A geographic comparison of Plato's Atlantis and Ireland as a test of the megalithic culture hypothesis

U. Erlingsson
Erlingsson Sub-Aquatic Surveys, Sweden

ABSTRACT

Based on geographic similarities, Erlingsson (2004) presented the scientific hypothesis that the Atlantean Empire was modelled on the megalithic culture of Europe and Northern Africa. It follows from the hypothesis that the island of Atlantis must have been Ireland.

This is tested scientifically using two geographical tests, one regarding length and width, the other regarding the plain surrounded by mountains. Each of the tests passes at the 2 percent confidence level. In view of these statistically significant matches, the hypothesis is retained.

Similarities are also found with Irish archaeology. Newgrange matches the temple of Poseidon in several aspects, while Knowth matches a second temple on Atlantis. In Irish folklore Newgrange is the mansion of a river divinity, just like Atlantis' main temple is.

The sinking of Atlantis is found to have parallels with how Dogger Bank sank. The time of the disaster given by Plato corresponds to an earlier dramatic flooding of a North Sea plain, which has been pointed out as a promising area for underwater archaeology.

The conclusion is that Plato rearranged factual information to create a fictional tale of Atlantis. The traditions can have been passed on directly from the megalithic culture to the Old Kingdom of Egypt, as they were contemporary.

Even though the facts are rearranged, they are unique in providing information from the earliest known advanced culture in Europe, many thousands of years before the start of recorded history.

1. INTRODUCTION

The only original source on Atlantis is Plato, in the dialogues *Timaios* and *Kritias* (*Timaeu*s and *Critias* in Latin). If the tale is true to some extent, it may represent our oldest extant traditions, at least outside Mesopotamia. If it can be deciphered, it may thus add invaluable clues to the interpretation of the more silent discoveries made in archaeology.

We can safely assume that not everything in Plato's tale matches reality, if not for other reasons so for errors in the transmission and translation. The name Atlantis in a strict sense refers to Plato's exact description. However, in a lax sense it may be used to refer to a real world model for only a part of Plato's tale, just like a modern city can function as a backdrop to a novel (and be modified in the novel compared to reality).

The literature on how to interpret Plato's Atlantis tale is huge, but often of little scientific substance. The signal to noise ratio is very poor, which makes it challenging to discern a research frontier. Having said that, it is my understanding that there does not exist any hypothesis regarding the interpretation of the tale that has stood up to scientific scrutiny. I therefore ask for your indulgence when I now start a scientific study from scratch, building on nothing but the translated dialogues of Plato.

1.1 The scientific method

To suggest that a certain place may be a model for Atlantis in some aspect is to suggest an hypothesis. As a test of the hypothesis, the student compares detail after detail. Any

similarity that the student made use of to come up with the hypothesis, is banned for use in a test.

If a test nevertheless can be devised using independent data, and the result is negative, the scientific method dictates that the hypothesis should be dismissed. However, since we are dealing with a potentially ancient tradition we must allow for some errors to have entered the tale, and can therefore not be that strict.

Unfortunately, the possibility of such errors in the tradition largely defeats the purpose of the hypothetic-deductive method. Clearly some other rejection criterion is needed, lest we be stuck with the present deluge of untested hypotheses.

The solution is to apply the statistical significance test on the null hypothesis. What it amounts to is to raise the bar for a test to pass, by requiring that it be statistically improbable that it passes by chance.

Another benefit of using the null hypothesis is that segments of the tale can be evaluated independently from each other. It is not necessary to assume that all or nothing must be true.

This study is based on the classic scientific hypothetic-deductive method and statistical significance-tests on the null hypothesis. A significance level of 0.02 (2%) was chosen as rejection criterion. The null hypothesis is that Plato made it all up, and that any similarity with reality is purely coincidental.

1.2 Why the case is open

The mainstream opinion is that the Atlantis tale is entirely fictional. However, this has not and can not be proven.

One flawed line of argument is this: "If it is fictional it exists to serve the story. It serves the story. Thus it is fictional." The logical operator (if A so B) is false only when A is true and B is false. When, as in this case, B is true, A can be either false or true. Thus, the argument is logically false (illogical). An argument has to be both logically true and relevant to be valid, why this one is invalid.

Christopher (2001) is another example of a flawed argument. Plato advocated the use of lies in the service of propaganda to maintain a militaristic, hierarchically structured society, and to prevent real democracy. We can therefore not rule out that Plato may have intended to create a political myth, but even if that is the case, it does not imply that everything is fiction.

However, Christopher, a linguist, considers any partial resemblance meaningless. Given that, as he states, all legitimate scholars have jettisoned the conclusion that the account is entirely factual and inerrant, it of course becomes somewhat of a truism that Atlantis does not exist.

Old tales like the Icelandic Sagas were notorious for mixing fact and fiction. If we reject all old tales as potential sources of factual information, we loose a large part of our history. It is by choice, not necessity, that Christopher closes the door to the past.

Any student of prehistory is forced to lay puzzle with incomplete data, and any piece of information may turn out to be crucial. Even if the only thing that can be proven from this line of inquiry is that Plato had access to knowledge from a specific time and place, it is still a potentially invaluable result.

Therefore I elect to use a paradigm in which the goal is to search for pieces of facts in the Atlantis tale, and to use these pieces to deduce how the traditions were transmitted and the tale assembled by Plato.

All quotes of Plato's dialogues are from Benjamin Jowett's translation unless otherwise stated.

2. HYPOTHESIS

2.1 The empire in Kritias

The hypothesis was formulated by Erlingsson (2004) based on information in *Timaios* only (not *Kritias*), notably this passage: "This power came forth out of the Atlantic Ocean, for in those days the Atlantic was navigable; and there was an island situated in front of the straits which are by you called the Pillars of Heracles; the island was larger than Libya and Asia put together, and was the way to other islands, and from these you might pass to the whole of the opposite continent which surrounded the true ocean; for this sea which is within the Straits of Heracles is only a harbour, having a narrow entrance, but that other is a real sea, and the

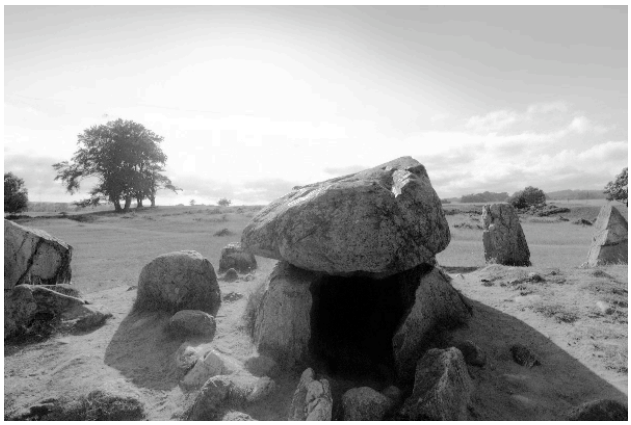

Figure 1. The cairn at Havänge in southern Sweden. It is a typical megalithic tomb of the type without passage.

surrounding land may be most truly called a boundless continent."

The text seems to be referring to the North Atlantic islands, which can be used to divide the crossing to America into many short legs, like the Vikings did. In my experience, it is by far the best route to take across the ocean for a boat without proper sleeping quarters. During the climatic optimum in the Atlantic Period, it will have been even easier to make a crossing at this latitude.

The text in *Timaios* continues: "Now in this island of Atlantis there was a great and wonderful empire which had rule over the whole island and several others, and over parts of the continent, and, furthermore, the men of Atlantis had subjected the parts of Libya within the columns of Heracles as far as Egypt, and of Europe as far as Tyrrhenia."

Megalithic tombs (Fig. 1) are found on several islands in the Atlantic Ocean, on parts of the European continent, and, furthermore, the parts of Africa inside the Straits of Gibraltar almost as far as Libya, and in Europe as far as the Tyrrhenian Sea and southernmost Italy (Fig. 2). Considering that "the pillars of Heracles" was understood in Plato's time to mean 'the Straits of Gibraltar', and that "Libya" meant 'Africa', the extent of the empire of Atlantis in Plato's account matches that of the megalithic tombs quite well.

I therefore hypothesize that the empire of Atlantis refers to the entity responsible for the erection of the so-called megalithic tombs in Europe and northern Africa, an entity that I for short call the megalithic culture. I avoid the word tomb since they also erected standing stones (menhirs, stone circles), and since it is far from obvious that the primary function of all so-called tombs were as burial places.

The construction of the megalithic tombs ended suddenly around 2,800 BC, in connection with a climatic deterioration. Note that the term megalithic culture in this sense does not imply any connection with megaliths on other continents.

2.2 Deduction

In the hypothetic-deductive method a prediction is made from the hypothesis, and tested using independent data.

Plato let us understand that the empire Atlantis was based on a large island (after which the empire was named) along the path from the Mediterranean to the opposite continent (America), and that they completely controlled that island. A quick look at Figure 2 shows that there are only two large islands off Europe, and that of those, only Ireland is completely within the distribution area of megalithic tombs.

I therefore deduce that for the hypothesis to be correct, Ireland should correspond to the description of the island Atlantis.

2.3 Independence criterion

The test must be made using independent data. This is satisfied since the hypothesis and the deduction were formulated without knowledge of relevant Irish geography, geology, archaeology, or mythology, and furthermore without knowing the content of *Kritias*. By using only information from that dialogue, the data are even doubly independent.

Among the geographical information in *Kritias* is the following: "The whole country was said by him to be very lofty and precipitous on the side of the sea, but the country immediately about and surrounding the city was a level plain, itself surrounded by mountains which descended towards the sea; it was smooth and even, and of an oblong shape, extending in one direction three thousand stadia, but across the centre inland it was two thousand stadia."

This information about Atlantis is compared with modern geographic data on Ireland, derived from encyclopedias, and from digital geographic information system (GIS) databases in vector and raster format.

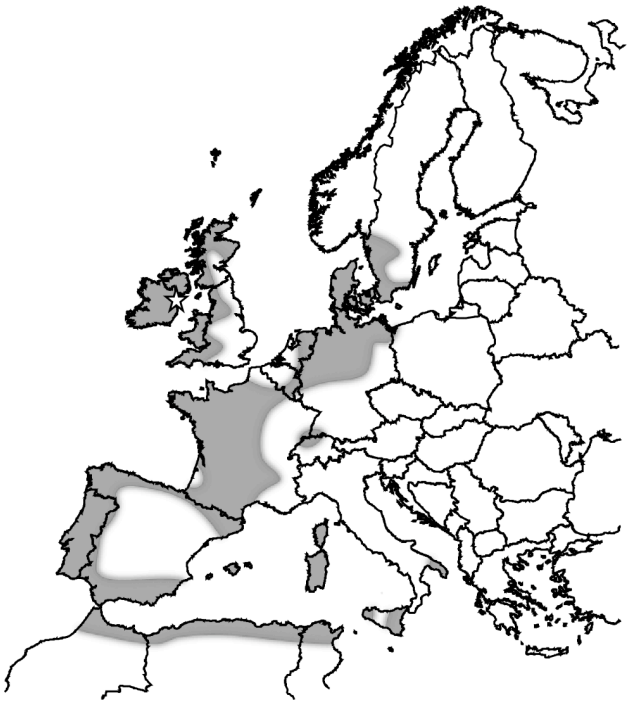

Figure 2. The extent of megalithic tombs and the location of Newgrange (star). From Erlingsson (2004), which is largely based on Burenhult (1999, Fig. 77).

3. DIMENSION TEST

The first test compares the length and width of Atlantis and Ireland.

3.1 Data

On a digital chart of the world in scale 1:250,000, the longest dimension of Ireland was measured to 490.0 km and the greatest width to 341.8 km (Fig. 3). This has to be converted to stadia for comparison with Atlantis.

In Greece a stadion was 600 feet, while in Egypt it was 400 Royal cubits. A cubit being 1.5 foot, it is the same thing. The Greek and Egyptian stadion had different lengths, though. Since Plato gave all measures with only one significant digit, he evidently simply exchanged the Egyptian units for the corresponding Greek units.

If Plato's account is correct, the Egyptians got the measures from another country (his alleged Atlantis). We may assume that also the Egyptians took over the measurement *values*, regardless of small differences in the measurement *units*. Hence it is irrelevant how long a stadion was in Egypt or Greece. What we require is the length of a stadion at the time and place we are interested in: Megalithic Ireland.

Based on the investigation of many megalithic sites on the British Isles, Thom (1967) found a common denominator of 0.829 m. He called it a megalithic yard. Since there are 200 yards on a stadion, a megalithic stadion equals 166 m. The dimensions of Ireland in this unit are 2,950 times 2,060 stadia—within 3% of Plato's values. Ireland also matches Atlantis by having the greatest width "across the centre inland".

3.2 Test

The real test is, though, if the correspondence is statistically significant. The null hypothesis is that Plato invented Atlantis, and happened to give the dimensions of Ireland by chance.

The question thus becomes, what is the probability that Plato would have stated the dimensions as 3,000 times 2,000 stadia by pure chance?

Based on the size of territories in the Antique world, Erlingsson (2004) estimated that a reasonable length could have been in the range of 700 to 10,000 stadia. Assuming a width of at least 600 stadia, the number of possible values becomes 91. The probability that the null hypothesis is correct is thus 0.011, well under 0.02, which means that the correspondence is statistically significant and the null hypothesis is rejected.

An alternative scale-independent calculation can be made as follows. As the reasonable size of the island varies by more than one order of magnitude, it would be conservative to disregard the order of magnitude in the dimensions, and only consider the significant digit. For each of the length and width, the digit can be any one in the range one through nine. This creates 81 possible combinations and a significance level of 0.012, why the null hypothesis still is rejected.

An assumption in both cases is that each size or digit has the same chance of being picked. A poll (www.macpolls.com/?poll_id=332) online asked "Pick a number between 1 and 10". Removing the 10, the number 2 had a frequency of 4.95%, and 3 had 11.21%, among the 4252 respondents. The probability that someone would pick 2 and 3 can therefore be estimated to

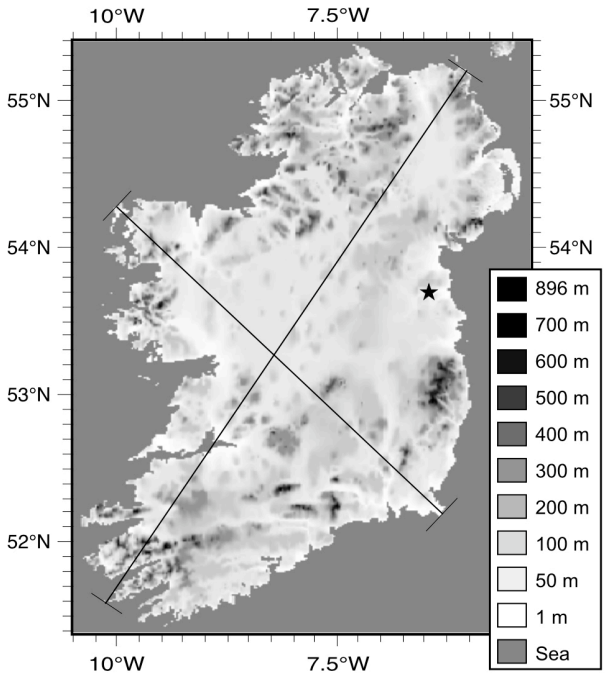

Figure 3. The elevation of Ireland with the location of Newgrange (star). The lines show where length and width measurements were taken. Based on ETOPO2, adopted from Erlingsson (2004).

0.0055, which means that the null hypothesis is rejected. (The number that most pick is 7, with almost one third of the votes.)

3.3 Interpretation

The megalithic yard is still not generally accepted. However, the existence of a statistically significant smallest common denominator in many stone monuments requires an explanation. The megalithic yard seems to be the best explanation offered. At any event, it is not crucial for the statistical significance test, as any value of the stadion between 137 m and 196 m would result in the rejection of the null hypothesis.

Using virtually any other stadion, from the Sumerian of 148.5 m to the Olympic of 192.3 m, the conclusion holds true. Only the Egyptian stadion is too long with its 209.2 m.

However, as was argued earlier, even if we do not accept the existence of a megalithic stadion there is still no logical reason to infer that the Egyptian one was used to measure Atlantis (unless the hypothesis being tested is that the Old Kingdom of Egypt was a direct continuation of the Atlantean civilization, which, however, would contradict what Plato wrote about the war). Furthermore, the Egyptian stadion seems to be an outlier, being about one seventh longer than the average stadion—the same relationship as between a common cubit and a Royal cubit in Egypt. There is thus strong reason to suspect that the unit being used, megalithic stadion or otherwise, was less than 196 m long.

In evaluating the conclusion, another relevant question is if the translation that was used correctly interpreted Plato's words.

The size and landscape of Atlantis is primarily described in *Kritias* 118a. Some translations describe the plain as rectangular, but there does not seem to be any tangible support for that in Plato's text. There are also some translations that interpret the dimensions, 3,000 x 2,000 stadia, as referring to the plain and not the whole island. Due to the way of writing in Plato's time—without punctuation marks or even spaces between words—and since Plato lined up these descriptions without repeating the subject of the sentence (and since the measurements are in genitive, which is identical in every genus), it is not completely clear what he was referring to.

There is a detail that seems to have been missed in translations, all of which give the width as two thousand stadia. However, after mentioning the length, Plato writes "κατα δε μεσον απο θαλαττης ανω δισχιλιων", which I translate as 'in the middle from the sea more than two thousand'. Recall that the width of Ireland is 2,060 megalithic stadia—hence *more than* two thousand from sea to sea.

4. LANDSCAPE TEST

The second test compares Atlantis' central mountain-surrounded plain with Ireland.

4.1 Data

This is what *The World Factbook* (2004) has to say about the geomorphology of Ireland: "Mostly level to rolling interior plain surrounded by rugged hills and low mountains; sea cliffs on west coast". Compare it with this quote from *Kritias*: "The whole island was high and steep on the side of the sea, but at and around the city the surrounding was a plain,

Figure 4. Cliffs of Mohrer on the west coast of Ireland. Composite of two photos ©Mike Goldsman 1997.

which in turn was surrounded by mountains that sloped down to the sea."

Plato's text first stresses the sheer cliffs with a plain on top, which also exists on Ireland (Fig. 4). Just like *The World Factbook*, he complements that with mentioning the plain surrounded by mountains.

The Irish "central plain" is clearly visible in Figure 3, which is based on a digital elevation model (DEM) of the world, with 2 minutes resolution. The plain is roughly rectangular, extending from the east coast to the mountains on the west coast, between N53º and N54º.

Ireland clearly matches the description as regards the landscape, but the question is again if this similarity is statistically significant, or if it could have been caused by chance.

4.2 Test

Coastal cliffs are very common on oceanic islands, especially those with a volcanic origin. Mountains and plains are equally common. But how frequently is a plain, obviously of substantial dimensions, surrounded by mountains?

Using the ETOPO2 DEM, the landscape of the 50 largest islands in the world was evaluated as regards one specific parameter: If they have a plain surrounded by mountains. All remaining islands were too small to evaluate in a 2 minute DEM.

A careful scrutiny of the GIS came up with only one island that had a plain surrounded by mountains, and that is Ireland. As expected, the typical situation is a central mountain with a low coastland, or a low island without mountains.

With only 2% of the islands having a plain surrounded by mountains the result is significant, and the null hypothesis is rejected.

The test assumes that Plato would have described Atlantis in a normal and typical way for islands if he had been making it up. That is, it assumes that the likelihood for him to describe a certain feature is directly proportional to the frequency of that feature on real islands. In the view of this, it is perhaps more relevant to look at insular geography in Plato's part of the world, than on the entire planet.

Such a comparison was made using a DEM with 1 km resolution. Ireland plus the five largest islands in the Mediterranean Sea were analyzed as follows: The distance from the coastline was calculated for each cell, and the cells divided in 1-km distance classes. The average elevation for each distance was calculated. Both the average elevation and the distance were normalized.

The 6 resulting curves (Fig. 5) show how clear the distinction is between Ireland on the one hand, and all the major Mediterranean islands on the other. Ireland alone is lower in the inland than near the coast.

4.3 Interpretation

A large plain surrounded by mountains violates the normal geomorphology of islands, and especially the situation in Plato's part of the world. The description of Atlantis closely resembles that of Ireland.

5. DISCUSSION

Based on the geographical tests, the hypothesis that Plato was describing Ireland and the megalithic culture is retained. Before reflecting on how Plato could have access to this information, some other aspects than the geography will be compared.

5.1 Archaeology

If Ireland is the island Atlantis in Plato's tale, and the megalithic culture is the empire, then the finest megalithic monuments ought to be found on Ireland. A university textbook in archaeology provides the answer.

Burenhult (1999) writes, "Ireland possesses the without comparison largest number of

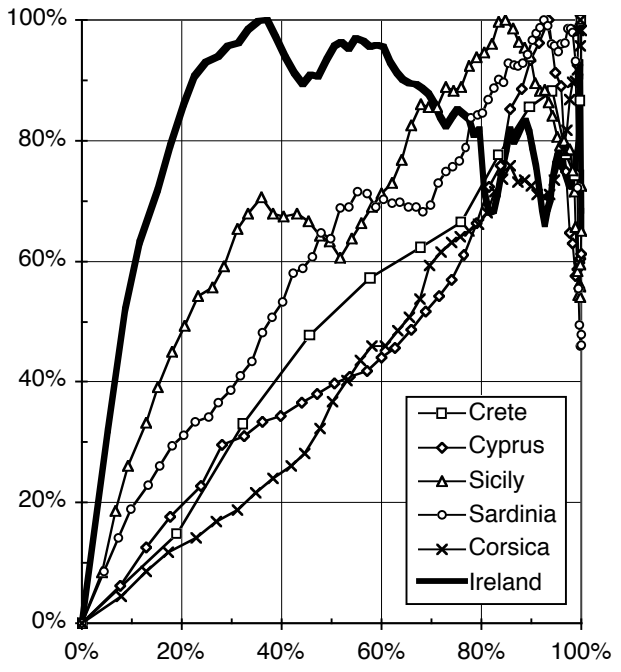

Figure 5. Normalized average elevation plotted against normalized cumulative distance from the coastline for Ireland and the five biggest Mediterranean islands.

megalithic tombs in relation to the surface area of the island" (p. 284), and "…the choicest megalithic constructions created in Europe. To these belong principally Newgrange, Knowth and Dowth in the Boyne valley, richly ornamented […] The monuments bear witness to deep astronomical knowledge…" (p. 287; my translation). Some of the oldest megalithic monuments are also found on Ireland, in Carrowmore in County Sligo, dating back to the mid sixth millennium BC (Burenhult 1999, p. 286; Bergh 1995). Ireland is thus a likely central region for the megalithic culture, and the hypothesis holds up.

Newgrange is shown in Figure 6, in a frontal view and a close-up of the entrance. Compare it with the rather typical megalithic cairn in Figure 1, where a rectangular chain of standing stones mark the sacred area, in the middle of which is a tomb created by a few megaliths, with one of them serving as roof. It is of similar age as Newgrange.

Plato mentioned that the Atlanteans quarried white, black and red rock, and wrote in *Kritias* 116b, "Some of their buildings were simple, but in others they put together different stones, varying the colour to please the eye, and to be a natural source of delight."

The end of it reads in Greek, "μειγνυντες τους λιθους ποικιλα υφαινον παιδιας χαριν". According to the online dictionary of the Perseus project, μειγνυντες means 'mixing' (properly used of liquids), and τους λιθους is 'the stones'. The last three words mean that they were 'weaved together to a childish grace', literally. The remaining word, ποικιλα, means 'many-coloured, spotted, mottled, pied, dappled', suggesting that in a façade of stones in one colour, there were spots made of stones in a different colour (the form of the word is dualis).

Compare this with the façade of Newgrange (Fig. 6), made up of quartz (white) with spots of granite stones (dark). The wall is a restoration, since the original one collapsed over 4,000 years ago (the monument was built around 3,200 BC; O'Kelly 1982). The decoration is another match between Atlantis and Ireland. It may prove statistically significant since it is rather unusual.

Plato mentioned two temples, one being for both their ancestors: "in the centre was a holy temple dedicated to Cleito and Poseidon, which remained inaccessible", while the other was for their divine ancestor alone: "Here was Poseidon's own temple which was a stadium in length, and half a stadium in width, and of a proportionate height, having a strange barbaric appearance."

As was argued in Erlingsson (2004), the passage tomb of Knowth (Eogan 1987) with its two chambers may correspond to the temple for both Cleito and Poseidon, while Newgrange may correspond to that of Poseidon alone (the Irish monuments are about half a megalithic stadion across). Note that while there are hundreds of burials in Knowth, there may not be a single one in Newgrange. This would seem to agree with the latter being a temple for a god, rather than for a mortal ancestor.

The single chamber in Newgrange has a corbelled vault, whereas in Knowth there is one chamber with a corbelled vault and one with a flat stone slab for roof like in the majority of megalithic tombs. When caliph Abdullah Al-Mamun of Baghdad in AD 820 broke into the Great Pyramid in Egypt, he first found a chamber with gabled roof and named it the Queen's Chamber, since they buried their

Figure 6. Newgrange. Note the granite stones in the quartz façade. The original façade continued straight out to both ends of the decorated entrance stone. Above the door there is a light opening, through which the rising sun's rays reach the grave chamber on Midwinter solstice.

women in tombs with gabled ceilings, but men in tombs with flat ceilings. This distinction based on sex might be the reason for Knowth having two chambers with different roof types, which would be in line with it being a temple for both the earthborn ancestral mother Cleito, and for their divine ancestral father Poseidon.

Plato mentioned that the distance from the sea to the city was 50 stadia (*Kritias* 115d and possibly 113c). The Boyne valley monuments are located 50 stadia from the sea (Erlingsson, 2004, p. 50).

In conclusion, there is reason to suspect that Plato also had access to a description of the monuments in the Boyne valley in County Meath, Ireland.

5.2 Mythology

Ireland has a long oral tradition. The location of Newgrange was unknown during four millennia, after it collapsed into an inconspicuous hill when the retaining wall gave way (it is now concrete reinforced). In spite of this, Irish folklore remembered it. The Irish name is Brú na Bóinne, which means 'Mansion of the Boyne'. The river name Bóinne means 'white cow' (a cognate to Sanskrit Govinda), and it is related to the name of the river goddess Boann (or Boand), whose son Oengus now inhabits the mansion. Incidentally, the Milky Way is called 'the way of the white cow' in Irish.

Boann, without permission, approached a sacred well. The well sprang up in a flood and took her out to the sea, thus creating the river Boyne, a most revered river on Ireland. The well belonged to the river god Nechtan, a name cognate to Roman Neptun, i.e., Poseidon, originally a river god. There is thus a connection between Newgrange and Poseidon. Since the word that Plato used for temple also means 'residence of a god', the Mansion of the Boyne is a namesake of Poseidon's temple on Atlantis, except for the sex of the river divinity.

Irish mythology contains elements that hint at an ancestral homeland that was flooded by the rising sea, and myths of sunken cities exist on much of the Atlantic seaboard of Europe. However, since such myths are common all over the world they tend to be dismissed. Nevertheless, most of the planet did experience a significant sea-level rise after the Ice Age, so the omnipresence of the motif is logical. The question is, though, if the motif has a

psychological origin common to all people, or if it is a very ancient tradition.

As a test of whether a myth about geographic changes can survive for such a long time, we may look at an island that has experienced the opposite, namely rising from the sea: Gotland in the Baltic Sea. The creation myth of that island, preserved in the introduction to their law, recalls how the island used to sink in the sea every morning and rise every evening, until Tjelvar came and brought fire.

Modern geology has shown that Gotland melted out from the inland ice as barren rocks barely protruding from the Baltic Ice Lake some 10,000 years ago. The core element of the tradition is therefore correct, since the myth reflects that this island has risen from the sea, while the majority of coasts have been flooded. This hints at the possibility of very ancient memories being preserved in oral tradition, especially on remote islands where there has been a long continuous occupation.

5.3 Sinking

Ireland did not sink in the sea, but Atlantis did, according to Plato. For this aspect of the tale Ireland is obviously not the model. A distinct possibility is that it is a memory of some other place that was preserved in megalithic Ireland.

Erlingsson (2004, p. 22) suggested a real world explanation for Atlantis' sinking, namely that Dogger Bank was destroyed by the Storegga tsunami. By coincidence, the flood wave came at a time when Dogger Bank was about to sink anyway in the rising sea level.

It was a very powerful tsunami (Bondevik *et al.* 2003) that may well have converted large low-lying areas into mud banks. This is especially true if they were protected against storm floods by coastal dykes or natural sand dunes, since those would prevent the sea from withdrawing. The apparent effect would have been that the island sank in the sea after a dramatic natural disaster. Furthermore, it would have created a mud bank that made the sea un-navigable, just as the case was with Atlantis (*Timaios* 25c-d and *Kritias* 108e).

In *Timaios* 24e Plato positions Atlantis before the mouth that the Greeks call the columns of Heracles. In this context it is worth noting Tacitus' report in *Germany and its tribes* (XXXIV) that the columns of Heracles are located by Friesland, which in turn is located by the Rhine. Dogger Bank being located off the mouth of the Rhine, one must contemplate the possibility that it was the Phoenicians who first applied the name pillars of Heracles to Gibraltar, and that they did so to keep others away by exploiting the fear connected with an old myth (Plato apparently considered it well known that the sea outside the pillars of Heracles was un-navigable).

It is also worth noting that at the time when Dogger Bank was sinking it formed a tidal bank that covered most of the distance between the shores of England and Denmark. It thus effectively prevented the navigation from the Rhine to the open North Sea—just what Plato claimed happened when Atlantis sank. In stark contrast, an Aegean island that sinks in an earthquake does not create a mud bank that hinders navigation. As Plato's description fits the geography of Dogger Bank of six millennia ago well, while being so exotic to his own part of the world, the match is noteworthy.

An alternative reason for the apparent sinking of Dogger Bank could be the rising world sea level after the Ice Age. It is usually dismissed as a potential cause of disastrous floods, since the melting of ice is a gradual process that should not produce rapid transgressions. However, some scientists are suggesting multiple events of rapid sea-level rise triggered by jökulhlaups and ice-marginal lake bursts from the Laurentian inland ice (e.g., Blanchon & Shaw 1995; cf. Fig. 7). The last cataclysmic transgression would have drowned Dogger Bank, and the previous one would have drowned a plain to the south of Dogger Bank, considered to be a promising location for underwater archaeology by Flemming (2002).

This plain, called Doggerland by Coles (1998), would have been flooded in a rather short time some 9,000 years before Plato. This is precisely the number of years Plato said had passed since the disaster. That transgression coincided with the end of the Ice Age, and represented a global change-event on a scale that makes the gloomiest predictions today seem inconsequential. Incidentally, there was a comparable event of equally rapid sea level and temperature rise a mere three thousand years earlier.

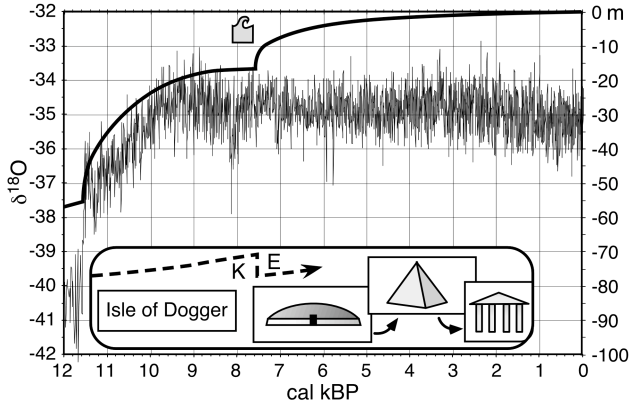

Figure 7. Suggested context of the Atlantis tale in climatic change and sea level rise. The x-scale is in thousands of calendar years before present, defined as 1950 AD. The thin line is the $\delta^{18}O$ temperature proxy from Greenland (GRIP Members 1993). The Ice Age ended at 11.5 kBP. The bold line is the sea level from Blanchon and Shaw (1995). There were drastic rises around 11.5 kBP and 7.6 kBP. The flood wave symbol marks the tsunami from the Storegga submarine slide around 8.1 kBP. Insert: The dashed line illustrates the drastic cultural decline ca 7.5 kBP from the Kongemose (K) to the Ertebølle (E) Mesolithic culture. Rectangles represent the temporal extent of Dogger Bank as an island, the megalithic culture, Egypt, and Antiquity. The arrows show how the tradition of the sinking may have been transmitted between them. Since there are significant reservoir effects when calibrating from radiocarbon years to calendar years, it is quite possible that all events around 8 kBP occurred in a short time span and were related in some way. The earliest megalithic tombs on Ireland also date from that time frame.

The evidence for these alleged rapid transgressions are not universally accepted, though; nor are Laurentian jökuhlhaups, although they appear theoretically possible through the captured ice shelf mechanism suggested by Erlingsson (1994a, b).

What is irrefutable is that Dogger Bank became an island during the Holocene transgression (Isle of Dogger in Fig. 7). The final sinking of this island was the last great cataclysm before Plato's (and our) time, whether it was caused by the Storegga tsunami or the final drainage of Lake Agassiz through Hudson Bay.

5.4 The origin of the Atlantis tale

The image that emerges is that megalithic Ireland kept alive the memory of the disaster that struck Dogger Bank, during three thousand years (Fig. 7). After the collapse of the megalithic culture, the memories of it, as well as of the Dogger Bank cataclysm, may well have been kept in Egypt just as Plato claimed.

As the insert in Figure 7 shows, there is no gap in time between these cultures. Nor is there any sizeable spatial gap, since the Atlantean empire, like the megalithic culture, reached the eastern Mediterranean.

It seems a reasonable conclusion that Plato got hold of historic data the way he claimed, and used it to create a political myth in the way he himself advocated.

6. CONCLUSION

Plato based the description of Atlantis on megalithic Ireland, which at the time appears to have been the focal point of a large culture. It seems feasible that the memory of the Storegga tsunami on Dogger Bank was kept alive in that culture, and carried from there to Egypt, eventually to be mixed up with Ireland itself. When Plato wrote his dialogues, he either put the fragments together in a novel order while adding some flair, or someone else before him had already done that.

Although we must take into account that Plato may have added many fantastic details to the description of Atlantis in order to glorify Athens' victory over the empire, his tale can still give us clues. Even if the tale is partly fictional, whatever factual details can be extracted are invaluable, since there simply is no other source of recorded tradition from the European Stone Age.

Incidentally, this result is also proof that Atlantis in the strict sense never existed.

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The Perseus project website at www.perseus.tufts.edu was consulted for the original Greek and Latin texts.

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