

Circumstantial Evidence for Plato's Island Atlantis in the Souss-Massa plain in today's South- Morocco

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ABSTRACT

In the 4th century BC the great Athenian philosopher Plato described in his *Timaeus* and *Critias* dialogues a large state, which he called Ἀτλαντὶς νῆσος, the *Island Atlantis*. This island has not yet been localized with absolute certainty. In this paper a new approach to the analysis of Plato's dialogues is described and the results of this analysis are presented. By means of a *hierarchical constraint satisfaction* procedure, a variety of geographically relevant indications from the antique texts are used to infer the most probable location of the island of Atlantis. Surprisingly, this turns out to be the Souss-Massa plain in today's Southwest Morocco. This plain is surrounded by the High Atlas, the Anti-Atlas, the Atlantic Ocean, and, on the south and the east, the Sahara. Because of its isolated position it could well be called an *Island*. The whole *Maghreb* is also called an *island* because of its isolated position (*Djesirat el Maghreb = Island of the West*).

Global (large scale), regional (mid scale) and local (small scale) geographic and geologic attributes of the Souss-Massa plain can be matched to the descriptions of Plato. In addition, cultural and linguistic correlations can be firmly established. In this context, an interesting analogy with the Heracles myth was found: The "Golden apples in the garden of the Hesperides" could be the fruits of the Argan tree (*Argania spinosa*) which is endemic to this particular region.

A major archaeological find of interest is a large annular geomorphological structure which was discovered in the northwestern part of the Souss-Massa plain. This structure fits the dimensions of Plato's capital of Atlantis and is covered with hundreds of large and small prehistoric ruins of different types made partially out of rock coloured red, white and black (as described by Plato). The presence of substantial landscaping at the site and a vast number of findings of prehistoric artefacts support the author's localization hypothesis. A second archaeological find of interest is a unique geomorphological structure close to

Cape Ghir, which applies to Plato's roofed over docks cut into red, white and black bedrock. Several findings of prehistoric artefacts in this particularly area provide an indication for the cultural importance of this site in prehistoric times.

1 INTRODUCTION

1.1 *The Atlantis Enigma*

In Plato's account, Atlantis was a naval power lying "in front of the Pillars of Hercules" that conquered many parts of Western Europe and Africa 9,000 years (Crit. 108e) before the time of Solon, or approximately 11,600 years before today. After a failed attempt to invade Athens, Atlantis sank into the ocean "in a single day and night of misfortune".

Over the years, many people have searched for this island (currently more than 100 different localization hypotheses exist), but so far little archaeologically verifiable evidence has been found. Plato gave a highly detailed account of Atlantis with a multiplicity of indications. The Atlantis mystery can be described as a real world *constraint satisfaction problem* (CSP) as follows:

- The problem: Where was Atlantis located?
- The constraints: A multiplicity of indications which a geographical area must satisfy in order to qualify as the site where Atlantis could have existed (e.g Plato described Atlantis as close to an ocean, near many high mountains, with elephants, etc...)
- A large domain of possible solutions: In general each place on Earth, but particularly places of known Atlantis candidates like Santorini, Troy, etc...
- Only one valid solution: Either Atlantis never existed or Atlantis is located at a specific place on Earth. If the latter is the case, that should be archaeologically verifiable.

Because of the enormous effort, which would be needed to test which place on Earth satisfies all given constraints, we try here to approach

this CSP by the method of a *hierarchical constraint satisfaction (HCS)*.

1.1.1 Hierarchical Constraint Satisfaction

1.1.2 Extraction of Indications/Criteria

The first step is to scan Plato's *Timaeus* and *Critias* dialogues for geographical indications or geographically relevant indications. Geographical or geographically relevant indications are text passages describing geographic, geological, biological or climatic attributes of the Island Atlantis or social or cultural attributes of the Atlanteans.

During the course of the 1st International Conference “*The Atlantis Hypothesis – Searching for a Lost Land*” 24 criteria were derived from Plato's account and were established by consensus (Kontaratos, 2007). These and more than 20 additional (elementary¹) criteria derived from Plato's and Diodorus Siculus' account will be used for the HCS and discussed later in this paper.

1.1.3 Indication Classes

We then need to geographically classify all indications. Since we are searching the whole surface of the Earth, a class for global indications (GI) seems to be appropriate. Analogously two classes for regional (RI) and local (LI) indications will be used. Therefore we have three classes in a hierarchical order:

- A class for global indications (GI)
- A class for regional indications (RI)
- A class for local indications (LI)

Indications relating to a very large geographical area are classified as *global*. The *Island Atlantis* indicates proximity to the sea or ocean. Therefore all oceans and their coastlines are potential locations for Atlantis. Oceans, by virtue of their *global* size, belong to GI.

Indications relating to a geographical, geological or cultural attribute of sub-global size are

¹ e.g. Atlantis should be located in close proximity to a sea or ocean

classified as *regional*. As an example regional indications include: (geographical), a wide plain; (geological), iron, silver, gold and tin ore deposits; (cultural), Atlanteans wore blue clothing.

Indications describing very small geographical details are classified as *local*; for example, the concentric structure of the capital of Atlantis.

1.1.4 Masking and Visualization of Global Indications

All *global* indications can be used to constrain the area where Atlantis might have been located. This is simply done by creating indication layers or masks, which are then laid over an Athens-centric world map. Each layer ‘grays out’ the subjacent map where the respective indication does not apply. It is better to enlarge the scope of the indication rather than to attempt to precisely define its boundaries, particularly because we are not able to define historical or biogeographical boundaries very precisely (e.g. of predynastic Egypt or the range of a species). Afterwards all masks (indication layers) are combined. An area of the map which is shaded by all masks appears black. Atlantis is probably not located here. An area which is not shaded by any mask remains white. Atlantis is most probably located here. Each area where at least one or more indications do not apply, appears gray.

1.1.5 Examination of Regional and Local Indications

Each area which is still visible in white (all *global* indications apply) must be more carefully examined to determine whether *regional* and *local* indications also apply.

2 CLASSIFICATION OF INDICATIONS

2.1 Global

2.1.1 Global Indications/Constraints

2.1.1.1 GI01 – Logistical Range

The logistical range of a pre-ancient army lim-

its the location of Plato's *Island Atlantis* to areas routinely reachable from Athens. This indication is derived by *common sense* from Plato's entire account and was declared as a condition at the International Atlantis Conference 2005 (Kontaratos, 2007).

Global Constraint → *Atlantis should be located within a reasonable range from Athens.*

2.1.1.2 GI02 – Close to a Sea

"Bordering on the sea [...] there was a plain [...]" (Crit. 113c);

If the core plain of Atlantis is located at the sea, the island of Atlantis should also be located at or within the sea.

Global Constraint → *Atlantis should be located close to a sea or ocean.*

2.1.1.3 GI03 – Mediterranean and Large Sea

"[...] in front of the mouth [...] there lay an island [Atlantis] [...]" (Tim. 24e); "[...] all [...] lying within the mouth is evidently a port [...] but that yonder is a real ocean [where Atlantis was located][...]" (Tim. 25a); "[...] within the Straits [the mouth] they ruled over Libya as far as Egypt, and over Europe as far as Tuscany" (Tim. 25b)

Plato described both a large and a small sea, connected by a strait. The territories of Libya, Egypt, Europe and Tyrrhenia (today's Tuscany) are located within the "port". Therefore the port must be the Mediterranean.

Global Constraint → *Atlantis should be located close to a sea/ocean, which is large in relation to the Mediterranean and connected by a strait with the Mediterranean.*

2.1.1.4 GI04 – West of Tyrrhenia and Egypt

"[...] within the Straits they ruled over Libya as far as Egypt [the Nile], and over Europe as far as Tuscany [Tyrrhenia]. So this host [Atlantis], being all gathered together, made an attempt one time to enslave by one single onslaught both your country [Greece] and ours [Egypt] and the whole of the territory within the Straits." (Tim. 25b)

Plato states that the Atlanteans had already conquered parts of the Western Mediterranean,

therefore the borderlands were Tuscany and Egypt. From here, the Atlanteans continued to attack territories of the eastern Mediterranean. It seems improbable that the Atlanteans inhabited a region east of the Tuscany-Egypt boundary and even more improbable that they inhabited regions east of Greece and Egypt.

Global Constraint → *Atlantis should be located west of Tyrrhenia and Egypt.*

2.1.1.5 GI05 – Presence of Elephants

"Moreover, it [Atlantis] contained a very large stock of elephants [...]" (Crit. 114e)

Global Constraint → *Atlantis should be located where elephants lived.*

2.1.1.6 GI06 – High Mountains

"And this region [the plain] [...] faced towards the south and was sheltered from the northern blasts. And the mountains [...] which surrounded it were at that time celebrated as surpassing all that now exist in number, magnitude and beauty" (Crit. 118b)

Plato states that the main plain was sheltered from northerly winds by high mountains. Therefore, this plain must be located to the south of these high mountains.

Global Constraint → *Atlantis' main plain should be located close to and south of high mountains.*

2.1.1.7 GI07 – Not Located in Ancient Asia or Europe

"[...] a mighty host, which, starting from a distant point in the Atlantic ocean, was insolently advancing to attack the whole of Europe, and Asia to boot." (Tim. 24e)

If the Atlanteans attacked Europe and Asia, Atlantis was not located in ancient Europe or Asia.

Global Constraint → *Atlantis should not be located in ancient Europe or Asia.*

2.1.2 Visualisation of Global Indications

GI01 – Logistical Range



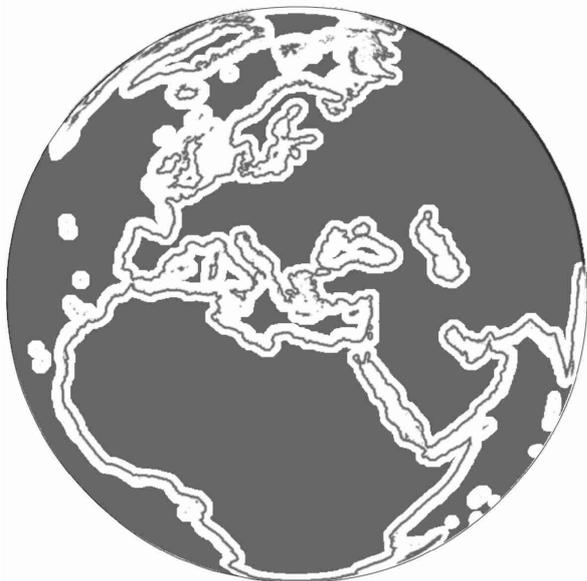
A 5,000 km radius area around Athens will be analyzed first. The 5,000 km radius is drawn from the campaigns of Alexander the Great, which reached a maximum of 4,700 km from Macedonia. It is also known that trading (e.g. ivory) ranged over similar distances in prehistoric times.

Note: this indication is an "excluding" indication. It excludes everything outside of the 5,000 km radius. If Atlantis can not be found within this region, the radius can be enhanced.

Figure 1: Mask Reasonable Range from Athens

Global Constraint → *Atlantis should be routinely reachable from Athens.*

GI02 – Close to a Sea



This indication layer is a strip at least 200 km wide along the shoreline of all continents and islands. It starts 100 km inland from the current shoreline and extends out to sea 100 km past the shoreline of 15,000 years ago.

Note: this indication, like the following ones, is not an *excluding* indication. Atlantis could also be located within the gray regions, but it is more probable that it is located within the white regions.

Figure 2: Mask Close to a Sea.

Global Constraint → *Atlantis should be located close to a sea or an ocean.*

GI03 – Mediterranean and Large Sea



The condition *located close to a sea/ocean, which is large in relation to the Mediterranean and connected by a strait with the Mediterranean* applies only to the Atlantic Ocean. Atlantis should be located somewhere in the Atlantic Ocean, or on the Atlantic coast.

Figure 3: Mask Relation Mediterranean Sea.

Global Constraint → *Atlantis should be located close to a sea/ocean, which is large in relation to the Mediterranean and connected by a strait with the Mediterranean.*

GI04 – West of Tyrrhenia and Egypt



Plato described Europe and Libya as captured areas. Tyrrhenia (today's Tuscany) and Egypt were borderland. He mentioned that the countries in the eastern Mediterranean were attacked by the Atlanteans. It seems improbable that the Atlanteans inhabited a region east of the Tuscany-Egypt boundary or even east of Greece and Egypt.

Figure 4: Mask West of Tyrrhenia and Egypt

Global Constraint → *Atlantis should be located west of Tyrrhenia and Egypt.*

GI05 – Presence of Elephants



Figure 5: Mask Elephants.

Elephants usually live in tropical or subtropical regions like Africa or India. Further north the probability for elephants shrinks because of climatic conditions. The Mediterranean also acts as a natural barrier. It is improbable that Plato meant mammoths because he described a subtropical or tropical type of flora and fauna. Contemporaneous documents of Punic and Roman writers, i.e. Hanno the Navigator (470 BCE), Pliny the Elder (23 CE), et al. give evidence for elephants up to the 7th century CE in the Maghreb. We also have evidence for elephant stock (*Elephas maximus*) from Syria across Mesopotamia to India and Indonesia (Schuhmacher, 2006). As for the European Forest Elephant, *Elephas (Palaeoxodon) antiquus*, it had become extinct on the Iberian peninsula 33,000 years BCE (Schuhmacher, 2006), so that habitat is ruled out of our considerations.

Global Constraint → *Atlantis should be located where elephants lived.*

GI06 – High Mountains



Figure 6: Mask High Mountains.

The top 9 of the highest mountains (excluding single peaks like Mount Teide on Tenerife) are from left to right: High Atlas, Sierra Nevada, Pyrenees, Alps, Pirin, Taurus, Caucasus, Ethiopian Highlands and the Zagros Mountains. Since the main plain of Atlantis was sheltered from the 'northern blast' by high mountains, it should be located somewhere to the south of these mountains. All mountains, which do not have a sea/ocean to the South-West, South or South-East are ruled out of our considerations, because the main plain was also situated at the sea/ocean (e.g. the eastern Atlas has only a sea to the North).

Global Constraint → *Atlantis main plain should be located close to and south of many high mountains.*

GI07 – Not Located in Ancient Asia or Europe



Figure 7: Mask Europe and Asia.



Figure 8: Ancient World Map.

The ancient world was divided into Europe, Asia and Libya. Atlantis should be located in Libya or somewhere in the oceans or seas.

Global Constraint → *Atlantis should not be located in ancient Europe or Asia.*

2.1.3 Resulting Indication Layer

GI01-GI07



Figure 9: Combination of Masks GI01 – GI07.

The combination of *global* indication layers leads to the most probable ‘region’ for Atlantis, the white spot in northwestern Africa in today’s southern Morocco. This region is located beyond the *Pillars of Heracles*, at the *Atlantic Ocean*, south of the *High Atlas*.*

* The *Pillars of Heracles*, the *Atlantic* and the name *Atlas* are also indications mentioned by Plato (see section 2.2.1.1 , *RI01*). All *global* indications lead to this region, without utilizing the names as indications. Therefore it is very plausible that Plato used these names (*Pillars of Heracles* and *Atlantic*) with the same denotation we use today. The king’s name *Atlas* may also be related to the name of the *Atlas* mountains.

Global Constraint Satisfaction → *For the white spot all global indications apply.*

2.1.4 Conclusions from the Analysis of Global Indications

The most probable 'region' for Atlantis is in northwestern Africa in today's Morocco. All *global* indications apply. More precisely, the core region of Atlantis must be located in southern Morocco, south of the High Atlas at the Atlantic ocean (because of *GI06 - close to and south of many high mountains*) on or close to the so-called *Souss-Massa plain*. The most improbable area for Atlantis is northeast of Athens, where only the indication *Routinely reachable from Athens (GI01)* applies.

2.2 Regional

The Souss-Massa plain must be carefully examined, to see if all *regional* indications also apply. For this purpose, the author made six expeditions to the region of the Souss-Massa plain in April 2007, May and September 2008, May 2010, November 2011 and May 2012.

2.2.1 Regional Indications/Constraints

2.2.1.1 RI01 – Named Locations

"[...] for in front of the mouth which you Greeks call, as you say, 'the pillars of Heracles,' there lay an island [Atlantis][...]" (Tim. 24e);

"Now first of all we must recall the fact that 9,000 is the sum of years since the war occurred, as is recorded, between the dwellers beyond the pillars of Heracles and all that dwelt within them;" (Crit. 108e);

"And to all of them he gave names, giving to him that was eldest and king the name after which the whole island was called and the sea spoken of as the Atlantic, because the first king who then reigned had the name of Atlas." (Crit. 114a)

Plato used the terms *Pillars of Heracles* and *Atlantic (Atlantis thalassa)*.

Regional Constraint → *Atlantis should be located beyond the "Pillars of Heracles" at the "Atlantic" (Ocean).*



Figure 10: *Fretum Herculeum* (Pillars of Heracles, Gibraltar) and *Herculis Promontorium* (Cape Ghir)

The Souss-Massa plain viewed from the eastern Mediterranean (Egypt or Greece), is located beyond the *Pillars of Heracles* (the name in Antiquity for the promontories that flank the entrance to the *Strait of Gibraltar*) at the Atlantic Ocean. From an eastern Mediterranean perspective it is also located beyond *Cape Ghir*, which was called *Herculis Promontorium (Cape Heracles)* in Antiquity (Ptolemy) and beyond the Atlas mountains, which were called *Pillar of Heaven*.

Constraint Satisfaction → *The Souss-Massa plain is located beyond the Pillars of Heracles and the Herculis Promontory (Cape Ghir) at the Atlantic Ocean.*

2.2.1.2 RI02 – Island

"[...] there lay an island [Atlantis] [...]" (Tim. 24e)

Regional Constraint → *Atlantis should be an island.*

The term *nesos*, which was used by Plato to describe Atlantis as an *island*, does not necessarily mean *island*, which is completely surrounded by water. It is a known fact, that the term *nesos* was also used for peninsulas (e.g. *Peloponnese* means *Island of Pelops*) or river-deltas (e.g. the Nil delta was called *nesos* by the ancient Greeks (Liddell, 1940)).

In addition, we can not conclude with absolute certainty that Plato meant a 'real' island, because he used only the ambiguous term

nesos. An explicit description, that Atlantis was an island, which is completely surrounded by water, can't be found in his accounts.

We know that the northwestern parts of the Maghreb were called *Djesirat el Maghreb (Island of the West)* by ancient and medieval Arabic merchants. They used the term *Djesirat (Island)* because the whole region lies isolated by the Atlas mountains, the Sahara, the Mediterranean and the Atlantic ocean. The most isolated region within this “island” is the Souss-Massa plain (it lies between the High Atlas and the Anti-Atlas and therefore it could well be called *island (within an island)* if we use the denotation of the Arabic *Djesirat*. Still today the Souss-Massa plain and its adjacent valleys are said to be called *Island* by the native Amazigh people. The Amazigh again are said to have inhabited this area for at least 5,000 years. The most efficient trade route to this plain, especially from the eastern Mediterranean, was by sea, through the pillars of Heracles, and along the West African coast. During the so-called *Green Sahara Period* (approx 7,500 – 3,500 BC) parts of the Sahara (Kröpelin, 2008) must have been a huge fertile oasis (with rhinos, giraffes, elephants and crocodiles) suitable for agricultural use. Moreover, the Souss-Massa plain is irrigated the year around by rivers from large parts of the southern watershed of the High Atlas and the whole western watershed of the Anti-Atlas (if we think of *nesos* as a term for *river-delta*).



Figure 11: Isolated position of the Maghreb and the Souss-Massa *Island* (white rhombus).

Plato described *Atlantis* to be of *continental size* (Tim. 25e) with *innumerable dwellers* (Crit. 119a). From a scientific point of view, it

is improbable that such a large island sank entirely into the sea within such a geologically short time (10,000 years). It is even less probable that such a large island sank *in one day and one night* (Tim. 25d). An area which is called *Island* and which is part of a continent seems to be a valid explanation for the indications 'island' and 'continental size'. But we have to figure out why it is called 'sunken'.

Atlantis (Nom. Sg. Fem.) and *Atlas (Nom. Sg. Masc.)* have both the Greek stem *Atlant-*. In the matriarchal Amazigh culture most things are assigned to one of the antipodal categories *male* or *female*. 'Mountains' are assigned to the *male* category. The complement 'valley' is assigned to the *female* category. See: Table 2: Antipodal Categories . Therefore it is very plausible that the valley between High Atlas and Anti-Atlas was named *Atlantis*.

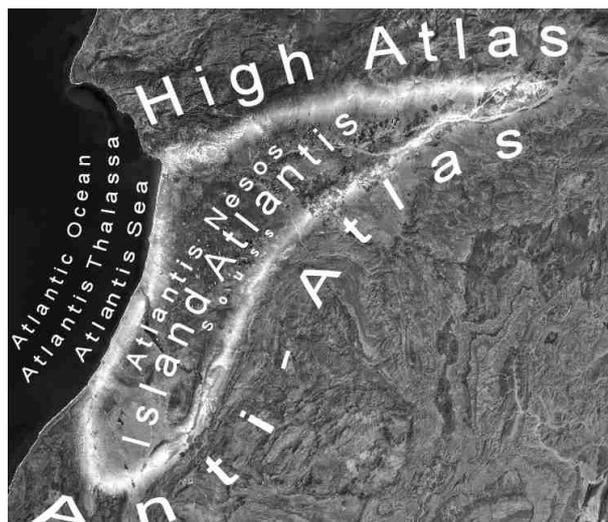


Figure 12: *Atlantis Nesos, the Island Atlantis*.

Constraint Satisfaction (today) → *The Souss-Massa plain is an island (of Atlas) in a figurative sense.*

2.2.1.3 RI03 – Plain Encircled by Mountains

"In the first place [...] the whole region rose sheer out of the sea to a great height, but the part about the city was all a smooth plain [...] being itself encircled by mountains which stretched as far as to the sea [...]" (Crit. 118a).

Regional Constraint → *The main plain of Atlantis should be encircled by mountains.*

Plato's description, in a narrative style reminiscent of a *periplus*, applies very well to the circumstances found in situ. From the perspective of a ship sailing down the Atlantic coast, *the region rises out of the sea reaching a great height* at Cape Ghir, where the High Atlas meets the Atlantic Ocean. The Souss-Massa plain lies south of Cape Ghir surrounded by the High Atlas to the North and the Anti Atlas to the East and South.

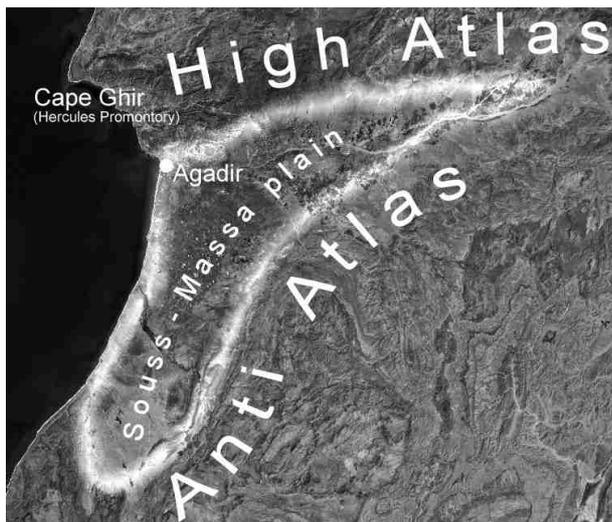


Figure 13: The Souss-Massa Plain is encircled by high Mountains.

Constraint Satisfaction → *The Souss-Massa plain is encircled by high mountains which stretched as far as the sea.*

2.2.1.4 RI04 – Presence of Red, White and Black Bedrock

"And the stone they quarried beneath the central island all round, and from beneath the outer and inner circles, some of it being white, some black and some red; and while quarrying it they constructed two inner docks, hollowed out and roofed over by the native rock." (Crit. 116a, b)

Regional Constraint → *There should be red, white, and black bedrock.*

There are several stone pits where red stone is quarried on the Souss-Massa plain (i.e. *Rouge Agadir Marbre, Rouge Atlas Marbre*), but particularly near *Aglou*, where red, white, and black stone (marble) is quarried. These different coloured stones lie side by side (bedrock) and their colours are clearly red, white and

black. The colours are evenly distributed. All of the stones are calcite (white) with carbon (black) or hematite (red) constituents. A combination of these three stone colours is very rare in bedrock.



Figure 14: Red, white and black stones from a stone pit near *Aglou Plage*.

Constraint Satisfaction → *There are red, white, and black stones.*

2.2.1.5 RI05 – Docks cut into Red, White and Black Bedrock

Regional Constraint → *There should be docks cut into the native red, white and black bedrock.*

Since Plato described in Crit 116a,b that these coloured stones were quarried while cutting docks into the native stone, the location for this quarry must be in close proximity to the sea. In our expedition in May 2010 we discovered a unique geomorphological structure at the Atlantic shore, close to *Cape Ghir*, which precisely applies to Plato's description of "roofed over docks cut into red, white and black bedrock". Also today these structures are used as docks for fisher boats (see also 2.2.1.18 RI18 – Rock-Cut Architecture).

Constraint Satisfaction → *There are docks cut into the native red, white and black bedrock.*



Figure 15: Docks cut into red, white and black bedrock. There are at least three similar geomorphological structures in neighbouring bays. The largest cave in this picture is 12m wide, 8m high and 30m deep. Currently it is uncertain if this unique geomorphology is of natural origin or not.

2.2.1.6 RI06 – Buildings of Red, White and Black Stone

"And of the buildings some they framed of one simple color, in others they wove a pattern of many colors [...]" (Crit. 116b)

Regional Constraint → *There should have been buildings made from coloured stones.*

Regional Constraint → *There should have been "weaving" stone laying patterns.*

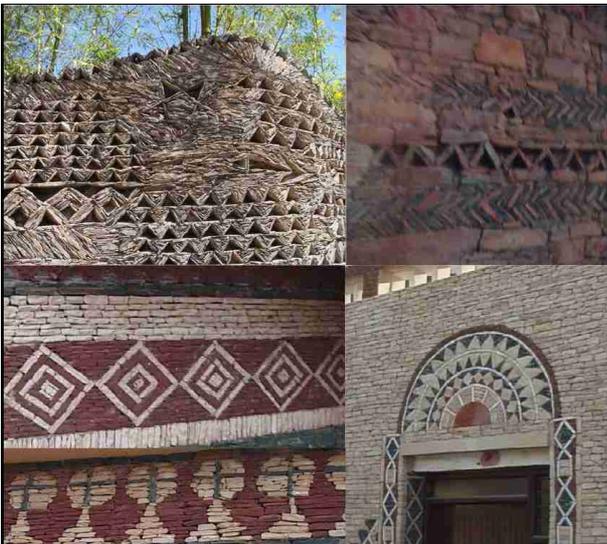


Figure 16 shows new and older (upper right) buildings of natural red, white and black "woven" stones and slate in Agadir. The two lower pictures show bricklaying patterns which can be ordered in Agadir's diy markets today. The patterns used are reminiscent of symbols of the Amazigh alphabet *Tifinagh*, which is at least 2,000 years old.

Additionally to these recent buildings, there is also evidence for prehistoric buildings made of red, white and black stones. This topic is discussed in the *Local Indication* section: 2.3.2.5.

Constraint Satisfaction (today) → *There are buildings made from coloured stones (particularly red, white and black).*

Constraint Satisfaction (today) → *Bricklayers use "weaving" patterns.*

Constraint Satisfaction → *There are ancient ruins made from coloured stones (particularly red, white and black) within the annular geomorphological structure.*

2.2.1.7 RI07 – Northerly Winds

"And this region [the plain] [...] was sheltered from the northern blasts." (Crit. 118a)

At least occasionally there should be northern 'blasts' (winds) from which shelter is needed.

Regional Constraint → *There should have been northerly winds.*

Because of the Coriolis Effect, the Azores High is a clockwise rotating system. This is the reason for prevailing cold northerly winds at the Atlantic coast of Morocco. Sand in the lee of the plants also indicates the prevailing northerly winds at Cape Ghir.

Constraint Satisfaction → *At the Atlantic coast of Morocco we have prevailing northerly winds.*



Figure 17: Clockwise rotating Azores High; Sand in the lee of plants indicates prevailing northerly winds at Cape Ghir. Viewing direction North.

2.2.1.8 RI08 – Shelter from Northerly Winds

"And this region [the plain] [...] was sheltered from the Northern blasts." (Crit. 118a)

Regional Constraint → *There should be shelter from northerly winds.*

The bay of Agadir and the Souss-Massa plain are sheltered from northerly winds by the High Atlas.

Constraint Satisfaction → *The Souss-Massa plain is sheltered from the prevailing northerly winds by the High Atlas.*



Figure 18: Northerly Winds Shelter.

2.2.1.9 RI09 – Ore/Metal Deposits

"[...] and the island itself furnished [...] metals [...] which are extracted by mining [...]" (Crit. 114e)

Plato mentioned: orichalcum, gold, silver, tin, brass and iron.

Regional Constraint → *There should be varied ore/metal deposits.*

Morocco has very rich ore deposits: iron, lead, copper, zinc, tin, silver, gold, antimony, manganese, nickel and cobalt. All metals mentioned by Plato are present in the region, with the exception of the currently undefined 'orichalcum'.

Constraint Satisfaction → *In northwestern Africa all the known ores/metals mentioned by Plato are present (see section 5.3 for a feasible explanation of what orichalcum might be).*

2.2.1.10 RI10 – Signs of Specific Geological Activity

"[...] an island [...] now lies sunk by earthquakes [...]" (Crit. 108e); "[...] beneath the earth two springs of waters, the one flowing warm from its source, the other cold [...]" (Crit. 113e)

Regional Constraint → *There should have been earthquakes and hot and cold springs*

From time to time, the whole region is exposed to heavy earthquakes (e.g. a 5.7 earthquake in 1960) because of plate tectonics. The

South Atlasic Fault runs parallel to the Souss Valley. Another indication for volcanism is the hot spring (40° C) in Abeinou.

Constraint Satisfaction → *There are earthquakes and there currently is at least one hot spring in the region at Abeinou (south of the Souss-Massa plain).*

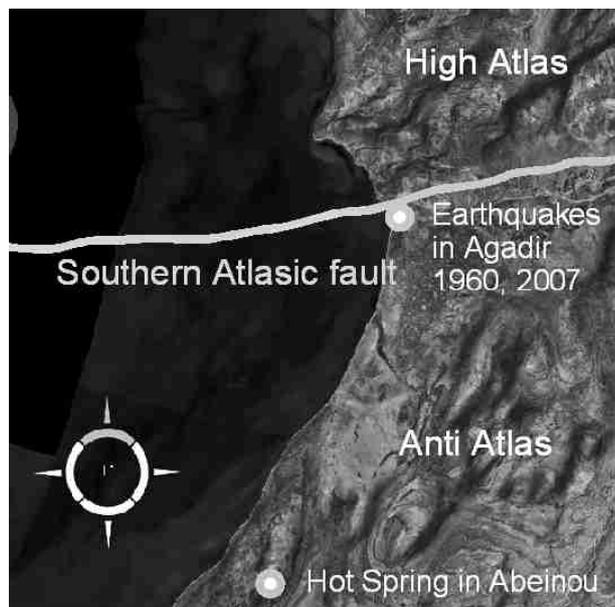


Figure 19: Earthquakes and Hot Spring.

2.2.1.11 RIII – Presence of Horses

"[...] a racecourse laid out for horses [...]" (Crit. 117c)

Regional Constraint → *There should have been horses.*

The current state of scientific knowledge pushes the *Horse period* in the Sahara back to 1500 BCE. Horses might have existed more than 10,000 years ago in Northern Africa (Chaid-Saoudi, 2002).

Constraint Satisfaction → *Horses have lived at least since 1500 BCE in the Maghreb.*

2.2.1.12 RI12 – Region Named after Gadeiros

"And the name of his [Atlas] younger twin brother [Gadeiros], who had for his portion the extremity of the island near the pillars of Hercules up to the part of the country now called Gadeira after the name of that region [...]" (Crit. 114b)

Regional Constraint → *There should have*

been a region named after Gadeiros.

Today's Agadir is a fast growing town with 670,000 inhabitants located at the Atlantic Ocean north of the Souss-Massa plain. Since masculine substantives begin in Tamazight with an Affix *A-*, *I-* or *U-* the name of the town *A-Gadir* and the Hellenized *Gadeiros* has the same meaning *the Gadir*.

The Tamazight word *Gadir* derives etymologically from the Semitic *g-d-r*, which means *wall* (Kossmann, TBP), *fortification*, *enclosure* (Vycichl, 1952) and *sheep fold* and, as a new hypothesis, also *island* in a figurative sense (see section 3.6). The meaning of *enclosure*, *sheep fold* corresponds to the Greek translation of the name *Gadeiros* (Crit. 114b), which is *Eumelos* = *Rich in Sheep* (Perseus Digital Library, 2008). *

Table 1: Agadir vs. Gadeiros

Prefix	Word stem					Suffix
masc.						masc.
sg.						sg.
Tamazight						Greek
<i>A</i>	G	A	D	I	R	
	G	A	D	EI	R	<i>OS</i>

Also the town Cádiz (Phoen. 'gdr' (Gadir); Greek. 'Gadeira') and its surrounding area could have been Plato's *Gadeira*. Cádiz is said to be founded by Phoenicians or by Hercules.

Constraint Satisfaction → *Today, there is a region/town (Agadir or Cádiz) named after Gadeiros (similar etymology).*

2.2.1.13 RI13 – Streams from Mountains

"It [the plain] received the streams which came down from the mountains [...]" (Crit. 118d)

Regional Constraint → *There should be streams from the mountains.*

**Eumelos* could also be translated *Rich in Apple*, since *mêlon* means *sheep* or *apple*, see 2.2.2.2 OI02 – The Golden Apples of the Hesperides.

The whole Souss-Massa plain is irrigated by several rivers or wadis. The two main rivers are the Souss and the Massa. Today these rivers are seasonal rivers because of desertification.

Constraint Satisfaction → There are streams from the Atlas mountains.

2.2.1.14 RI14 – Trench Parallel to the Shore

"[...] this trench [...] was dug round the whole plain [...]" (Crit. 118c)

A trench around the whole plain also indicates a trench along the shoreline of the plain.

Regional Constraint → *There should be a trench parallel to the shore.*

Since the plain was situated directly at the sea, a trench dug around the whole plain implies that there was a trench parallel to the shoreline. But what could be the use of an artificial trench dug parallel to the shoreline? Probably this trench was not dug by humans, but was a natural "trench". Such a natural trench is found in today's northern Morocco between Meddouza and Douar el Khemamla (length > 80km). The Canary Current, running parallel to Morocco's Atlantic shoreline, erodes the coast producing longshore drift. Sandspits and natural trench-like bays or lagoons are common along this type of coast.

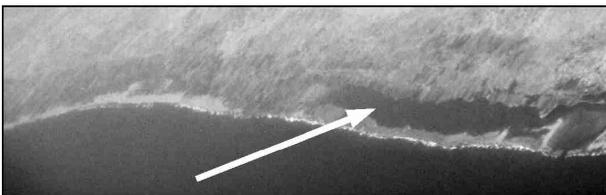


Figure 20: Natural trench parallel to the shoreline.

No Constraint Satisfaction (today) → *There are no trenches parallel to the shoreline in southern Morocco (today), only north of the High Atlas (see section 3.4.1).*

2.2.1.15 RI15 – Plants with Fragrant Roots

"[...] sweet-scented stuffs which the earth produces now, whether made of roots or herbs or trees [...]" (Crit. 115a)

Regional Constraint → *There should have*

been plants with fragrant roots.

Today, especially in Essaouira, arts and crafts businesses use fragrant roots of the Sandarac tree (*Tetraclinis articulata*) for 'thuya' wood-carving. A resin obtained from these trees is traded in the form of small elongated tears, which are used as incense. The Sandarac tree is endemic to the western Mediterranean region and native to northwestern Africa in the Atlas Mountains of Morocco, Algeria and Tunisia. The wood and the resin of these trees were probably exported in ancient times.



Figure 21: Sandarac tree and sweet-scented wood-carving made from its roots.

Constraint Satisfaction → *The Sandarac tree has sweet-scented roots, which are very popular in arts and crafts businesses in Morocco.*

2.2.1.16 RI16 – Space for a Large Population

"[...] and the number of the men in the mountains and in the rest of the country was countless [...]" (Crit. 119a)

Regional Constraint → *There should be enough space and food for a large population.*

During the green Sahara period, the region surrounding the Souss-Massa plain provided plenty of space and food for a large population.

Constraint Satisfaction → *There was enough space and food for a large population.*

2.2.1.17 RI17 – Year-Round Water Supply

"And they cropped the land twice a year, making use of the rains from Heaven in the winter, and the waters that issue from the earth in summer, by conducting the streams from the trenches." (Crit. 119a)

Regional Constraint → *There should have been a water supply providing year-round irrigation.*

The High Atlas is a giant reservoir that dispenses water to the plain over the whole year due to natural rainfall and melting snow.

Constraint Satisfaction → *There was a water supply providing year-round irrigation (particularly in the times before desertification).*

2.2.1.18 RI18 – Rock-Cut Architecture

"[...] they constructed two inner docks, hollowed out and roofed over by the native rock [...]" (Crit. 116b)

Regional Constraint → *There should have been architecture which is integrated into the native rock of the coast.*

Today, fishermen at the Atlantic coast of the Souss-Massa plain construct similar buildings. The stone is stable and easy to hollow out.



Figure 22: Cavities constructed by Fishermen on the Atlantic Coast of the Souss-Massa Plain.



Figure 23: Close to Cape Ghir geomorphological structures were discovered (within three bays), which meet the description of Plato's harbours (roofed over by the native rock). These docks are partly still in use. The stone colours are red, white and black.

Constraint Satisfaction (today) → *There is architecture, which is integrated into the*

native rock of the coast.

2.2.1.19 RI19 – Specific Agricultural Products

"The cultivated fruit [...] the dry, [...] vegetables [...] trees which afford liquid and solid food and unguents [...] fruit of the orchard-trees [...] after-dinner fruits [...] all these [...] produced in marvellous beauty [...]" (Crit. 115a)

Regional Constraint → *There should have been diverse agricultural products.*

Because of the richness of flora and fauna, Atlantis must have had either a Mediterranean, subtropical or tropical climate. Crops cultivated in West Africa today include olive, pistachio, date palm, almond, cactus pear, citrus, mulberry, walnut, fig, grape, wheat, barley, millet, pepper, artichoke, argan and various legumes. Most of these are native to West Africa and have been cultivated since at least ancient times.

Constraint Satisfaction → *There is a high diversity of Mediterranean/ tropical agricultural products.*

2.2.1.20 RI20 – Blue Clothing

"[...] when darkness came on and the sacrificial fire had died down, all the princes robed themselves in most beautiful dark-blue vestments [...]" (Crit. 120b)

Regional Constraint → *The Atlanteans had blue clothes.*

Today there are at least three kinds of blue dyeing methods known in West-Africa:

- Indigo (*Isatis Tinctoria*), blue, dark-blue
- Purpel (*Murex brandaris*), black, blue, green, purple, red
- Orseille (*Rocella tinctoria*), red, blue

It is known that ancient Phoenicians established a factory at *Iles Purpuraires* (formerly Arambys, Mogador and today's Essaouira) for extracting a Tyrian purple dye from a marine gastropod *murex* species (Clark, 1975). The methods of dyeing with Orseille and Indigo

have been known since ancient times. Both plants are native to northwest Africa and the Canary Islands. Probably one of these blue-dyeing methods was already known in prehistoric times in West Africa. Today the Amazigh mostly use Indigo



Figure 24: Blue is the most seen colour in the street scene of villages in the Souss-Massa plain.

as blue dye or synthetic colours. Blue is used not only for clothing, but it is also popular for painting doors and window shutters.

The Tuareg are called *Les Hommes Bleus*, after their blue clothing. The colour blue is believed to provide a religious "Protection against the ill" for both the Amazigh and the Tuareg peoples.

Constraint Satisfaction (today) → *Today the Amazigh wear blue clothing.*

2.2.1.21 RI21 – Sacrifice of Bulls

"[...] and the ten princes [...] hunted after the bull [...] and cut its throat over the top of the pillar" (Crit. 119d, 119e)

Regional Constraint → *The Atlanteans sacrificed bulls.*

Some Amazigh tribes have a similar ritual. They celebrate, usually on August 15, the beginning of the rainy season. A bull is sacrificed as a manifestation of the ties between each tribe. (Neumann, 1983).

Constraint Satisfaction (today) → *Today*

some Amazigh tribes sacrifice bulls.

2.2.1.22 RI22 – Concentric Circle Patterns

"[...] and he [Poseidon] made circular belts [...] two being of land and three of sea [...] which he carved as it were out of the midst of the island" (Crit. 113d)

Regional Constraint → *Concentric circles may have had a religious/ magic connotation for the Atlanteans.*



Figure 25: Concentric-triple-circle ornaments.

Three concentric circles are a common pattern in the historical ornamentation of the Amazigh in the Souss-Massa plain. This decoration is inscribed with a compass particularly on old doors and gates of farms. Presumably this magic concentric-triple-circle ornament has a protective function like the colour blue. Or, the concentric trenches around the central hill may have had a real protective function.

Constraint Satisfaction (today) → *Concentric circles have a religious/magic connotation for the Amazigh.*

2.2.1.23 RI23 – Significance of Odd and Even Numbers

"[...] they assembled every fifth year, and then alternately every sixth year - giving equal honor to both the even and the odd" (Crit. 119d); "And he [Poseidon] begat five pairs of twin sons [...]" (Crit. 113e)

Regional Constraint → *Odd/even numbers may have had a religious/ magic connotation for the Atlanteans.*

Odd/even numbers have a religious connotation for the Amazigh. In their matriarchal culture most things are assigned to one of the antipodal categories *male* or *female*. For example *odd numbers* belong to the *male* category, to which the *right hand side, the border, the static, the straight lined, the light, the dry, the good* and *the square* belong. On the contrary *even numbers* belong to the *female* category as well as *the unlimited, the multitude, the left hand side, the astatic, the curved, the darkness, the wet, the ill* and *the circle*, etc. Since *the male* and *the female* are emancipated in the Amazigh culture, equal honor is given to both sides.

Moreover, the odd number *five* also has a special religious connotation with the meaning *the center, the middle*.

Table 2: Antipodal Categories

MALE	FEMALE
Odd	Even
Five	Six
Brightness	Darkness
Sky	Earth
Rectangle	Circle
Straight	Curve
Dry	Wet
Life	Death
East	West
Mountain (Atlas)	Valley (Atlantis)

Constraint Satisfaction (today) → *Odd/even numbers have a religious/magic connotation for the Amazigh.*

2.2.1.24 RI24 – Large Trenches

"Now, as regards the depth of this trench and its breadth and length, it seems incredible that it should be so large as the account states, considering that it was made by hand, and in addition to all the other operations, but none the less we must report what we heard: it was dug out to the depth of a plethrum and to a uniform breadth of a

stade, and since it was dug round the whole plain [...]" (Crit. 118c)

Regional Constraint → *There should be remains of large trenches.*

Richter (2005) concluded that these figures for length and breadth may be reasonable, but a canal depth of 1 plethron = 30,8 m seems not credible, particularly because the canal walls would have slipped down continuously.

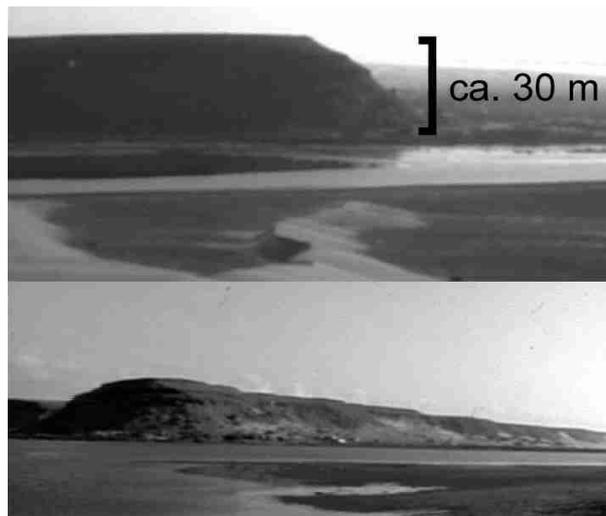


Figure 26: The wadi Noun gives the impression of a 30 m (1 plethron) deep and 200 m (1 stade) wide artificial trench at its estuary.

All the more astonishing is the fact, that 'trenches' with exactly these dimensions can be found in southern Morocco. For example the wadi Noun has a breadth of about 200 m and walls of precisely 30 m height at its estuary. The walls are nearly vertical up, because the Souss-Massa (and Draa) plain consists of stone which is a precipitation of thick layers of calcite and/or sandstone on a former, now elevated sea-floor. The estuaries of the Massa, the Draa and other wadis give similar impressions.

Constraint Satisfaction → *There are wadis, which give the impression of large trenches.*

2.2.2 Regional Indications from Other Sources

2.2.2.1 OI01 – Atlas the Bearer vs. Asalas the Bearer

"The garden was in the far west, where Atlas supports the sky, beyond the stream of the

Oceanus." (Hes. Th.215); "And he [Poseidon] begat five pairs of twin sons [...]" (Crit. 113e).

Like Plato's account, the Heracles myth reports a king with the name Atlas. This Atlas held the sky upon his shoulders (Atlas the bearer). In Plato's account the King Atlas has several brothers who were kings.

The typical roof of an old Amazigh house is built with a master roof beam and several smaller beams. The smaller beams are arranged in pairs (twins) in a right angle to the master beam. The master beam (in Tamazight *Asalas* = *the bearer*, a masculine term) which extends the protection of the male part of the house to the female part, is explicitly identified with the landlord of the house (Madsen, 2002). The smaller (twin-)beams are associated with the brothers of the landlord. The main pillar, a forked tree trunk (in Tamazight *Thigejdith* = *the pillar within a house*, a female term) is identified with the wife, on which the master beam rests. This symbolic summary of the house, the union of *Asalas* and *Thigejdith*, is like *a marriage of heaven and earth* (Madsen, 2002), whereby heaven is related to the male category, earth is related to the female category (see section 2.2.1.23, *RI22*). The female earth is covered and protected by the male heaven. *Asalas* could etymologically be related to *Atlas* since *Asalas* holding up heaven, the Atlas Mountains holding up heaven and the King Atlas holding up heaven are similar allegories. In Plato's account, the brothers of King Atlas help to reign over Atlantis. A close similarity is found in the symbolic summary of an Amazigh house. *Atlas* in Plato's account and *Atlas* in Greek mythology seem to be related to the culture of the Amazigh and, therefore, to their settlement area, the Atlas Mountains.



Figure 27: Typical roof of an Amazigh house: Asalas the bearer and his 'twin-brothers'.

2.2.2.2 *OI02 – The Golden Apples of the Hesperides*

When Zeus espoused Hera there sprang up a wondrous apple tree ("μηλέα"). This tree was committed to the care of maidens called Hesperides, daughters of Night (Hes. Th.211), sweet singers; and it was guarded by a terrible dragon, coiled round the stem (Eur. H. F.397, Paus.6. 19. 8). Heracles slew this dragon with poisoned arrows (Apoll. Rh.4. 1396 ff., where the monster is named "Λάδων"); "Chorus: And he [Heracles] came to those minstrel maids, to their orchard in the west, to pluck from golden leaves the apple-bearing fruit, when he had slain the tawny dragon, whose terrible coils were twined all round to guard it; and he made his way into ocean's lairs, bringing calm to men that use the oar." (Eur. Her. 394-400); "To the applebearing shore of the Hesperides, famous singers, would I go my way, there where the lord of the deep-blue mere forbids further passage to sailors, fixing the sacred boundary of the skies, the pillar held up by Atlas." (Eur. Hipp. 742); "[...] and the Hesperides who guard the rich, golden apples and the trees bearing fruit beyond glorious Ocean [...]" (Hes. Th. 207)

In Greek mythology, the Hesperides are nymphs who tend a blissful garden in a far western corner of the world, located near the Atlas Mountains in Libya. In this garden a golden apple bearing tree grew which was guarded by a dragon named *Ladon*. The Hesperides were the daughters of king Atlas.

Until now it was assumed that *The Golden Apples of the Hesperides* were quinces. But they are more likely to have been the fruit of

Argan tree (*Argania spinosa*), which is endemic to the Souss-Massa plain in southwest Morocco. The Argan fruit look like small golden apples. The fruit has an unpleasantly flavored layer of pulpy pericarp but an aroma like that of a baked apple. The pulp surrounds a very hard nut, which contains one (occasionally two or three) small, oil-rich seeds. The oil has a high percentage of polyunsaturated fatty acid and vitamin E. It has an excellent taste, and is very expensive. The oil from the unroasted nuts is traditionally used as a treatment for skin diseases (unguent) by the Amazigh, and has found favor with European cosmetics manufacturers.



Figure 28: Argan Fruits - The Golden Apples of the Hesperides.

Argan oil was probably exported as a luxury merchandise in ancient times. This could be the reason why Heracles, in his eleventh labor, was sent to carry the *Apples* to Greece for the purpose of cultivation. The cultivation failed because the Argan needs very special cultivation conditions, and “Athena returned the apples to their rightful place, in the garden of the Hesperides”. The Argan tree is probably also the tree in Plato's account described as *trees which afford liquid and solid food and unguents*. (see RI17), where the nut is *solid food*, the oil is *liquid food and unguents*. In Greek mythology the tree of these golden apples is guarded by the always-awake, hundred-headed dragon *Ladon*. Greek illustrations usually show a snake with two or more heads. The legend tells that for every drop of *Ladon's*

blood that fell on the ground a dragon tree grew. A simple explanation for this image of *The Dragon Ladon* could be the Argan tree itself because it has thorn-equipped branches and the bark looks similar to the skin of a reptile. The trunk is the body, the branches are the (hundred) heads, the thorns are the teeth and the Argan fruits are the blood drops. Saying that Heracles struck this dragon dead probably means he cut the tree down (to have the fruits within reach).

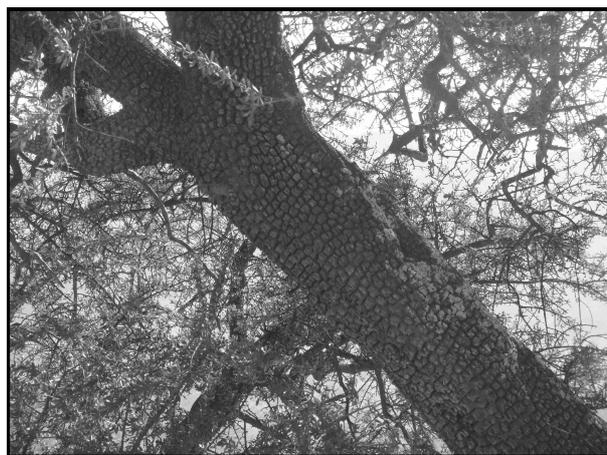


Figure 29: The Argan Tree (*Argania spinosa*) – The Dragon *Λάδων*.

2.2.2.3 OI03 – *Mar Tenebroso* vs. Plato's *sunken Island Atlantis*

"[...] that hallowed island, as it lay then beneath the sun [...]" (Crit. 115b); "[...] an island [...] now lies sunk by earthquakes and has created a barrier of impassable mud which prevents those who are sailing out from here to the ocean beyond from proceeding further." (Crit. 108e, 109a)

Cape Noun in southern Morocco was considered by fifteenth century Portuguese mariners to be the impassable limit for navigators. The so-called *Mar Tenebroso* (Sea of Darkness) begins at Cape Noun which is too shallow and dangerous for navigation because the water and sediment ‘congeal’ into mud. This myth did not hold true when the Portuguese mariners discovered the Americas, probably because currents had flushed away the sediments or perhaps because of sea level rise. This is an indication that this myth could be much older. The description of 'impassable mud' is similar to Plato's account.

"[...] wherefore also the ocean at that spot has now become impassable and unsearchable, being blocked up by the shoal mud which the island created as it settled down" (Tim. 25d).

The name *Mar Tenebroso* could be understood as the inverted version of "[...] island, as it lay beneath the sun" (Crit. 115b). The term *island* turned into *sea*, the term *sun* into *darkness*. This could possibly be explained by a shift within the antipodal (male/female) categories. The *alive, dry island beneath the sun* turned into the *dead, wet sea of darkness* (see Table 2: Antipodal Categories).

2.2.2.4 OI04 – Diodorus Siculus

In his account of the *Libyan Amazons* and the *Atlanteans*, the Greek historian Diodorus Siculus (1st century BCE) described a marsh (or alluvium) called *Tritonis* which lay on an island *Hespera*. This island was located in West Africa at the Atlantic Ocean, close to the Atlas mountains:

"[...] As mythology relates, their home [the home of the Libyan Amazons] was on an island which, because it was in the west, was called Hespera, and it lay in the marsh Tritonis. This marsh was near the ocean which surrounds the earth [the Atlantic Ocean] and received its name from a certain river Triton which emptied into it; and this marsh was also near Ethiopia and that mountain by the shore of the ocean which is the highest of those in the vicinity and impinges upon the ocean and is called by the Greeks Atlas. The island mentioned above was of great size and full of fruit-bearing trees of every kind, from which the natives secured their food. It contained also a multitude of flocks and herds, namely, of goats and sheep, from which possessors received milk and meat for their sustenance; but grain the nation used not at all because the use of this fruit of the earth had not yet been discovered among them. The Amazons, then, the account continues, being a race superior in valor and eager for war, first of all subdued all the cities on the island except the one called Menê, which was considered to be sacred and was inhabited by Ethiopian Ichthyophagi, and was also subject to great eruptions of fire and possessed a multitude of the precious stones which the Greeks call anthrax, sardon, and smaragdus; and after this they subdued many of the neighboring Libyans and nomad tribes, and founded within the marsh Tritonis a great city which they named Cherronesus after

its shape." (Diodorus 3.53)

"Setting out from the city of Cherronesus, the account continues, the Amazons embarked upon great ventures, a longing having come over them to invade many part of the inhabited world. The first people against whom they advanced, according to the tale, was the Atlanteans, the most civilized men among the inhabitants of those regions, who dwelt in a prosperous country and possessed great cities; it was among them, we are told, that mythology places the birth of the gods, in the regions which lie along the shore of the ocean, in this respect agreeing with those among the Greeks who relate legends, and about this we shall speak in detail a little later." (Diodorus 3.54)

"[...] The story is also told that the marsh disappeared from sight in the course of an earthquake, when those parts of it which lay towards the ocean were torn asunder." (Diodorus 3.55)

Since Diodorus described this large island *Hespera*, which was to the west, at the Atlantic, close to and south of* the Atlas, it should have been situated close to the Souss-Massa plain, or more probably the Souss-Massa plain itself. This conclusion was already made by (Berlioux, 1883). Since Diodorus' account refers to the Greek mythological era, we have a further indication, that this region was already known to the Greeks before the *Greek Dark Ages*.

Interestingly, the analysis of Plato's account, by means of a *hierarchical constraint satisfaction*, points exactly to the same area described as the home of the *Libyan Amazons*. If we accord credibility to Diodorus, these *Amazons* subdued the *Atlantioi*, who have been the former inhabitants of the Souss-Massa plain. Therefore, it is very plausible that Plato's *Atlanteans* and Diodorus' *Atlantioi* are identical. Like Plato's *Atlanteans*, Diodorus' *Libyan Amazons*, in alliance with *Atlanteans*, invaded countries around the eastern Mediterranean Sea (e.g. today's Turkey) (Diodorus 3.55, 4-6).

The description of the *Libyan Amazons* and their female leader *Myrina* corresponds to the

* Since Diodorus mentioned that it was also close to *Ethiopia* (which means *suntanned face*), it should have been situated south of the High Atlas.

fact that the *Amazight People* have had a matriarchal culture. The terms *Amazon* (Ἀμαζών) ** and *Amazight* could be etymologically related (Rothery, 1910).

Moreover, Diodorus described a great city within the *Tritonis* marsh (most probably the alluvial littoral zone in the Souss-Massa plain or the Souss-Massa plain itself) named *Cherronesos* (χερρόνησος), which means *Peninsula* (presumably a city lay on a ridge of land running out into the plain, the marsh or sea).

2.2.2.5 OI07 – *Libyan Amazons*

The term *Amazon* is commonly derived from *ἀ* (*a-*) and *μαζός* (*-mazos*), a form of *μαστός* (*breast*), meaning “*without breast*”. Diodorus stated in his account, that the *Libyan Amazons* seared the breasts of young girls:

When their children were born the babies were turned over to the men, who brought them up on milk and such cooked foods as were appropriate to the age of the infants; and if it happened that a girl was born, its breasts were seared that they might not develop at the time of maturity; for they thought that the breasts, as they stood out from the body, were no small hindrance in warfare; and in fact it is because they have been deprived of their breasts that they are called by the Greeks Amazons. (Diodorus 3.53.3)

And as for their children, they mutilated both the legs and the arms of the males, incapacitating them in this way for the demands of war, and in the case of the females they seared the right breast that it might not project when their bodies matured and be in the way; and it is for this reason that the nation of the Amazons received the appellation it bears. (Diodorus 2.45.3)

A similar barbarous and cruel custom, named *breast ironing*, is practised in western Africa (R. J. Sa'ah, 2006), predominantly in the coastal countries Cameroon, Togo, Equatorial Guinea and Benin. *Breast ironing* is the pounding and massaging of a pubescent girl's breasts using heated objects, in an attempt to make them stop developing or disappear. It is typically carried out by the girl's mother in an attempt to protect the girl from sexual harassment and rape, to prevent early pregnancy that

would tarnish the family name, or to allow the girl to pursue education rather than be forced into early marriage. Used implements for breast ironing are grinding stones, ladles, spatulas, and hammers heated over coals, wooden pestle normally used for pounding tubers, bananas and coconut shells.

2.2.2.6 OI08 – *Maximus of Tyre*

The Hesperian Lybians inhabit a long narrow strip of land surrounded by the sea. The extremity of this peninsula the ocean envelopes with heavy waves and currents. To these men Atlas is a temple and a statue. But Atlas is a hollow mountain, of a great altitude, open to the sea like theatres to the air; and in the middle region of the mountain and the sea there is a deep valley, fertile and well planted with trees. In this valley you may see fruits hanging on the trees, which, when surveyed from the summit, appear to be as it were at the bottom of a well; but it is neither possible to descend into it, for it is precipitous, nor lawful. The prodigy in this place is the ocean, which inundates the shore, and not only pours on the plains but crowns Atlas itself with its waves. You may also see the water rising by itself like a wall, and neither flowing into the hollow places nor supported by the land; but between the mountain and the water there is much air and a hollow grove. This is the temple and deity, the oath and statue of the Lybians. (Maximus of Tyre, *Disertationes*, viii. 57)

By comparing Plato's and Diodorus' accounts with Maximus of Tyre's description of the Souss-Massa plain (the only place, where the *Atlas opens to the sea like a theatre*), we can get a deeper insight into ancient Greek's idea about this region. Maximus of Tyre described a long narrow strip of land, which was surrounded by the sea (*amphithalasson*). This is similar to Plato's account, except that Plato described the elongated plain around the capital to be surrounded by tranches, which were connected to the sea. Tyre's description of the long narrow strip of land may also correspond to Diodorus' marsh and peninsula. Additionally we have the correlations, that this region was sacred for the inhabitants, similar to Plato's *hallowed island* (*Critias' 115b*), that there was a peninsula/ isthmus (like Diodorus' *Cherronesos*), that the Souss valley once was very fertile and that there occurred catastrophic

** The etymology of the word is uncertain.

floods/ tsunamis from time to time. Moreover the description “*like a theatre*” and “*bottom of a well*” and “*impossible to descend into it*” seems to correlate to the Amazigh (proto-semitic) term g-d-r (see section 3.6), which means *wall, enclosure*.

2.2.3 Conclusion from the Analysis of Regional Indications

Nearly all regional indications apply to the Souss-Massa plain. The only exception is 2.2.1.14 *Trench parallel to the shore*, which applies today only to parts of the coastline north of Cape Ghir. The Atlantis catastrophe, if it occurred in southern Morocco, would explain the absence of such a trench (see section 3.4.1 – *Earthquakes and Soil Liquefaction*).

In addition to Plato's account, other indications concerning the *Atlanteans* in Diodorus' and Maximus of Tyres' account also apply to the Souss-Massa plain. Ptolemy's *Geographike Hyphegesis* indicates the presence of a *Hera*, *Cerne* or *Autolala island* (which all may be identical) south of the High Atlas. Up to now, none of these islands could be located with absolute certainty. Possibly the Souss-Massa plain itself is one of these islands. The name *Cherronesos* could be related to the annular geomorphological structure, which lies like a peninsula within the Souss-Massa plain (see next section).

Greek mythology (Heracles' eleventh labor) gives additional explanations to the open questions “*What are the Golden Apples of the Hesperides?*” and “*What could be the etymological root of the term Atlas?*”.

2.3 Local

All of the *local* indications in Plato's account need to be examined. For this purpose two expeditions to the region, with a specific site in mind, were made in September 2008 and in May 2010. This site, which has several of the characteristics of the capital city of Atlantis (especially, the distance from the ocean, its location on the margins of the Souss-Massa plain, its annular geomorphology and its scale)

is depicted and compared with local indications in this sections.



Figure 30: Annular Geomorphological Structure with Central Hill.

In additional expeditions in Nov 2011 and May 2012 several other large archaeological sites were discovered in close proximity to the Massa valley. Please refer to M. Huebner 2012 for this set of facts.

2.3.1 Annular Geomorphological Structure near Agadir

The annular geomorphological structure is located 8 km east of Agadir in an area called *Mesguina* situated between the Atlantic shore (12 km), the Souss River (5 km) and a branch of the western Atlas Mountains (2 km). The highest peak in north Africa, Jbel Toubkal (4167 m), is about 160 kilometers northeast. The geological origin of the structure is most probably an anticline. It has a diameter of ~5 km with surrounding hills and strongly resembles a volcanic crater, though no volcanism has been found in this particular area (Ambroggi, 1963). The subsoil is mainly lime and marlstone. The central hill has a diameter of ~3 km and a maximum height of ~325 m above sea level. Inside the formation and on the surrounding ring of hills, many ruins of different types were discovered. Among them are foundation walls of large buildings, semicircular stone wall fragments, oval and horseshoe-shaped flooring, caverns and lime kilns. Old paths and substantial landscaping were also discovered. All buildings are completely ruined and gave the impression of Stone Age buildings. Most of the buildings were found in the central area of the formation.

2.3.2 Local Indications/Constraints

2.3.2.1 LI01 – Location within the Plain

“[...] at a distance of about 50 stades, there stood

a mountain [...]" (Crit. 113c)

"[...] a wall which began at the sea and ran round in a circle, at a uniform distance of fifty stades from the largest circle and harbor, and its ends converged at the seaward mouth of the channel" (Crit. 117e)

Local Constraint → *The capital city of Atlantis should be located at a distance of about 50 stades from the sea.*

Depending on which scale is taken as a basis (1 Sumerian stade = 148.5 m, 1 Attic stade = 177.6 m, 1 Egyptian stade = 211 m) we have a distance of 7.425 km (Sumerian), 8.875 km (Attic) and 10.55 km (Egyptian) to the sea. The shortest distance from the Atlantic Ocean to the structure is approximately 12 km and therefore the Egyptian stade applies best.

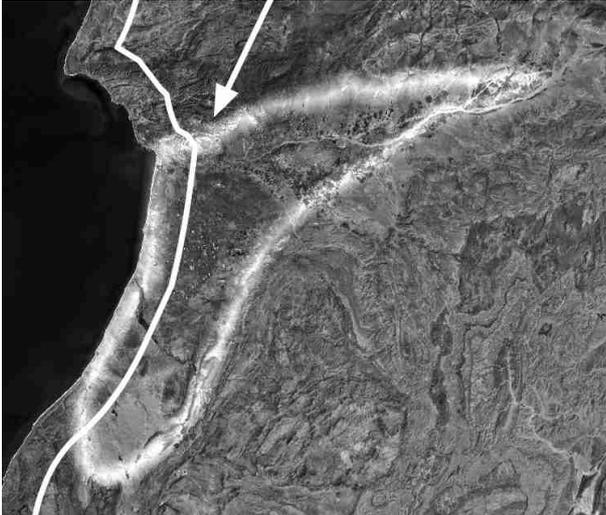


Figure 31: The structure is situated at the intersection of the plain's northern border and the thin white line, which represents a distance of 50 Egyptian stades from the sea.

Constraint Satisfaction → *The Mesguina structure is located at a distance of ~50 Egyptian stades from the sea. (In our expedition in 2012 we discovered a second semi-annular shaped structure at a distance of ~50 Egyptian stades from the sea in the Massa valley. Please refer to Huebner M. 2012).*

2.3.2.2 LI03 – Attributes of the Central Hill

"[...] there stood a mountain that is low on all sides [...]" (Crit. 113c)

In the Greek original "βραχυ πάντη" is translated literally "short on all sides" but could

mean "gently inclined" in the sense of "not precipitous" or more probably "low" in the sense of "not high".

Local Constraint → *The central hill of the capital of Atlantis should be low and/or gently inclined on all sides.*

The central hill within the structure has a diameter of approximately 3 km. The highest point (d) within the structure is ~ 325 m above sea level; the lowest point (c) is ~ 140 m above sea level, which results in a relative height of ~ 185 m, which is *low* for a mountain. The main entrance to the structure is located at point (c). The gradient between points (c) and (d) can be calculated from their distance (~ 2.2 km) and the relative height (~ 185 m), the outcome of this is ~ 8.4 %. The same calculation can be done with all other sides of the hill, which results in similar gradients. The central hill can be called *gently inclined* and *low* on all sides.

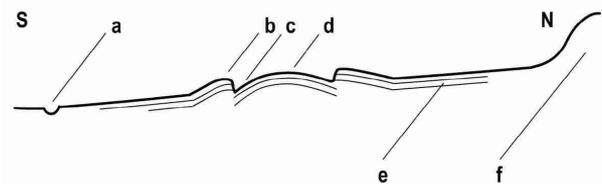


Figure 32: Schematic Diagram of the Structure. (a) River Souss, (b) Outer Ring, (c) Lowest Point within the Structure, (d) Highest Point within the Structure, (e) Parallel Rock Formations, (f) The High Atlas.

Constraint Satisfaction → *The hill within the center of the structure is low and gently inclined on all sides.*

2.3.2.3 LI04 – Attributes of the Annular Structure

"[...] and he [Poseidon] made circular belts of sea and land enclosing one another alternately, some greater, some smaller, two being of land and three of sea, which he carved as it were out of the midst of the island; and these belts were at even distances on all sides, so as to be impassable for man;" (Crit. 113d);

"The greatest of the circles into which a boring was made for the sea was three stades in breadth, and the circle of land next to it was of equal breadth; and of the second pair of circles that of water was two stades in breadth and that of dry land equal again to the preceding one of water;

and the circle which ran round the central island itself was of a stade's breadth. And this island, wherein stood the royal palace, was of five stades in diameter." (Crit. 115E, 116a);

"For, beginning at the sea, they bored a channel right through to the outermost circle, which was three plethra in breadth, one hundred feet in depth, and fifty stades in length" (Crit. 115d)

Local Constraint → *The capital of Atlantis should be located in an annular structure.*

Local Constraint → *There should be three concentric rings of water and two of land (islands).*

Local Constraint → *The whole structure should have an outer diameter of about: $2x(2x3 + 2x2 + 1x1) + 1x5 = 27$ stades.*

Local Constraint → *The central island (hill) should have a diameter of 5 stades.*

Local Constraint → *The outer ring is located 50 stades from the sea.*

Without doubt the site can be called an annular structure. But there are no alternating rings of water and land. An exegesis for this statement could be the three main wadis coming out of the interior of the structure. These wadis open out into the river Souss. The wadi (b), which is the closest to the Atlantic Ocean, is the biggest, because its spring is located beyond the structure in the High Atlas and therefore it has many tributaries. The two smaller wadis collect their water in the interior of the annular structure. All three valleys are (today) used as entrances to the inner part of the structure. At (b), (c) and (d) there are traces of old paths visible along the wadis.

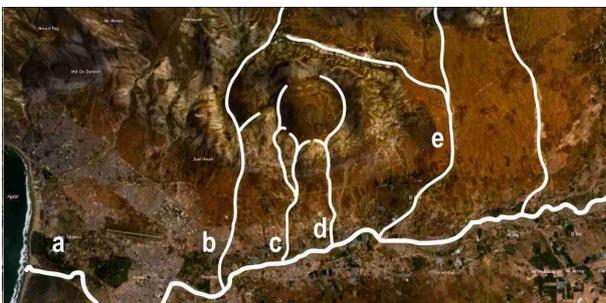


Figure 33: Rivers (a) Estuary of the Souss, (b) First Wadi passing the Structure, (c) Second Wadi flowing out of the Structure, (d) Third Wadi flowing out of the Structure, (e) Wadi partly encircling the Structure.

Constraint Satisfaction → *See Table 3: LI04*

2.3.2.3.1 LI05 – Presence of Springs

"[...] the central island, bringing up from beneath the earth two springs of waters, the one flowing warm from its source, the other cold, and producing out of the earth all kinds of food in plenty." (Crit. 113e);

"The springs they made use of, one kind being of cold, another of warm water, were of abundant volume, and each kind was wonderfully well adapted for use because of the natural taste and excellence of its waters;" (Crit. 117a)

Local Constraint → *There should have been a cold and a warm spring within the central structure.*

Today there are no active springs within the structure. But there are traces of several dried up springs. The soil around the springs is still moist. Travertine sediments on top of the central hill indicate the formerly presence of hot springs. There are some hydro-engineering buildings from the 1960s with unknown functionality.

Constraint Satisfaction → *There are springs (dried up) within the central structure.*

In comparison with Plato's account we have following relations.

Table 3: LI04

ID	Plato (scale of stade is unknown)	Reality (1 Egyptian stade = 211 m)
LI04.0	Annular structure	Yes
LI04.1	Three concentric rings of water and two of land	No. There are three wadis flowing out of the structure
LI04.2	Outer diameter 27 stades	Yes. 25 stades (central hill with surrounding ring of hills. Error of 7%)
LI04.3	Central hill 5 stades	No. 14.2 stades (including surrounding valley. Error > 64%)
LI02	Distance (a, b) 50 stades	Yes. ~56 stades. Error = 10%

2.3.2.4 LI06 – *Traces of Prehistoric Settlement*

"[...] upon the bridges on each side [...] they erected towers and gates [...]" (Crit. 116a);

"[...] all the circumference of the wall which surrounded the outermost circle [...]" (Crit. 116b);

"The royal palace within the acropolis was arranged in this manner. In the center there stood a temple sacred to Cleito and Poseidon, which was reserved as holy ground, and encircled with a wall of gold;" (Crit. 116c);

"And there they had constructed many temples for gods, and many gardens and many exercising grounds" (Crit. 117c);

"[...] moreover, they set reservoirs round about, some under the open sky, and others under cover to supply hot baths in the winter;" (Crit. 117b);

"The whole of this wall had numerous houses built on to it, set close together;" (Crit. 117e)

Plato described a great many buildings of different kinds. There should have been fortification walls, temples, baths, gardens, harbours, bridges, simple buildings etc. Ruins of some of these buildings should remain.

Local Constraint → *There should be traces of prehistoric settlement.*

The whole area is covered with many ruins of different types. Parts of these ruins resemble fortification walls, temples, houses, baths, reservoirs, paths etc. Findings of pottery and flint tools lead to the assumption that the whole site has been inhabited since the meso- or neolithic period. For now we can assert that the indication prehistoric traces of settlement applies to the site. A more detailed comparison, of all buildings mentioned by Plato with all ruins found in the area, goes far beyond the scope of this document. Moreover, there is a need for extensive archaeological investigation before any comparison can be done. At present, we can only refer to the documentation *Evidence for a Large Prehistoric Settlement in a Caldera-Like Geomorphological Structure in Southwest Morocco* (Huebner M., Huebner S. 2010), which gives a rough overview of the site and describes a small part

of the ruins and findings discovered so far.

Constraint Satisfaction → *There are many traces of prehistoric settlement.*

2.3.2.5 LI07 – *There should be traces of buildings made of coloured stones*

"And the stone they quarried beneath the central island all round, and from beneath the outer and inner circles, some of it being white, some black and some red; and while quarrying it they constructed two inner docks, hollowed out and roofed over by the native rock. And of the buildings some they framed of one simple color; in others they wove a pattern of many colors by blending the stones for the sake of ornament so as to confer upon the buildings a natural charm [...]" (Crit. 116b)

Plato described the quarrying of red, white and black stones and buildings made out of coloured stones. Ruins of some of these buildings should still exist.

Local Constraint → *Traces of Buildings made of Coloured Stones (particularly Red, White and Black).*

Within the annular geomorphological structure many prehistoric ruins made out of stones coloured red, white and black can be found. These colours can't be seen at the first glance, because all stones (lime- or sandstone) are bleached out and/or covered with lichens. The colours can be seen, if the stones were made wet or if they were cracked.



Figure 34: Cracked stones from a ruin. The colours are red, white and black. The percentage of the coloured stones varies from ruin to ruin.



Figure 35: Ruins out of red, white and black stones. All Stones are deeply eroded, bleached out and/or covered with lichens. The stones close to the camera were made wet. The large stones of this ruin are of red sandstone .

Constraint Satisfaction → There are many traces of buildings made of coloured stones .

2.3.3 Conclusion from the Analysis of Local Indications

Many, but not all, local indications apply to the annular geomorphological structure under consideration. The correlations between the location of the structure within the plain, its shape, its distance to the sea and its size are notable. Another significant indication is the fact that the whole site is covered with ruins made out of red, white and black stones. The age of the visible ruins and other monuments probably buried under thick layers of sediment still needs to be determined. For the indications which do not apply at first glance (e.g. the three concentric rings of water and two of land), a more detailed investigation of the site or a re-assessed translation is required. In particular, the circular rings of water and land could be explained by a combination of reality

(the three wadis coming out of the structure or the three bays with docks) and religion (the triple-circle-sign, which has protective magical properties) [see section 2.2.1.22, RI22]).

It might well be that Plato's account contains mixed information concerning the location of the annular structure, the docks and the semi-annular structure in the Massa valley (Huebner M. 2012).

3 HYPOTHESES

Using a *hierarchical constraint satisfaction* scheme for the analysis of Plato's account of Atlantis (and other sources) leads us to the following hypotheses:

3.1 The Souss-Massa Plain was the Core Region of Plato's Island Atlantis

This is confirmed by the following facts:

a) All global indications [GI01-GI07] apply to the Souss-Massa plain, whereas areas outside the Souss-Massa plain are supported only by some of the global indications.

c) All regional indications [RI01-RI24] apply to the Souss-Massa plain (except RI13, Trench parallel to the shore. See also section 3.4.1)

d) Indications derived from other sources (Greek mythology) also apply [OI01-OI08] and lead to most plausible and interesting insights (e.g. the Argan tree, which is endemic in the Souss-Massa plain, could be the tree of *The Golden Apples of the Hesperides/Ladon*).

e) Diodorus' and Plato's accounts seem to point to the same area, the Souss-Massa plain.

f) Ptolemy mentioned many locations South of the High Atlas. Some of these locations have Greek names (i.e. the *Ochema Theon* and the *Autolalai* or *Hera island*). These names indicate a certain importance of these locations for the ancient Greeks.

3.2 The Annular Geomorphological Structure may have been the Capital City of Atlantis

This is confirmed by the following facts:

a) Section 3.1

b) Most, but not all of the local indications apply to the annular geomorphological structure and its settlement.

3.3 *Plato's Account of the Capital City contains mixed Information concerning the Annular Structure and the Harbours/Docks near Cape Ghir*

This is confirmed by the following facts:

a) Not all indications mentioned by Plato apply to the annular structure. There are no alternating rings of water and land (only one ring of land).

b) Significant indications apply to the annular geomorphological structure and to the geomorphological structure of the harbours/docks near Cape Ghir. (e.g. docks cut into bedrock coloured red, white and black), but Plato described them to be in close proximity together.

3.4 *Why is Atlantis called 'Sunken Island'?*

Three hypotheses can be drawn:

3.4.1 *Earthquakes and Soil Liquefaction*

Earthquakes, which are caused by plate tectonics (i.e. the Southern Atlasic fault), devastated the capital city of Atlantis and probably great parts of the Souss-Massa plain. Particularly drenched sediment strata, which had been created by currents and big rivers (i.e. the *Draa*) (see section 2.2.1.13, [R113] and (Huebner M., 2008)) and probably had been used for agriculture, and therefore irrigated, slipped into the sea by soil liquefaction. Additionally, tsunamis could have induced further destruction.

3.4.2 *Mega-Tsunami*

Also mega-tsunamis, which could have been created by subsidence and landslip in the Canary Islands or the continental shelf (Krastel, 2010), might have devastated large parts of the West African coast. A large-scale volcanic instability in the Canary Islands could cause a mega-tsunami of about 900 m height, the the-

oretical worst case, which would make landfall at a 50-100 m height at the African coast in 60 minutes (Ward & Day, 2001).

3.4.3 *Metaphorical Sense*

The expression *sunken island* also may be understood metaphorically: What sunk after the earthquake-caused destruction of the capital city was *not* the island of Atlantis itself, but the empire of the Atlanteans. This could have occurred due to severe political turmoils that would have occurred after such a catastrophe, and their defeat by the Athenians.

3.5 *The Fruits of the Argan Trees are The Golden Apples of the Hesperides*

This is confirmed by the following facts:

a) The aroma and the appearance of the Argan fruits are reminiscent of small golden apples.

b) Because of its excellence, Argan oil may have been traded as far as to Greece and Egypt in ancient times.

c) Ancient Egyptian sources give evidence of trading of a very special and expensive oil from areas west of Egypt (Tehenu/Libya) (Kaplony, 1964), which probably was Argan oil.

d) The oil of the unroasted Argan seeds is traditionally used as a treatment for skin diseases, which applies to (Crit. 115a) (*unguent*).

e) The description of the *Guardian Dragon Ladon* could apply to the Argan tree itself.

3.6 *The Amazigh Term 'Agadir' has at least in South-Morocco the additional Denotation of 'Island' in a figurative Sense.*

This is confirmed by the following observations:

a) Today's town Agadir in South-Morocco is said to be named after the surrounding Souss-Massa plain, which is enclosed by the High Atlas, the AntiAtlas and the Atlantic. Therefore it is named after an isolated area, an *Island* in a figurative sense.

b) The ancient town Gadira (today's Cádiz in southern Spain) was situated on an island.

c) The arabic term *ǧazīra*(t) (جزيرة), which means 'island', could well be derived from the afro-asiatic prototype *g-d-r*. The arabic /z/ has the same alveolar point of articulation like /d/. The etymology of the Tamazight term *Agadir* is *g-d-r*.

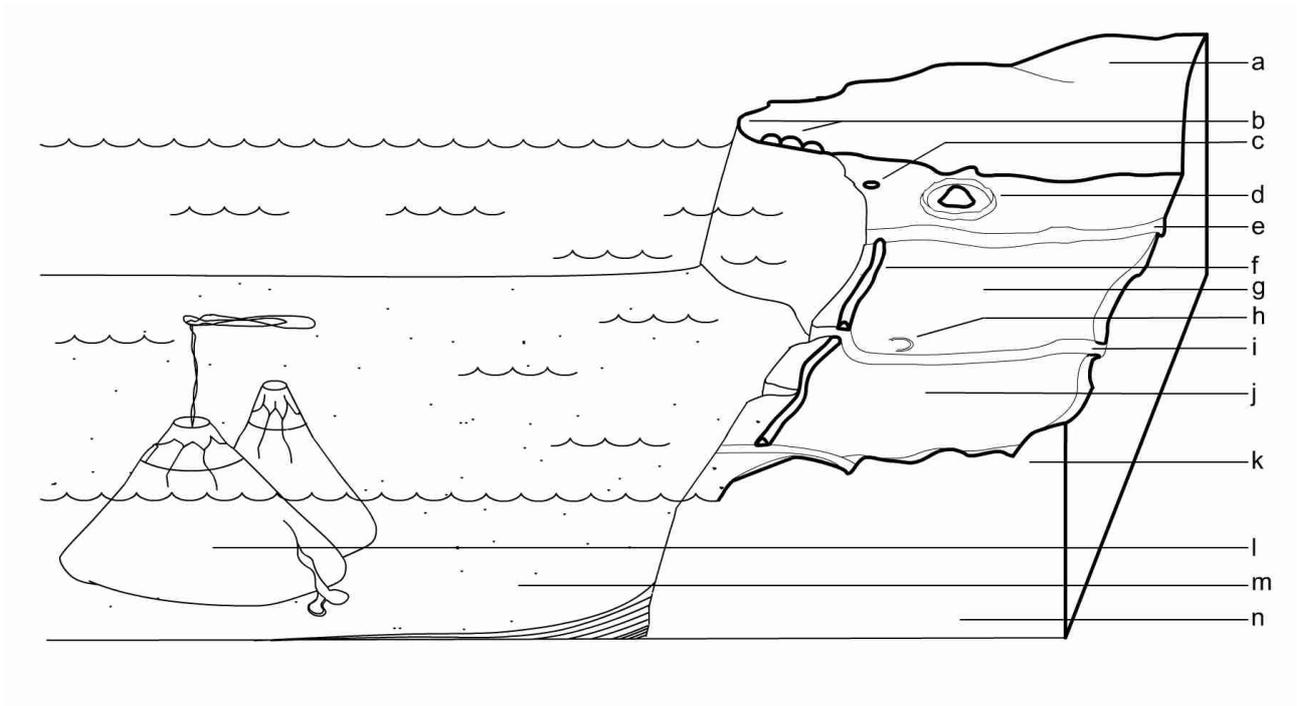


Figure 36: Situation of the Continental Shelf of Southwest Morocco and the Souss-Massa plain encircled by the High Atlas and the Anti-Atlas.

(a) High Atlas, (b) Heracles Promontory (Cape Ghir) and Roofed over Docks, (c) Today's Agadir, (d) Annular Structure/ Settlement, (e) Wadi Souss, (f) Coastal dune (height 140m) parallel to the Shore, (g) Souss-Massa plain, (h) Semiannular structure/ Settlement at the wadi Massa, (i) Wadi Massa flowing out of the Anti Atlas, (j) Souss-Massa plain, (k) Anti Atlas, (l) Canary Islands, (m) Deep Sea, (n) Continental Shelf of Africa.

4 HYPOTHESIS SUPPORT

On the basis of the sum of all indications I_n that apply to a subarea $a_{i,j}$ of the whole search-area A (i.e. the world), a hypothesis support value $S_{Atlantis}(a_{i,j})$ for each subarea $a_{i,j}$ can be computed. In consideration of the weight of criteria c_n (the more subareas the criteria applies to, the less weight it has), a measure of the uniqueness of the criteria can be evaluated (e.g. the criteria *Roofed over docks* applies only to a single subarea, on the contrary, the indication *Close to an ocean* applies to many subareas, therefore *Roofed over docks* has a greater weight than *Close to an ocean*). The hypotheses support value S can be calculated using the following equation:

$$S_{Atlantis}(a_{i,j}) = \frac{1}{N} \sum_{n=1}^N \left(\frac{1}{q_n} \cdot T(c_n) \right) \quad (1)$$

Where:

- N : the number of all criteria.
- $a_{i,j}$: the subarea under consideration.
- c_n : the n^{th} criteria.
- q_n : the number of all areas, where c_n applies to.
- $T(c_n)$: 1 if c_n applies to $a_{i,j}$
0 if c_n does not apply to $a_{i,j}$.

Note: This calculation can also be used to compare competing hypotheses against each other. For this purpose, the *quality* of evidence for a particular indication needs to be established by a fixed rule or rule set. For example, if we want to test the existence of *red, white and black stones* in Santorini and compare the result with the *red, white and black stones* found in the Souss-Massa plain, we need a rule set which defines what *red, white and black stones* are. In the sense of Plato's account *red, white and black stones* should (a) lie in close proximity, (b) be recognizable in colour (which stones can be called black, which white and which red?), (c) be recognizable by percentage, etc.

5 SPECULATIONS

5.1 *The Atlanteans knew about the Americas*

Because of Plato mentioned a *opposite continent*, it seems possible that the Atlanteans knew about the Americas. The possible use of the route *West Africa → Canaries → Americas* in ancient times was already demonstrated by Thor Heyerdahl in his archaeological experiments *Ra* and *Ra II* in 1969 and 1970 (Heyerdahl, 1971). Today this route is preferred by transatlantic sailors because it is relatively short and quick.

5.2 *Cenotes and Karst Holes in Mexico may be the Antetype for the Greek Hades*

If there was already a connection between the Americas and Africa, Cenotes and Karst Holes in Yucatan (Mexico) could be understood as the Greek *Hades*, the realm of the dead, which was often located on the gloomy far shore of *Okeanos*, beyond the setting sun. The giant Cenote and Karst Hole system is the underworld for the Maya, a portal between the worlds of the living and the dead.

5.3 *The Lybian Amazons and the Atlanteans were the so-called Sea Peoples.*

The *Sea Peoples* is the term used for a confederacy of seafaring raiders of the second millennium BC, who sailed into the eastern shores of the Mediterranean, caused political unrest, and attempted to enter or control Egyptian territory during the late 19th dynasty. Probably Diodorus' account, particularly the 3rd book (49-61), gives an explanation for the open question:

Who were the Sea Peoples and what was their intention in invading the eastern Mediterranean?

5.4 *ὄρειχαλκος = Mica and Lime*

"[...] and all the rest of the walls and pillars and floors [within the temple of Poseidon] they covered with orichalcum." (Crit. 116d)

In 2010 small pieces of a reddish lime plaster with an addition of mica were discovered close to a rampart (most probably the remains of a

city wall) within the annular structure. This material applies to Plato's description of Orichalcum: "sparkling like fire".

6 CONCLUSIONS

Using *hierarchical constraint satisfaction* for the analysis of Plato's Atlantis account points us to a large annular geomorphological structure at the wadi Souss, which is covered with many prehistoric ruins (Huebner M., Huebner S. 2010), a semi-annular structure at the wadi Massa, covered with many unusual prehistoric ruins and at least three other larger prehistoric settlements at the wadi Massa (Huebner M. 2012). These structures and settlements are situated within the Souss-Massa plain at the Atlantic Ocean in the *Djesirat el Maghreb (Island of the West)* in today's southern Morocco. The Souss-Massa plain and its adjacent valleys are said to be called *island* by the native Amazigh people. The Amazigh again are said to have inhabited this area for at least 5,000 years. Moreover, nearly all global, regional and local criteria, derived from Plato's accounts, apply to this plain.

From the above insights, the Atlantis enigma could well be based on facts, and can therefore be called a myth with a *λόγος (logos)* kernel (Papamarinopoulos, 2007). The core region of *Atlantis Nesos* is the Souss-Massa plain, which lies beyond the *Pillars of Heracles*, enclosed by the *Atlantic Ocean (Atlantis thalassa = Sea of Atlantis)*, the *High Atlas* and the *Anti Atlas*. Since it is surrounded by *Atlas* (mountains and sea), it could well be called *Island Atlantis*.

Unfortunately all archaeological sites are exposed to massive destruction by local building companies (please refer to Huebner M. Huebner S. 2010 and Huebner M. 2012 for details) and should be preserved from this destruction by all adequate means. A scientific investigation of these sites could lead to a better understanding of the ancient interconnections with other regions, especially with eastern Mediterranean cultures (particularly Greek and Egyptian). These settlements should be included on the List of World Heritage in

Danger (in accordance with Art. 11 (4) of the Convention) ¹.

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¹ <http://whc.unesco.org/en/conventiontext/>

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