

## The Jesus Voyage Curragh

Of immense interest to students of early marine architecture and the history of cultural diffusion in the Western World is the task of building a supposedly "authentic" Neolithic curragh.

The traditional materials themselves have been well known for decades. Replica curraghs built during the past half-century have demonstrated the proper method of construction using these traditional materials. "Neo-curraghs" made of modern materials, such as my own curraghs designed and manufactured in association with the Canadian International Development Agency, have also contributed to an understanding of what might be called "basic curragh engineering".

But what would a "Neolithic" or "megalithic" curragh of about 10,000 to 7000 BC have looked like?

No one knows because there are no known ship depictions that ancient in the entire world, and certainly not in Europe. We know only that reed vessels could not have been portaged over European watersheds and could not have coped with adverse winds and currents of the Atlantic and Mediterranean.

Of vessels within the capability of Neolithic technology, only rafts, dugouts and curraghs remain as possibilities. Rafts are even clumsier than reed ships (which are technically rafts anyway). And Europe has never boasted trees of sufficient girth, combined with straight trunks, to result in dugouts of seagoing size and reasonable cargo capacity.

Nonetheless, one of the world's acknowledged authorities on early naval architecture, Bjorn Landstrom, has suggested that some of the Mycenaean vessels drawn up on the beach at Troy (circa 1250 BC) may actually have been large dugouts. Thus, Homer's "black ships" of the *Iliad* and *Odyssey* may not have been planked vessels at all. They may have been nothing more than glorified canoes. They would not have carried many heroes like Achilles and Agamemnon to Troy, and they could have carried even less booty back to Greece.

But since we know that the post-glacial folk of Neolithic and megalithic Europe were able to use French rivers for transport as early as 10,000 BC and to colonize Mediterranean islands in force and to bring some livestock with them as early as 7000 BC, they must have used curraghs. That's the only answer that makes any sense and, in fact, the only answer left.

And, with all due respect to Landstrom's towering reputation in historical naval architecture, I am also inclined to think that some of Homer's "black ships" were much more likely to have been curraghs than dugouts. Bjorn Landstrom, in fact, never once mentions curraghs in his authoritative book *The Ship* (1961) and seems never to have even heard about them.

The first known depictions of Northwestern European vessels are scratched on rock near the towns of Boslund and Tanum in Sweden. These petroglyphs show skin boats.

Curraghs. They are shown with a characteristic upturned projection of the keel extending both fore and aft. These projections are always absent in Eskimo "Umiaks", by the way, and this may suggest that the early Scandinavian skin boats came from a completely different cultural tradition.

Replication of these vessels using a skin hull stretched over a wooden frame quickly demonstrated the function of these curious projections. The front upcurve created a "false bow wave" starting a few feet beyond the bow or front of the actual hull. This "false bow wave" allowed paddlers or oarsmen along the side of the boat to work in flatter, calmer water. They could therefore ply their paddles or oars more efficiently.

The upswept rear or stern projection may have had no purpose other than providing symmetry that was pleasing to the eye, but both upward projections may also have had another function. These curving branches of wood may have provided flotation if the boat was capsized, and such craft must have capsized fairly often.



Tanum boat glyph.

My own opinion, for what it is worth as a designer and manufacturer of over two hundred curraghs, is that curraghs intended for fairly frequent paddling or rowing would have usually incorporated such projections. But the specific shapes of these projections may have gradually evolved throughout the thousands of years of curragh development. This is because curraghs are an inherently ultra-lightweight type of vessel. Properly designed and built, curraghs can carry an immense amount of cargo without breaking up.

But they can also be capsized fairly easily when they are not laden. Adding purposeful ballast in the form of rocks doesn't make much sense in a boat with a sewn skin or leather hull. Obviously, carrying ballast is just asking for trouble. Bulging rocks could easily rupture the sewn seams of the hull. Besides, a prime advantage of a curragh is that it is easy to propel by oars or sail because it is so light in weight. Purposeful ballast only negates this characteristic.

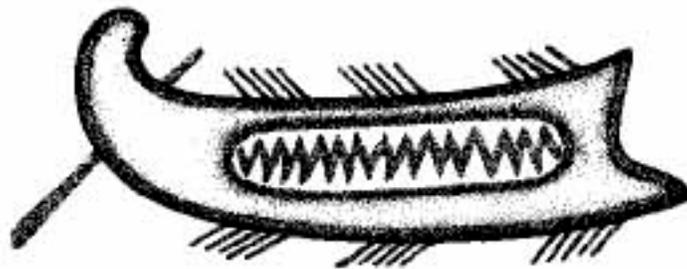
Therefore, I think, curraghs intended for rivers and coastal voyaging where paddling or rowing was a frequent necessity would have been fitted with some form of "anti-capsize" flotation such as we see on the Tanum glyphs. This would have become even more urgently required when sails began to be used as alternative propulsion.

My own view is that curraghs actually dictated the general appearance of Mediterranean vessels in the so-called "Ancient World" even after wood-planked hulls began to supercede sewn-leather hulls. This began to happen about 2000 BC in the Aegean,

according to the evidence of pots and potsherds, and probably progressively later elsewhere. Wooden planking gradually became feasible with the percolation of bronze-edged tools down to the artisan classes like boatbuilders. At first, of course, bronze would have been used exclusively for the weapons and jewellery of the elite. Once wood became easier to shape with bronze tools, wood planking could begin to substitute generally for sewn leather hulls.

It is probably not just a cultural oddity that Ireland was the last stronghold of currachs. Sailing currachs were the usual type of Irish cargo vessel well into the medieval period. And in Ireland, metal was also both scarce and expensive well into the medieval period.

But I think that currachs dictated the general shape of vessels in the Mediterranean's "Ancient World" for a long time after wood planking became the usual method of construction. In my view, the beautifully upturned stern curves, the forward-projecting "rams" and the high forecastles of Mediterranean vessels were all a legacy from earlier currachs. They were "anti-capsize flotation devices", an evolution of the curious projections shown in the Tanum glyphs. Here's the so-called "Volos Ship" that was scratched on a potsherd about 1600 BC or so in Mycenaean Greece.



The Volos ship.

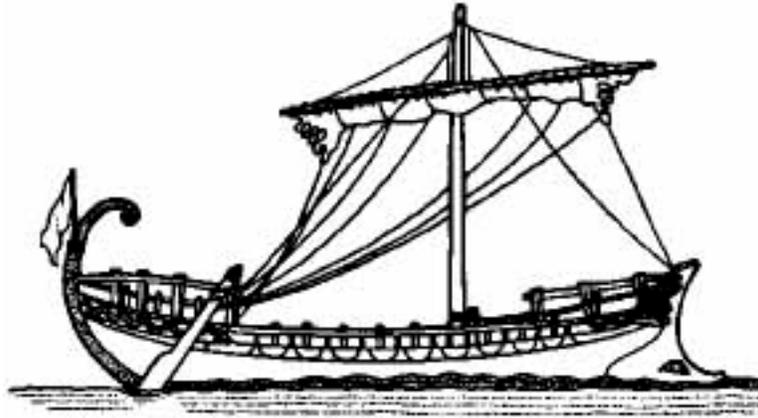
This ship was sketched on pottery clay about three or four centuries before Jason sailed to fetch the Golden Fleece and faithless Helen's lovely face "launched a thousand ships" against Troy – also, these epic events supposedly took place at roughly the same time as the biblical Exodus.

I think that with the "Volos ship" we are looking at an evolved curragh that was intended to be sailed (cautiously) and rowed when necessary. The softly rounded shapes of the vessel, I suspect, depict a sewn leather sheath covering an internal wickerwork hull over a framework of curved wood branches. The rather bulbously curved upswept stern may actually have been hollow and filled with something that would float -- reeds, packed brushwood or inflated bladders. The same goes for the prominent "forecastle". The curragh could be knocked flat and the hull might partly fill with water, but (with luck and wise cargo stowage) it could not actually be capsized or turned completely over.

We see that the forward projection or "ram" is also more bulbous than the Tanum projections, much like the bows of some modern ships, in fact, and for exactly the same reason: this shape is easier to move through the water. This evolution of the "ram" suggests a lengthy period of trial and error refinement before 1600 BC. For a boat that had to be rowed fairly frequently, however, the bulbous shape was even more efficient

than for a modern motor vessel. As with the Tanum skin boats, the artificial bow wave created out in front of the true bow made a wider "vee" wave that left the oarsmen in relatively flatter water along the sides of the hull.

Tim Severin used the "Volos ship" as a basic configuration when he planned his Late Bronze Age replica Mycenaean 20-oar galley for *The Jason Voyage* (1985) in the early-1980s. The British naval architect, Colin Mudie, turned the general configuration into the 54-foot wood planked sailing galley *Argo*. Again, it was confirmed by scientific tank testing in Southampton that the "ram" made the galley significantly easier to move.



Tim Severin's replica Mycenaean sailing galley.

We must remember that the epics attributed to "Homer" were written about five hundred years after the events related in the *Iliad* and *Odyssey*. Although Jason's voyage to steal the Golden Fleece traditionally happened one or two generations before the Trojan War, and Homer himself mentions Jason's exploit, the first known written version of the *Argonautica* wasn't composed by Apollonius of Rhodes until the third century BC. This was about a thousand years after Jason supposedly lived. By the time these tales were actually committed to writing, wood planking had become the standard method of construction and their respective authors, Homer and Apollonius, would have described ships and shipbuilding that were common in their own day. But the actual ships and shipbuilding at the time of Jason and Odysseus may have been very different.

If some of the "black ships" drawn up on the beach before Troy were currachs, it may be that Jason's *Argo* was really a curragh too. In fact, there are definite indications of this in the *Argonautica*.

It has always puzzled scholars that, according to the *Argonautica*, Jason returned from Colchis to Greece by sailing along the south coast of the Black Sea, then sailing up the Danube River and then somehow crossing over the Balkan mountains to reach the northern end of the Adriatic Sea. This is, of course, an impossible route geographically. But it also apparently wasn't just a simple error of ignorance by the Mycenaean bards. They preserved the tale of Jason and the Argonauts by rote repetition so that it could be handed down some forty generations until the time of Apollonius. Thus, the curious "error" was repeated, and even emphasized. Was it really an error?

Jason did not only steal the Golden Fleece. He also made off with Princess Medea, daughter of the King of Colchis, who had fallen hopelessly in love with him. The king sent his son and Medea's brother, Prince Apsyrtus, in pursuit of Jason. Apsyrtus had orders to bring both the Golden Fleece and Medea back home to Colchis. It is noteworthy that Apsyrtus also somehow crossed the Balkan mountains from the Danube River system and, like Jason, ended up in the northern Adriatic Sea. Cutting a long story short (or editing an epic down to size), Jason and Medea contrived to murder Apsyrtus on one of the islands in the northern Adriatic.

In Classical times, and even on some modern maps, a group of islands in the northern Adriatic is still labelled the "Apsyrtus Isles". This place-name in this location indicates that there once must have been way of passing, by a portage for lightweight currachs, from the Danube to the Adriatic. The *Argonautica* also says that in another adventure the *Argo* was portaged across the "Libyan Desert".

Not only that, but Tim Severin in *The Ulysses Voyage* (1987) notes that some traditions attaching to Odysseus insist that he, too, returned home from Troy to Ithaca by way of the northern Adriatic. In fact, Severin's retracing of *The Ulysses Voyage* in a genuine Mycenaean sailing galley (and not by armchair academic speculation), cleared up the always-disputed geography of Odysseus' route home. But with the idea of Odysseus's "Danube route" home, Severin presented yet another puzzle about the *Odyssey* that no one else had identified during the previous 2300 years of literary criticism.

The last part of the *Odyssey*, what might be called the true homecoming or last leg, is really a separate epic involving Circe's island, Calypso's island, Scylla, Charybdis, the entrance to Hades and a few other incidents. These places and incidents have only one thing in common: they all take place either in the Adriatic or further south in the Ionian Sea.

Severin came to the surprising conclusion that Odysseus must have been a personality that was intimately and specifically associated with the Adriatic and Ionian Seas. His story was woven into the saga of the Trojan War, true enough, but he was also (or even mostly) used to inform audiences about the extent of Mycenaean seafaring and geographical knowledge. And this knowledge and seafaring, in turn, had much to do with the northern Adriatic Sea, the Balkan mountains and the Danube River.

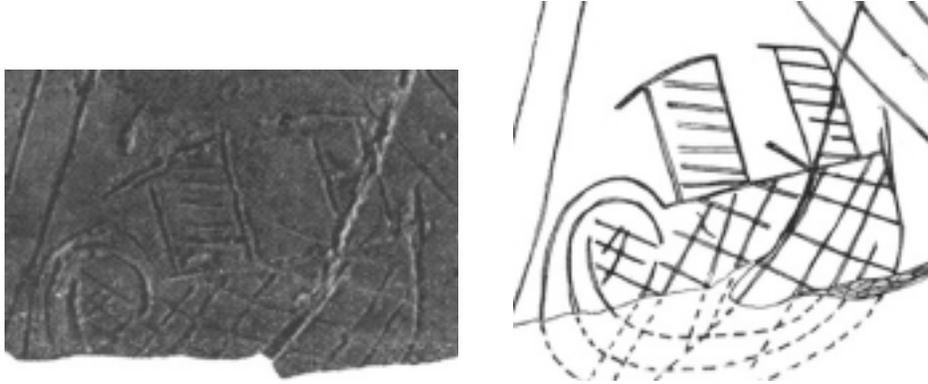
We have touched on this very region before.

This corner of the extreme Northern Adriatic Sea was where Isis may have become a Fish Goddess like the fishy divinities of the Lepinski Vir and Vinca Danubian cultures. It is this region where the supposedly "later" Christian dalmatic style of ceremonial robe originated, the oldest known example of which was discovered in Tutankhamun's tomb by Howard Carter.

And, although we have not mentioned it yet, this is also the general region from which the so-called "Bogomil" sect, according to some authorities, brought the legend of the Holy Grail into southern France during the AD 1100s. It now seems clear, however, that the Bogomils more properly injected a shot-in-the-arm of vitality to a native southern

French tradition that was still surviving, but just barely, under the onslaught of Roman Church orthodoxy Christianity.

The so-called "Danilo-Hvar Culture" has been identified as existing about 7000 BC in this area, centred on the large island of Hvar just off the Croatian coast. Not only that, but the oldest known boat depiction in the world as of this writing comes from a potsherd from the island of Hvar. It is dated to 4000 BC and, in my opinion based on reproductions supplied to me by Dr. Miha Bujic of the University of Ljubljana, shows a very sophisticated diagonal-framed and two-masted curragh.



Left: a University of Ljubljana photo of the original Hvar island pot sherd. Right: Line rendition by a University artist of the sherd's detail showing a two-masted ship. This is presently one of the oldest ship depiction in the world, dated at about 4000 BC.

Some idea of the very imprecise "science" of trying to interpret very early drawings on clay pots and rocks may be gleaned from the fact that "Yugoslav" (now Croatian) scientists at first thought that this sketch had been an attempt to draw a mammoth or an elephant! Look at the things upside down. Maybe the scientists were right the first time around.

However, two things gradually changed their opinion.

First, the sherd had been reliably C-14 dated to about 4000 BC because of organic remains found in close association with it. Mammoths were confidently thought to have been extinct by then in Croatia, whereas "elephants" per se (i.e. technically speaking, the "loxodonts" of Africa; two species and maybe three) had never, and still have never, extended their range to Croatia.

Secondly, many rather similar drawings were subsequently discovered on the island of Hvar and all these looked even more like ships. So, a ship it was voted to be. And, during 2000-2002, I was asked my opinion about what kind of ship was being represented. My long replies to Dr. Bujic probably seemed a bit balmy to him and his colleagues, but here's the gist for what it is worth.

Me, I think that this is not just a side-on crude profile sketch of a ship. I looked at the line rendition "with a squint" and, to me, it suggested a possible and purposeful artistic composition involving ships, not just an amateur's side-on drawing of "a" ship.

Are we seeing a ship sailing ahead...from the point of view of a passenger on another ship sailing behind the leading ship? To me, the strongly marked diagonal lines leading to an apex at the top of the drawing may be a “frame” for the composition. They are possibly the shrouds that support the mast of a following vessel and, if so, the artist’s point of view is at deck level from beside the mast of this following boat.

If this much is allowed, or is at least grudgingly conceded with a shrugged “well, maybe so...” then we can also say that both ships are on the starboard tack or gybe – that is, the wind is coming from the viewer’s (your) right. The ships are heeled over to leeward – away from you – because of the wind. That is to say, the hidden side of the leading ship, the side away from you the viewer, is much lower in the water than the side of the ship facing you (the viewer). Much more of this “windward” side is visible to the viewer because the ship is leaning over in the water due to the press of wind in the sails. Anyone who has seen sailboats “heeling” (leaning) over in the wind will realize immediately what I’m describing.

If my squinting has not distorted my eyesight too much, we can say even more. We are not looking at the actual front end of the leading ship, we’re seeing the bulge at about its widest width – its “beam” from this perspective. The true front or bow curves away out of sight in front behind the body of the ship. If so, we have a true “Mycenaean galley-type” of upturned stern and even the suggestion of a bowsprit at the true front of the ship or bow. This bow seems to be about as high as the stern, judging by the angle of the bowsprit, suggesting a forecastle of sorts. But we cannot really see it, and neither could the artist, because the windward side of the ship is so high.

If this isn’t all sheer imagination on my part, we are seeing evidence of the “anti-capsize” front and rear flotation devices that were also suggested by the Tanum glyph and the “Volos ship”.

The crisscrossed lines on the hull are, in my opinion, an attempt to show *double diagonal* framing under a curragh’s leather hull skin. This in itself is an extremely sophisticated solution to the problem of dealing with stresses, particularly if there are only Neolithic tree branches, rawhide lashings and dubiously sewn leather to hold the ship together.

Double diagonal framing of the main hull skeleton – if this is what we’re really seeing – represents sophistication in design equal to Medieval Irish curraghs like Severin’s replicated *Brendan*, and more sophistication than my own “neo-curraghs” made with CIDA’s help. *Brendan*, however, was made with power-sawn and power-planed ash lathes of uniform width and thickness. These lathes made a closely spaced double diagonal frame matrix for *Brendan*. A true Neolithic curragh, or even a truly authentic poor monk’s Medieval Irish curragh, would have probably had to make do with a lashed framework of rounded saplings.

I have tried this double diagonal framing, using rounded dowels of bamboo, on a model curragh and the hull is about twice as strong than using conventional “rectangular-working” longitudinal keel-and-stringers and with the usual transverse frames. I might attempt this kind of diagonal framing on “The Jesus Voyage” curragh using ash saplings.

On this Danilo-Hvar potsherd, we're also seeing two masts with sails. This isn't surprising in itself because woodcuts of currachs in medieval books also show two masts and two sails. Traditional currachs made on the West Coast of Ireland until the 1900s also still retained two mast steps, even though the foremast was actually never made and never used. Colin Mudie, doing some sophisticated calculations, gave the Medieval replica *Brendan* two masts and two sails.

And, although it is difficult to be certain because the viewer's angle is foreshortened due to the heeling of the leading ship, the sails *appear* to be very sophisticated fore-and-aft sails. That is, they are attached on the rear side of the mast just like sails on modern yachts. Not only that, but they appear to be full-battened sails that are characteristic of Chinese "junks" – and also just like the ultra-modern rendition of full-battened mainsails on the current (February 2003) America's Cup contenders *Alinghi* and *New Zealand*. Battens are slats of wood (or plastic – or carbon-fibre in the America's Cup) that keep the sailcloth flat and smooth. The ancient Chinese of about 1000 to 500 BC could even bend these battens with ropes called parrels in order to curve the sail to the proper aerodynamic chord or "shape". This last refinement has not yet reached even the America's Cup.

These sails are not just the simple, downwind, "square sails" used by St. Brendan for his curragh, used on Tim Severin's *Brendan* replica curragh, shown on artwork depicting Mycenaean sailing galleys and designed for Tim Severin's *Argo* replica.

Frankly, these masts and sails on the "Danilo-Hvar" ship stunned me, and I said as much to Dr. Miha Bujic. This kind of sails, fully battened ones (and they may be made of woven reeds, cloth or leather), are known only from the Far East culture area – but about 3000 years later than the Danilo-Hvar potsherd. Further, the shape of the sails, almost rectangular, plus the number of battens – a foreshortened six (6) on each sail – suggest *North* Chinese sails, of all things.

These North Chinese sails were specifically designed for sailing on rivers where the available wind often came from over high banks on shore. These sails had to use what little wind they could catch on the water, and this was usually fairly high up in the sails, and they had to use this wind as efficiently as possible in order to make headway against a river's currents. Going upstream against the current means an obvious need for power. But landlubbers don't realize that a ship must go faster than the current even downstream as well. Rudders cannot steer the ship unless the ship is travelling faster than the water floating it. So, ships require power to go downstream under control. They can't just drift with the current.

Therefore I suggested to Dr. Bujic that these ships, if they truly were typical Danilo-Hvar vessels, must have done a lot of voyaging on large rivers. The only nearby one that I could think of was the Danube. And this suggestion was made before I learned much about the supposed cultural associations between the Danilo-Hvar and Danube cultures.

Quite honestly, this Danilo-Hvar ship raises more questions than it answers. One almost wishes that it had remained a mammoth! But I hope that it wasn't meant to be a mammoth, for I must rely upon this "ship" depiction for "The Jesus Voyage" replica.

Because it is the oldest known European depiction of a ship, and especially because it comes from the Danilo-Hvar Culture (an offshoot of the first French Neolithic and megalithic "Cardial Culture"), it must be taken into account in any design for a replica curragh of about 7000 BC.

We may recall that the German historian, Paul Hermann, identified a Neolithic or Early Bronze Age haul-over or portage from the northern Adriatic over the Balkan mountains to the Danube River drainage basin. According to Paul Hermann writing in 1954, the Adriatic-Danube haul-over was established in order to facilitate the amber trade about 3000 BC. But since the 1970s we know, as Hermann did not, that the prize may have been a commodity that was even much more valuable than amber. Copper and bronze seem to have been the incentive.

Fairly recently, since the 1970s, it has been discovered that the first known metal-smelting cultures were located near the mouth of the Danube. It came as something of a shock for archaeologists to learn that the habitual use of metal had begun about 6500 BC in modern Romania and Bulgaria and not in the ever-popular "Middle East". The reason for this was the geological presence of copper salts and oxides actually on, or relatively near, the surface of the ground.

These copper-bearing minerals were apparently used initially for making glazes with which to decorate clay pots. Since women's fingerprints have been characteristically discovered impressed into the clay of these ceramics, it is reasonable to assume that women also invented the first metallurgy. By about 6000 BC, metallic copper was being extracted for use as ornaments, tools and some weapons (which, however, could also have been used for hunting), although most things were still made from stone and wood.

This first stage of metal technology has sometimes been called the "Chalcolithic Age" meaning the "Copper and Stone Age". The first true bronze was also smelted in Romania and Bulgaria about 5500 to 5000 BC, or about 2000 years before anyone had previously thought.

So, for Neolithic colonists at the northern end of the Adriatic Sea about 7000 BC, a very valuable commodity soon became available over the mountains separating the Adriatic Sea from the Danube. River At a very early stage of metal usage, enough copper and bronze ingots to satisfy a very modest demand could have been carried over the mountains in sufficient quantity by only a few men. But what were the Adriatic Danilo-Hvar folk to give in exchange for it? They were agriculturalists, herdsman and fishermen. All their potential trade goods were bulky.

It may be that at a very early date, say 7000 to 6000 BC or so, the Cardial Culture or the immediately succeeding and related Danilo-Hvar Culture, constructed a portage or haul-over so that their currachs could reach the Danube from the Adriatic. There are good reasons to think so, or at least to know why such a project would have seemed worthwhile to the people of the time.

My guess, and it is only a guess, is that the Danilo-Hvar people established the haul-over so that they could carry their bulky commodities over the intervening Balkan mountains

in their currachs. They could then sail down the Danube to where the metal magicians lived not far from the mouth of the river – which would have been a magnificent waterfall before 5600 BC (because of the Great Black Sea Flood, see pages 58-76 below). They could have used cattle to help pull the boats up the portage, and the cattle would also have been a trade commodity on the hoof.

Most unfortunately, although Paul Hermann mentioned the Adriatic-Danube portage or haul-over, and although he documented its use in "amber trading times", he neglected to draw a detailed map of the route or to explain exactly where it was. As of now, I have not been able to locate anyone who claims to know where it had been. Perhaps, if there's time, interest and funding, finding the route of the Danube-Adriatic portage might be worked into "The Jesus Voyage".

Therefore, when all has been said, the puzzling and anomalous Chinese-type full-batten sails may have been accurately depicted by the Danilo-Hvar artist because these ships frequently navigated on the Danube River as well as sailing true sea routes.

Taking the Tanum glyph, the Volos ship, the known appearance of Mycenaean galleys and the strange Danilo-Hvar sails into account, we come up with a composite picture of what an early Neolithic-megalithic curragh *might* have looked like.



An idea of "The Jesus Voyage" curragh of about 10,000 to 7000 BC.

I see it as a kind of tubby Mycenaean sailing and rowing galley. It will have the upcurved stern and forecastle "flotation devices" and the "ram" of the Tanum and Volos ship to make paddling or rowing more effective. Because of the evidence of the Danilo-Hvar pottery sherd, it will have two masts and full-battened sails set behind the masts. Note the use of a tree trunk-and-branch in the bow. An extension of the tree trunk is the "ram" while a naturally curving branch provides the profile of the bow.

I believe that in this design study, it is easy to see the progressive influence of the Tanum glyphs, the Volos ship on the Early Mycenaean pot and the Danilo-Hvar contribution. I

think this is a reasonable “replication” of an early Neolithic Mediterranean curragh, but it is not necessarily a correct one.

I think, at least, that the idea of using the butt of a log for the “ram” and a convenient upcurving branch to define the prow (as above) must have been used in the construction of Neolithic curraghs. I cannot imagine any other source for the later distinctive shape of Mycenaean galleys like *Argo*.

In fact, with “The Jesus Voyage” curragh, naturally curved tree trunks and branches must serve for the majority of major keel-and-frame members. Neolithic stone axes have been discovered by replication and experiment to be surprisingly effective. But one wouldn’t like to chop down a large tree with a Neolithic axe. And one doesn’t want to shape large tree trunks and branches with them for fear of breaking the stone axe-head, even a hard diorite one. But the bark could be sliced off and smaller branches could be safely trimmed with these implements. Trees and branches of the right size, with the natural curves required, are essential to building the Neolithic curragh as an “authentic” vessel.

There is evidence from all over the world that ancient boat builders grew their frames into the proper shape by tethering growing saplings into the desired curves with ropes. The Lombok islanders of modern Indonesia, who use outrigger canoes for their fishing, still grow hibiscus frames into the beautiful curves of their outrigger struts.

Obviously, “The Jason Voyage” project does not have the time to employ this method of growing Neolithic curved frames for the curragh. We will have to search for suitable frames among the naturally curved branches of woodland trees. Looking for this wood may take time, even in Brittany. I have therefore toyed with the idea of actually making the basic curragh keel-and-frame in Canada where there is much more timber to choose from and then shipping or air freighting the labelled pieces to France. The basic keel-and-frame could then be “re-assembled” in France and then the hull and rigging could be completed.

My opinion is that curraghs intended for rivers, coasting and headland-to-headland short open water passages in generally sheltered waters would have looked something like the later sailing and rowing galleys of the "Ancient World". Except for the two-masted rig with Chinese-type sails (better for river navigation), they would have looked something like Tim Severin's modern *Argo* replica...or, even better, like the "Volos ship".

When Tim Severin built his *Argo* replica sailing-and-rowing galley in the early 1980s, he intended to use it, first, for *The Jason Voyage* in 1984 and then for *The Ulysses Voyage* a year later. Severin decided on the smallest size of galley mentioned by Homer, a "20-oared" vessel.

Nonetheless, Severin's modern *Argo* replica weighed some eight tons. And, even so, Severin remarked several times how fragile and lightly built she seemed. Yet, of course, a crew of twenty could never have portaged an eight ton planked vessel over either the Balkan mountains or across the "Libyan Desert".



Severin's **Argo** under sail.

It seems more likely to me that tales like the *Iliad*, *Odyssey* and *Argonautica*, in addition to being the popular entertainment of the time, also served as compendiums of "Greek" (Mycenaean) geographical knowledge. But it is also evident, at least in my opinion, that some of this knowledge was so old that the details and implications of it had been lost by the time these epics were written down.

"Homer" must have known that there was no passage for wood planked galleys from the Danube River to the Adriatic Sea in his own time. Apollonius Rhodius, a renowned geographer and head of the great Alexandria library when he wrote the *Argonautica* in the third century BC, also knew well enough that a passage from the Danube to the Adriatic did not really exist for the wood planked galleys of his day. Nonetheless, both of them faithfully recorded the legendary Danube-to-Adriatic route that neither of them could have understood.

In short, both "Homer" and Apollonius were consciously or unknowingly recalling some lost and very ancient lore about currachs and currach portages when they composed their epics.

There was probably just one major difference in general configuration, not to mention the radical difference in construction between Severin's replicated *Argo* and my notions of a very early Neolithic-megalithic currach of about 7000 BC or so. Tim Severin's sailing and rowing galley *Argo* had a length to beam (width) ratio of almost 6 to 1. That is, it was almost six times as long as it was wide. But I do not think that a currach should be more than 4 to 1 in terms of length to beam (width). My "neo-currach" prototype, built in 1974, incorporated this ratio and the currachs manufactured between 1979-1983 retained it.

My experience, and the British naval architect Colin Mudie apparently thought the same way when he designed Tim Severin's replica currach *Brendan* in 1976, is that currach construction inherently requires a wider beam in relation to length than wood frame-and-

plank construction in order to achieve sufficient strength. Mudie gave **Brendan** a length-to-beam ratio of about 4:1.

I also tend to think that very early currachs, say circa 10,000 to 7000 BC, would have been somewhat smaller than wood planked galleys of the later "Ancient World". I also suspect that they may have been paddled rather than rowed – although the greater power of oars must have been recognized at a very early date, so it is unwise to be dogmatic on this point.

To cut a long train of analysis and interpretation short, the replicated curragh for "The Jesus Voyage" is envisioned as being about 48 to 50 feet in length (including a 3-foot "ram"), and having a beam (width) of about 12 feet. I envision a hull "depth" from gunwale to keel at about 3-4 feet. Given the hull cross-section envisioned, the curragh will draw about 1.5 feet and be capable of carrying about 5 tons with 2 feet of freeboard remaining.

The upswept curved "tail" or stern will rise 3 or 4 feet above this gunwale-to-keel height, as will the forward "castle". These upward projections would traditionally have contained some sort of flotation device -- the packed bark of Mediterranean cork oaks, bundles of hollow reeds with their ends sealed by tree resin or pitch, animal bladders or intestines inflated with air. There are numerous possibilities depending on what materials might have been most readily available. This flotation capability in these upswept projections prevented a sailing-and-rowing curragh from capsizing completely. For "The Jesus Voyage" we could use traditional flotation materials...or carved styrofoam.

These upward projections may serve another purpose on "The Jesus Voyage" curragh. With careful design, at least part of their volume can be devoted to a small but private toilet compartment containing a modern "Porta Potty". This will reduce one of the problems of having both sexes represented aboard. Given the size of the crew envisioned, there might be room for two Porta Potties – one under the upcurved stern and one in the forecastle. Since these portable toilets have an additive like Elsan Blue as a disinfectant, they can be kept sweet-smelling aboard. And since they can be pumped out at most ports-of-call, they also eliminate any pollution by "The Jesus Voyage".

It is well to remember that all dimensions must be related to so-called "Megalithic Yards" of 2.72 English feet and simple fractions (one-half, one-quarter, etc.) that could be measured by folding a length of rawhide strip in progressive halves. This unit of measurement, according to the latest analysis of the several earlier "Woodhenges" that have been discovered from Wales to Germany, was established and standardized throughout the Neolithic "Civilization of the Goddess" at least as early as 5000 BC.

The curragh is therefore tentatively planned to be 18 Megalithic Yards in length (48.96 feet), and 4.5 Megalithic Yards in width (12.24 feet), which yields a length to beam ratio of exactly 4 to 1.

The keel and ribs will be of pine. I think I would attempt a crisscrossed diagonal framing of ash saplings once the keel and ribs had defined the basic shape of the boat. A light-weight wickerwork "hull shell" would be fastened outside the basic frame matrix in the

form of removable panels (although this is not strictly necessary). The actual waterproof hull sheath will be oak bark tanned leather sewn with waxed flaxen thread. Possibly, it would be "authentic" to coat the leather hull with pitch – and, if so, we have then probably also authentically replicated Homer's famous "black ships" of the "Achaeans" (Mycenaeans) that attacked Troy.

Severin's planked *Argo* galley replica wasn't black, or at least not at first with *The Jason Voyage*, because it needed no covering of waterproof pitch. *Argo* was painted black for *The Ulysses Voyage* merely in order to give the ship a new look for the new project and also, of course, to conform to Homer's usage about the "black ships" of Odysseus.

The planks swelled to seal the hull (more or less), although *Argo* still leaked significantly. But a Neolithic leather hull, sewn with Neolithic thread, would probably leak even more profusely than a Late Bronze Age wood planked hull. The seams connecting the individual hides would have to be sealed with tree resin, at least, but where pitch was available it would have been easier and better to just smear the entire hull with it.

All fastenings of "The Jesus Voyage" curragh will be genuine Neolithic stretched rawhide lashings, possibly treated with alum (but that was a much later Roman refinement).

In the matter of masts and sails, I'm inclined (at the moment) to follow the very obvious two-masted configuration of the Danilo-Hvar ship on the potsherd. At 4000 BC, and being from the European coast, it is closer in time to the curragh needed for "The Jesus Voyage" than any other known European depiction of a ship. There will be two relatively short masts and simple full-battened fore-and-aft sails (probably woven reed mats, but possibly leather or leather-reinforced flax linen). I have not decided yet. I'm still in correspondence with experts about the quantities of very early Neolithic cloth weaving. Could enough woven flax linen cloth for a sail have been made back then?

Total sail area will be only about 200-300 square feet in area. And, following the Danilo-Hvar drawing as a guide, I'm inclined to give roughly 45% to the foresail and 55% to the mainsail – but is this apparent difference in area due to an attempt at perspective? I will first play it safe and make both sails the same size...and then reduce the foresail by trial and error if necessary to achieve reasonable "balance" on the steering oars.

Now, as it happens, I know without any doubt that curraghs will sail very well to windward with a *single-sail* fore and aft rig – so long as they also have sufficient lateral surface stuck down into the water to prevent leeway. The CIDA-supported 32-foot "neo-curraghs" carried a Polynesian "lateen" or "crab claw" sailing rig of 200 square feet. The lateral surface of these mass-produced "neo-curraghs" was supplied by twin lee boards that pivoted down from out-of-the-water horizontal outside the gunwale to 5 feet of vertical immersion.

I suspect that Neolithic paddles secured along the gunwale of Neolithic curraghs may have provided precisely similar lateral surface in order to reduce vessel's leeway under sail and especially when tacking to windward. It is partly because shorter paddles

can serve dual usage as either paddles or “lee boards” that I suspect that early curraghs may have used paddles rather than longer oars.

Paddles can therefore have been used as leeboards on curraghs of the Neolithic era, just as they were once used on large Polynesian sailing double-canoes to serve the same function. It is an obvious idea and one that would have occurred to all boating peoples within hours of being afloat.

All the “ropes” (cordage) for the rigging will be woven rawhide set up on wooden deadeyes. Anchor and mooring warps will have to be woven rawhide as well.

Not genuinely Neolithic but necessary, the curragh will carry an adequate selection of survival gear for the crew. There is admittedly and unavoidably some risk involved in sailing a replica "Neolithic-megalithic" curragh. Prudence to anticipate and avoid potential danger is essential, and the patience to outwait adverse weather is crucial. Probably the most valuable safety feature will be that the project must be sufficiently well funded so that the organizers and crew do not feel financially pressed to keep to a rigid timetable of progress.

However, curraghs are inherently extremely seaworthy provided that their construction is reasonably strong. Neolithic technology should prove to be adequate in the replica, just as it has been proved adequate by the historic colonization of Mediterranean islands and by one modern Atlantic crossing. During *The Jason Voyage* in the replicated galley *Argo*, Tim Severin considered that modern radio communications and a life jacket for every crew member was sufficient.

Constructed and equipped in this fashion, I estimate that the finished curragh would weigh only about 1800-2400 pounds. That is, it will be about one-eighth (1/8) the weight of Tim Severin's slightly larger wood planked *Argo* sailing and rowing Mycenaean galley replica.

I envision a crew of about 20 people: one steersman/"captain", 18 "oarsmen" (paddlers?) and one cook/quartermaster. There would normally be only 16 paddlers or oarsmen working at any given time with two being relieved every 10 minutes. These two would therefore be immediately available for sail handling, emergency bailing, anchoring and mooring. This would be the ideal roster, although the crew will comprise different individuals from country-to-country and from port-to-port.

This size of crew would be able to row or paddle the curragh effectively under most "summer sailing season" conditions in the Mediterranean. This size of crew would also be able to portage the curragh over the Garonne-Aude watershed by either pulling the vessel over log rollers or by using the shipped oars or paddle handles to pull and lift the vessel along by brute force. Thus, there would be infrequent bouts of hard work when each crew member would have to exert from 50 to 120 pounds of force in order to move the curragh over a land portage if it actually had to be lifted off the ground for any reason. Using lengths of log rollers or inflated leather tubes would usually make the hauling much easier.

The usual daily routine will entail daylight sailing and sleeping ashore. Except for a small store of emergency rations, food will ordinarily be purchased in the evening for supper and for use the following day at breakfast and lunch. The organization of food purchase and usage is the reason why the expedition requires a full-time cook/quartermaster. Many details of "The Jesus Voyage" have been worked out, but there is (of course) much to do. Modern voyagers lack the freedom of Neolithic or Early Bronze Age mariners in at least some respects.

An important distinction has to be made here, and hopefully without promoting any confusion. It should be noted that currachs intended for long open-water oceanic passages out of sight of land must have been designed and made somewhat differently from currachs intended for river work and coasting navigation like the proposed "Jesus voyage" currach.

This differentiation must have been an early development. Ocean-going currachs were intended to use sails almost exclusively. They were not intended for extended periods of propulsion by oars or paddles. They did not require the "anti-capsize" upswept stern, high forward "castle" or the "ram" projecting out in front. In fact, these projections of the hull could prove dangerously counter productive in oceanic waves. They typically, in consequence of using sail, also carried a smaller crew than river and coasting vessels. All this means that ocean-going sailing currachs could have higher freeboard and a deeper hull section. Supplies needed for a long oceanic passage provided the necessary ballast low down in the hull to ensure stability under sail.

A glance at the photograph of Tim Severin's *Brendan* currach replica shows a "banana shape" that was obviously developed through much experience with true oceanic conditions. The general configuration of *Brendan* was inspired by existing currachs still used by some fishermen on the stormy Atlantic coast of Ireland and by illustrations in Medieval manuscripts about St. Brendan "the Navigator".

This replica successfully crossed the Atlantic from Ireland to Newfoundland in 1976-1977 with a winter's layover in Iceland. Likewise, my CIDA-associated "neo-currach" design was initially intended for use in the Southwest Caribbean. This is a region where, according to Columbus, he encountered the largest "ground swell" he had ever seen. These "ground swells" are the result of the Northeast Trade Winds blowing for 3000 miles across the Atlantic.

Huge waves are set in motion and, when the ocean bottom starts to become shallower around the islands and mainland of the New World, a very large "ground swell" results – about three storeys high. These mountains of water are not storm waves and they are not particularly dangerous. Once you get used to it, it is rather fun to be lifted gently up 30 to

50 feet and be just as gently lowered slowly down again. The usual oceanic Trade Wind surface waves of 4-6 feet are superimposed on this groundswell.

My "neo-currachs" were intended to operate in this sort of environment, quite different from the Mediterranean and Baltic. Obviously, even the most energetic rowing or paddling will not be very effective in such groundswells or "rolls" as the Caribbean

fishermen call them. Only very effective sailing ability can navigate in such waters. Therefore, the “rams” of Tanum and the “Volos ship” were of no use and would even have been counter-productive in oceanic waves. My CIDA-associated “neo-currachs”, like *Brendan*, had a banana shape and a fairly high freeboard to reduce water coming aboard. In fact, because the “neo-currachs” were painted a bright yellow, the Caribbean fishermen actually came to call them “banana boats”.

From very early times, then, Northwestern European currachs were differently designed and made depending on their function. This alone argues a lengthy and sophisticated seafaring tradition from the earliest times of Western civilization.

**But** – to emphasize it yet again – “The Jesus Voyage” currach is intended to ply very different waters and conditions from the open Atlantic or the Southwest Caribbean. “The Jesus Voyage” currach is intended for rowing and sailing along rivers and along the coasts of Mediterranean. It cannot have a particularly deep hull section and it must be designed to have a relatively low freeboard so that paddles or oars can easily reach the water.

Something of subtle importance should at least be touched upon. The Chinese-type sails and double diagonal framing of the Danilo-Hvar currach suggest that, in some respects, there was a decline or “degeneration” in naval architecture from time of the Old Civilization (10,000 to 4500 BC) to the later Mycenaean culture (3000 to 1000 BC).

There was advance in material technology, yes, and the gradual widespread use of bronze (for example) illustrates this. I have suggested that wider use of bronze allowed the construction of wood-planked vessels that replaced currachs. But there was also a loss of something more ephemeral and perhaps more valuable. There was degeneration in the understanding of the principles that govern the interaction of natural forces and humanity’s technological creations. Mycenaean ships were planked with wood, yes, and this made them larger, longer lasting and able to carry more cargo. But the superior principle of double diagonal framing was lost until it was rediscovered by the aircraft industry during the 1930s. The aerodynamic principle of Chinese-style full battened sails was lost until it was finally rediscovered by yacht designers (again during the 1930s) and gradually came into racing and then cruising use. Material progress “against” natural forces was made at the expense of “working with” natural forces. I offer a possible reason for this in “Genetics in Western History and Religion” on pages 61-80.

In conclusion, I should emphasize that currachs really are “sea creatures”.

Not only can a currach’s frame closely resemble an animal’s skeleton, the traditional hull material was actually animal hide or “leather”. As both Tim Severin and I can testify from experience, currachs also move and flex in the water. They are not so rigid as solid-hulled boats. Further, the action of oars or paddles resembles the movement of legs or fins. I believe that currachs of the era 10,000 BC to perhaps even 2000 BC stimulated the imagination of early sailors to regard their boats as being living sea creatures.

Tim Severin observed that leather-hulled *Brendan* seemed to attract whales and porpoises. He conjectured that *Brendan’s* frame and hull returned a sonar echo that was similar to that of small whales. Caribbean fishermen in my “neo-currachs” reported the

same thing, their “banana boats” were frequently escorted by dolphins. This made the curraghs seem even more like just one kind of sea creature among many others.

It may be that myths such as that of Andromeda and Perseus actually referred to curragh-using people. The “sea beast” who swam upriver to threaten helpless Andromeda was probably a curragh-borne raiding party. Naturally, Perseus rescued her in the nick of time.

It would have seemed quite natural, in my opinion, to make curraghs appear to be even more like living animals. The upturned sterns would have suggested tails and the addition of eyes painted near the “ram” must have been too tempting to resist. My own emotional experiences while sailing curraghs have been vivid and perhaps even “therapeutic” excursions into a younger and more vital world. The curragh sailor becomes a more natural organism in a symbiosis with his almost-living sea creature that carries him. The conceit that humanity is separate from nature, and disdainfully superior to it, is difficult to maintain in a curragh. The boat becomes almost a totem and the sailor tends to feel like a curragh creature himself.

These animal-like features of curraghs, reflected in the curved tails, snout-like “rams” and painted eyes of later Mediterranean galleys may have lingered because of their psychological appeal even after planked ships with ballast superceded curraghs.

To view the additional and more detailed information on The Jesus Voyage, [Click here](#) to go to the Index page or [click here](#) to continue.