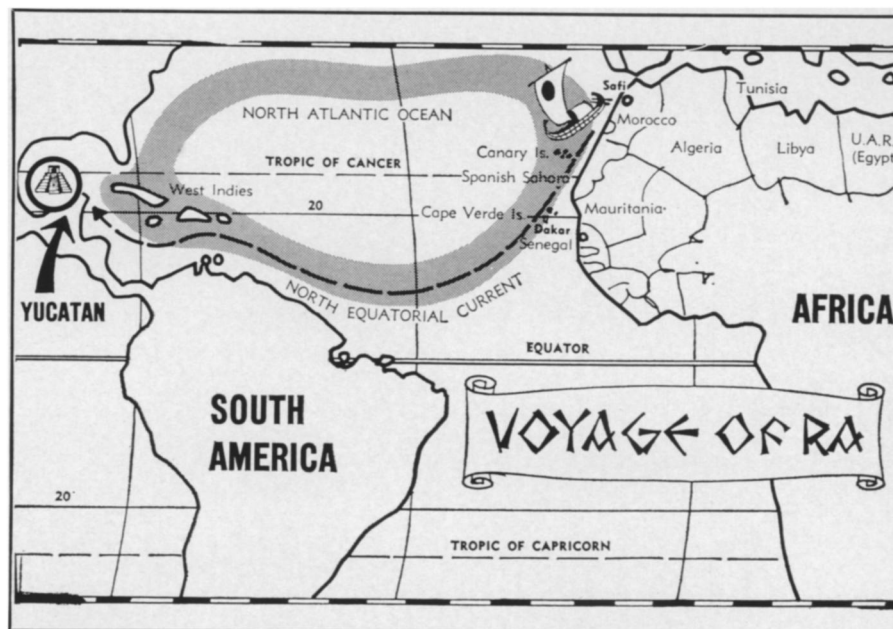


Twenty-two years after his historic *Kon Tiki* expedition across the Pacific, Thor Heyerdahl proposes to test another cultural migration theory. On a reed-boat, a phenomenon of marine architecture present in the Old and New Worlds, the Norwegian anthropologist is embarking on a three-month test of the proposition that the ancients of North Africa could have crossed the Atlantic, to land in Mexico. From Safi, on the Moroccan coast, Heyerdahl expects to catch the current and trade winds down the African coast, heading almost due west opposite Dakar. The craft, named *Ra* for the Egyptian sun god, will carry a crew of eight. This is Heyerdahl's account of *Ra*'s genesis.



Linking the transoceanic cultures

by Thor Heyerdahl

The first man to die in America was born in Arctic Asia. He had no metal industry, his clothing was of animal hides or bark, he knew nothing about agriculture or architecture. He was a pure Stone-Age man. Science does not know when he arrived, or when the first descendants and followers of the Asians who crossed the Bering Straits started to spread southward from Arctic Alaska into North, Central and finally South America. Some believe this initial colonization started 15,000 years before the time of Christ; others are equally certain that this timespan can easily be doubled.

All agree, however, that the Arctic was man's initial gateway into America, and that only the simplest Stone-Age tools were known to the unorganized flocks of savages whose numerous descendants were to become known to the present world as the wide variety of aboriginal American Indians.

The narrow gap between Arctic Asia and Alaska was probably never closed for human crossings, and recent scientific discoveries have shown that primitive migrants have apparently continued to leak back and forth across the local semi-frozen waters and the Aleutian chain of islands.

Nobody can ever take away from Columbus the honor of having put wide open for the first time the gates to America, thus revolutionizing his-

tory for men of all breeds and nations for all centuries to come.

Yet we must never forget that he did not arrive on an empty beach.

In the tropic jungle areas of Mexico, precisely where the perpetual tradewinds and the large transatlantic current had carried the early Spaniards who followed Columbus ashore, the conquistadores met people with organized communities and specialized occupations.

Their astronomical knowledge had reached the point that they had figured out the exact position of the equator and the equinox, and they distinguished the planets from the stars.

Their calendar system was more exact than the Gregorian calendar, and their surgeons were able, not only to repair fractures or prepare mummies, but even to perform successful trepanation of the skull, something unheard of in Europe at that time.

Paved roads, enormous aqueducts and suspension bridges criss-crossed the landscape, and colossal monolithic monuments, pyramids and other architectural structures from quarried stones surpassed anything known in contemporary Europe in size and splendor.

Vast fields with intricate aqueducts, terracing and irrigation systems contained a wide variety of root-crops, vegetables, cereals, fruits, drugs and other cultivated plants, many of which

were unknown to the European visitors.

The intruders marvelled at the fact that cotton was extensively cultivated also on this side of the Atlantic, and for the same purpose: the local cotton cultivators knew how to spin, dye and weave, and some of their materials were of a finer thread and technique than anything seen in Europe.

With the European conquest of the Aztec and Inca empires the curtain fell on the aboriginal American civilizations, a curtain barely raised by Columbus only a few decades before. Today the science of archaeology and the deciphering of pre-Columbian inscriptions on stone and paper are our only means of reconstructing part of the broken picture.

What had happened in America before Columbus? Had the Stone-Age hunters from Siberia developed these splendid civilizations in Mexico, Central America and Peru independent of the outside world?

Or could it be that the tropic current reaching Mexico from North Africa had carried along some unidentified drift voyagers who had brought certain ideas to tropic America long before culture had spread from Africa and Asia Minor to the southern shores of Europe?

There was a time when the teachings of the so-called Vienna School of "diffusionism" had a firm grip on anthropological thinking throughout the world.



Photos: Science Service

Heyerdahl's papyrus reed-boat set against the physical culture he will try to relate to both Mexico and Egypt.

Primitive craft built of reeds in the New World and papyrus in the Old could indicate a common heritage and an anthropological truth

Right into the 20th century it was a widely accepted theory that civilization had only one cradle, not too far from the Biblical lands, and from here culture spread across continents and oceans to every corner of the world wherever subsequently encountered by the medieval explorers from Europe.

Thus the existence of sun worship, pyramid-building, marriage between brothers and sisters in the royal families, mummification and the art of hieroglyphic writing among the American high-cultures were naturally seen as direct inheritance from ancient Egypt, and no ocean was considered wide enough to form a geographical barrier.

This theory of universal cultural diffusion was soon to be vigorously challenged by a rapidly growing group of more critical and exact American and European anthropologists, who refused to accept any such theory without a proof.

Gradually they became equally fanatic, guided by another emerging doctrine: All cultural parallels could be ascribed to the unity of the human mind. They justly pointed to the close mental and physical relationship among all subdivisions of human family which, they contended, made man react in a similar way to the same outer challenge as long as the environmental conditions were alike.

In other words, there was no need

for the pyramid-builders of Mexico and Peru to have gotten their inspiration from across the ocean; after all, they had the same mind and body as the people of Egypt and could therefore have hit upon the same architectural ideas independently.

From then on modern anthropologists locked all gates to pre-Columbian America except the extreme Arctic north, and the Atlantic and Pacific oceans were considered total barriers to any human craft prior to the historic crossing of the three caravelles guided by Columbus. This frequently publicized doctrine gradually became an incontrovertible scientific axiom.

Nevertheless, a group of rebellious anthropologists at the American Museum of Natural History in New York began to point out striking similarities between southern Asia and Mexico in pre-Columbian times, and other leading authorities at the United States National Museum in Washington, D.C., followed suit by pointing to archaeological discoveries in coastal Ecuador that indicated to them contact with ancient Japan.

In 1966, I flew to Lake Titicaca in Peru-Bolivia to visit once more the remarkable bundle-boats of totora reeds which have navigated this stormy South American mountain lake since time immemorial. Their seaworthiness and carrying capacity struck me more than



Reed-boats survive in Central Africa.

ever before as being quite astonishing.

At the International Congress of Americanists in Argentina that year, I had quoted an isolationist who had pointed to their remarkable similarity to the specialized bundle-boats of papyrus reeds which were in common use in ancient Egypt.

His conclusion was that, since nobody could have traveled from the Nile to Lake Titicaca, these peculiar reed-boats could be taken as proof that even a remarkable analogy such as this had to be the result of independent inventions in two continents.

The same isolationist had committed one serious error, however. He had

overlooked the fact that similar bundle-boats of reeds and canes were formerly not restricted to Egypt and this isolated South American mountain lake.

At the arrival of the Spaniards they were in common use along a Pacific coastline of some 4,000 miles from California to Chile, and also on a number of lakes in Mexico.

Moreover, their Old World counterparts were not restricted to the Nile, but were used from Mesopotamia through Ethiopia, Chad, Niger and coastal Morocco. Morocco and Mexico were separated by nothing but a constantly westward-moving ocean current.

Was there anything that could prevent such an ingeniously constructed bundle-boat from drifting with the permanently westbound ocean current from the coast of northern Africa to the tropic areas around the Mexican Gulf?

I could no longer rid myself of the suspicion that the key to the whole problem might be the hitherto unexamined seaworthiness of such a pre-Columbian type of bundle-boat.

A reed is a tender water plant that can be bent by the hands of a child. A gust of wind along the swampy shores of a lake suffices to make the reeds wave like green grass in the field. A reed is a mere flower stalk unable to hold either a nail or a screw.

Yet, reeds have been used by man to navigate lakes and oceans, and pyramid-builders in two continents have floated tons of cargo on bundles of reeds tied together.

When the early European visitors crossed the Panama isthmus, the Indians of Panama had already told them of the existence of the Inca Empire with its wealth of gold and its sailing vessels which were reported to be as large as those of the Spaniards.

And true enough, a large vessel reported to carry sails and rigging like those of the Spanish ships, with a crew of men and women as well as 20 tons of precious cargo from the Inca Empire, was encountered and sacked by Pizarro's pilot before the Europeans reached Peru.

To the surprise and disgust of the Spaniards, the large Inca craft proved to be nothing but an open raft of light balsa wood which permitted the water to move freely up and down between the logs. The merchandise on board was kept dry on an elevated deck of plaited bamboo.

One after another of these sailing rafts of balsa logs were encountered by the Spaniards until they had passed the jungle coast of Ecuador and reached the desert coast of Peru. Here they found, side by side with the balsa log-rafts, a huge number of still stranger vessels, which from the distance looked



Pyramids and reed-boats could link New World and ancient Egyptian cultures.

like lofty ships with high and elegantly curved bow and stern.

The smallest of these reed vessels were nothing but tusk-shaped reed rollers on which one or two men could ride astride as on a horse, with their legs in the water. The larger ones, however, were reported to be as large as a real sailing ship, with a crew of 24 men.

Any water pouring over the strange wash-through Inca reed-boats just ran through their bottom and out, making scooping or bailing unnecessary.

With the conquest of Peru and the introduction of European culture, these wash-through bundle-boats and raft-ships disappeared with the rest of the amazing Inca culture. To the modern generations they have become something symbolic of a primitive past, something leaking like a sieve, and therefore unfit for ocean travel.

Their non-European construction principles have been used to support the argument that the coastal population of Peru, although living almost entirely from off-shore fishing and coastal trade, had never discovered the secret of true boatbuilding: They had never learned how to build a watertight hull.

This is indeed a great misconception. In fact, the Inca boatbuilders knew very well how to make watertight canoes, but they used them only on calm rivers. In rough seas and in the open ocean they preferred something which was fully buoyant in itself, which surfs and stormy seas could never fill: a wash-through balsa raft or bundle-boat of buoyant reeds.

In the earliest pre-Inca ceramic art of Peru large reed ships with double deck and a great quantity of human passengers and cargo are commonly illustrated.

And reed boats large enough to carry cattle across the stormy waters were still being built on the mountain lake of Titicaca, in the high plateau of the South American Andes.

Whereas the reed-boats of Peru and Bolivia have survived to modern times, those of Mexico are known only from casual references in the literature. Various European travelers report having come across bundle-boats of reeds, bulrushes and canes in a number of isolated Mexican lakes as well as along the shoreline of the ocean.

My efforts at tracing any possible survivors of this type of watercraft north of the Panama isthmus led to my friendship with two Mexican traveler-adventurers and skindivers, Ramon Bravo and German Carrasco, who offered to be my pathfinders. Such boats had until recently been in use among the isolated Seris Indians in the Gulf of California, they said.

We flew to Hermosillo in northwestern Mexico and crossed the Sonora Desert to the barren local coast. Here, surrounded by gigantic candle-shaped cactus trees and flanked by rugged red mountains, a small tribe of colorful Seris Indians made their living from fishing in the open bay.

Against an adequate contribution from our side, however, it appeared that the past was not very far away. After an attempt to build an askam or reed-boat failed, an almost blind old former Seris chief rebuilt the ruins of one, and launched it from an ocean beach.

I realized that we were seeing perhaps the last bundle boat still preserved in Mexican waters. A proud tradition was ended in a country with a remarkable cultural history.



In Lake Titicaca between Peru and Bolivia, Heyerdahl tries out a reed-boat.



Construction of the reed craft, Ra.

Since bundle-boats of reeds and canes have been widely used in adjacent parts of ancient America, the Seris Indians were hardly the original inventors.

But who were the original inventors? Peruvians? Mexicans? Or had the idea spread with the boat itself across the ocean from the Old World? Nobody has the answer yet.

When and where did the reed-boat evolve among Old World boatbuilders? Certainly long before man began to build similar vessels in Mexico and Peru. Rock carvings in the interior of Africa, identified by archaeologists as representing reed-boats, have been tentatively dated to 10,000 years ago. And the importance of reed-boats to ancient Egyptian culture is well documented in

hieroglyphics and drawings on the walls of Egyptian tombs.

We do not know if reed-boats spread with certain ancient cultures or these cultures spread by means of reed-boats, but such craft were used by pyramid-builders in Asia Minor as well as in Egypt.

That they were used in the open Mediterranean is indicated by their survival until modern times on the island of Sardinia, and it is directly shown by Isaiah who wrote in the Old Testament (Ch. 18.2) that ambassadors arrived from Egypt "in vessels of bulrushes upon the waters." What the former distribution was on the Atlantic seashore is not known. Reed bundle-boats, locally called *madi*, were in use at the mouth of Rio Lucus in Morocco until the beginning of our own century.

Very early in Egyptian history, before King Cheops built his famous pyramid, a vigorous oversea trade had developed between Egypt and Lebanon. From the swampy delta of the Nile, papyrus was shipped to Biblos, the oldest known port in the world, where papyrus was used to manufacture paper for regular books, locally called "bibles," an industry which gave the name to the old city.

From Biblos the return voyagers started to bring back to Africa cedar timber, a highly prized material in ancient Egypt. With a steadily increased access to cedar wood a sudden evolution, if not a sudden change, took place in Egyptian maritime architecture. The papyrus ships had great advantages, above all they could never be filled by breaking seas or bottom leakage, but the papyrus would gradually waterlog and rot, and the exposed cords were worn off against rocks and sand.

Inspired by other maritime people who had wooden ships that often lasted a lifetime, the Egyptians, too, began to cut planks and sew them together with stitches of cord. These wooden vessels, however, became strongly papyriform: The conservative Egyptian architects kept closely to the original outline of the ancestral papyrus vessel, although this shape was exceedingly awkward for the carpenter who had to imitate in the wood the elegantly bent bundles of reed with their curved flower-heads at the extremities.

Today papyrus boats of any size are unknown in all of Egypt. The reason is obvious: papyrus no longer grows in this country where it once was a principal element in the culture.

To find papyrus today one has to travel far up the Nile beyond the borders of Egypt, or into the very heart of the African mainland. And in a few of these remote places the custom of building papyrus-boats has survived the millennia together with the plant itself. To get a first-hand impression of these ancient watercraft other than from wall paintings on plastered tombs, I decided to visit the village of Bol on remote Lake Chad in the Central African republic of the same name.

Bol, with its hundreds of beehive-shaped grass huts, was the principal town in the lake area, and the seat of the Sherif and the Sultan. In Bol we met Omar and Mussa, two of the numerous Buduma tribesmen who lived by fishing with papyrus-boats on the lake, precisely as on the Nile thousands of years ago.

Omar and Mussa built for us a papyrus-boat small enough to put on the roof of one of our jeeps, once we had tried it, together with a whole flotilla of larger papyrus vessels. Mussa was a professional papyrus-boatbuilder who was said to have once built a reed vessel that carried 80 cattle across the open lake to the opposite coast in neighboring Nigeria.

My meeting with the boatbuilders in the papyrus swamps of Chad sparked an idea that for some months had laid dormant in my mind. I asked Omar, the most active of the two brothers, if he would come to Egypt and build a large caday for me. He said yes, if his brother Mussa could come as well, and their friend Abdoullaye added on his own accord that he would come along as interpreter.

I had established my first contact with new friends in a hidden corner of our modern world where tradition kept alive an art developed to perfection before pharoanic times. Now I knew people who could build a real papyrus ship. I could test the possibility of contact between the ancient Old World and the New. ◇