

THE REED BOAT ABORA ON THE MEDITERRANEAN SEA

A voyage in the field of experimental archaeology

by

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Summary

Thirty years after Thor Heyerdahl has navigated the Atlantic with his papyrus boats RA I & II in bold expeditions a new reed boat expedition should deliver further proofs for the seaworthiness of the reed boat. Many scientists believe that the crossing of the Atlantic by the RA II was not a proof that the earliest civilizations of Mediterranean brought cultural influence across the Atlantic, because Thor Heyerdahl always started with his expeditions on the coast of Morocco, exactly there, where the Stream of Canarias drifts to Amerika anyway. If prehistoric sailors really made transatlantic voyages they would have to sail the West Mediterranean first to reach the Atlantic at all. But the papyrus boats did not have this sailing capability to sail against winds across the Mediterranean. The reed boat TIGRIS did also not sail against the wind in its long voyage across the Indian Ocean, either because it possessed a small sailing square or because keel swords were fixed in wrong positions. New discoveries on prehistoric rock paintings prove that the sailors of the earliest times already sailed against the wind successfully. For that reason this expedition wanted to test with an improved rigging whether the reed boats were able to sail across and even against the predominant winds. A team of students from the FH Mittweida and a grammar school from Borna have constructed an eleven meter long and 17 tons reedboat which has sailed on the Mediterranean in spring 1999. The expedition, originally, should have sailed across the Mediterranean Sea with final destination the port of the Canary Islands. Climatological and technical reasons took place to an earlier stop of the expedition in Piombino. Nevertheless the reed boat ABORA was able to overcome the most difficult route of the expedition in the Mediterranean Sea and follow the traces of the prehistoric sailors.

Overseas wanderers in the Stone Age?

WHEN A SHIP IS SAILING you can see its traces on sea only for some moments. Just some minutes later winds and waves have covered its tracks and it is impossible to say where it has come from or where it has sailed. But how can we explain today what distances

the prehistoric sailors of the Stone Age have overcome on sea?

It is obvious that people travelled through the sea: A view on a land map of the Mediterranean Sea shows, why neolithic

settlement began on its northern shores, if navigation is postulated. The map indicates sea currents during summer and shows that their regularity was an important factor in spreading the Neolithic way of life. These currents moved sailors again and again to the same coastal areas.(1) This helps to explain the amazing cultural similarities between the Eastern and Western Mediterranean, such as plant and animal breeding, the cordial impressed pottery, the schematic worshippers in rock drawings and the development of the wide spread obsidian trade. The occurrence of these specific cultural traces indicates that the spread of Neolithic from East to West was only possible by a powerful navigation.

THE SCHOLARS USUALLY pronounce the opinion about the maritime abilities of earlier water vehicles only from old models and examples of interpretative art. So the teaching opinions about their seaworthiness are mostly not more than indirect conclusions that learn on comparisons and inferences of known sea vehicles but that are not based on a real knowledge about the judged vehicle.(2) So unfortunately, lots of specialists still measure with measure of two kinds concerning the judgement of migrations in the early ages: contacts over land - yes! Contacts by sea - no! According to their opinion that was only possible with wooden sailing ships that were developed at the end of the 4th millennium B.C. There is still an extensive obscurity how sea vehicles were used before, and which regions and travel routes were possible through the Mediterranean. That is why there is the task to investigate abilities of prehistoric seafaring with the help of the experimental archaeology in practice even 30 years after the spectacular RA-expedition by Thor Heyerdahl. Although the experimental archaeology can only prove the practical possibility of far journeys across the sea in considerably limits the speculation and puts our knowledge on a realistic basis.

An examination of all boat drawings in the area of Mediterranean Sea shows that all seagoing vessels were constructed or represented in the form of papyriiform boats.(3) Therefore we can suppose that the reed boat is the oldest maritime craft that was probably used just ten thousand years ago. This conclusion brings us face to face with a problem:

What was method of its construction? Which maritime performances can be supposed for these kinds of papyriiform vessels?

THE ANSWERS TO these questions only remain guesswork, however, we must go back to a period of thousands years when reed boats were very often used.(4) Today we only have little evidence of the lost tradition of reed boat navigation. These tradition is represented in rock drawings and seals which were found around the Mediterranean.

So we have a lot of ikonographic evidence from Seals on Creta, Malta or the famous golden ring of Thyrins. Furthermore, almost until our times last remains of reed boat building existed on some Mediterranean Islands such as the fassonies on Sardinia or the papyrella on Corfu. With both vehicles far journeys were made in order to go fishing in the Mediteranean Sea just in this century, as stories of the last still living reedboat builders report. But the best proofs are preserved in the rock drawings of the prehistoric Egypt.(4) Only the preEgyptian drawings give us the first instruction of what these boats looked like and how they had to be handled.

Already the oldest representations of WADI Hodein Mogul shows papyriiformed boats with a complete rigging. You can see so important inventions such as mast, sail, ruder bridge and basket cabin. All constructions let us suppose that these representations are not the beginning but the continuation of a long tradition of boat building. The drawings which are represented in

the *aspective artistic style* could tell us a lot if we accepted them as a historical source of boat building and not only for mythological purposes.(6)

ALL THESE BOATS are high bowed boats. There is no doubt that they were reed boats. The experiments by Thor Heyerdahl and my project group proved that different marsh plants of different botanic origin are able to swim a long time on water: The reed boat Dilmun I constructed from the common reed plant - Phragmites - swam on sea without sinking over 9 weeks. At this point let me disprove the widespread view that the reed boat building did only arise therefore on places where there was not enough useable wood. This view is wrong because the palynological investigation clearly shows that all Mediterranean lands were densely wooded. Not the lack of useable wood but the free availability and usability of reeds was the reason for this widespread kind of navigation. Furthermore, the reed boat construction needs no high expenditure of technological equipment. On the base of our experience of reed boat building we only needed 9 days to construct the 6 metres long and 1,5 tons heavy DILMUN II. This technological simplicity is an important condition by the development of sea going vessels in the early neolithic times.

Sailing against the wind at the Stone Age?

MAST AND SAIL appear in such an early period that the development of a sailing vessel with complete rigging still took place in the prehistory. The famous expert BJÖRN LANDSTRÖM has made the interesting observation that in the early period with the mast forward of the centre, the vessel would sail only before the wind. This conclusion is right if you believe that these boats were equipped without any kind of a keel. But a careful comparison with all prehistoric representations document that a lot of prehistoric watercraft had

the mast in the middle of the boat. Furthermore, some vessels were equipped with side swords. These swords can be explained by fixed oars beside on the hull. They would have been served in exchange for a keel: The reed boat is a float in ship form without a keel.

Every sailing vessel needs a keel for steering the craft in the wind. Therefore, the reed float also needs constructions which help to navigate the float in the wind. Without any keel this float cannot navigate, because the wind will blow off course the vessel due to the high drift.(7)

In the great arsenal of prehistoric rock paintings of Africa and Asia anterior you can discover a lot of pictures which proved that the using of side swords was well known. Beside some Sumerian drawings, especially preEgyptian engravings of the Negade-culture give us important knowlegde about the side sword sailing technique because the artists have not presented the swords without a thought but in exact position and number. Moreover, the categoric explanation of Landström is not right that the mast was only put up in front of the vessel. A lot of pictures prove that the ancients learnt to put up the Mast for sailing against the wind in the middle of the ship. Beside the position of the mast, you can see two different types of sails: the square rigg and also a triangular sail clothing. All these technical details suggest that the prehistoric sailors were able to navigate across and even against the wind.

The calculation of the drift emphasis *without* swords on an original rock drawing (Wadi Sayala) shows that the raft is unable to sail across the wind. In this case, the sailing point is situated in front of the drifting point and the craft will be lee-greedy.(8) If you only set one pair sword in front of the vessel, the conditions will be changed. The sailing point (center of force from the sail) will move behind the

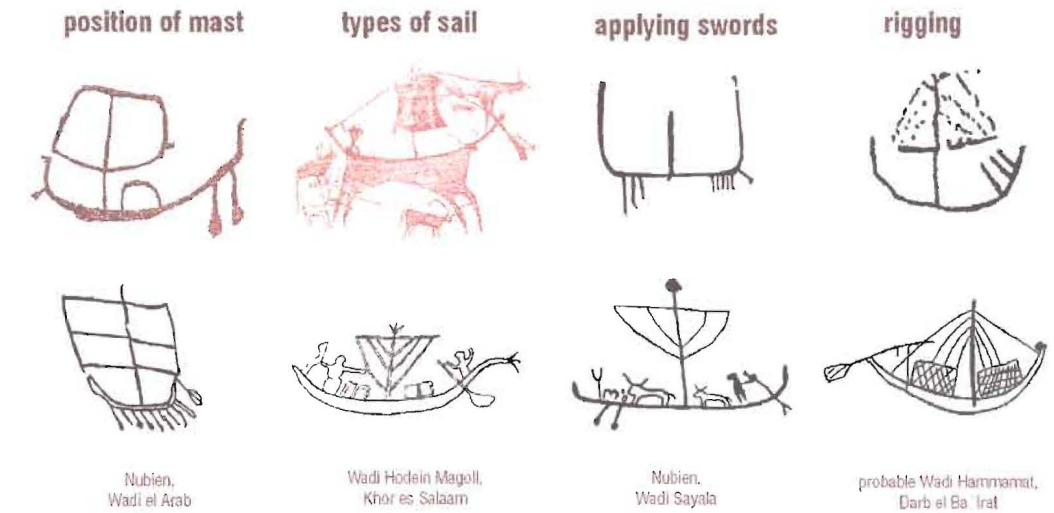


Figure 1



Figure 2: The expedition route from the Abora. Originally, we wanted to cross the whole West Mediterranean. Nevertheless, the reed boat sailed the most difficult part from Sardinia to the Northern Mediterranean across to the Northwesterly winds.

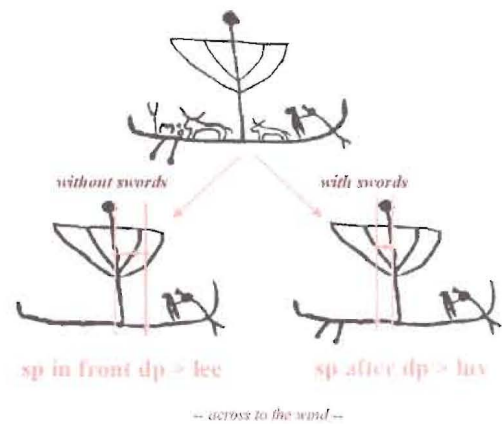


Figure 3: The project group also calculated some rock drawings on their physical features. These calculations show that the use of side swords make the vessels windward greedy. (Compare the left and right picture)

drifting point (the relating pressure center of the water) and the craft will be windward-greedy. Especially in front of the ship you need a keel to decrease the immense side drift, if you sail across or even against the wind. Every sword which is fixed in front of the hull will decrease this negative effect.

Indeed preEgyptian and Mesopotamian pictures show a lot of examples that steering by side swords was well known. We can learn by the ancient drawings that swords were always fixed on the same places:

- near the bow and the stern
- and sometimes in the centre of the ship

The main aim for my research group was to reconstruct this matter and to examine if prehistoric sailing vessels were able to sail against the wind or not. We have been testing three sailed reed boats in the last few years. Our results are really remarkable. According to the pattern of the prehistoric pictures we built the following reed boats:

1990 Dilmun I - 11 m long - it was able to sail only before the wind

1993 Dilmun II - 6 m long - it was able to sail across the wind

1994 Dilmun III - 6 m long - it could sail against the wind

The reed boat Dilmun III was equipped with only two pairs of swords on bow and sailed during the 100th Kiel Week in 1994. This reed boat was even able to sail 75° against the wind with a wind speed of about 5. In opposite to Heyerdahl's ships we equipped the raft with several swords and one moveable steering oar on starboard. This equipment is the main condition for sailing on the Mediterranean Sea. There is no doubt in my mind that the reed boats in the ancient times which crossed the Mediterranean Sea must be equipped with a similar method of steering.

For that reason a new reed boat expedition should deliver further proofs that the prehistoric reed boats could navigate not only before the wind. This is one of the main questions according the navigation in ancient times.

The reed boat Abora should follow the traces of neolithic merchants across the Mediterranean. It should demonstrate that the civilizations of the Mediterranean could get in touch with the lands beyond the Strait of Gibraltar. This voyage delivered experimental data about navigation routes according the oceanography and study of the currents in the Western Mediterranean.

Sardinia – an important archaeological site

IT IS VERY IMPORTANT for a scientific expedition on traces of neolithic seafarer to find a location which has all conditions for the boat building as well as the historical background. This place was not very difficult to find. My choice fell on Sardinia. The second large island West of Italy possesses a very old history and all cultural-historical features, to connect it with the cultural centres in the East and the last places of the Old World culture on the Canary Islands.

Sardinia is well known by historians for its big-stone-buildings, the *muraghs*. Over 8000 of these admirable stone towers are known. They have some similarities with megalithic architecture, but they come from the middle of the 2nd millenium B.C.. However, for many experts Sardinia offers a lot of further traces and remains which identify it as an undiscovered country on the archaeological map.

So Sardinia is the last place in Europe where even today reed boats are still constructed. It was a suitable coincidence that the Sardinian reed

boats could resist against the modern wooden boats and were not supplanted from the technique of the modern civilization. These small reed rafts have a short, pointed bow. The stern is cut and flat. They are constructed by *Scirpus lacustris* or in Italian "*fieno*". It is a related specie of the papyrus family. The fishermen from Cabras and Santa Giusta paddle with it through the small canals to the Oristano lagoons on West Sardinia.

The method of construction has some particularities because it is constructed similar to a Buduma-float from the Lake Tschad. Through the bundling together of many reed roles arise a hollow reed hull. Therefore, the *fassoni* are a highly developed type of a raft. The Sardinian expert Mena Manca Cossu, who is engaged in the reed boat research for many years, could document in her book "*pescatori di Cabras*" numerous methods of constructions. She showed that the *fassoni* have its origin in the ancient double hull method of construction.(9)

The size of these crafts was different. Today the *fassoni* are only 2 – 3 meters long but in former times that vessels existed which were over 5 meters long. I could still collect reports of old fishermen who have told stories of large *fassoni* which could fish for over one week at sea.

But these vessels were exclusive for fishing not for a merchant navigation on the sea. There are only remains of the former reed boat tradition, which were spread over the whole Mediterranean Sea. The *fassoni* reminds in its construction on reed boats, which you could once find in different countries all over the world, such as in Egypt, on the Persian Gulf, but also on the Canarias or in Peru on the Lake Titicaca or on the coast of the Pacific.

However, Sardinia still delivers other archaeological features which makes its

attractive as a starting point for our expedition. Near the port city Porto Torres exists the famous temple Monte d'Accoddi which shows all characteristics of a stepped pyramid. Fortunately, in opposition to other stepped pyramids in the Mediterranean like on Sicily or the Canary Islands the excavations could discover important remains which allow a historical dating of this building. These excavations were took place from the University of Sassari between 1959 and 1985. They could find out that the monument was constructed by the Ozieri-culture who has existed in the end of the neolithic time (Eneolitico). The pyramid was constructed on the place of a former megalithic tribe. Today the building is 36 x 29 m large. Its architecture is very interesting because you can see 3 phases of construction: the first phase started with the building of an one-step-ziggurat. There was a simple temple on the highest platform like in Mesopotamia. A ramp with a width of 5,5 m allows the ascent on the high terrace with the cult room. There were made several organic findings which were dated in a the important Utrecht laboratory on an age of 2950 B.C..(10) It is a very strong link for the relationship with the Mesopotamian temples that in the beginning of the 3rd millenium B.C. the old Sumerians also constructed the ziggurats in this form of architecture. Just from the middle of the 3rd millenium the Mesopotamians developed the known ziggurat with several steps. Exactly the same period the extension of Monte d' Accoddi in a typical ziggurat took place. At the same time the old building was integrated in the new construction like in Mesopotamia.(11)

Who has invented this plan of construction? Was it independently developed from Mesopotamia on this Mediterranean island? Or did priests spread this idea from SW Asia to Sardinia? The stepped pyramid of Monte d'Accoddi is isolated by a distance of almost 3000 km from its Western examples from Mesopotamia. For that reason many scientists doubt on a cultural relationship between both cultures. But based on the occurrence of the similar stepped pyramids on Sicily, Corsica and the

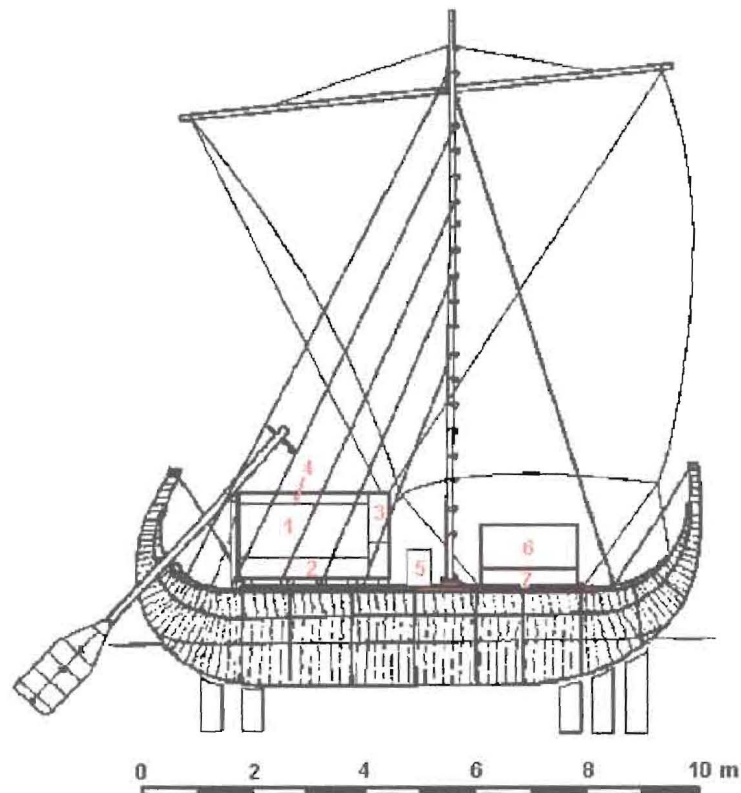


Figure 4: The rigging of the ABORA. We rigged the vessel according to the pattern of prehistoric petroglyphes. All superstructures were built as simple as possible.

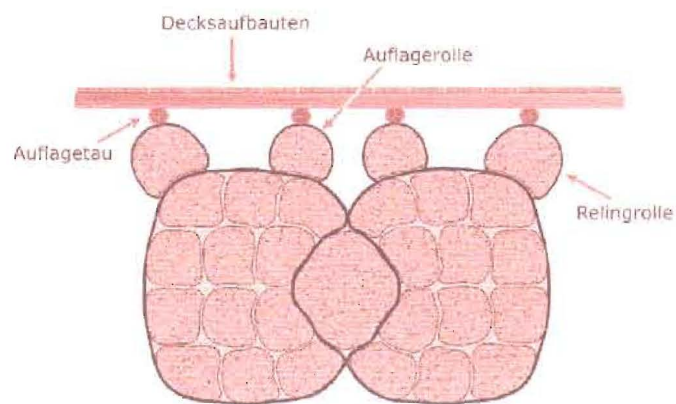


Figure 5: The cross-section through the reed hull. The reed boat is similar to modern catamaran but it belongs by its method of construction to the rafts.

Canary Islands to the same coincidence? Are there connections to the Helicon pyramids in Greece?

Some archaeological findings can prove that there were connections between the Central and Eastern Mediterranean. There is evidence of ceramic, cultural motifs or the wide spread obsidian trade from Sardinia over the Mediterranean Sea. We cannot explain the whole enigma of the origin of the Sardinian culture, nevertheless we are able to break, with the aid of new knowledge crusted ways of thinking about those history. Beside the early agriculture the Sardinian Ozieri culture also had to master the navigation to spread their culture from its supposed country of origin in the East Mediterranean. In this very old time the neolithics had to know the important sea routes of the Mediterranean. Otherwise you can not explain the occurrence of special religious motifs like bull horns or anthropomorphic sun symbols on the Mediterranean islands. It is known that these cultural parallels from the famous Chatal Hüyük in Anatolia were found as well as on Sardinia, South France and Spain.(12)

After my first encounter with Sardinia it was quite certain for me that the prehistoric Sardinians have carried on far away relations by sea. You can put this island without problems in one line with its neighbouring countries like Sicily, Crete, Malta and even Asia minor. Therefore, Sardinia was a excellent place for this project of prehistoric navigation.

The building of the reed boat

BEFORE WE COULD START the expedition in May 1999 we had a lot of work to do. The construction of the 11 m long and 17 tons needed over two years. The project group harvested over 20 ton reeds. It was bundled together to reed roles in the small city Borna

near Leipzig. The whole equipment were transported to Sardinia in the summer 1998.

According to method of Sumerian-Egyptian boat builders over thirty reed rolls were carried into a wooden scaffolding. The reed boat tied up in this scaffolding and this gives the future ship its seaworthy form. Two big compact bundles are built from a lot of single bundles in the scaffolding. Finally a third but smaller roll is put between the two "huge rolls" which will form the backbone of the double hull boat. After this working step two endless ropes are led in permanent spiral bundagings from both sides around the reed bundles. We are able to tie up both spiral ropes with the help of all women and men as well as all Italian hotel guests within four days. A massive double hull that has little similarity with a modern catamaran developed by pressing that two big compact bundles against the little roll in the middle.

Afterwards, the railingrolls were tight up with a thick "stropp" on the reed hull to carry the superstructures. The boat was be rigged with two wicker huts, a double pole as well as two steering rudders in the spring of 1999. In opposition to the reed boats of Thor Heyerdahl, we fitted our boat out with 6 pairs of moveable side swords, which were put on later right, in front and at the back of the hull. These side swords should protect the boat from drifting. Our calculations, that were even awarded with the first place by the "Jugendforscht" Jury (a youth exploring group) in Dresden 1999, represent that these swords bring the lateral plan far enough in front to give a windward greedy (luff-greediness) to the reed boat. The calculations, which were also transferred to the completed hull, in form as that we probably only need three or four pairs on the bow. The construction of the superstructures took place in the winter season. In April 1999, the project group returned to Sardinia with their

The reed boat ABORA on the Mediterranean. 10 people sailed on the raft from Alghero to Piombino in a 46 days long voyage. The vessel could overcome a distance of around 600 km.



equipment to complete the reed boat.

According to the pattern of prehistoric rock drawings, we completed the rigging in four weeks. During this work we made a big mistake when we put up the little cabin in front of the vessel. There was no correct place for the fixing of the cabin without a changing of the sword fastening so that we had changed its position more to the middle. The mast must change its position, too. But in this time we did not think anything about this alteration and for the future sailing performances of our boat.

The lurching of the vessel was very difficult in the port of Alghero. The reed boat was named according to an old Canarian goddess Abora who was worshiped on stepped pyramids on La Palma. (13) She was a good power who always arose when the sea "Moneiba" and the sky "Ataman" united themselves. This cult was very similar with some religions in the prehistoric Mediterranean and shows the dualistic characteristic of the neolithic fertility cult. The voyage was prepared in the port of Alghero until the end of May. The reed boat could sail on some tests and was loaded with a lot of cargo. The crew was recruited of ten people from Germany, Switzerland, Sardinia and later also from Norway. The team consists also a woman, Cornelia Lorenz from Germany. Over ten years she has taken place and organized with the author the research of prehistoric navigation.

The expedition of the ABORA

FOR MANY YEARS, my crew and me could collect experience in steering of prehistoric reed boats. Now, we want to extend our knowledge by our new reed boat expedition ABORA which should go from Sardinia across the West Mediterranean Sea - perhaps with the expansion

to the Canary Islands in the East-Atlantic. A view of the map shows that the expedition route is extremely depended on the local winds in West Mediterranean.

The first step of the expedition should mainly decide on success or failure when we start our voyage from NW-Sardinia. The strong *Mistral-Wind* blows as dominating wind from the Rhone Valley in NW direction across the Mediterranean, will make the navigation of the reed boat much more difficult. (14) This wind is a climate-or weather divide for many historians, which could not be defeated for the sailing ship of the early period. In dependence on the weather situation, we nevertheless have a realistic chance to sail only some degrees against the Mistral and reach the coast of SE-Spain if we have a high pressure area form over France in the late spring. When the Mistral comes from NW-direction, we have to navigate the vessel on the indirect way around Corsica. We will pass the Island Elba and reach the northern Mediterranean coast of Italy.

Our voyage leads from Alghero along the coast from NW Sardinia to the dangerous Strait of Bonifacio. Already during the first nautical miles we must learn that the ABORA was rigged not perfectly. The mast was put up too much in the middle and the vessel was too windward greedy. Therefore, we could not use our sword on bow when we had stronger winds. Even during the first sailing weeks, we change some swords from bow to the stern of the float to decrease the windward greediness of the ABORA. We were successful with moderate winds between a wind speed of 3 – 4 bft. In these situations we could use one or two swords on bow and we immediately sailed 90 – 82 degrees against the wind. With stronger winds we could not use the bow swords and so we had a strong side drift and we only reached course around 100 – 120° on the wind. (15)

Nevertheless, after two weeks we learnt to handle the vessel step by step and reached the North Sardinian town Castellsardo. There we

**The ABORA sails across to a strong wind. In this situation we could not set the
swords on bow to decrease the side drift. Nevertheless the ABORA sailed
with moderate winds at least 90° across to the wind.**



had to wait over 12 days because two deep pressure areas prevented the continuation of the voyage to Corsica. Moreover we had very often slow winds and must wait of suitable sailing conditions. Just after 1 month we reached the Strait of Bonifacio where we sail to the famous touristic city Bonifacio. There we had to change our skipper because our first one was not very experienced.

Our new skipper Hans-Eric Hansen comes from Norway. He was a representative of the KON-TIKI Museum in Oslo who should support the expedition for the next route along the coast of Corsica.

After the dangerous passing of the Strait of Bonifacio we sailed under difficult conditions to the North of Corsica. These nautical miles taught us that even a prehistoric vessel is able to manoeuvre almost across to the wind if you have to sail against a relative strong current. A current has a large influence on the movement of a raft which has a big draught under the sea level. The ABORA was rigged with 64 m² trapezoid square sail. Its delivered enough speed to navigate across the wind. In this period we had turned winds which changed their direction each hour for many degrees. So the wind came on day in the early morning from NO and turned around the day over South until NW to the evening. Nevertheless, our courses followed exactly the coast line of Corsica how the GPS logs can prove. We documented all sailing courses with a GPS receiver which downloads continuously log books in a special computer. On bases of these logs we are able to prove that the ABORA really reached this sailing capability. During our voyage we have collected a big arsenal of scientific data about speed, manoeuvrability and sailing courses.

Unfortunately, we could not overcome the most difficult way through the Strait of Bonifacio in the first four weeks. The

"Canale di Sardegna" is a very windy and complicated navigation way, but not only for reed raft. We lost by the climatical conditions a lot of time before we could reach the entrance of the Strait of Bonifacio. Therefore, our time table was overrun when we passed our first eye of a needle Bonifacio. When we passed the Gulf of Porto Vecchio in East Corsica we got an extraordinary offer of the Italian ferry company Linea dei Golfi from Piombino. They offered us to rescue the reed boat without any costs in the city of Piombino. Therefore, I decided to change the expedition route to Piombino and we crossed the Tyrrhenian Sea to the Island Elba where we finished the voyage after 650 kilometer.

Scientific importance of the reed boat expedition

THE EARLIER FINISHING of the experiment is not a failure of the project. In opposition we wanted to collect experimental experience about the steering and rigging of a prehistoric sailing vessel. The main aim of the expedition was not touring over the Mediterranean Sea but testing the side on sailing technique. On base of the prehistoric rock drawings we found a lot of indications that in the prehistoric times the man was already able to sail with his reed boats at least across to the wind.

The reed boat ABORA could prove experimentally that a neolithic sailing vessel is able to sail at least 90° across to the wind. The reed boat even sailed with moderate winds 83° against the wind over ground! We tested the reed raft under real maritime conditions and could follow archaeological traces so far as was possible. The ABORA made possible experiences which were not able to interpret from ancient rock drawings. Now, we are able to explain that the supposed expedition route was able to sail with a

The ABORA sailing on the Mediterranean. (good visible windgenerator)



prehistoric reed boat. But it needs more time than we have thought before. For long distance voyages from Sardinia to the Canary Islands it will need 2 to 3 years of navigation. But the prehistoric reed boat possesses this sailing performance. So we could even sail against a strong current of 2 kn with a sailing speed of 1,5 kn. The cruising speed was around 2 kn. The maximum speed was 4,1 kn with wind speed of about 4 bft. In that way ABORA overcomes the 600 km long voyage in only 44 days although we must wait a lot of time for better winds or on our TV station as well as some escort vessels. We sailed this route the first time and made some failures in choosing the correct route. During a second voyage between Alghero and Piombino we could optimize the expedition route by a shorter sailing time. If we compare our experimental results with a wandering over land we can see that a seafarer was even faster than a wanderer by land. We rested if we sail with 2 kn over seas. We have carried all personal things on board, had enough time and space for our life and nobody had stress or trouble while we sail over the Mediterranean. These are complete different features to wanderings by land. A land wandering needs a lot of energy to carry all things and cargo. You have to gather a lot of effort to transport the household effects or drive the cattle through the bushlands. Moreover we have to consider that the environment in the neolithic time had a vegetation like a jungle. There were no ways or open landscapes in Europe like today. Therefore, the prehistoric navigation was the most fastest possibility of movement which allows connection to far countries.

From the time on when the man has developed swimmable and manoeuvrable watercrafts he was able to spread his culture and life over the whole Mediterranean Sea. There is no doubt in my mind that these people were also able to leave the Mediterranean and settled on the Canary Islands long before the Phoenicians. All archaeological and scientific remains speak a

clear language that it has already existed a highly developed navigation in the prehistory.

There were contacts throughout Gibraltar?

THOUSANDS OF YEARS ago the prehistorians developed the first sea going vessel and crossed the seas. The influence of global oceanic streams as a vehicle in maritime migrations was a decisive factor in the development of cultures in many parts of the world. Today we begin to understand these effects and comprehend that our history is closely connected to the history of navigation.

This research was never completed. Each day new discoveries are made. Therefore, the ABORA-project group plans to try the second attempt in crossing the Mediterranean in Western direction. A new and improved reed boat should open the secret door to the Atlantic! Sorry Phoenicians – you were not the first! The Abora 2 expedition will prove experimentally that the neolithic navigation could already sail over the Mediterranean Sea.

New discoveries of rock drawings near the Strait of Gibraltar prove that in process of the spread of Neolithic way of life ancient sailors passed this way long before the antique times. The Spanish scientist Barroso Ruiz discovered drawings of sailed reed boats. This picture shows two large reed boats which are situated 20 km from Gibraltar. Most of the experts date this rock drawing in the middle of the 2nd millennium B.C. (16) Another scientist Fernando Alonso pointed out: "The most important circumstance is that these rock drawings deliver the direct proof for the use of the reed boat in the South of the Iberian peninsula." (16) The occurrence suggests that until the 2nd millennium B.C. sailors still used this watercraft for its merchant fleet. Alonso found

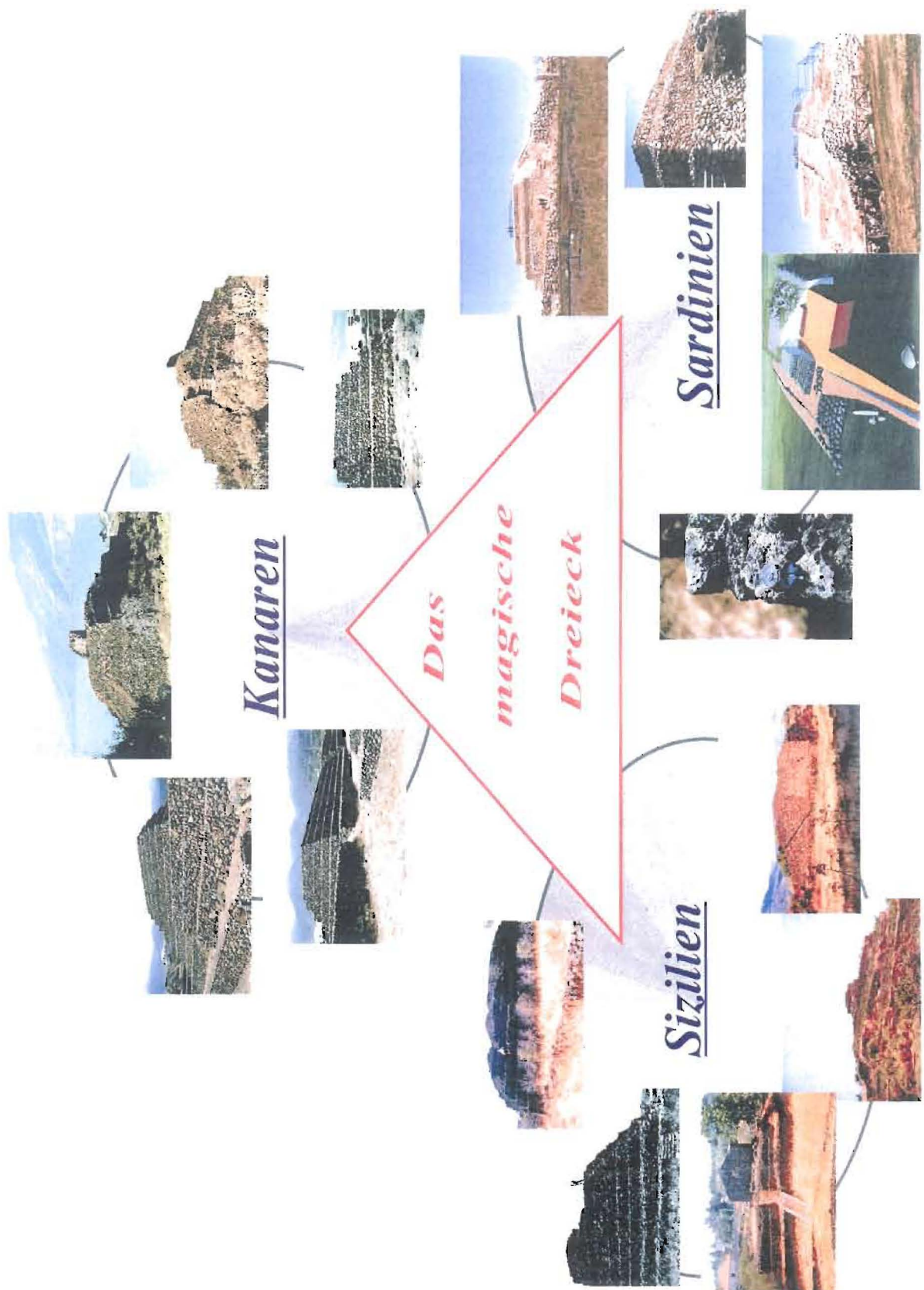
further pictures near Cadiz which show still former drawings in the Bay of Borna/Spain. These remains are clear iconographic evidences for the trans-Mediterranean navigation. They document that the reed boat navigation reached the Atlantic Sea still in early antiquity. The foothills of these wanderings must have reach the Canary Islands on the NW coast of Africa, too. There we can find a lot of traces of cultures of the prehistoric Mediterranean. Although most of the authorities believe that the Canarian culture were settled by antique seafarers in the beginning of the 1st millenium B.C. the settlement of the guanches must have started a long time before. New discoveries of stepped pyramids on Tenerife and La Palma or the existence of artefacts like in the Mediterranean cultures deliver further arguments for the cultural exchange by sea.(18)

But this statement cannot be proved with the help of archaeological evidence alone. Its necessary to prove experimentally that our

ancestors 6000 years ago already possessed the technology to build fully manoeuvreable sailing vessels which could navigate at sufficient distance from the coast against the wind to leave the Mediterranean Sea even. Therefore, the project group wants to construct the ABORA II. We will start a new voyage to cross the Western Mediterranean and try to pass the Strait of Gibraltar.

If the crossing of the West Mediterranean is successfully, we are able to prove practically that already at the late Stone Age neolithic cultures could navigate on the Atlantic Sea. This voyage could fill the long "missing link" between the civilizations in Mediterranean Sea and the lands beyond the Strait of Gibraltar. It will be of great scientific value in explaining major problems of cultural diffusion by sea in early pre-European times.

Right picture: The magic triangle (Sicily-Sardinia-Canary Islands); The appearance of architectural forms – such as pyramids – in different cultural areas is a phenomena which has led to numerous discussions concerning contacts between early civilizations. The discovery of buildings in the Mediterranean area supports the thesis of an expansion of a pyramid-building civilization coming from Anterior Asia.



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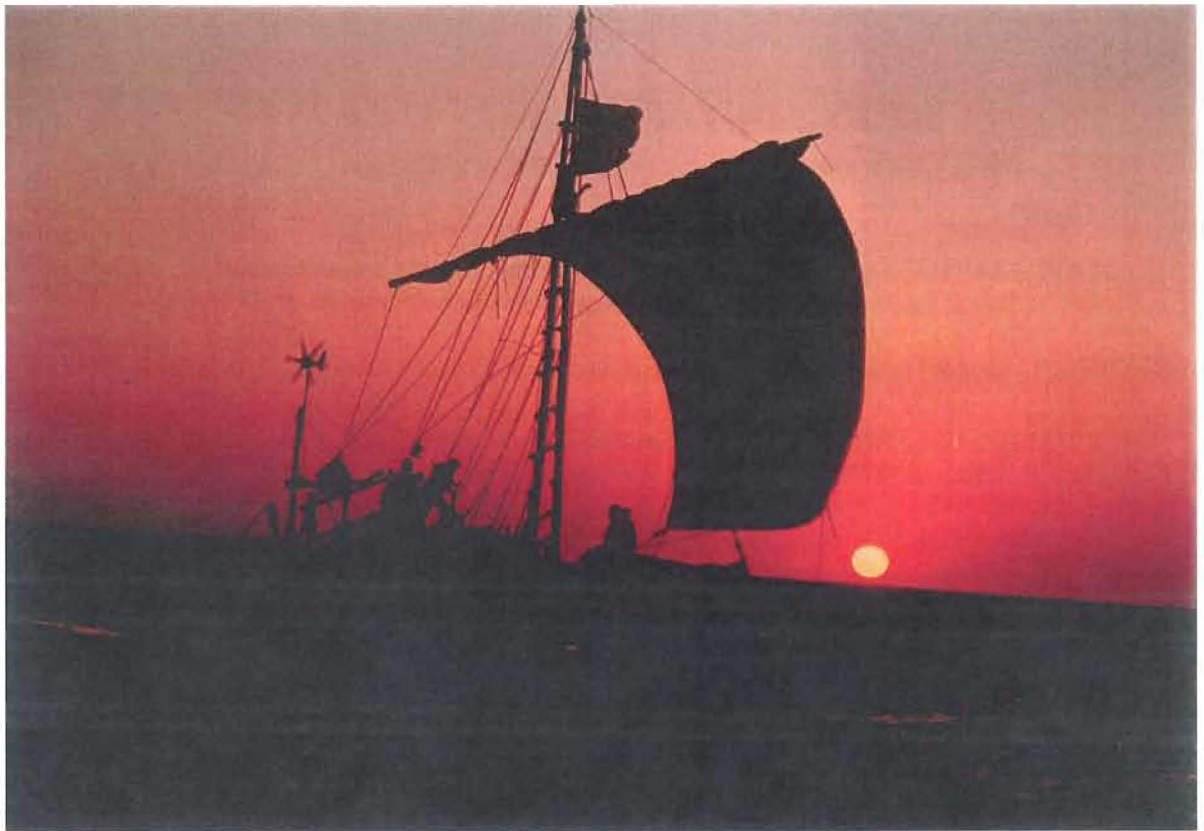
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Zusammenfassung:

Archäologische Funde deuten an, daß zwischen den frühen Kulturzentren im Mittelmeer ein reger Kulturaustausch stattgefunden hat, der vermutlich bis auf den Atlantik reichte. Beeindruckendste Belege für diese Kontakte sind die Verbreitung terrasserter Heiligtümer, die als Stufenpyramiden in Vorderasien, Nordafrika, auf den großen Mittelmeerinseln sowie den Kanaren in den Himmel ragen. Die Seefahrer nahmen außerdem Haustiere und Saatgut mit sich und verbreiteten innerhalb von Jahrhunderten die Kultur der Jungsteinzeit bis an die Grenzen der Alten Welt. Eine dieser Wanderungsrouten führte von Sardinien um Korsika herum über die Balearen bis nach Spanien.

Zur Bestätigung dieser Hypothese führte ein Team junger deutscher Wissenschaftler unter der Leitung des Autors eine Schiffsbootexpedition durch, um die Segelfähigkeit dieser prähistorischen Wasserfahrzeuge zu erforschen. In drei Jahren Vorbereitungszeit konnten wir ein 17 Tonnen schweres Schiffsboot bauen, das wir nach vorgeschichtlichen Felsbildern aus Nordafrika ausgerüstet haben.

Die Hauptaufgabe dieser Expedition bestand darin, mit Hilfe der Seitenschwertsegeltechnik quer und gegen den Wind zu steuern. Die gesegelten Kurse bestätigen diese Zielstellung. Bei günstigen Windstärken zwischen 3-4 ist es uns gelungen, mit der ABORA 90° quer zum Wind zu segeln. Auf kurzen Strecken segelte die ABORA unter Idealbedingungen sogar 80° gegen den Wind. Auch wenn das Experiment vorzeitig in Piombino beendet wurde, hat die Abora den schwierigsten Navigationsweg der ursprünglich geplanten Expeditionsroute zurückgelegt. Unsere Seereise entlang der Küsten Sardinien und Korsikas wäre ohne die Fähigkeit der ABORA, quer zum Wind zu segeln, nicht möglich gewesen. Wir haben versucht, entlang der ausgewählten Route soweit wie möglich vorwärts zu kommen, mit dem Ergebnis, daß sie durch ein frühgeschichtliches Schiffssegelboot befahren werden konnte.

Auf der Grundlage unserer Expeditionserfahrungen sehen wir Möglichkeiten zur weiteren Verbesserung der Segeleigenschaften. Mit dem Wissen und den Erfahrungen der Expedition ABORA können wir die vorgefaßten Meinungen über die eingeschränkte Manövrierfähigkeit steinzeitlicher Schiffsboote korrigieren, denn die Segelboote auf den Felszeichnungen und Malereien, die wir als Vorbild wählten, stellen manövrierfähige Seefahrzeuge dar.

Mit der Entwicklung steuerbarer, besegelter Schiffsboote vor mindestens 6000 Jahren haben sich die Möglichkeiten der Ausbreitung früher Kulturen vervielfacht. Es wurden Reisewege und die Überwindung von Entfernungen möglich, die über Land schwerer oder gar nicht erreichbar waren. Diesen Sprung in der Verkehrstechnik kann man mit der Erfindung der Dampfmaschine und der Einführung der ersten Motoren im Schiffbau mehrere Jahrtausende später vergleichen.

Selbstverständlich waren die Segelschiffe der Antike den vorgeschichtlichen Schiffsbooten weit überlegen. Doch bereits die frühgeschichtliche Seefahrt hat dazu beigetragen, das unsichtbare Netzwerk von Strömungen und Winden auf dem Mittelmeer zu entdecken. So wie wir auf unserer ersten großen Expedition gelernt haben, bestimmte Gebiete bei einer zweiten Fahrt zu meiden oder für neue Reisen wieder aufzusuchen, haben auch die Menschen der Steinzeit gelernt, das Meer als Wasserstraße zu nutzen. Generationen von Seefahrern haben diese maritimen Transportbänder genutzt und sind ihnen an die entferntesten Küsten der Alten Welt gefolgt, wo sich ihre Spuren im weiten Atlantik verlieren,