Significant New Evidence for the Location of Plato's *Island of Atlas* in the Souss Plain in today's South Morocco
Michael Hübner 06/2011

Significant New Evidence for the Location of Plato's *Island of Atlas*
in the Souss Plain in today's South Morocco
Part 1
Localizing Archaeomythological Sites - a Formal Approach

Part 2
Significant New Evidence for the Location of Plato's Island of Atlas in the Souss Plain in today's South Morocco
Let's assume that we are searching for an ancient town (or region, country, etc), which is described in a historical or mythological source. We can then derive a set of criteria* from this source that a site should meet to qualify as a possible location. With this set, we can calculate the hypothesis support, search area, and weighting as follows:

**Set of Criteria**  \( C = \{ \gamma_1, \ldots, \gamma_n \} \)

**Search Area**  \( A = \begin{bmatrix} a_{1,1} & a_{1,2} & \cdots & a_{1,x} \\ a_{2,1} & a_{2,2} & \cdots & a_{2,x} \\ \vdots & \vdots & \ddots & \vdots \\ a_{y,1} & a_{y,2} & \cdots & a_{y,x} \end{bmatrix} \)

**Hypothesis Support**  \( (m, n) \)  
\[
\text{Hypothesis Support}(m, n) = \frac{1}{|C|} \sum_{\gamma \in C} (w(\gamma) \cdot t(\gamma, m, n))
\]

**Weighting**  \( w(\gamma) = \frac{1}{\sum_{x} \sum_{y} t(\gamma, x, y)} \)

**Test**  \( t(\gamma, m, n) = \begin{cases} 1 & \text{if } \gamma \text{ applies to } a_{m,n} \\ 0 & \text{otherwise} \end{cases} \)

*) e.g. geological, geographical, archaeological, biological, cultural, etc. attributes
Part 1  Localizing Archaeomythological Sites - A Formal Approach

Set of Criteria  \[ C = \{ \gamma_1, \ldots, \gamma_n \} \]

Search Area  \[ A = \begin{bmatrix} a_{1,1} & a_{1,2} & \cdots & a_{1,x} \\ a_{2,1} & a_{2,2} & \cdots & a_{2,x} \\ \vdots & \vdots & \ddots & \vdots \\ a_{y,1} & a_{y,2} & \cdots & a_{y,x} \end{bmatrix} \]

Hypothesis Support \((m,n) = \frac{1}{|C|} \sum_{\gamma \in C} (w(\gamma) \cdot t(\gamma, m, n))\)

Weighting  \[ w(\gamma) = \frac{1}{\sum_x \sum_y t(\gamma, x, y)} \]

Test  \[ t(\gamma, m, n) = \begin{cases} 1 & \text{if } \gamma \text{ applies to } a_{m,n} \\ 0 & \text{otherwise} \end{cases} \]

*) just think of a map, which is divided into \(x \times y\) subareas
Part 1  Localizing Archaeomymthological Sites - A Formal Approach

Set of Criteria $C = \{ \gamma_1, \ldots, \gamma_n \}$

Search Area $A = \begin{bmatrix}
  a_{1,1} & a_{1,2} & \cdots & a_{1,x} \\
  a_{2,1} & a_{2,2} & \cdots & a_{2,x} \\
  \vdots & \vdots & \ddots & \vdots \\
  a_{y,1} & a_{y,2} & \cdots & a_{y,x}
\end{bmatrix}$

Hypothesis Support $(m, n) = \frac{1}{|C|} \sum_{\gamma \in C} (w(\gamma) \cdot t(\gamma, m, n))$

Weighting $w(\gamma) = \frac{1}{\sum_x \sum_y t(\gamma, x, y)}$

Test $t(\gamma, m, n) = \begin{cases} 
  1 & \text{if } \gamma \text{ applies to } a_{m,n} \\
  0 & \text{otherwise}
\end{cases}$
Part 1  
Localizing Archaeomythological Sites - A Formal Approach

Set of Criteria  \( C = \{ \gamma_1, \ldots, \gamma_n \} \)

Search Area  \( A = \begin{bmatrix}
    a_{1,1} & a_{1,2} & \cdots & a_{1,x} \\
    a_{2,1} & a_{2,2} & \cdots & a_{2,x} \\
    \vdots & \vdots & \ddots & \vdots \\
    a_{y,1} & a_{y,2} & \cdots & a_{y,x}
\end{bmatrix} \)

Hypothesis Support  \( (m, n) = \frac{1}{|C|} \sum_{\gamma \in C} (w(\gamma) \cdot t(\gamma, m, n)) \)

Weighting  \( w(\gamma) = \frac{1}{\sum_x \sum_y t(\gamma, x, y)} \)

Test  \( t(\gamma, m, n) = \begin{cases}
    1 & \text{if } \gamma \text{ applies to } a_{m,n} \\
    0 & \text{otherwise}
\end{cases} \)

*) e.g. by querying a knowledge-base
Part 1  
Localizing Archaeomythological Sites - A Formal Approach

**Set of Criteria**  
\[ C = \{ \gamma_1, \ldots, \gamma_n \} \]

**Search Area**  
\[ A = \begin{bmatrix} a_{1,1} & a_{1,2} & \cdots & a_{1,x} \\ a_{2,1} & a_{2,2} & \cdots & a_{2,x} \\ \vdots & \vdots & \ddots & \vdots \\ a_{y,1} & a_{y,2} & \cdots & a_{y,x} \end{bmatrix} \]

**Hypothesis Support**  
\[ \text{Hypothesis Support}(m,n) = \frac{1}{|C|} \sum_{\gamma \in C} (w(\gamma) \cdot t(\gamma, m, n)) \]

**Weighting**  
\[ w(\gamma) = \frac{1}{\sum_x \sum_y t(\gamma, x, y)} \]

**Test**  
\[ t(\gamma, m, n) = \begin{cases} 1 & \text{if } \gamma \text{ applies to } a_{m,n} \\ 0 & \text{otherwise} \end{cases} \]
A Simple Example
Significant New Evidence for the Location of Plato's *Island of Atlas* in the Souss Plain in today's South Morocco
Michael Hübner 06/2011

**Part 1**

Localizing Archaeomythological Sites - A Formal Approach

**Example**

Searching for Thirasia island

This is a map of the Santorini archipelago, which is divided into 4 subareas $a_{1,1}$, $a_{1,2}$, $a_{2,1}$ and $a_{2,2}$

Let's assume that we don't know where Thirasia Island is located within the Santorini archipelago. But we have 4 criteria that describe properties of this island ...
Part 1  Localizing Archaeomythological Sites - A Formal Approach

Example

Searching for Thirasia island

The first criteria tells us that Thirasia Island is located in the North of the archipelago.

Since we have 2 subareas, $a_{1,1}$ and $a_{1,2}$ which meet this criteria, the hypothesis support value for each is 50%.

The upper number (100%) in both subareas tells us that all selected criteria apply.
Part 1  Localizing Archaeomythological Sites - A Formal Approach

Example

Searching for Thirasia island

The second criteria tells us that Thirasia Island is located in the West of the archipelago. Therefore the subareas \(a_{1,1}\) and \(a_{2,1}\) are each supported by 50%.
The third criteria tells us that Thirasia Island can be seen from the largest island. Therefore the subareas $a_{1,1}$, $a_{2,1}$ and $a_{2,2}$ are supported. This results in a 33.33% hypothesis support value for these subareas.
The last criteria explicitly tells us that Thirasia Island is located in the North-West. Since this applies only to $a_{1,1}$, we have a high weighted hypothesis support value of 100% for $a_{1,1}$. 
Part 1  Localizing Archaeomythological Sites - A Formal Approach

Example

Searching for Thirasia island

If we combine criteria 1 & 2 ...

P false positive = 0.25
Expected mean = 1, max = 2, min = 0

(1.1) = 54% support, 2 of 2 indications
(2.1) = 25% support, 1 of 2 indications
(1.2) = 25% support, 1 of 2 indications
Part 1

Localizing Archaeomythological Sites - A Formal Approach

Example

Searching for Thirasia island

Hypothesis Support Distribution

Indication Distribution

\[ P_{\text{false positive}} = 0.1875 \]

\[ \text{Expected mean} = 1.75, \text{max} = 3, \text{min} = 1 \]

\[ (1,1) = 44.44\% \text{ support, 3 of 3 indications} \]

\[ (1,2) = 27.78\% \text{ support, 2 of 3 indications} \]

\[ (2,1) = 16.67\% \text{ support, 1 of 3 indications} \]
Part 1
Localizing Archaeomythological Sites - A Formal Approach

Example

Searching for Thirasia island

1 & 2 & 3 & 4, the highest hypothesis support value of 58.33% (100% of all criteria apply) can be found in $a_{1,1}$. Therefore, according to all given criteria, Thirasia Island is most probably located in $a_{1,1}$.

$$A = \begin{bmatrix} a_{1,1} & a_{1,2} \\ a_{2,1} & a_{2,2} \end{bmatrix}$$
Part 1  
Localizing Archaeomythological Sites - A Formal Approach

Example
Searching for Thirasia island

The null-hypothesis \( H_0 \) for a specific subarea is:

"Thirasia Island is not located within this subarea"

Based on all criteria-probabilities (0.5, 0.5, 0.75 and 0.25) we can compute the probability of a "false positive" or "error 1" for the case that all criteria apply to a specific subarea.

Therefore, if we reject the null-hypothesis for subarea \( a_{1,1} \) and accept the alternative hypothesis:

"Thirasia Island is located within this subarea"

we have a probability of 0.046875 that rejecting the null-hypothesis was a wrong decision.

Each criteria probability can be computed by this equation:

\[
Probability \quad p(\gamma) = \sum \sum t(\gamma, x, y) / xy
\]
Part 1  Localizing Archaeomythological Sites - A Formal Approach

Binomial Distribution 4 Criteria

\[ M = \left\{ \alpha \in \{0,1\}^n \; ; \; \sum_{i=1}^{n} \alpha_i = k \right\} \]

\[ P(k) = \sum_{\alpha \in M} \prod_{i=1}^{n} P_i^{\alpha_i} (1-P_i)^{1-\alpha_i} \]

All criteria probabilities can also be used to compute a binominal distribution, which shows the probabilities that a specific subarea meets 0, 1, 2, 3 or all 4 criteria.
Significant New Evidence for the Location of Plato's *Island of Atlas* in the Souss Plain in today's South Morocco
Michael Hübner 06/2011

**Part 1**  Localizing Archaeomythological Sites - A Formal Approach

**Binomial Distribution 4 Criteria**

The expected mean value is to find 2 criteria accumulated by chance within a subarea. (probability of about 0.4)
Part 1  Localizing Archaeomythological Sites - A Formal Approach

Binomial Distribution 4 Criteria

In our example, we found 4 criteria in $a_{1,1}$. Since this is beyond the 2-sigma level, we can call this result 'significant'.
From Plato's accounts *Timaios* and *Critias* we can derive more than 50 criteria that a given site should meet to qualify as a possible location for 'Atlantis Nesos', the 'Island of Atlas'.

Please refer to the paper 'Circumstantial Evidence for Plato's Island Atlantis in the Souss-Massa plain in today's South-Morocco' (Huebner, 2011) for an excerpt of these criteria and please stay tuned for a complete list.
Part 1  Localizing Archaeomythological Sites - A Formal Approach

An adequate search area for Atlantis covers Europe and parts of Africa and Asia. *

The search area is divided into 20 x 20 = 400 subareas.

All criteria are classified and assigned to global, regional or local criteria classes. **

*) This covers an area of about 5,000 km radius around Athens. If we can not find Atlantis here, we can enlarge the search area. The criteria „Atlantis should be located within a reasonable range from Athens“ was also declared as a condition at the International Atlantis Conference 2005 in Athens. ***) See also section ‘Hierarchical Constraint Satisfaction’ in (Huebner, 2011)
Significant New Evidence for the Location of Plato's Island of Atlas in the Souss Plain in today's South Morocco
Michael Hübner 06/2011

Part 1
Localizing Archaeomythological Sites - A Formal Approach

Plato

Global criteria:

Atlantis should be located close to a sea or ocean.

This criteria applies to approx. 51% of all subareas.

Note: The green surface contains all subareas, which cover sea or coastal regions. It is more probable that Atlantis is located somewhere within these subareas than within the gray subareas (interior of a large land surface).
Part 1

Localizing Archaeomythological Sites - A Formal Approach

Plato

Global criteria:

*Atlantis should be located west of Tyrrhenia and Egypt.*

This criteria applies to approx. 80% of all subareas.
Part 1

Localizing Archaeomythological Sites - A Formal Approach

Plato

**Global criteria:**

*Atlantis should be located where elephants lived.*

This criteria applies to approx. 62% of all subareas.
Significant New Evidence for the Location of Plato's Island of Atlas in the Souss Plain in today's South Morocco
Michael Hübnner 06/2011

Part 1  Localizing Archaeomythological Sites - A Formal Approach

Plato

Global criteria:

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.

This criteria applies to approx. 26% of all subareas.
Part 1

Localizing Archaeomythological Sites - A Formal Approach

Plato

Global criteria:

*Atlantis should not be located in Ancient Asia or Europe*

This criteria applies to approx. 53% of all subareas.
Significant New Evidence for the Location of Plato's *Island of Atlas* in the Souss Plain in today's South Morocco
Michael Hübner 06/2011

Part 1
Localizing Archaeomythological Sites - A Formal Approach

Plato

**Global criteria:**

*Atlantis should be located in an area with Mediterranean/subtropical or tropical flora*

This criteria applies to approx. 70% of all subareas.
Significant New Evidence for the Location of Plato's *Island of Atlas* in the Souss Plain in today's South Morocco
Michael Hübner 06/2011

Part 1
Localizing Archaeomythological Sites - A Formal Approach

Plato

Global criteria:
*Atlantis’ main plain should be located close to and south of high mountains.*

This criteria applies only to approx. 4% of all subareas.
Significant New Evidence for the Location of Plato's Island of Atlas in the Souss Plain in today's South Morocco
Michael Hübner 06/2011

Part 1
Localizing Archaeomythological Sites - A Formal Approach

Plato

Global criteria:
If we combine all global criteria...

- Hypothesis Support Distribution
- Indication Distribution
- P false positive = 0.4173825
  Expected mean = 1.325, max = 2, min = 0
  (1,1) = 0.4% support, 2 of 2 indications
  (2,1) = 0.4% support, 2 of 2 indications
  (3,1) = 0.4% support, 2 of 2 indications
Significant New Evidence for the Location of Plato's Island of Atlas in the Souss Plain in today's South Morocco
Michael Hübner 06/2011

Part 1
Localizing Archaeomythological Sites - A Formal Approach

Plato

Hypothesis Support Distribution

Indication Distribution

P false positive = 0.26117578125
Expected mean = 1.55, max = 3, min = 0
(6.9) = 0.4% support, 3 of 3 indications
(7.9) = 0.4% support, 3 of 3 indications
(6.9) = 0.4% support, 3 of 3 indications

Sea/Ocean (0.5175)
West of Timbuktu/Egypt (0.3075)
Elbligian (0.6225)
Strait (0.425)
Not in Asia/Europe (0.6375)
Mediterranean/Subtropical/Tropical flora (0.7)
Large mountain range (0.0025)

Regional
Large canals (wastewater? Plethron ~39m height) (0.5)
Evidence for climate in ancient times (0.5)
Cultural importance of three concentric circles (0.0025)
Presence of red/bright difficolt (0.5)
Region of Gades (Hedge) (0.5)
Match names (Atlantis Malassa, King name Atlas)
Smooth plain (0.5)
Rectangular plain (long since parallel to the shore) (0.5)
Size of the plain (500000000 Stadia) (0.5)
Region (0.5)
Size of island (0.5)
Fruits (particularly lemons) (0.5)
Geological active zone (hollow earthshakes) (0.5)
Presence of forces in prehistoric times (0.5)
Presence of chariots in prehistoric times (0.5)
Located beyond the Pillars of Heracles (0.5)
Streams from the mountains (0.5)
Reservoirs around water supply (0.5)
Canal parallel to the shore (0.5)
Fragmented roads (0.5)
Sacrifice of bulls (0.5)
Dark blue clay (0.5)
Prevalence winds from the North (0.5)
North-west projection (0.5)
Trees which afford liquid and solid food and unguent

Local
Annular shape of the structure (0.005)
Three concentric circles (0)
Distance from the structure to the sea (~60 Stadia) (0)
Central hill (acropolis) within the structure (0.0025)
Diameter of structure (~27 Stades) (0.0025)
Prehistoric settlement within the structure (0.0025)
Dimension of settlement is town-sized (0.0025)
Water sources (springswells) warm and cold on the City wall (0.0025)
Reddish sparkling plaster on city wall (0.0025)
Presence of cisterns water reserves (0.0025)
Architecture (red/white/black stones) (0.0025)
Docks cut into red/white/black bedrock (0.0025)
Route course for horses (0.0025)
Significant New Evidence for the Location of Plato's Island of Atlas in the Souss Plain in today's South Morocco
Michael Hübner 06/2011

Part 1
Localizing Archaeomythological Sites - A Formal Approach

Plato

...
Part 1 Localizing Archaeomythological Sites - A Formal Approach

Plato

...
Part 1  Localizing Archaeomythological Sites - A Formal Approach
Significant New Evidence for the Location of Plato's *Island of Atlas* in the Souss Plain in today's South Morocco
Michael Hübner 06/2011

Part 1
Localizing Archaeomythological Sites - A Formal Approach

Plato
Part 1
Localizing Archaeomythological Sites - A Formal Approach

Plato

... the remarkable result is, that only subarea a_{3,11} fulfills all these criteria.

Note: The probability, that all these global criteria can be found combined by chance within a specific subarea is already approx. 1 in a thousand.

\[ P \text{ false positive} = 0.001096 \]
Part 1

Localizing Archaeomythological Sites - A Formal Approach

Plato

In terms of hierarchical constraint satisfaction we proceed and test all regional and local criteria for subarea $a_{3,11}$. *

*) Note: The probabilities of all regional and local criteria can't be computed as long as we don't have a knowledge-base, that provides us with corresponding information for all subareas. In terms of hierarchical constraint satisfaction we proceed and test subarea $a_{3,11}$ based on in-situ examinations (several expeditions to South-Morocco in 2007-2011) where all criteria were investigated and most of them found to be true $t(y,a_{3,11}) = 1$. But if we want to compute a binominal distribution, we need to make assumptions for the probability of each criteria. Today we know, that South-Morocco has geomorphological features that are very rare. For example we found docks, which were cut into red, white and black bedrock near Cape Ghir. We think this feature, which was indeed described by Plato, is unique in the whole world. (Probability of $1/400 = 0.0025$ within our search area). But since we don't want to support our South-Morocco test results arbitrarily, we assume that all attributes described by Plato are frequently distributed and therefore have a high probability. Since we know that approx. 50% of all subareas cover land and all criteria are somehow related to land, we assume a 0.5 probability for criteria which we think are more common and a 0.25 probability for criteria which we think are rare. For example we assume a probability of 0.25 instead of 0.0025 for the dock criteria (to be on the safe side). We estimate that most 0.5 criteria have a smaller probability than 0.5 and most 0.25 criteria have a smaller probability than 0.25 in reality.
Part 1

Localizing Archaeomythological Sites - A Formal Approach

Plato

The probability of finding all 51 criteria within a specific subarea is:

\[ 5.94 \times 10^{-25} \]

Subarea \( a_{3,11} \) fulfills 44 of the 51 criteria.

Note: We did a best-case assumption for the null-hypothesis „Atlantis is not located in \( a_{3,11} \)“. If we make more realistic estimations for all regional and local probabilities, we get a false positive result for the case that all criteria apply to one subarea that is much less than \( 10^{-50} \).
Part 1  Localizing Archaeomythological Sites - A Formal Approach

Binomial Distribution 51 Criteria

The probability that 44 of 51 criteria apply to a specific subarea is about:

\[ 2.79 \times 10^{-12} \]

Note: This graphic is computed using the standard equation for binominal distribution based on an averaged probability for all criteria. This is because the computation with the equation introduced in the example section would take several years on my home computer, due to a very high number of permutations. Anyway, the expected mean would be nearly the same, the standard deviation little less and the significance level for \( p(44) \) even higher.
Additionally to Plato's account, we can also analyse other sources like Diodor's account of the settlement area of the *Atlanteans* (*Atlantoi*) and the *Libyan Amazons*.
Diodorus said, that the Atlanteans lived on the western parts of Libya (Africa) at the shore ...
Part 1
Localizing Archaeomythological Sites - A Formal Approach

Diodorus Siculus

... close to the Atlas mountain range ...
Part 1
Localizing Archaeomythological Sites - A Formal Approach

Diodorus Siculus

Just these two criteria point us precisely to the same subarea $a_{3,11}$ like the result of the analysis of Plato's account.
Additonal, Diodorus' Atlanteans must have lived south of the Atlas mountain range, because their settlement area was also close to ancient Ethiopia. This correlates with Plato's account (south of high mountains and protected from the north wind).
Maximus of Tyre

Also Maximus of Tyre's account of the settlement area of the *Hesperian Lybians* points us to subarea a$_{3,11}$. He didn't mention the *Atlanteans*, but he gave us other interesting information about this area ...
Very similar to Diodor, Maximus of Tyre described the settlement area of the Hesperian Lybians to be situated on the western parts of Libya (Africa) at the Atlantic shore ...
Part 1

Localizing Archaeomythological Sites - A Formal Approach

Maximus of Tyre

The settlement area of the Hesperian Libyans

... close to the Atlas mountain range ...
Maximus of Tyre

The settlement area of the Hesperian Lybians

... and precisely 'where Atlas opens to the sea like theaters to the air'.

Without doubt, this is the so-called Souss plain (which is situated in a_{3,11}), because it is the only location where the Atlas meets the Atlantic and 'opens to the sea' (i.e. split into High Atlas and Anti Atlas, which surround the coastal Souss plain).
Significant New Evidence for the Location of Plato's *Island of Atlas* in the Souss Plain in today's South Morocco
Michael Hübner 06/2011

Part 1
Localizing Archaeomythological Sites - A Formal Approach

Maximus of Tyre

The settlement area of the Hesperian Lybians

Again, the result is subarea $a_{3,11}$
Part 1  Localizing Archaeomythological Sites - A Formal Approach

Maximus of Tyre wrote:

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)

Maximus of Tyre gave us at least two interesting details about this area:

- there once was a peninsula* (or the region was called peninsula?)
- there is evidence for tsunamis (or even mega tsunamis)

Note: Also Diodorus wrote about a town within this region, which was named Cherronesos (Greek for peninsula) after its shape
Significant New Evidence for the Location of Plato's *Island of Atlas* in the Souss Plain in today's South Morocco
Michael Hübner 06/2011

**Souss vs Santorini**

A comparison between the Santorini and the Souss Atlantis hypotheses.
Significant New Evidence for the Location of Plato's *Island of Atlas* in the Souss Plain in today's South Morocco

Michael Hübner 06/2011

Part 1  
Localizing Archaeomythological Sites - A Formal Approach

Souss vs Santorini

If we compare the number of all criteria that apply to Santorini (23)* with all that apply to the Souss (44) ...

Note: Probably there are less than 23 criteria that apply to Santorini, e.g. we don't know if there is evidence for elephants or horses in prehistoric times or if there once have been docks cut into red, white and black bedrock, etc. But for now we assume that these criteria apply (in dubio pro reo)
Part 1

Localizing Archaeomythological Sites - A Formal Approach

Binomial Distribution 51 Criteria

... we notice, that Santorini does not have a significant amount of Atlantis-relevant attributes. Only slightly more than 19.75 (the expected mean) criteria apply.

Atlantis in Santorini
23 criteria apply
\( P_{\text{error}} = 0.09 \)
not significant

Atlantis in the Souss
44 criteria apply
\( P_{\text{error}} = 2.79 \times 10^{-12} \)
highly significant
Part 2

New Significant Evidences for Plato's *Island of Atlas* in the Souss

Significant New Evidence for the Location of Plato's *Island of Atlas* in the Souss Plain in today's South Morocco
Part 2

Significant New Evidence for the Location of Plato's *Island of Atlas* in the Souss Plain in today's South Morocco

Satellite overview

The Souss plain seen from North-East to South-West

Image: Google Earth
Significant New Evidence for the Location of Plato's *Island of Atlas* in the Souss Plain in today's South Morocco

Michael Hübner 06/2011

**Part 2**

Significant New Evidence for the Location of Plato's *Island of Atlas* in the Souss Plain in today's South Morocco

Satellite overview

Image: Google Earth

- **Anti Atlas**
- **Souss Plain**
- **Annular Structure**
- **Esturay Oued Massa**
- **Atlantic Ocean**
- **High Atlas**
Significant New Evidence for the Location of Plato's \textit{Island of Atlas} in the Souss Plain in today's South Morocco

Michael Hübner 06/2011

Part 2

Satellite overview

Annular Structure, which is covered with hundreds of ancient ruins*

*) Please refer to the paper (M. Huebner & S. Huebner, 2011)
Part 2

Significant New Evidence for the Location of Plato's *Island of Atlas* in the Souss Plain in today's South Morocco

Some old maps of the region
Part 2

Old Maps

In ancient times, Cape Ghir was called Hercules Promontory
Significant New Evidence for the Location of Plato's *Island of Atlas* in the Souss Plain in today's South Morocco

Michael Hübner 06/2011

Part 2

Significant New Evidence for the Location of Plato's *Island of Atlas* in the Souss Plain in today's South Morocco

Old Maps

The Cerne Island was located south of Cape Ghir. Today, there is no such island.
Part 2

Significant New Evidence for the Location of Plato's Island of Atlas in the Souss Plain in today's South Morocco

Old Maps

Cerne, Hera and/or Autolala Island in front of the Souss.

Cape Ghir

Note: Ptolemy's coordinates are not very exact and most probably all information is based on several sources, therefore some locations could well be drawn twice (or more) on the map with different names. E.g. the Cerne, Hera or Autolala island could be identical, Cape Russaddir could be Cape Heracles/Ghir, Massa could be Massitholos, large harbor (Grosser Hafen) could be Hypodromos, Nuios could be Nias, etc.

Ethiopia

Part 2

Significant New Evidence for the Location of Plato's *Island of Atlas* in the Souss Plain in today's South Morocco

Indications of Mega Tsunamis in Ancient Times
Part 2

Evidence for Tsunamis in ancient times
Aprox: 0-1000 BC

These tremendous undersea landslips, which were discovered in 2010, could have induced mega tsunamis.

Source: Prof. Dr. Sebastian Krastel, IFM-Geomar, Leibniz-Institut für Meereswissenschaften der Universität Kiel, 2010
Docks cut into Red-White-Black Bedrock

(Maybe called 'Hypodromos' by Ptolemy)

In addition to the large annular structure covered with hundreds of neolithic ruins, the Souss plain and its environment apply to some other very rare geological features mentioned by Plato.
Part 2

Significant New Evidence for the Location of Plato's *Island of Atlas* in the Souss Plain in today's South Morocco

Image: Google Earth
There are three bays with caves cut into the bedrock. These distinctive points are suitable for use in a *Periplous*.
Plato wrote:
"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)

Caves cut into red, white and black bedrock. It is uncertain if they were human made or of natural origin or both. Today fishermen still use similar structures all along the coast to store their boats.
These caves are arranged in a circular bay.
Part 2

Significant New Evidence for the Location of Plato's *Island of Atlas* in the Souss Plain in today's South Morocco

The stone is indeed white (bottom) and red/black conglomerate (roof)

The largest cave is approx 10m wide, 8m high and 32m deep.
Part 2

Significant New Evidence for the Location of Plato's *Island of Atlas* in the Souss Plain in today's South Morocco

Detail: red/black stone (roof)
Part 2

Significant New Evidence for the Location of Plato's *Island of Atlas* in the Souss Plain in today's South Morocco

Canals
1 Stadia (177.6 – 211 meters) wide,
1 Plethron (29.6 meters) deep

Plato mentioned canals, which were 1 Stadia wide and 1 Plethron deep. This kind of (natural) canal can only be found if there are adequate geological conditions. The Souss plain is an uplifted former sea bed and meets these conditions. Remarkably, today the plain stands about 30 m = 1 Plethron above sea level.
The estuaries of the Oued Massa and Oued Noun give the impression of 30 m deep and 200 m wide canals and therefore precisely meet Plato's description.
Conclusion

From all these insights we can say:

Without any* doubt, Plato's Atlantis account is based on facts.

Also the name Atlantis Nesos, the Island of Atlas seems to make sense, since the Souss is surrounded by Atlas mountains and sea and therefore is an island within Atlas.

*) Mathematically at most with the doubt of $2.79 \times 10^{-12}$

In other words: The probability that Plato's account is based on historical facts and the Souss is the location he described is at least:

$99.999999999721\%$
Significant New Evidence for the Location of Plato's *Island of Atlas* in the Souss Plain in today's South Morocco
Michael Hübner 06/2011

Thank you very much!

www.asalas.org

References:
Michael. Huebner, 2011,
*Circumstantial Evidence for Plato's Island Atlantis in the Souss-Massa plain in today's South-Morocco*,
Michael. Huebner & Sebastian Huebner, 2011,
*New Evidence for a Large Prehistoric Settlement in a Caldera-Like Geomorphological Structure in Southwest Morocco*

www.asalas.org/doku.php