a schist formation lies the village of Karditsa/Akraiphnion (see above). From the S, from Thebes, the whole mountain (Ptoon-Skroponeri) looks like a levelled ridge. Actually, towards the coast the mountain becomes a level area which one can see from Chalkis-Karababa. The E end of this mountain range separates the Skroponeri gulf from Paralimni lake, which runs parallel to the bay to its S<sup>25</sup>.

Below the gulf of Karditsa, low reliefs (mainly limestone) border the Copais basin and are crossed by passages towards Yliki lake and the plain of Thebes. On a limestone plateau one can recognize a karst basin (Asprokambos – 137m height), just in the middle of the pass towards Yliki. Above the limestone plateau rises the Sphigion-Phagas mountain (565m asl) at the SE edge of Copais, overlooking the railway passage through Onchestos<sup>26</sup>.

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<sup>21</sup> This area was probably not subjected to flooding, but only to some marshy episodes in certain areas – see Appendix III.

<sup>22</sup> See note 41 above.

<sup>23</sup> Philippson 1951: 491ff.

<sup>24</sup> See note 41 above.

<sup>25</sup> Philippson 1951: 491.

<sup>26</sup> Philippson 1951: 493.

The Messapion Ktipas (1018m asl) constitutes a prominent landmark which overlooks the Euripos area<sup>27</sup>. The steep slopes along the sea present terraces at 200/400m above sea level. This *Jura* limestone formation continues towards the SW forming, after a plateau 550m high with a karst basin filled with red soils<sup>28</sup>, a limestone mountain (700m asl) and then, after a 570m high pass, Mt. Sagmatas (746m asl), which continues into the plain of Thebes. Here the limestone massif stops abruptly, marking our picture of the landscape<sup>29</sup>.

To the NE, between the Ptoon and Messapion mountain formations are the Paralimni lake and, bordering the lake to the S, an area of limestone hills (up to 400m), below which is a wide strip constituted of serpentine and *hornstein*, along with limestone schist<sup>30</sup>, which runs in a W-SW direction from the village of Loukisia (ancient Anthedon) to the Mouriki plain.

The area between Yliki lake and the end of the Messapion massif (Mt. Sagmatas) is characterised by the presence of serpentine which appears at the village of Sirtsii/Ypaton and spreads among gentle slopes and red soils (*elluvia*) that can easily be distinguished, even from a distance, from the grey limestone. To the West of the *elluvia* the serpentine marks the pass (211m asl) between the plains of Mouriki and Thebes, and then the limestone appears again in the heights bordering the lake to the E<sup>31</sup>.

To the E side of Messapion a series of low limestone/calcareous hills can be found, running from Mt. Sagmatas to ancient Aulis (the gulf of Vathy) and the coastal area of Euripus<sup>32</sup>. The shoreline, S of the rectangular-shaped peninsula of Chalia, is marked by a series of small gulfs (Mykro and Megalo Vathy are the largest) formed within limestone formations. Further to the S, more recent alluvial deposits lie along the sea<sup>33</sup>.

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## **The area of the lakes (Yliki and Paralimni)**

### **YLIKI**

The Yliki (formerly Likeri) lake belongs to the large Karstic circulation system which takes up a vast part of Boeotia, from Copais to the Euboic gulf<sup>34</sup>. The lake occupies a tectonic depression with a complex system of faults. The lake bed is formed by impermeable Jurassic clay-marl, on which lacustrine sediments have been deposited, while along the banks overlying limestone appears. The lake follows an E direction and has an articulated perimeter, marked by gulfs and promontories forming among a group

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<sup>27</sup> Philippson 1951: 497.

<sup>28</sup> The basin contained wild pear trees in Philippson's time.

<sup>29</sup> And Philippson (1951: 497) adds that: 'in a way its ancient name Ypaton (=highest mountain) makes sense'.

<sup>30</sup> Philippson 1951: 496.

<sup>31</sup> Philippson 1951: 497.

<sup>32</sup> Philippson 1951: 491 and 498.

<sup>33</sup> Philippson 1951: 498-99.

<sup>34</sup> See Appendix III – THE KARST.

of limestone hills which are visible from Thebes as Stroulongo, Kokkinovrakos and others, which rise like islets out of the Theban plain<sup>35</sup>. Along the N side of the lake there are two gaps among the hills through which the plain of Thebes reaches the lake<sup>36</sup>.

Prior to the drainage of Copais, the Yliki lake used to get water from Copais through the several sink-holes (*katavothrai*) which open up in carbonate rocks along the E edge of the basin. Within the Karstic hydro-circulation system Yliki lake used to have a positive hydrological balance, which guaranteed the existence of a perennial lake, characterised by both seasonal and annual fluctuations of water level, related to the climatic trends and the functionality of the Copais *katavothrai*.

Today, however, following the drainage of Copais, the Yliki lake collects water from Copais through artificial channelling linked to the modern drainage works. This change has certainly had an effect on the hydrological balance of the lake. In the past, under similar climatic conditions, Yliki would receive less water from Copais, both due to it being partially retained in the Copais basin itself, and because the Karstic circulation used to drain directly towards the sea, and less regularly also.

The Yliki lake would probably be smaller, therefore, and marked by greater water level variations than at present<sup>37</sup>. Nowadays, water level fluctuation depends more on human rather than natural factors (the lake is one of the water reservoirs serving the city of Athens).

There are two passes from the Yliki lake to the W side of the Paralimni lake, lying to the N of the E side of Yliki, but not constituting a real continuation of it.

## **PARALIMNI**

The Paralimni lake, located to the East of the Yliki lake, towards the gulf of Euboea, is similar in character to Yliki. The lake has a semi-elliptic shape, and occupies a tectonic depression. It is embedded among carbonate reliefs with steep slopes, steeper on its Northern side along the Northern edge.

The Paralimni lake, in contrast to its neighbour, is a long basin with simple contour and with an E-NE axis. There are lacustrine plains to the SE as well as at the opposite end, and fertile marls and flysch hills to the S; otherwise the banks are plain limestone slopes. At the NE end a *katavothra* used to regulate the water flow, but today is no longer operational<sup>38</sup>. The land separating the lake from the coast 2 km away reaches an elevation of 87m, but when the level of the lake is high water reaches the sea through a tunnel<sup>39</sup>.

The Paralimni lake belongs today to the system of water supplying the Athens aqueduct, as does the Yliki lake, and it is linked to the latter through an artificial open air channel.

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<sup>35</sup> Philippson 1951: 494.

<sup>36</sup> Philippson 1951: 494. The prehistoric village of Lithares marks the edge of the plateau where the Theban Plain descends into Yliki lake (see chapter Thebais).

<sup>37</sup> Before the drainage, the area of the Yliki lake was 13 sq.km.; today 22 sq.km. Today the Lykeri/Yliki lake – 75-80m (low) and 70-77.5m (high). 39m (deepest point). Compare the natural situation (before the drainage of Copais): 15-8m deep (Philippson 1951: 481).

<sup>38</sup> Philippson 1951: 495.

<sup>39</sup> Philippson 1951: 496.

In the past, subterranean circulation probably regulated its hydrological balance with that of Yliki. The water level of the two lakes must also have influenced each other<sup>40</sup>.

Lake fluctuations are testified by aquitrinous swamp areas located at the two corners (SW and NE) of Paralimni lake. The southwestern allowed for the two lakes (Yliki and Paralimni) to be quite close to each other. On the other hand, the northeastern swamp area, reaching the slight watershed between the lake and the sea, does not seem either to be or to have been affected by the lake fluctuations. This could indicate that in the past the lake may have had phases of larger extension.

The level of the Yliki lake always used to rise along with the level of Copais. The Paralimni lake behaved the same way with Yliki. On the other hand, unlike Copais, Yliki and Paralimni were permanent lakes, rich in fish. They are karst water lakes, whose extension depended on the water flow from Copais to the sea<sup>41</sup>.

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#### e) **Eastern Boeotia**<sup>42</sup>

The basins, hills and plateaus of Thebes and Tanagra constitute the area of Eastern Boeotia in parallel with the basins (mainly Copais and the plain of Chaironeia), hills and plateaus of Western Boeotia.

The row of basins of Eastern Boeotia extends with a width of 12-20km in a W direction for 55km from the E end of Helicon to the outlet of the Asopos into the Euboic sea.

From the Asopos outlet a narrow coastal landscape 12km long extends towards the E to the port of Kalamos (area of Oropos), which from the geographical and geological point of view marks a border area between Boeotia and Attica<sup>43</sup>.

The Northern border of the Eastern Boeotia basins row is marked by a small section of the mountains surrounding the Copais basin, and by the mountain lane from Sphiggion-Phagas to Megalo Vathy gulf and ancient Aulis (see above). In the middle of this lane, opposite Thebes, around Yliki lake, as we saw earlier, this series of mountains becomes a series of limestone hills and the actual border of the Thebes area is marked by the Ptoon mountain.

The Southern border of the Eastern Boeotian row of basins is constituted by the wide mountain wall of Kithairon and Parnes, which separates the plain landscape of Eastern Boeotia from the Corinthian gulf as well as from the basin of Megaris and W Attica

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<sup>40</sup> In its natural situation the lake must have been ca 8km long. At present is ca 10km long and 2 km wider. The water level was around 35m while it is now ca. 55m. The extension of the flooded area has increased from 9 to 14.5 sq.km. The highest water level in the past must have reached 51.2m compared to 58.9m asl more recently; the lowest changed from 41.3m to 50.4m asl. The greatest depth has increased from 9.5m to 20.5m. In Philippson's time it was up to 22m. (Philippson 1951: 495).

<sup>41</sup> The diversion of the Copais lake through Yliki had as a consequence the increase in level from ca. 45m to 70m asl, without reaching the Mouriki channel leading the water to the Paralimni, which was excavated at an elevation of 78m asl. On the other hand, the surplus water ran underground from Yliki to Paralimni, demonstrating that the channel was not needed (Philippson 1951: 494).

<sup>42</sup> Philippson 1951: 500ff.

<sup>43</sup> For the historical issue, see earlier in this chapter and II.3.14.

(Eleusis), and is crossed only by a fairly low (290m asl) and narrow pass through the Livadostra valley (there is another pass towards the gulf of Corinth, further W, between Helicon and Korombili).

Towards the **East** the plain landscape is open towards the Euboic sea, forming a continuous flat area 18km wide<sup>44</sup>.

Generally speaking, even the inner part of Eastern Boeotia is less closed than the Copais basin, and olive trees can grow more easily, due to the mild winter temperatures, up to the E offshoots of Helicon<sup>45</sup>. Compared to Western Boeotia, Eastern Boeotia is drier, in full accord with the dry and sunny climate of E Greece.

The row of basins of Eastern Boeotia is divided along its long axis into three parts which, from W to E, are: **i)** the plain of Thebes; **ii)** the central part which is characterised by an E-W limestone mountain range that rises in the middle of the plain landscape up to the 611m asl of the highest peak (Soros); to the S the limestone of Kithairon-Parnes reaches the level of the basin, while to the N the Soros mountain creates a narrow low zone (the corridor of Sphaides) which connects the basin of Thebes with the Easternmost plain of Tanagra; **iii)** the basin of Tanagra which opens to the Euboic sea.

Another clear division can be noted, along the short N-S axis, between **a)** a higher area to the S marked by Young Tertiary deposits and the limestone of the Soros range and Klembotsari/Asopia, and **b)** a lower area to the N characterised by marshy plains and low hills.

**a)** Along the higher area (S) flows the Asopos, the main river of Eastern Boeotia, second in length only to the Kephisos in the region. It emerges near the W end of the plain of Thebes, flows in a W-E direction, from basin to basin, taking unimportant tributaries from the Kithairon-Parnes ridge. In its lower valley the river is almost always dry until it reaches the Euboic sea.

**b)** The lower area (N) has no important river, though the central area receives water from the Yliki lake.

**i)** Within the basin of Thebes, a division, along the N-S axis, into two areas is very clear: **iA)** the Northern lower part marked by marshy plains around 100m asl; **iB)** the larger and higher Southern part, 10km wide and 25km long, 350m asl, which is constituted by a *Tafel* of young tertiary deposits (marls, sand and strong conglomerates, which form the upper layers).

**iA)**<sup>46</sup> The plain of Thebes is bounded by two promontories, so that the plain can be considered as divided into two parts.

The W part, once named the Teneric plain (*Tenerikon pedion*), extends up to 10km to the hills of Onchestos and is 4km wide. It has no river flowing through it, but a *katavothra* at the W end. Its Eastern part is 100m asl while its Western part is 91m asl. Thus, surface water collects into the large Variko marsh, to the W<sup>47</sup>. Lower flat marshy areas are also to

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<sup>44</sup> In some periods of history this area belonged to the Tanagra *chora*, and is considered as such here (see chapter II.3.14).

<sup>45</sup> This is due to the fact that the area is open towards the sea, whilst in the Copais area olive trees are prone to frost during winter, due to fogs from the lake which inhibit warming by sunlight.

<sup>46</sup> Philippson 1951: 508.

<sup>47</sup> Variko is a historical marsh, since the drainage of the Copais lake caused its disappearance, except in exceptionally wet winters.

be found W of Thebes, just W of the outlet of the Kanavaris river into the plain of Thebes (see below), and immediately below and North of the Tertiary *Tafel* of Thebes (iB). The modern landscape has a generally marshy character due to permanent irrigation, while in the past there were localised marshes only, as drainage is very good and soils are old Pleistocene for the most part (see above).

The E part, named the Aeonic plain and much larger, extends from W to E 11km and from S to N (from Thebes to Yliki) 6km. From Thebes to Yliki the elevation falls from 130m to 100m asl. It is very fertile with no marshes, since the water of the Kanavaris and Lefkos streams, which cross respectively the W part of the plain in a N direction and the E part in a W direction, flow into the Yliki lake through one of the two gaps between the hills bordering the lake.

**iB)**<sup>48</sup> Above the tertiary *Tafel* is a homogeneous tableland made of colluvial deposits 350m asl. Wide, flat valleys into which no visible rivers flow are separated by gentle hills. Yet the upper part of the Asopos is a river with little water flowing in a large valley, which from the W to the E drops from 300 to 240m. Water sources in the marshy valleys are not rare, and they are used by the villages of the area (Thespies, Neochori, Ellopia, Vagia, etc.). A thick, muddy brown soil covers the small basins; a soil which can be considered one of the most fertile soils of Greece and cultivated to a large extent. On the other hand, the Eastern zone of the area is marked by the presence of surface conglomerate which creates a landscape suitable for grazing only (*frigana*).

Three landscape units can be distinguished within the iB area (The tertiary *Tafel* of Thebes), from W to E: a) the S edge, b) the central basin, c) the Northern hills (*randschwelle*).

**iBa)** The S edge is an elevated limestone zone which runs to the E from the area N of Korombili with an average height of 320m asl. At its end lies the large village of Kaparelli, and Eastwards an isolated limestone hill, Kotroni (385m asl). To the N, parallel to the limestone ridge, is a cultivated slope covered with soil from the Tertiary period, on the N slope of which is the village of Parapoungia/Leuktra, overlooking the wide valley basin. This wide basin has no visible surface river, but does have surface water. The basin extends from the turning of the river Askris up to where the Asopos begins. Philippson (1951: 503) suggests the possibility that the river Askris once constituted the upper part of Asopos, and this would explain why the upper Asopos valley looks wide compared to the present river, and was probably formed by another river –the Askris– at a lower level of its course. Afterwards, at some point in the landscape history, the river Askris turned towards the W, by the Neochori village, as it does now<sup>49</sup>. To the East is the Livadostra river valley, separated from the Asopos valley to the N by a low rise, atop which is the deserted village of Pyrgos. The sources of the river are in a basin (2-3km; 280m asl) to the E of the Kotroni hill at the foot of Kithairon. The basin is bordered to the E by a Tertiary *Tafel* divided into several valleys (360m asl). The *Tafel* extends from the mountains by the village of Kriekouki/Erithrai, and continues to the S towards the Asopos. The Livadostra flows along the foot of Kithairon to the W and S of Kaparelli in a wide cultivated valley at an elevation of 200m. Further to the W the valley becomes narrower and deep, with banks covered with trees, and then it turns to

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<sup>48</sup> Philippson 1951: 502ff.

<sup>49</sup> We could see a similar relationship between the Askris river and the Kanavaris river (see chapter II.3.9).

the SW between Korombili and Kithairon. The river ends in a small plain by the few houses of Livadostra.

**iBb)**<sup>50</sup> The central area of the Tertiary *Tafel* (iB) is marked by the wide Asopos valley. During its course, the river sometimes flows within close banks marked by reeds, while sometimes it opens up. The area crossed by the Asopos river is called Parasopia. To the N side of the river the area is characterised by small valleys and basins.

**iBc)** The Northern uplands of the Tertiary *Tafel* of Thebes, running with continuous steep edges, W to SE from behind Haliartos, at the edge of Helicon, up to Thebes and the Soros, separates the Parasopia and Thespies areas from the central plains of Boeotia. On the *Tafel* are the villages of Mavromati and Vagia. To the W of Thebes up to Vagia this upland ridge projects further into the basin, forming promontories and spurs. E of Vagia and Erimokastro the Northern upland/ridge disconnects from Helicon and takes an E direction, rising up to 413m E of the Kanavaris valley. In this section, where the ancient city of Thespies also lay, the landscape is characterised by less vegetation coverage and more open fields. The elevation drops around Thebes and rises again up to the Soros. Thus, the Northern upland/ridge of the Tertiary *Tafel* of Thebes runs from Helicon to Soros.

**ii)**<sup>51</sup> 6km E of Thebes the Soros mountain (538m asl) rises out of the tertiary *Tafel* formation, as a limestone ridge 16km long, running towards the E with peaks (611m – 440m – 465m – 367m asl) and cols (330m – 260m asl). This rocky limestone formation disappears again under the Tertiary *Tafel*, in association with the ancient city of Tanagra which marks the ridge's end.

To the S of the Soros ridge, and between it and the foothills of Kithairon (600m asl), the Tertiary formation extends along the Asopos (surface at ca. 340m asl), and then rises to the village of Klembotsari, forming steep hills (458m asl) and Karstic doline formations (300m asl). Further to the S, the Asopos river cuts the limestone through a series of meanders; at certain points the river valley is narrow with steep banks, while elsewhere a terrace opens up from 280-200m asl, and the river flows in an elevation range of 185-100m asl. SW of ancient Tanagra, the river crosses the white soil of the Eastern basin Tertiary formations, while its valley becomes wide and the slopes gentle, with terraces at 300m and 200m asl. To the S of the river, along the foothills of Kithairon, is a terrace surface (420-400m asl), probably corresponding to the Tertiary *Tafel* of Thebes, which in Soros can be found at the same elevation.

On its Northern side the Soros ridge falls abruptly in a 4km wide depression<sup>52</sup> that follows the Athens-Thebes railway. Within it is the village of Sphaides/Eleon. This depression marks the pass from Thebes to Chalkis and to the E coast, which was always of crucial importance. The area is characterised by a hilly landscape of grey sandy clay, while the surface of the Tertiary formation here is 100m lower than the Tertiary *Tafel* of Thebes and forms a sort of a 'corridor'.

Associated with Sphaides are some hills with alternate strata of sand and clay, remains of an old soil (probably fluvial deposits) where remains of elephants were found. A

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<sup>50</sup> Philippson 1951: 506.

<sup>51</sup> Philippson 1951: 512ff.

<sup>52</sup> Philippson 1951: 513.

watershed by Dritsa divides the Leukos river basin from that of Lari. The Lefkos river runs to the W and flows into the Likeri lake, while the Lari runs SE and flows into the Asopos by Tanagra. At the W end of this 'corridor' is the limestone hill of Mesovouni, where ancient Teumessos was located, which, bordering the Aeonian plain, marks the spot where the routes from Thebes to Chalkis and from Thebes to Tanagra separated. From Sphaides/Eleon to Dritsa/Harma is a series of limestone hills in the middle of the Tertiary 'corridor' which are only slightly higher than the 'corridor' itself<sup>53</sup>. At the N edge of the 'corridor', where the Thebes-Chalkis road turns, is a hill that juts out from Mt. Sagmatas towards the E, where the site of ancient Harma was probably situated.

At the edge of the Lari valley are two villages, 4km apart, Vratsi at the S end, and Schimatari at the N, between which lies a flat area. The landscape of the area has a generally mild character<sup>54</sup>, except for the Southern border, marked by the Soros ridge.

As mentioned earlier, at the spot where the 'corridor' opens up into the lower valley of Asopos, at the confluence of the Lari and Asopos rivers, is the city site of ancient Tanagra, built on the very last slopes of Soros.

The Sphaides/Eleon 'corridor' is not sharply divided from the wide hilly landscape which constitutes the 'Tanagra basin'<sup>55</sup>. In fact, it is a basin only in geological terms, as it is filled by the same tertiary formation as the basin of Thebes. Morphologically speaking, it is a *Tafel* landscape where the hills constitute the surface level (240 to 200m asl), while many valleys and depressions break this surface, marking a hilly landscape. To the North of Dritsa/Harma, at the edge of the hill where the ancient city lay, the tertiary formation extends to the N, reaching the limestone ridges of the Anaphoritis pass and Aulis. Where the village of Ritsona (ancient Mykalessos) lay, the Ritsona river is formed and runs towards the E to reach the coast South of Aulis, forming a wide delta. The river no longer reaches the sea, and its former delta deposits constitute a fertile coastal plain, forming a promontory just 500m from the Euboic coast<sup>56</sup>, and bordered to the S by the hilly ridge of *Kala Denta*, along which runs a poor road towards Schimatari<sup>57</sup>. Hilly formations from the Tertiary mark the landscape between the coast and the inland, also associated with Schimatari (160m to 80m asl), reaching the sea in the area of Dilesi, along the Asopos river which cuts a wide valley through the Tertiary formations. To the S of the river, mountain ridges mark the border between Boeotia and Attica<sup>58</sup>.

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<sup>53</sup> On one of these hills is also the acropolis of ancient Eleon and a Medieval (Frankish) tower stands on top. At their S end are ruins above the village of Bratsi/Tanagra.

<sup>54</sup> In Philippson's time wine was produced in the area (1951: 514), the best of Boeotia, as he said, thanks to the white clay Tertiary soil.

<sup>55</sup> Philippson 1951: 515.

<sup>56</sup> Namely the 'strait of Burtsi'.

<sup>57</sup> Philippson 1951: 516.

<sup>58</sup> For the physical borders of Boeotia towards the S see above in this chapter, whilst for the question of the border between Boeotia and Attica see chapter II.3.14.