

AFRICA & ANCIENT WATERWAYS: **SOME INTERNATIONAL COMPARISONS**

Bridges of boats

Starting with China takes us straight to how the pattern of this article will follow, as each succeeding section will do just this. A massive history of science plus technology of ancient China readily reveals just deep this has been compiled by Joseph Needham with a nautical summary taken from it is by Frank George (in the 1972 edition of *The Haven-finding Art* by Eva Taylor [not that of 1956]). Probably the most famous example of a bridge of the type under discussion in ancient China occurred in the reign of Kublai Khan. It is that whereby troops of the Yuan Dynasty put such a bridge across the River Yangtze took the city of Hechou from the Song Dynasty. This helped to end the fighting that had been going on for circa 40 years between the Yuan (=Mongol) and Song Dynasties.

The western littoral of the Americas forms the coast of the opposite side of the Pacific from China and the rest of east-facing Asia. Here the American Indians (= Native Americans = Amerinds) include the Incas. They continued the age-old construction of bridges of many forms that include those based on boats but it is unknown just how far this stretched into what Douglas Peck (*Yucatan: Prehistory to the Great Revolt 2005; Origin & Diffusion of the Maya Civilisation: The Olmec/Chontal/Itz-Centric 2007*) has called the Olmec/Proto-Maya is unclear.

The Olmec-to-Maya sequence takes us into Middle parts of the Americas (= Mesoamerica) and East-coast Amerinds. Among them are the Nahua-speaking people called the Aztecs. An account of the Spanish conquest Hernando Cortez was written by Francisco Lopez de Gomara. A Nahua version of this was edited by Christine Schroeder et al (2010) as "Chimalpin's Conquest: A Nahua historian's rewriting Francesco Lopez de Gomara's *La Conquista de Mexico*. Chimalpin described an example of this type of bridge put across a river by anti-Aztec allies of the Spaniards.

Nordic/northern Europe does not appear to have had accounts of pontoon bridges based on boats but Ireland does have stories of such bridges that they attach to north Europe via the Fomoire (= From the Sea) in the guise of being from Lochlainn (= Lochlann = Norway?). There are two accounts of Cath Maige Tuired (= Battle of Moytura). One is Cet-Chath Maige Tuired (= The 1st. Battle of Moytura) plus Cath Tanaiste Maige Tuired. Despite the numbering, Thomas O' Rahilly (*Irish History & Mythology 1946*) felt the oldest was Moytirra/Moytura II and Dathi O'h-Ogain (*Myth, Legend & Romance: An Ency. of the Irish Folk Tradition 1991*) says Balar (a Fomoire king) was older in a southern tradition than that of any to do with the north. In the translation by Elizabeth Gray (1982) of Moytura II, the Fomoire had a bridge of boats stretching from the Hebrides to Ulster (= nth. Ireland).

The part of Celtic Europe that is Ireland has a further tradition of such bridges. They are recorded in such collections of ancient Irish texts known as *Annala Rioghachta Eireann* (= Annals of the Kingdom of Ireland) or *Annala na gCethire Maistri* (= Annals of the Four Masters) plus *Foras Feasa ar Eireann* (= History by Seithin Cethin (= Geoffrey Keating) that all have Wikipedia entries. This centres on Cath Maige Mucram (= Battle of Magh Mucram). There are references to this battle in such sources as *Lebor Gabala Erenn* (= The Invasion/Conquest of Ireland) itself part of the oldest literary corpus in western Europe but it is the other texts cited just above that give us the fullest treatment of these myths. They tell us that Mac Con invaded from Britain via a bridge of the skin-boats called *currachs* stretching from west Britain to Ireland.

The Balkan Peninsula is in the opposite corner of Europe from Celtic parts in the northwest. Easily the most famous part of the Balkan Europe is Greece. In the Balkans (= southeast Europe) plus Anatolia (= most of modern Turkey), the principle of these bridges was shown by Darius of Persia wanting his troops to cross the Dardanelles to invade Scythia (= approx. Ukraine); Xerxes of Persia later doing the same to invade Greece; Greeks under Alexander the Great invading India and crossing the River Indus.

The Indian epic called the Ramayana provides what may be one of the oldest legends about such bridges. One of the earliest strands of Indian literature seems to be the Ramayana

(= Voyage of Rama) that may or may not have been compiled ca. 3500 years Before Common Era (= BCE, as opposed to CE). A basic theme is that Rama had a wife called Sita. She was kidnapped by a demon named Ravanna and whisked off to an island overseas. In order to reach that island, Rama prayed, fasted and meditated to Varuna as the Lord of the Oceans. However, Varuna failed to respond. This so enraged Rama that he obtained supernatural weapons and began to destroy the seas and all life therein. This did get a response from Varuna. In what seems to be version of God parting the Red Sea so that Moses plus the Hebrews could escape from Egypt, Varuna kept the oceans open that formed a land-bridge between India and that island, so that Rama's troops could cross to the island. This "bridge" seems to be origin of the story of Cattaydeva "building a bridge of ships reaching the island".

Islands between southeast Asia and Sri Lanka also have close connections with Varuna. In the variously labelled Maritime Southeast Asia (= MSEA), Insular/Island Southeast Asia (= ISEA), "Indonesia", Indo/Malaysia, Austronesia, Nusantara (= The Islands), etc, this especially means Varuna in ISEA-speak as Brunei later Anglicised as Borneo. Even though we are clearly dealing with myth not history, a bridge from ISEA to India would be very impressive. From the account given in the previous paragraph, it will be immediately obvious that geographically, the island referred to can only be that going under the several names of Taprobane, Ceylon, Sri Lanka, etc. This means that what has undergone the various names of Seth Rama (= Rama's Bridge) or Adam's Bridge was constructed to connect Pamban Island off southeast India with Mannar Island in northwest Sri Lanka. Whether man-made or natural, "Naval Warfare in Ancient India", Prithwis Chakravarti (Indian Historical Quarterly 1930) surely shows the legend of a bridge of boat originates in that of Seth Rama

Egypt is easily the most famous region of anywhere in eastern parts of Africa. Bridges of boats are associated with an Egyptian Pharaoh known as Thutmose III or Tutmosis III. He is said in "KPN Boats, Punt Trade & a Lost Emporium" by Louise Bradbury (Journal of American Research Centre in Egypt = JARCE 1996) to have had a bridge of boats built over the River Euphrates when invading Mesopotamia/Iraq. Amenhotep II or Amenophis II is another Pharaoh associated by Bradbury (ib.) with such a bridge but this time over the River Orontes (Turkey, Syria & Lebanon) with this repeated by Crusaders when besieging Antioch (Turkey).

There are several interesting parallels between west Africa and Egypt. Thus part of west Africa called Nigritia (= Land of Blacks) and Egypt as Khemet (= Land of Blacks?). Also the Niger was called the Nile of the Blacks (& see below re. stars). The Nile boatmen are described by Edward Lane (cited by Gregory ib.) as muscular presumably because of the needs of their way of life and it can be assumed that this applies equally to Niger boatmen (& note esp. the contrast of robust people on one side of the Senegal & punier ones on the other). Having also noted Egyptian bridges of boats, we come to that referred to by Ivan Van Sertima (They Came Before Columbus 1976). Amenhotep's crossing of the Orontes was as triumphant as that of Sundiata (12th c. Malian & founder of the Malian Empire) crossing the Niger on a bridge of boats after victory over the people called the Sosso.

We know where they are

Yet more islands are those off China/southeast Asia at the opposite end of the Eurasian land-mass from the British Isles. This is what is generally called the China Sea (esp. the South China Sea) but for which there are other names. Here are islands that are little more than rocks that would have been known to the Austronesians (= ANs) en route to settling islands in the west Pacific plus the Indian Ocean. In pursuit of their territorial claims, the Chinese feel able to produce ancient texts to at least as far back as what conventionally ca. 220-210/15 BCE that they apparently feel are solid testimony for their claim. They were/are basically uninhabited seasonal fishing-camps with the Chinese name for what in the West are called the Senkaku Islands being the islands of Diayutai (= fishing platform) to the Chinese.

From a probable homeland in that part of the west Pacific that is the South China Sea in islands collectively called Island Southeast (= ISEA), yet more islands of the South China

Sea were settled first by what archaeologists call the Lapita-folk then the Austronesian ancestors of the Polynesians. A suggestion has been made that Polynesians are brown and Melanesians are black because of the Polynesian "express-train" movement through Melanesia. Their Polynesian descendants reached to as far away as Hawaii, New Zealand plus so remote a speck of land as Easter Island. So-called Melanesian-type Polynesians settled Hawaii. Mark Rawson (*Isles of Refuge* 2002) wrote of the Polynesians going past islands plus some use just used for fishing.

It seems probable that Amerinds (= American Indians = Native Americans) of West-coast Americas encountered Polynesians in the east Pacific. Going in the opposite direction, West-coast Amerinds from the Andes went overland to the east and met East-coast Amerinds as part of what has been dubbed the Circum-Caribbean Culture defined by Julian Steward (*Handbook of South American Indians* Vol. 4 1948). Thor Heyerdahl (*Early Man & the Ocean* 1978) showed the West-coast Amerinds knew of the Galapagos Islands that they apparently used as stopovers. Douglas Peck (*Yucatan: Prehistory to the Great Revolt* 2005) refers to what may have a seasonal fishing-camp off Yucatan of a type already seen but Peck disagrees.

Notions that the Norse reaching Iceland plus the Maya used Polaris for navigation are denied by Peck (*ib*; *The History of Early Dead Reckoning & Celestial Navigation* online). That Pytheas (ca. 2400 B.P Greek) reached Iceland is allowed by such as Christopher Hawkes (*Pytheas: Europe & the Greek Explorers* = 8th Myres Lecture 1977), Barry Cunliffe (*The Extraordinary Voyage of Pytheas* 2002), etc. There are also coins bearing the images of three separate Roman Emperors plus Norse literary mentions of Celto/Irish papar (= priests). Pliny (ca. 150 B.P. Roman) wrote of islands in the "Cronian" or Frozen Sea that seemingly means those in the seas between Norway and Greenland plus Iceland with Iceland colonised by the Norse centuries later.

Celtic speakers once occupied most between the Baltic and the Alps from Russia in the east to Ireland in the west. To the south, Anatolia, Italy, France and Iberia had large Celtic populations, so much so that Celt and Gaul (= country & people) were synonyms. The names were taken up for Celts in Britain by Geoffrey of Monmouth (as a territory) south of Hadrian's Wall and north of the Wall by James MacPherson in the *Poems of Ossian* (as a person). The seemingly uninhabited islands of the Irish Sea reported Pliny seems to be among the "deserta" of Norse texts and where Irish monks mainly set up their cells. The Irish text called the *Lebor Gabala* (= Book of Conquests) tells us of Iberian fishermen stopping temporarily in Ireland.

Such islands have also been seen to be tied to fishermen, as are the coasts of Iberia that Mark Kurlansky (*The Basque World History* 2000) links to the Basques. It is well known that the Catholic Church in the Middle Ages did not allow the eating of meat on Fridays but did permit the eating of fish. This created a demand for cod that was particularly met by the Basques until the Basques were chased from northern seas by a combination of Norse/Vikings of Norway plus Iceland, English plus Scots. According to Kurlansky (*ib.*), the Basques continued to provide cod that Kurlansky plus others regard as coming from Atlantic sources. Kurlansky points to Basque non-stop voyages sailed directly from their homeland in northwest Iberia/southwest France to north Atlantic seas. In doing so, they bypassed coasts plus islands of west-facing Europe and covered about 1000 miles at one hit in doing so.

John Cherry (*Proceedings of the Prehistoric Society* = PPS 1980) is one of those pointing out that all too often this is more theoretical than proven. Cherry (*ib.*) was referring to the progression across the Mediterranean already seen to have prompted arguments that the mechanism was the pursuit of tunny. This is a deep-water species coming inland to fishermen. It is this discontinuous spread that is being referred to by Cherry (*ib.*) and the attached dates appear to confirm that it is later the nearer to M/M/M coasts that it occurs.

The Indian word of *dvipa* applies to yet more islands across the Indian Ocean. It may appear as *Dvipa Mahal* (= Great Island = Madagascar?). Malagasy tradition has it that their Austronesian (=AN) ancestors landed in northeast Madagascar. Yet the Indian plank-built fishing-boat called a *masula* apparently dominates here according to Cyril Hromnik (*Indo-Africa* 1981) not any known AN type. Cape Comorin (India) may have its name echoed by

that of the Comoros (= islands just north of Mad.). The PME says Indians were settled on Socotra. Indian ships from Barygaza (India) are shown by PME at Opone/Hafun (Somalia) and more Indian traders are proven by the excavations of Felix Chami on the east African islands of Mafia Island (Tanz.), Zanzibar, etc, between ca. 3000 and 2500 B.P.

At roughly the point where that part of the Pacific Ocean called the South China Sea meets the eastern Indian Ocean there occurs something noted at the beginning of this subsection. These are the rocky islets that prompt considerable conflict between eight nations because hydrocarbons have been found. One was known to the Chinese as Kunlun. It has an imprecise location in Chinese geography as mountains to the northwest of China or in southeast China with the latter receiving some confirmation from the one just noted as Kunlun but known in Vietnamese as Con Son and to the Indo/Malays (or ANs) as Pulau Condore. Pulau or Pulo (= island in Malay) being set in what Chinese texts call the Kunlun Sea (= eastern Indian Ocean). Here too are the islets seen to have been used seasonal bases by various groups of fishermen.

The "Evidence for the Austronesian Voyages in the Indian Ocean" is shown by Roger Blench (in *The global origin & development of seafaring* ed. Atholl Anderson 2011). The several works of Blench give a detailed list of islands evidently used mainly as stopovers as the ANs headed west towards permanent occupation of the large island of Madagascar. An Austronesian presence in east Africa is theorised on linguistic grounds but a lack of archaeological evidence makes this very uncertain. This is echoed by the Austronesian presence on Madagascar but though there is little in the way of archaeological proofs of this but removing any ambiguity here is the solidly AN basis of the Malagasy language of Madagascar.

East Africa may also attest the Indian *dvipa* as Arabised *diba*, so Serendib[a] (= Ceylon/Sri Lanka), *Diba* (=Laccadives), *Wadiba* (an east Af. group), etc. Yet the *Wadiba* were/are not Indians or Arabs but apparently a more sea-bound component of the Swahili who equating to Shirazi in turn are shown in works by Chami to be named by a compound of Swahili words meaning shore-dwellers. Moreover, the *Wadiba* are seen to be part of "The Structures & Evolution of the Coastal Fisheries of Kenya" by Bernerd Fulanda et al (online). As itinerant fishermen, they exploited the seasonal marine resources of east Africa. Their spread is further shown by islands where they came to settle listed by Martin Walsh (*Deep memories or symbolic statements?: the Diba or Debuli & related traditions* online) from Songo Mnara (Tanzania) to Lamu (Kenya) and Bajun (Somalia).

Another island settled by west African fishermen is Luanda (Angola) in west Africa. Elysee Reclus (*The Earth & its Inhabitants* Vol. III 1892) shows more Angolans as wrecked crew on Sao Thome but we may wonder if seasonal fishing is not more likely again. Of the islands in the Bight of Biafra named Pagalu (= ex-Annobom, Equatorial Guinea), Sao Thome, Principe, Bioko (= ex-Fernando Po, Cameroon), the first do seem to have been permanently settled by Africans before the Portuguese but Bioko was.

A curiosity of what was written by Reclus (ib.) is his acceptance of Portuguese writings about the Pre-Portuguese west African knowledge of Sao Thome but not those about west Africans knowing about the Cape Verde Islands. This stands with an opinion that is widespread, namely about Africans were too scared to go to sea and a chronic inability to undertake sea-voyages. Underlying this is an even more basic belief that Africans were too scared to venture on to the sea. This has the neat effect of any need to allow that west Africans were to sail on their own coasts, let alone crossings of the Atlantic Ocean at any time.

Much of this is discussed in other papers of this series but immediately we can observe another past opinion and one that is from the not too distant in the past denying Mainlanders being able to reach the Bissagos Islands. This ignores that the Portuguese found that the Bissagos/Bijagos Archipelago was inhabited by west Africans **before** they got there.

To this added what the local traditions collected by Bishop Feijo (19th c. Portuguese) in the Cape Verde Islands. It does appear that the description of islands with buildings but no people turning up in Classical plus Islamic sources more fully fits the Cape Verde Islands than the Canaries which have had permanent populations for millennia. The buildings but no

people scenario hinting at seasonal fishing has already been seen above. More evidence of fishermen on the Cape Verdes comes from the Feijo-given traditions that such peoples from what is now Senegal as the Serer, Wolofs, Lebou, etc, came to fish in the islands. Of them, the Lebou are particularly noted fishermen. Columbus tells us of Black traders in canoes leaving the Cape Verdes with just the open sea in front of them.

Waterways

The Chinese descriptions of “Kunlun” as deep valleys plus active volcanoes of “Kunlun” recall those of the east African Rift Valley according to Chami (ib.). The more so given that also reported are mountains that sound like what the Greeks called the Mountains of the Moon usually seen as the Ruwenzoris of east Africa. Chang Hsing-lang (The Importation of Negro Slaves to China under the Tang Dynasty (A.D. 618-900) felt the Blacks imported to China were Africans from the start but Juliet Wilensky (The Magical Kunlun & “Devil Slaves”: Chinese Perceptions of Dark-skinned people & Africa before 1500 online) shows that this includes both Africans plus Negritos. Kunlun also describes expert divers. Alexander Hislop (The Two Babylons 1868) says the Chinese form of Buddha is a Negro. A localised form of him is Wat-Yune who drowns near Hong Kong. He is closely linked to the Dragon-boat races of Hong Kong by William Gillespie (The Land of Sinim 1857).

The Negritos referred to in the last paragraph have prompted a wide variety of words. Among them are Mahra in Arabia, Sudra plus Varna in India, Papua in Malay, Guinea, Melanesia, Blackfellas once used of Australian Aborigines, Kunlun in China, etc. Most are local terms with a general meaning of black, with Papua apparently originally meant frizzled-haired, the west African Guinea is to be recognised in New Guinea and Melanesia means Black Islands. This shows the physical forms remains as African as in the Out-of-Africa (= OOA) movement(s) but genetics show mixing with groups that had become non-OOA. Papuan is also claimed to have had a secondary meaning of slave but they also were involved in very early sea-crossings between ISEA and Australia. We can further recall that Blacks as Kunlun were involved with boats in China and they gave rise to the term of Kunlunpo (= Ships of the Blacks).

Knowledge of Africans is shown by India. Here the well known hollow-cast figurine of a dancing-girl occurs at ca. 5000/4000 B.P. at Mohenjo-daro (Pakistan). It is a settlement of the severally known Harappan, Indus Culture, Indus River Culture, etc, once of “Greater” India (= Pak., India & Sri Lanka) but now mainly enclosed by Pakistan. Whether the figurine is that of a slave is unknown but she has prompted comparisons with what was once called the “true” Negro (= west Africans). In “An Obscure Passage from Periplus”, Anthony Christie (Bulletin of the School of Oriental & African Studies 1957) called attention to the Indian word of Kolandiphontia. Christie (ib.) regarded it as an Indian version of the Chinese Kunlunpo seen to mean ships of the blacks. The connection with African slaves went on with African slaves rising to high positions in Indian navies. Most notable was Malik Ambar (17th c. Ethiopian) who rose to become a Maratha Admiral.

Many of us will know of the Slaves Revolt led by Spartacus (2073/1 B.P.) against the Romans and described by Barry Strauss (The Spartacus War 2009) plus others. This was at a time when Roman armies were all-powerful in Europe and west Asia and were stopped for some two years by the Spartacus-led slaves. West Asia was also the base of the Abbasid Empire of early Islam that for their day, were also all conquering. The Islamic slavers kept their captives in reported conditions that were not only matched for brutality by the masters in the Americas but which also prompted a major slave revolt by the Zanj (one of the Arabic for Black Africans).

Having mentioned that the Islamic armies were all-conquering at this time, something emerges that should be of great interest. This is that whereas the Roman armies were stayed for just 18 months by the Slaves War, the Arab armies were stopped for 14 years by the Zanj Revolt (869-883A.D.). Comments by messrs. Shoureshi (Zapping the Zanj: Towards a History of the Zanj Slaves’ Rebellion online), Bashiri (Muslims or Shamans: Blacks of the Persian Gulf online) plus others have further significance.

James Hornell (Man 1941) wrote that Negroes were too feeble physically plus intellectually to be capable of very much. As to the physical aspect, this does not explain why the Islamic and Transatlantic slavers kept coming back to Africa for slaves, as shown by Zanj/east Africans in the salt-marshes of south Iraq plus such as the levees of the New Orleans (U.S.) marshes. That they were capable of rather more than providing physical labour for the improvement plus protective banks of these Iraqi and U.S. marshes becomes obvious from Bacheh Shoureshi (ib.) and Edward Salo (They Can Run the Boat But Ride: Slavery; Segregation & Ferries online).

East Africans have known for at least 4000 years that control of internal waterways was very important. This is shown by the Egyptian victory on the River Nile over the sea-borne warriors of the groups called the "Sea-Peoples" ca. 1150 B.P. Millennia later, the Zanj slaves were led by Ali ibn Muhammad (= Ali Razi) who is described as Persian but apparently known too as Zangi (= Zanj) or Zangi-yar (= Friend of the Zanj). His leadership led not only rule over much of Iraq plus Iran but also defences behind canals but also to the capture of a large number of ships that in Zanj hands defeated Abbasid fleets sent against them. Eventually the Zanj were defeated by the Abbasid Empire.

A massive book simply called "The Slave Trade" is by Hugh Thomas (2006). In it, Thomas shows that west Africans of the Fula, Mande plus Wolof peoples had an expertise with horses that was exploited by their new masters. The routes evidently long used by metals-traders along west African coasts are at least as valid as any other for the spread of the earliest iron-working in west Africa. The more so given what seems to be a consistent series of C14-dates from Gabon northwards plus what is said by writers cited in "West Africa & the Sea in Antiquity" (online).

Something of the expertise of Sub-Saharan metallurgists seems shown by a technology best known in ancient Tanzania. Here iron was made that was unmatched for quality until the Bessemer steel of 19th c. Britain. The "Technological & Cultural Transfer of African Iron-making into the Americas & the Relationship to Slave Resistance" is shown by Jean Libby (online). The skills of west African metal-workers (esp. with iron-working) was the basis of most of the iron and steel making in the pre-industrial Americas from Latin America up to the U.S.

Wetland agriculture has been practiced in west Africa for millennia and led to part being called the Rice Coast that is now mainly Sierra Leone and Liberia. Once again, the practitioners had skills that attracted unwanted attention. Those paying this close plus unwanted attention were slavers who would sell these wetland farmers to the owners of rice plantations of the Carolinas regions of the United States. Here again, this was the basis of the rice-growing of the Carolinas in the 18th/19th c.

Otherwise, another great demonstration of skills of the west African wetlands/waterways are of those using the waterways. This also seemingly led to selective snatching of such skilled users and who because went for a higher price than did slaves having no particular expertise. What seems to largely be missed is that African slaves were put to building ships for Vasco de Nunez (15th/16th c. Spaniard) on his becoming the known European to face the Pacific. Research by Edward Salo (online) was that "They Can Run the Boat But Not Ride: Slavery, Segregation & Ferries) when showing that what was acquired on the waterways of west Africans was put into service on the ferries of the U. S. Deep South. Once more, the very high dependency of the U.S. (esp. the southern states) on these African slaves is made very obvious.

Sails

The earliest Chinese sails are said by Sean McGrail (Boats of the World 2004) to probably not be the battened lugsail generally seen as the most typical in China. If China is truly the place of origin of most migrants reaching the islands of the Pacific, presumably this includes the sails. This probably means they would have antedated the circa 5000 B. P. put forward for the sails of the Pacific islanders.

The opinion of messrs Haddon & Hornell (*The Canoes of Oceania* 1936-8) was that the first of the colonisation of the islands of the Pacific Ocean proceeded on rafts and then by canoes. The development of rafts tends to run in parallel with that of sails. In the Pacific Ocean, a particular evolution is that of the lobster-claw/leg o'mutton sail. Because of the spread of sail and the amount of wind it could catch, this allowed these vessels to be approximately three times as fast as their European counterparts. This attracted considerable European admiration.

West-coast Amerinds undertook long voyages of circa 1000 miles between Peru/Ecuador and west Mexico for millennia to give us an analogy for the journeys of roughly the same distance between Punt (= Somalia) and Egypt that also occurred over millennia. These voyages along the western littoral of Pacific-facing America were still occurring on rafts at the time of the arrival of the earliest Spaniards and that these rafts had sails is vouchsafed in the oldest of the Spanish records.

East-coast sails are rather simpler according to many authorities, namely that East-coast Amerinds did not possess sails before the arrival of the Spaniards. It will be seen there is a long history of scepticism about sails on all Atlantic-facing coasts. For East-coast Amerind sails, this leads to some interesting conclusions.

This is despite a narrowing of Mexico across the Tehuantepec Isthmus being just 200 miles between the Pacific and Atlantic coasts of the Americas, the even narrower Panama Isthmus of just 90 miles across and that the Olmec Culture evidently stretched from their homeland on the Atlantic coast of Mesoamerica to the Pacific coast of Mesoamerica.

However, the matter of East-coast Amerind sails has been effectively dealt with by Jack Forbes (esp. in *The American Discovery of Europe* 2007). He points out that notions of absent East-coast sails go back to the single source of a Father Blasius. Forbes (ib.) plus others note a story about Amerind (= Mayan?) slaves overcoming a Spanish crew off Cuba and sailed the ship home. This kind of skill is not acquired en route. Moreover, it is an acknowledged principle that when a superior technology is introduced, new words come with it. So when a dictionary in the Mayan dialect called Motul with Spanish sections of the 16th c. has the Motul words of bub (= sail/under sail) plus bubil (= to navigate under sail), we may be sure Amerinds called Maya had Pre-Spanish sails. In any case, there are reports by Spaniards of Mayan vessels in first-contact contexts having sails.

The healthy antiquity behind Atlantic sails can be traced to at least as far back as Julius Caesar (ca. 2100 B.P. Roman). He wondered if Celts knew how to make the cloth normal for sails. However, the reputation of Celtic cloth-making plus archaeological evidence gives the lie to Caesar's doubts. In any case, Caesar himself allowed that the leather sails of the Celts of that part of Gaul (= approx. France) called the Veneti were due to the stresses placed on sails resulting from Atlantic conditions.

Sails in what elsewhere in this series has been called the Alexandria (Egypt)/Antakya (= Antioch, Turkey)/Athens (Greece) or A/A/A-arc of the east Mediterranean (as opposed to the Messina [Sicily]/Marseilles [France]/Malaga [Spain] or M/M/M-arc of the west Med.) can be shown to have been around since the Mycenaean period. Homer (ca. 900 BCE? Greek) describes sails of Aegeo/Greek can be projected back to the period of the Mycenaean/Late Bronze Age Greeks, as further shown by what is depicted at Akrotiri (Thera = Santorini).

Indian evidence shown by Robert LeBaron Bowen (*Mariner's Mirror* 1956) and Paul Johnstone (*The Sea-craft of Prehistory* 1980) is that of vessels depicted on a seal, a graffito, a baked-clay amulet, etc. They are of the variously called Indus River Culture, Indus Valley Culture, Harappan, etc. Culture. At this date there was trade between western India and places along the Persian Gulf. The cited writers have compared these Indian vessels with Egyptian ones for their being reed/papyrus boats, lashings round the hull, cabin amidships, wide sails, strakes joined by pegs in the thickness of the next one, spoon-shaped hulls, beams transversely jutting through the hulls, bipod masts, booms at the foot of sails, etc.

Indonesian use of rafts has hundreds of millennia behind it if the work of Robert Bednarik plus colleagues is correct. They connect the spread of early hominids on "Indonesian" islands separated by short stretches of sea to raft-building by these hominids that have been labelled "Hobbits" and who appear to have a line of human development that

is now extinct (as with so many others). The raft-first/canoe-next seen for the Austronesians (= ANs) that settled the islands of the west Pacific seems matched by the ANs who headed west across the Indian Ocean towards Madagascar on what is argued in “Austronesians in East Africa” by Roger Blench (in *The global origins & development of seafaring* ed. Atholl Anderson et al 2010). This will mean that sails were part of what came with the AN spread to the west.

However, an east African river provides a superb place on which to trace the evolution of sails. That river is called the Nile which is an African **not just** an Egyptian river. Put simply, sails here developed out of the circumstance of the river flowing north and the prevailing winds blowing south with proto-sails/sails used when going south. Sails also appear on the coasts of east Africa. Without going into the anomalies of what is and what can be acceptable as evidence of cross-Africa movement, we can note there has been very considerable migration across the continent yet once again, having shown there are sails proven on one side of a continent, we are supposed to believe the other side of that same continent did not have sails.

The much-cited article on “The Canoe in West African History” by Roger Smith (*Journal of African History* 1970) cites the sails of the Atlantic Celts called the Veneti as solid testimony of sails on Atlantic coasts that he thought were relevant for those of Atlantic-west Africa. Having seen that there is a presumption that for something to have been recorded in so-called first-contact situation, it had to have been pre-existent. This includes where Mayan sails were seen on the Caribbean coasts of mainly Yucatan (Mex.) and so again, west Africa. Here Michael Bradley (ib.) reproduces paintings of African canoes in the mouth of the River Congo. Bradley (ib.) does not give dates or attributions for these paintings but they fit the context and indicate Pre-European sails.

Further is that the contexts of Atlantic sails suggest they dictate the material that was used. The Atlantic conditions led to the above-noted leather sails of some of the Atlantic or maritime Celts. The material of the sails of the East-coast Amerinds plus those of west Africa is most often of matting yet Celts, Mayan Amerinds and west Africans all made an enormous amounts plus varieties of cloth and means that this cannot be the reason for sails of a form and material that is totally alien to that of European ships.

Africans have even explained that they have continued to use sails of matting for the entirely practical and plausible reason that the wind going through the gaps in the weave means less drag plus wear on the sail. Bradley (*Dawn Voyage: The Black Discovery of America* 1991) looked at the circumstance of the steering-oar of Ra 1 broken when en route across the Atlantic replaced by an ordinary one simply over the side of the vessel in its place. Bradley says this is the context of the emergence of the proto-guare in west Africa and that this is most effective when combined with sails that have stiff edges.

Wind & Wave

China may have been the place where the guara was invented according to a massive study of the science and technology of ancient China by Joseph Needham. Chinese versions of the simple compass-form called a wind rose follow the Chinese forms of the zodiac and are lo pan/luo pan. A recent study of Pacific techniques of navigation is “The Vaeaku-Taumako Wind Compass” by Cathleen Pyrek (online). These are part of the same methods that took the Micronesians plus Polynesians on their long-distance voyages across the largest of the world’s largest oceans.

More long voyages may be shown by plants exchanged between western South America with further along the same Pacific-facing parts of the Americas to as far north as west Mexico may give us hints of long-distance trade on these same coasts to as far back as ca. 1000/500 BCE. It is known that commerce on what is most of West-coast Americas declined and was then revived. Shell of the shellfish called *Spondylus calcifer* appear to only breed in the warm waters and seems to have been exported to west Mexico. Of the various Andean groups involved, the West-coast Amerinds of Ecuador called the Mantenos appear to be the most famous. The date of ca. 1000/500 BCE remains possible but the trade, its decline,

subsequent revival, etc, is shown by Richard Callaghan (*Antiquity* 2003) to be more secure in Manteno hands. Such voyages went against the prevailing wind and current when going northwards.

Spondylus shells apparently reached as far away in East-coast Americas as the Caribbean, Florida, etc. If correct, this shows the inter-ocean contacts probably across the narrow Darien/Panama Isthmus surely further shown by vessels now mainly known in Brazil but evidently of West-coast origin but which has oddly acquired a name from India of jangada. Forbes (2007) shows the jangada as capable of long voyages. The long-distance voyagers here are Caribs plus Maya. What comes out of such as "Fort Centre Mounds" (at LostWorld.org online); Douglas Peck (ib.; *Prehistoric Seafaring Exploration by Taino & Carib Indians in the Antilles & the Maya from Northern Yucatan* online), etc, show more such voyages. Long voyages would be easier under sail and this needs knowledge of winds and Kiore/Patterson (ib.) wrote the "Maya were expert navigators... they studied patterns of winds & currents".

The Nordic or Viking parts of west-facing Europe are on the opposite side of the Atlantic Ocean from the Maya plus other East-coast Amerinds. The Norse or Viking literature consistently describes Viking ships on the Atlantic and this now has been proven by excavations on the American side of the Atlantic. The wind-roses/compasses reported in these Norse/Viking tales of saga type also receive archaeological support. Most notably by the remnants of a specimen found during the excavation of a Viking settlement on Greenland. This is the fragmentary and reconstructed wind-rose referred to by Farley Mowat (*West Viking* 1965) plus several more authors.

Of the Celts occupying most of Iberia (= Spain & Portugal), a wind-rose compiled by Orosius (ca. 300 CE Romanised Iberian Celt?) is cited by Baumgarten (*Peritia* 1984). Geoffrey of Monmouth (12th c. Brit.) records the Druid-like Pellitus of Iberia having such control of winds that he drove the ships of Edwin's fleet to destruction. The Celts (also called Gauls by the Romans) of Gaul (now mainly France), Matthew of Paris is cited by Eva Taylor (*The Haven-finding Art* 1957) as showing what he described as a "Gallic" wind-rose. Celts also reached Ireland and that they also knew of the Orosian plus other wind-roses seems shown in "The geographical orientation of Ireland in Isidore & Orosius" by Rolf Baumgarten (ib.). The Irish Celts and their reputation for being able to control winds lasted until well into the 19th c. according to "Celtic Folklore" by John Rhys (1901).

Undoubtedly the most elaborate of all wind-roses from ancient Europe come from Greece and the islands of the Aegean Sea. Greece tends to dominate the Balkan Peninsula in southeast Europe in the opposite corner from the Iberian Peninsula in southwest Europe. The compass described by Homer (ca. 1000/900 BCE? Greek) marks the winds of the cardinal points of the compass to north, east, south plus west. To these four cardinal points were added ordinal points to give the 8-pointer known to Aristotle (ca. 350 BCE Greek) plus Andronicus (ca. 100-50 BCE Greek & designer of the Horologion = Tower of Winds at Athens) depicting winds on the Horologion bearing the names of lesser gods. Even more elaborate is the 12-pointer devised by Timosthenes (ca. 200 BCE).

A path via Semitic science via the Semites of Phoenicia and/or Syria; Thales (ca. 620/550 BCE) and the Greeks of Miletus/Ionia (= now part of west Turkey); the Greek islands of the Aegean then the Greek mainland for Greek wind-roses seems likely. Reinforcing this would be the Oxford Companion to Ships & the Sea seeing wind-roses as of Phoenician origin; the claimed Phoenician parentage of Thales; the claimed Syrian birthplace of Andronicus of Cyrrhus; Livio Stecchini ("Winds" online) noting that the Horologion word for the East Wind is Apeliotes from the Ionic form of ancient Greek not the Apheliotes of mainland Greek; Andronicus building a temple of Poseidon on the Aegean island of Tenos; those then known on the mainland parts of Greece.

The Indian epic called Rigveda (= Praise or Knowledge in verse) was seen to been cited in an article by Jayaram V entitled "The Vedic Pantheon" (online). The passage quoted further tells us that Varuna (= Hindu God of the Sea) that "He knew the pathway of the wind, the spreading, high and mighty wind". The name of Varuna is also claimed to relate to that of Brunei (once applied to the whole island that the West now knows as Borneo), on that island

reached by Indians crying "Barunha" (= hooray). It was an Indian that taught the first Europeans how to use the monsoon to reach India (see next two paras.) and we see the claimed part-origin of Mozambique in the Indian term of mussumbi-baza (= monsoon-boat?). This is in the opposite direction to Borneo across the Erythraean Sea. Of this direction went the Indian Muallaim (= Pilot) who also needed knowledge of winds as part of his skills.

The Austronesians of what is called Island Southeast Asia (= ISEA), Insular Southeast Asia, Maritime Southeast Asia or Nusantara (= simply Islands) will clearly relate to those of the Pacific and we should bear in mind that they came to as far west across the Indian Ocean as the island of Madagascar. Knowledge of the ways of the winds was part of what was expected of Indian pilots when navigating on the Indian Ocean (= western Indian Ocean). The first crossing of that sea is seen by the PME as by Hippalus but McGrail (ib.) shows Hippalus arose from a mis-translation.

This means the author of the *Periplus Maris Erythraei* (= PME = Voyage of the Erythrean Sea) was wrong about Hippalum being the first to directly cross the Erythrean Sea. Sean McGrail (*Boats of the World* ib.) is seen as one of those pointing out that Hippalum is an artificial construct arising from hipalum (= wind from the sea) being mistranslated. Given that the direct crossing was known to the Indian who on having been shipwrecked in Egypt was next seen as showing Eudoxus (ca. 2050 B.P. Greek) that route. Cyril Hromnik (*Indo-Africa* ib.) shows the Indian mussumbi-baza (= monsoon-boats) may have part-named the east African country of Mozambique.

Also tied to Africa are New Zealand, Fiji plus the Persian Gulf according to what is written by messrs Campbell-Dunn ("Maori"), Balson (*Brief Hist. of Fiji*) and Bashiri respectively. Iraj Bashiri (*Muslims or Shamans: Blacks on the Persian Gulf*) brought attention to what seems to have begun as the Thonga being held to be able to control winds. What may be analogous is the Mayan phrase of *iq'ama'qel* relating to winds, the Maya plus Africa but Jonathan Cohen (*The Naming of America* online) does not say how. The considerable advances in wind-roses held to be shown by the Greek version bearing winds named by godlings seems matched by the cross-shaped images of Olori Merin (= Lord of the Four Heads) of the Yorubas of Nigeria. Tales of Ijo migrants from South Africa; north-going African traders Namibia-to-Gabon then "Guinea", etc. would go against prevailing currents.

Stars

The astronomy of ancient China has the apparent distinction of having been separated off from astrology at an early date. Joseph Needham is well known for having recorded the history of science and technology in ancient China and he is quoted in online (*Ancient Chinese Science & Technology*) saying China was far in advance of coeval Europe. The same online site tells us China also developed sophisticated navigational systems by which sailors could find position when at sea. A further citation from "*Ancient Chinese Science and Technology*" tells us that that the Haida *suanjing* (= *The Sea & Island Maths. Journal*) dates to ca. 2220.

Pacific islanders are said to have steered "by the sun by day & the stars by night" by the various writers who have quoted James Cook (18th c. British sea-captain). Islanders of that part of the Pacific Ocean what was once called the Gilbert Islands but is now mainly Kiribati (= ex-Gilbert Islands) are famous for their star-maps. An example of a star-chart may be depicted as Ritidian (Guam) according to Rudolph Vilaverde (online). Several writers have called attention to the fact that here that the Tiaborau of these islands acted in the role of both astronomer and navigator so closely connected were astronomy plus navigation in the Pacific islands.

Amerinds from the west-facing shores of the Americas also went on long distances across the Pacific Ocean according to "*Early Man & the Ocean*" by Thor Heyerdahl (1978). Using the stars will also have featured in long voyages. Heyerdahl (ib.) may have been wrong about West-coast Amerinds being the major component of the Polynesians but does appear to have proven those Amerinds and Polynesians did interact after long voyages. For many of the long sequence of Pre-Inca cultures of northern parts of western South America, the personage

of Viracocha came as a culture-bringing god coming from the sea. Not only is he credited with bringing astronomy to these West-coast Amerinds and who is described in the Wikipedia entry on Viracocha as having sculpted in the garb an astronomer at Ollantaytambo (Peru).

Probably the fullest Amerind astronomy was in Yucatan (Mex.). This was the heartland of the Olmecs that Peck (2005, 2007), Edward Grondine (Going into the Water online), etc, regard as ancestral to the Maya. Peck cites texts saying Yucatan and Maiam/Mayaland were one and the same; the Itza (= Chontal Maya) is tied to the god-name of Itzam-na in turn seen in the place-names of Itzamal (= Izamal, Mex.), Tah-Itzae (= Tazesin, Mex.), etc. Grondine lists Olmec-to-Maya traits as building large mounds; deformed-headed leaders; poles/stones marking basic points of the compass; detailed astronomy; celestial jaguar symbols; celestial "dragon" motifs; hallucinogens from toads and/or lilies; ceremonial cylinders; use of written scripts, etc. Peck (2005; 2007) and Winters (The Olmecs & the 12 Routes online) would add seafaring to this list.

Peck (2005; 2007 & The History of Early Dead Reckoning & Celestial Navigation: Empirical Reality vs. Theory online) argues that the much-vaunted use of Polaris for navigation at sea by both Norse plus Maya is not really true. Other writers have it that Polaris/North Star is Mayan God-C and that that it was used by sailors and the general opinion is the North Star was of major importance for Norse/Viking navigators. Storr-Oddi (= Star-Oddi) is one of the Norse noted as able to set latitude but his fame came from star-maps. Geoffrey Marcus (The Conquest of the North Atlantic 1980) shows a contrast of night-entries into harbour by Ormund (who on bumping other ships was felt slovenly by his crew) and Gudemal (who did so successfully). Another means of navigation at sea was by way of what Leif Karlstein (Secrets of the Viking Navigators online) saw as a sun-stone.

Of Celtic Europe, the Isle of Mann/Man is a British island but the Manx language is Irish-derived. Here fishermen do not directly mention *caist* (= the moon) but refer to *ben-reine ny hoie* (= Queen of the Night). If this is retained from the Irish ancestor of Manx, the taking of position by Polaris/North Star by Celto/Irish skippers has significance when Peter Beresford Ellis (The Druids 1995) points up Polaris as *Realta Eolais* (= Star of Knowledge) in Irish. John Campbell (Popular Tales of the West Highlands 1864 & 1996) notes a folktale that he relates to the Farnese Globe (of Atlas bearing the World). Stars are referred to as guiding ships across the sea (as "Ossian"); the Druids of Gaul were also expert astronomers (as Caesar); Pellitus of Iberia "adds the ways of the stars & planets" (as Geoffrey of Monmouth) to this. Dicuil (9th c. Irish) notes Irish crews night-sailing between Scotland and Faeroe.

A series of Greek astronomers are also directly relevant for the Farnese Globe. The works of Eudoxus of Cnidus (ca. 400/350 BCE Greek) were versified by Aratus (ca. 300/250 BCE Greek), both were criticised by Hipparchus (ca. 200/120 BCE Greek) and of about this date there was a sculpted prototype of what we now call the Farnese Globe (ca. 200CE). A study by Bradley Schaeffer (The Epoch of the Constellations & Their Origin in the Lost Catalogue of Hipparchus online) relates Hipparchian sky-maps to what was sculpted on the Farnese Globe. This has gained some relatively mild criticism by such as Dennis Duke (Analysis of the Farnese Globe online) and something rather more vituperative by Dennis Ralston (The Farnese Globe controversy & elsewhere). The tracing of some of this back to Aratus takes us to "The Origins of the Constellations" by Michael Ovenden (Transactions of the Royal Philosophical Society of Glasgow 1966). He is one those seeing the "Phaenomenona" by Aratus as primarily a seafarers manual.

Semitic science has long been regarded to have been the source of so much of that taken up by the ancient Greeks. An Assyrian source may be a factor in what came down to such as Eudoxus of Cnidus, Aratus, Hipparchus, etc. Otherwise, the most famous of Semitic scientists are the Chaldaeans. They soon acquired a considerable reputation as astrologers at a time when astrology was regarded as the twin of astronomy. However, it seems the first Semites to apply this to going to sea were the people who tend to be called Canaanites during the Bronze Age. During the succeeding Iron Age, the western Canaanites are generally termed as Phoenicians. The best known of the stars in the constellation called Ursa Minor (= the Little Bear) is Polaris (= Pole Star = North Star). It must have significance that in antiquity that both Ursa Minor plus Polaris were designated by the Greeks as *Phoinike*.

That India was the cradle of the Semites called Assyrians, Phoenicians plus Chaldaeans as the Asuras, Panis and Cholas respectively that is called for on some arguments seems very unlikely. Yet underlying this is the recognition of Indian seafaring, as shown by such as the Ramayana, Manusmriti, etc, as noted by William Jones, Mountstewart Elphinstone, etc (as HinduWisdom online). The major deity of the Hindus with lunar functions seems to be Chandra that also is the word for the moon in some Indian tongues. The quotes from the Rigveda given by Jayaram V (The Vedic Pantheon ib.) demonstrate that Varuna was originally a sky/solar deity but that he took on some lunar functions. Bringing this back to Varuna's sea-god functions is the Muallaim saying Indian sea-pilots had to know the stars.

That "Indonesia" has a very long nautical history going back to at least the period of the Palaeolithic "Hobbits". Robert Dick-Read (The Phantom Voyagers 2005) gives a useful summary of "Indonesian" moves across the Indian Ocean. Arysio dos Santos (Corroborating Evidence of the Reality of Atlantis online) identified Atlantis with Indonesia. Stripped of the Atlantisology, of interest is that he does on account of "Indonesia" knowing celestial navigation. Dick-Read (ib.) particularly saw the Bugis of Sulawesi (= ex-Celebes, Indonesia) as crossing the Indian Ocean to Madagascar plus east Africa. In "Astronomy in the Indo-Malay Archipelago", Gene Ammarell (Google extract from Ency. of the History in Non-Western Cultures ed. Helene Selin 1997) shows the Bugis had a form of star-map that he thought compared with those of the Micronesians and Polynesians.

Of east African stone rings, undoubtedly the most famous is what excavation has revealed at Namoratunga I and II (Kenya). The clear horizons needed for calendrical purposes are provided at both and the Namoratunga circles have been related to the Borana calendar, so takes this to the areas adjacent to north Kenya. At No. II, symbols carved on some of the stones takes us to such speakers of Cushitic or Nilotic tongues as the Konso, Masai, Turkana, etc, branding motifs on their cattle. The alignments of the stones is shown by messrs. Lynch and Robins (in Blacks in Science ed. Ivan Van Sertima 1983 and 2001) orientate on Triangulum (= Beta), Pleiades, Aldebaran, Bellatrix, Central Orion, Saiph (= Kappa Orionis), Sirius, etc. Felix Chami (ib.) would again take this outside Kenya when comparing the astronomy just referred to with that noted by Iambulus (ca. 400? BCE) "in the islands", by which is meant the mainly offshore ones of Kenya, Tanzania plus Madagascar.

West Africa seen as Nigritia and Egypt as Khemet can be added some Pacific analogies, for which see the next paragraph. Studies of west African astronomy include that of the Bozos (of on the Niger plus that of the much-studied Dogons (also of Mali) apparently centring on Sirius also to be seen as having Yoruba connections. Andis Kaulins (Stars, Stones & Scholars 2006) shows the plausible star-matched positions of the Senegambian (= Senegalese & & Gambian) stone rings set in relationship to land-use at ca. 5000 B. P. Kaulins (ib.) especially points up how these same Senegambian circles at Wassu (Gambia) marry against the stars of Virgo system. The sea-borne/river-borne associations of the Senegambian rings are directly relevant when we come to the "family" of Atlas and the Atlantic links of seafarers and his "daughters" called the Pleiades.

Further to muscular Niger/Senegal and Nile boatmen is what is written by Atholl Anderson (in the Pacific section of Great Civilisations ed. Goran Burenhalt 2004) about the thin Lapita-folk of Pacific islands and the robust succeeding Polynesians. James Hornell (Mariner's Mirror 1928) compared west African canoe-paddles the Krio/Kru of Liberia/Sierra Leone and those of French Polynesia for elegance and effectiveness. West African interest in Sirius includes that of Bozos, Dogons plus the Yoruba phrase of Irawa-oko (= Canoe-star); Egypt knew Sirius as Sopdet but also knew Sirius as the Siris (= the Nile); the Melanesian cave-art at Ritidian (Fiji) might almost pictorially gloss the Yoruba phrase of Irawa-oko (= Canoe-star). The "family" of Atlas is consistently seen as of the north in west Africa and his "daughters" include the Pleiades that seemingly derives from Greek plein (= sailing stars) and are consistently placed in the north of west Africa.

Birds

Chinese concepts of birds in the guise of souls do not to often be directly associated with burials in boat-shaped coffins that are described in "Mysteries About the Boats of the Ancient Ba People" (online). The author related the Ba-folk boats to a tradition that will be seen in its fullest in Egypt. These are far from being the only boat-coffins of ancient China where those of Wuyisan are held to date between 4000/3500 BCE. Another ancient principle known in China was that of sailors at some distance from the nearest shore sending birds out to seek those shores. This is shown in the 8th c. Thang Yu Lin (= Papers of the Thang Dynasty) by Wang Tang as cited in "The Rise & Fall of 15th Century Chinese Sea-power" (online).

The Pacific provides some of the clearest instances of "The role of birds in early navigation" when attached to the settlement of islands forming what have been called Micronesia (=Small Islands) Polynesia (=Many Islands), Black Islands, etc. Ben Finney et al (Voyage of Rediscovery 1994) are among those describing the long voyages involved. As part of this, those to New Zealand followed the bar-tailed godwit long-tailed cuckoo, etc; to Hawaii followed the golden plover, bristle-thighed curlew, ruddy turnstone, etc; to Easter Island followed the fairy tern. The "Constructional Parallels in Scandinavian & Oceanic Boat Construction", James Hornell (Journal of the Polynesian Society 1944) points up the widespread use of canoe-shaped coffins across the Pacific.

West-coast Amerinds were thought by Thor Heyerdahl (Early Man & the Ocean 1978) to also have reached Rapa Nui (= Easter Island). The point about this is Heyerdahl held the Polynesians were mainly of Amerind sources but genetics proves this is wrong. Yet this should not disguise the fact that West-coast Amerinds from South America were capable of very long voyages. If reaching Rapa Nui, we should not overlook that this tiny island is the remotest speck of land anywhere in the world. This may tie in with the legend of Coatu tied by Heyerdahl to Sal-y-Gomez (nr. Easter Island) marked by large flocks of seabirds.

Of East-coast Amerinds, the Olmec Culture of Pre-Mayan date had Olmec-type cave-art at Juxtahuaca (Mexico) showing the kind of ritual that was called P'achi (= Opening the Mouth) by the time of the emergence of the Maya according to Rafique Jairazbhoy (Ancient Egyptians... in America 1974; Ramesses III: Father of America 1992). The associated human-headed figures called ba-birds thought to have guided the soul the Other-world are known in Mesoamerica too. The Maya also had a concept of the dead being taken into the Otherworld by canoe. Jairazbhoy (1992) further cites a scene painted in the Madrid Codex. This is a Mayan document that is one of the very few to have survived the mass-burnings of Amerind texts by the Spanish conquerors of most of the Americas. It shows a black bird that seems to be en route for the stars in the heavens (as a guide) and one of which actually rests on a star.

The outlier of Nordic Europe that is Iceland may have been first discovered by Pytheas (ca. 2350 B.P. Greek), they were presumably followed by the owners of Roman coins in the same parts settled by later Irish "Papar" (= Christian Fathers). The sequence of Viking colonists seems shown by such Viking sources as *Islendingabok* (= Book of the Icelanders), *Landnamabok* (= Book of the Settlement of Iceland), etc. They show a sequence of Naddod (Faroese), Gardar (Swedish), Floki (Norwegian), etc. Naddod plus Gardar discovered the island accidentally and Gardarsholmi (= Gardar's Holme) was then sought by Floki. He took three ravens with him. The first was released and flew aft over the bow (& back home?); the second flew away but returned to the ship; the third flew west over the prow and was followed by Floki. This Noah-like event gained him the epithet of Hrafn-Floki (= Raven-Floki). Eva Taylor (1956) notes the reason (s) given for use of birds in this role in Norway and Sri Lanka was because of a lack of knowledge about certain matters.

The Iberian figure that Geoffrey of Monmouth that he named as Pellitus was also described almost in terms of how Julius Caesar did so about the Druids of Gaul/France. If what Geoffrey plus Caesar reported included "knowing the ways of the ways of the birds", to these Celtic Druids can be added that Celts of the British Isles have been well known to have settled on islands long recognised as marrying very closely with the flight-path of seasonally migratory birds. Ex-Commander Peter Scott (son of Capt. Scott & of Slimbridge Wildfowl Trust fame) is cited by Taylor (ib.) as noting such migratory birds as brent-geese, white-

geese, barnacle-geese, greylag-geese, whooper-swans, etc. It has long been recognised just closely the flight-paths of these birds on their noisy seasonal migrations marry with the Celtic colonisation islands off the coasts Britain plus Ireland. The origin of the Irish tale of the Navigation of Bran may belong here. Stripped of the fabulous, "Bran" is of the Immrama (= Sea-tales) in describing a sea-voyage and Bran means Raven in Irish.

Having seen Greece is in one corner of south Europe from Iberia in the southwest of that continent, we also see it is in what defined in other papers of this series as the Alexandria (Egypt)/Antakya (=Antioch, Turkey)/Athens (Greece) or A/A/A-arc. For the A/A/A-arc of the east Mediterranean, Shelley Wachsmann (*Sea-going Ships & Seamanship in the Late Bronze Age Levant 2009*) listed the main use of birds by sailors. The main forms of this usage are two. The first is of caged birds taken to sea; on land needing to be found; a bird was released; the bird gaining height, heads for land; if not, swallow, dove, raven, returned to the ship. A second method is knowing how far certain birds go out to sea to feed and on the need to find the direction of land, either their morning outward flight or that of their evening return to their nests was observed. Wachsmann (ib.) does not mention the following of migrating birds.

Semitic forms of what have been called Great Flood myths are undoubtedly the most famous of texts dealing with birds as navigational aids but most famous of them all is the Genesis account in the Bible. Common to the Eridu Genesis (via Zuisudra seen as Xithuros in fragments of Berossus contained in Syncellus), the Epic of Gilgamesh (as Utnapishtim), the Biblical Genesis (as Noah), etc, is use of shore-seeking birds to find dry land. Also common to Ziusudra/Xithros, Utnapishtim plus Noah are three-fold episodes of sending the birds out and the last two further involve ravens. David Marcus (the Mission of the Raven online) refers to several Hebrew versions that are Rabbinical not Biblical. The distillation of Arab version of such sources contained by ibn Majid (in *The Book of Useful Info. ... of Navigation*) is translated by George Tibbetts as "Arab Navigation in the Indian Ocean before the Portuguese 1971).

India was seen to provide good evidence of the basic elements of maritime navigation, as would be expected of a having a deity who was a god of the sea. This was Varuna. Among his attributes are that "He knows the path of the birds that fly through the heavens" according to Jayaram V(ib.). Such Budddo/Hindu texts as the Dialogues of Buddha, according to messrs. Hornell (1946) and Taylor (ib.) also refer to birds used in the way under discussion. Knowledge of the ways of birds was straightforwardly expected of the Indian sea-going pilot. James Hornell (*The Origins & Ethnological of Indian Boat Designs 1920*) wrote that Mangalore on the Karnataka coast of western India, the freight-carriers were coffin-shaped. Boat-shaped coffins for burials in India are known mainly known in the northeast of the country.

In southeast Asia lie islands we saw as ISEA. Birds used as navigational aids are exemplified in the Toraja version of Great Flood myths but this is put to missionary or Muslim influence(s) by James Fraser (*Folklore in the Old Testament 1923*). However, Stephen Oppenheimer (*Eden in the East 1999*) takes the view that this kind of thing belongs with something much wider and older. So too is the canoes-as-coffins custom of the Toraja. Given the very long sea-journeys of these Indo/Malays or Austronesians (=ANs) towards Madagascar, use of birds across the Indian Ocean will also be very much older than anything to do with the arrival of Muslim and/or Christian proselytisers. Nor should the fact that AN groups burying their dead in boat-like coffins include the Torajas.

In east African waterways, are the Swahili who give us the name for what has been as Azania or Zanj itself variously spelt as Pwanit, Puanit, Punit, Punt (= Shore), etc. Here are forms of Great Flood myths. Of the same type as the myths that are as far apart as the Cora Amerinds of Mexico and the Toraja of Sulawesi (= ex-Celebes, Indonesia), discussed by Oppenheimer (ib.). James Hornell (*The Role of Birds in Early Navigation [Antiquity 1946]*) plus Mark Isaak (*Flood Myths around the World online*) refer to Zanzibari (Tanzania) and Masai (Kenya) versions having elements referred to by messrs. Oppenheimer (ib.) and Marcus (ib.) relevant for Hebrew Great Flood myths having a component in which the birds set out to espy dry land stop to feed on bodies of the drowned. The land-bound Masai given a

maritime aspect runs parallel to that of the equally land-bound Oromo of Ethiopia according to the historians of Imperial Ethiopia.

Voyages between east Africa and India have been touched on in connection of use of the monsoon-system of the Indian Ocean. Famous ancient wrecks on east African coasts will include that of a Carthaginian vessel of the type called a hippos found by Eudoxus, a claimed Wadiba vessel of the proto-mtepe form wrecked on the Bajun Islands (Somalia). What seems to have been a vessel on such a voyage that might also have ended in a shipwreck is one recorded by Cosmas Indicopleustes (= C. the Traveller/Voyager to India). This comes after the ca.550 CE after which A.D. dates applies.

Cosmas Indicopleustes (= C. the Traveller/Voyager) wrote of a severe storm that forced the ship that was to have carried him to India back to east Africa and probably to Opono/Hafun (Somalia). Cosmas (550 CE Egypto/Greek) further described that the way to safety was shown by large seabirds that he called sousphas birds and thought to be frigate-birds by Taylor (ib.) but as albatrosses in the McCrindle (1987) translation of Cosmas because of staying in the sky plus large size. There may be some relationship here with the sky seen as a sail in several African tongues according to Graham Campbell-Dunn (Who were the Minoans? 2006) and birds in the sky seen as sails according to The Tale of Wen-Amon (ca. 3150 B.P. Egyptian).

Wen-Amon was comparing birds in flight with ships in full sail. Rafique Jairazbhoy (Ancient Egyptians...in America; Rameses III: Father of Ancient America 1992) has pointed up a scene in one of the few Mayan manuscripts to survive the wholesale Spanish burnings. He argues it shows a black bird heading towards a star in the night-sky resting on a canoe and went on to compare it with a falcon rising from the horizon on a 21st -Dynasty sarcophagus. He also wrote that in the Egyptian Coffin Texts (of Middle Kingdom date = ca. 2180-2055CE), the falcon is identified as the guide to horizon of the sky. Another Middle Kingdom text is "A Man Talks to his Ba" showing the ba-bird apparently is the guide for the soul into the harbour where is moored the boat that would carry the soul into the next world.

The Ba was a human-headed bird just shown in what seems a psychopompos role. Frederick Whicker (Egypt & the Mountains of the Moon 1991) in a book dealing with the links of east Africa of below the Horn of Africa and Egypt, felt that birds swooping low over the horizon at dawn was the probable source of birds-as-souls. Another part of the ritual is Opening the Mouth. This involved the deceased in a kneeling position with a priest facing him holding an implement to open the mouth and snake-like object also used. Comparison with elsewhere has seen use of the blood of deer matching that of a bleeding ox-leg and the spotted skin of a jaguar worn with tail dangling between the legs replaced in Egypt by a spotted animal-skin but now that of a leopard and still shown with tail dangling between the legs.

The close association of various types of birds with boats in Egypt en route to the Otherworld receives a considerable support in the numbers of actual boats that have found in obvious funerary contexts. Expertise with boats used in conjunction with their intimate knowledge of their waterways that basically means the River Nile, was the basis of the Egyptian victory over the invaders that Egyptian records term the Sea-Peoples. Some accounts of how Egyptian ships were constructed openly show the Egyptians were far from averse in employing slaves or what may have been coerced labour in their shipyards, especially when those workers had particular skills and this has very good parallels from west Africa.

Across southern Africa, the peoples called Khwe plus Bantu were neighbours and may have been for rather longer than usually thought according to the opinions cited in other papers of this series. However, the normal consensus is that the Khwe in particular never went to sea and more generally that west Africans were far too frightened to ever have ventured to have done.

Yet we also read in "The Ijo Genesis" (online) that from western South Africa possibly came ancestral elements belonging to a formative stage of the Ijaw/Ijo of south Nigeria and who had/have something of a maritime reputation. In the dangerous seas of the Skeleton Coast (Namibia), only west Africans were trusted with the ferrying of passengers

from ship to shore according to the author of the Wikipedia entry on Hout Bay (Sth. Af.) by the German rulers of the time. Some writers have it that copper from here was carried by sea to as far north as south Nigeria. Elysee Reclus (*The Earth & Its Inhabitants* Vol. III 1896) wrote of Angolans seemingly en route on something like the same route but who ended being wrecked on the island of Sao Thome.

The dugout-canoe was the basis of the expertise of the west Africans doing ship-to-shore through the dangerous Namibian swell plus the fishing-based communities of Angola. This was Terra Incognita for the ancient geographers and in the case of the Portuguese colonial masters, not much study of the Africans occurred. Nor do fishing communities get very much attention in histories of African groups but they were of sufficient note to be given the name of Ichthyophagi (= Fish-eaters). There is a definite god of the sea here, as Jan Knapper (*The Aquarius Book of African Mythology* 1990) shows Kianda as the god of the sea of the Kimbundu people. The Solongo plus Ashiluanda were/are sea-based fishermen and the latter are island-based.

The Bantu of Gabon called the Mahongwe were especially proud of their canoe-building but their shamans (= medicine-men/witch-doctors) also took long trips into the Otherworld in visions fuelled by hallucinogens based on ebogain. This was the ancestor-cult called Bwiti, as described by Richard Burton (*Two Months in Gorilla Land & the Cataracts of the Congo* 1876). Actual long journeys carrying copper of South African (?)/Namibian (?)/Angolan sources were carried in Mahongwe canoes according to opinions cited in *West Africa & the Sea in Antiquity*. In doing so they would go against prevailing currents. Burton (ib.) was also of the opinion the Americas could be more or less reached in Mahongwe canoes described by Thomas Boteller (*Narrative of a Voyage to Africa & Arabia* 1838) as "built for strength, solidity & symmetry".

Fleets of canoes are described by the earliest European sources at the mouth of the River Congo. A painting of some at the Congo Estuary is reproduced by Bradley (ib.). "The Canoe in West African History" by Roger Smith (*Journal of African History* 1970) adverts to Atlantic sails in those of the ships of the Veneti. Those of the other side of the Atlantic in the form of Amerind sails were also noted above. The painting just mentioned shows a fleet of canoes with sails and their having sails probably indicates that as they were fishing-boats, they operated at sea. This seems shown by the fact that on jungle-enclosed and windless rivers, sails seem unneeded.

The coast of Cameroon returns us to fishermen bringing attention to the Ichthyophagi (=Fish-eaters), as it seems the Ichthyophagi Aithiopiae (= Black/African Fish-eaters) referred to by Ptolemy may be on these same shores. It is well known that Aithiopiae is but one of several ancient terms for Black/Sub-Saharan Africans. It is a compound word formed on Greek aithios (= burnt) plus opes (= face) combined in Aithiopes (= Burnt-faces). What makes these particular African fishermen more dark-skinned than any other African Ichthyophagi is unknown but that they attracted the attention of ancient historians is noteworthy.

Cameroon also provides two other areas of equatorial forest or jungle that are evidently dissected by the River Cross presumably so called because of this. The river starts in Cameroon and ends in Nigeria. Here too are the megaliths severally named as Cross River, Akwanshi (= Dead Ones), Ikom, etc. The *Before Adam* books by Catherine Acholonu have to be stripped of ufology plus religion but have usefully brought these stones to attention and have an extensive range of photos of them. Andis Kaulins (*Stars, Stones & Scholars* 2010) looks to give them a maritime then a river-borne spread.

A maritime spread was also seen to possibly apply to an ancestral component of what came to be the Ijaw of Nigeria. Adiele Afigbo (cited in Wikipedia entry re. the Ijaw) wrote "Igbo...Idoma...&...Ijaw would appear to be the only surviving coherent ethnic groups from the 1st set of Proto-Kwa penetrating the forest areas of south Nigeria to as far west as". Nigerian myth has Oduduwa as the Creator God and the Ijo Genesis (online) has his "sons" as Ujo/Ijo (ancestor of Ijos/Orus), Lufon (ancestor of Yorubas), Igodo (ancestor of Binis/Edos), etc. The Ijaws/Ijos have tales of arrival from all directions and probably means arrivals from

several directions. One has South Africa as an original homeland and a spread by sea accords with the Ijaw as Beni-otu (= Water-men) with a considerable reknown as fishermen at sea.

The Binis/Edos are most famous for the city of Benin itself renowned for the "Benin bronzes" joining with such other high cultural markers in Africa the stone towns of east Africa, the better known Zimbabwe of mid Africa, etc, in having been attributed to a long list of non-Africans. This has the interesting effect of fitting with the many views that virtually everyone got to parts of Africa. At the same time, there are those seeing the numerous problems of the African coasts as stopping Africans from going to sea, the more so given that we are told by many that Africans were too scared to do so. This would mean that west Africans never sailed on the Atlantic.

Meanwhile, the dangers of part of the Nigerian coast may be shown by the Wikipedia entry on the Bight of Benin. It cites old rhymes saying "Beware, beware the Bight of Benin, few come out but though many go in". The Bight of Benin was named by the city of Benin (Nigeria) in turn named by the Bini. Messrs. Reindorf (ib.), Stecchini (ib.) and Lacroix (Africa in Antiquity (1998) have also written about Benin. Lacroix (ib.) tied the Hippodromos Aethiopiae (= Racecourse? of the Africans) described by Ptolemy (ca. 1850 B.P. Egypto/Greek) to the horse-breeding reported by Olfert Dapper (17th c. Dutch) of roughly the Benin region of southern Nigeria.

A Yoruba deity named Olori Merin (= Lord of the Four Heads) had cross-shaped images that sometimes have heads or roundels in that stead at the end of each arm. It seems they were set up on mounds that can be man-made or natural marking the points of the compass. The heads on the arms also bear the names of lesser gods and these names are also those of winds of north, east, south plus west. Olori was also Guardian/God of the City when protecting cities against plague and pestilence. The naming of winds is also seen for Greeks (as above), the Maya, Egyptians, Indians, ANs, Chinese, Polynesians, etc. When occurring among such groups, this is held to be an achievement of sea-going peoples.

If Olori Merin was/is the Lord/Protector of the City, Olokun was the Lord of the Sea and was compared by Leo Frobenius (Voice of Africa 1913) the Greek god of the Sea named Poseidon. Yorubaland also has enough nautical connections for Frobenius (ib.) to have regarded it as Atlantis. This was on grounds of elephants being present, abundant plant-life, this including the tough-skinned but soft-fruited banana, blue-dyed garments, access to copper, matching metal alloys, etc. Frobenius (ib.) further regarded the Yoruba stories of golden cities now underwater out to sea were also very relevant.

Most of the coast up to what is now Ghana (= ex-Gold Coast) would appear to take us back what is written by messrs. Stecchini (about Hanno online) and Reindorf (The History of the Gold Coast & Asante 1895). Livio Stecchini (ib.) wrote of Hanno wanting to contact the great culture of Benin and Carl Reindorf (ib.) of Benin ruling through Ghana to as far away as the Gambia and a much vaster area to the east. The coastwise nature of that rule is underlined by the traditions collected by Reindorf (ib.). He goes further in tracing numerous other elements also coming by sea.

Ghana examples yet more of the fleets of canoes engaged in fishing, as reported by some of the first arrivals from Europe on the western littoral of Africa. The earliest of those Europeans are traditionally seen as the Portuguese. A lot is made of Portuguese arrivals having the nous plus foresight to establish a trading-post at what became came called Elmina (Ghana) but what then does it say when we realise that west had been trading from the same place long before the Portuguese got there.

The Krio/Kru of Sierra Leone plus Liberia became important to non-Africans over a very long period according to some of the sources cited just above. The west Africans that Hanno brought south with him stopped being useful to him at some point and needed to be replaced by others, for Lacroix (ib.) this was about Liberia and the west Africans who now acted as interpreters plus pilots for Hanno. The Hout Bay episode noted above showed west Africans as acting for the German rulers of Southwest Africa/is now independent Namibia. This was on ship-to-shore duties through the very dangerous Namibian swell and they were the only ones trusted by the Germans to carry their passengers through the very dangerous Namibian swell.

These west Africans were once again the Krio/Kru. One of their canoes was bought by Hannes Lindemann (Alone at Sea 1958) and successfully sailed across the Atlantic. In doing so, Lindemann (ib.) sailed not only the ancient type called-canoe, that being of the small 1/2-man normal for Krio fishermen, en route ate only the all-fish diet giving several west African groups their Greek label of Ichthyophagi. James Hornell has described on more than one occasion the everyday nonchalance shown by a Krio fisherman having caught and brought home two enormous tarpons using a very small dugout-canoe. Hornell further compared the canoe-paddles of the Krio/Kru and those of the central Polynesians used to going on long sea-trips for length, elegant design, effectiveness, etc. Elizabeth Tonkin (Africa & the Sea ed. J. F. Stone 1985) points to a section of the Krio still famous enough to be called the Fishmen.

Such territories as Guinea, Guinea-Bissau plus the Cape Verde Islands return us to yet more notions that that west Africans feared the sea. In particular this brings us to the islands of the Bissagos plus the Cape Verde groups. The Bissagos Archipelago is just off the mainland of Guinea-Bissau and a past entry on Wikipedia had it that African canoes could not have coped with the treacherous waters between the mainland and between the islands. The Portuguese reaching what is now Guinea-Bissau found populations of Africans on all the islands. The dialects spoken on some of the islands have apparently so diverged that they may be treated almost as separate tongues, as they are unintelligible to their fellow islanders. This taking ca. 1000 years to happen just cannot have been so if west African canoes could not have gotten to the islands. In any case, where did the islanders come from that the Portuguese encountered when they reached Guinea-Bissau.

The Cape Verde Islands are probably even more interesting. Reclus (ib.) was seen above as accepting that Angolans could have been en route to points north but ended up wrecked on the island of Sao Thome. This came via Portuguese sources but Portuguese texts relating to west Africans reaching the Cape Verdes are not accepted by him because of prevailing currents would prevent west African canoes reaching the islands. Any routes going north from Namibia/Angola also went against prevailing currents. Even more to the point is no less an authority than Christopher Columbus tells us of west African canoes heading west of the Cape Verdes with only the open Atlantic Ocean in front of them. This comes once again from Portuguese sources with some archaeological support plus further evidence from the pen of Columbus describing more blacks in canoes but this time on the Caribbean side of the Atlantic.

Meanwhile, the Portuguese source that is quoted by Reclus (ib.) about the Cape Verde Islands is that of Luis Feijo. He was bishop of the Cape Verdes in the mid/late 1860s. In the years of his time in the islands, Feijo collected local traditions about such west Africans coming to the islands for seasonal fishing. This seems to have included the Serers, Wolofs, Lebu, etc (as above). Of them, the Lebu are shown above as especially famous as fishermen.

Senegal was homeland of all these west African fishermen. When we read Bradley (ib.) citing Pacheco Pereira (15th c. Portuguese) stating west Africans were recorded as "fishing ca. 100 leagues" (= ca. 300 miles) from the nearest shoreline, it can be observed this approximates to the distance from Senegal to the Cape Verdes. The Wolof word for a dugout-canoe is sunugal and from it may come the name of Senegal. The Old-Egyptian word for Phoenicia is Djahi and another Wolof name for what is now more or less Senegal is also Djahi. Both mean Place of Navigation. Polynesians are known to have compiled maps of the world as they knew it on gourds and Senegal (as part of the Malian Empire) also visualised the world as a gourd (i.e. knew it was round) according to Ivan Van Sertima (They Came Before Columbus 1976).

Long voyages would parallel those into the Otherworld by such as Khwe shamans (= witch-doctors/medicine-men), on the basis of the phrase "as above, so below". On the Rock Art Research Institute (RARI), a piece of Khwe rock-art in Western Cape (in western South Africa) depicts what has been identified as type of snipe diving down the face of a cliff. The spectacular dive of snipe in New Zealand has led to it being called a hakaiwi in the Maori language according to Colin Miskelly (Notornis 1987). He also wrote that there it is linked to Tangaroa (the Maori god of the sea). It may also be noted that according to Burton (ib.),

Gabonese shamans went on long voyages into the Otherworld and we have noted that they too went on long sea-journeys in this world too.

On the views of those cited on my other papers, the Gabonese undertaking these long voyages were mainly of the Mahongwe/Mpongwe people linking Angola with Gabon the Congo with the Gulf of Guinea. Here too the Otherworld intrudes in that messrs. Lucas (*The Religion of the Yorubas* 1949) and Meyerowitz (*The Divine Kingship of Ghana & Ancient Egypt* 1960), the Opening the Mouth ritual occurs in Nigeria plus Ghana. This has been shown to connect with the human-headed ba-bird that led the soul into "the harbour" (= the Other/Next-world). In this region, the type of large seabirds described by Cosmas off east Africa appear to parallel those described by Jean Barbot (17th/18th French) as marking the west coast of Africa. John Dyson (*Gold, God & Glory* 1991) says much the same thing of birds marking the Cape Verdes that presumably would be seen by the returning captain of the Abubakri legends and described by Columbus according to Dyson (ib.).

There is a long sequence of this kind of knowledge through the Tichitt, Wakor/Old Ghana, Malian, Songhai, etc, periods of west/northwest Africa stretching from Senegal to the mid-Sahara. Herodotus wrote of black birds founding oracular shrines at Dodona (Greece) plus Siwa (west Egypt). He rationalised this as indicating as black women having founded these sites and that in Greek ears their speech sounded bird-like. There are few better instances of humans speaking in what others deem to be a bat/bird-like way than in the Sahara. Here from the "Troglodytes" noted by Herodotus (ca. 450 BCE) to reports of the Tibu/Tibbu (& umpteen other spellings) 19th c. Europeans, Saharan Blacks have had their speech described in this way.

This becomes significant in the light of non-Saharans being led towards Siwa. Herodotus tells us the guides leading Persian troops of Cambyses (the Persian king of Egypt) there to destroy it apparently abandoned the troops who were all lost to the Saharan sands. A party being led Alexander the Great towards Siwa was also lost but they were going to honour the shrine. According to Diodorus Siculus (ca. 50 CE) black "birds" suddenly appeared that successfully led the Greeks to Siwa. Having seen that we are to understand that these Saharan "black" birds were Saharan Blacks, we can further add that Van Sertima (ib.) wrote that "Toffut el-Alabi" (11th c. Arabic text) shows that Saharan Blacks were still leading the great Medieval caravanserai across the Sahara Desert.

The methods used were still in being in the 15th c. in the Sahara, as proven by what is written in the sources cited by James Hornell's (*Antiquity* 1946) "The Role of Birds in Early Navigation". There a comment is made inhabitants of the Sahara used birds for the purposes of navigation over trackless sands as elsewhere they were for navigating the equally trackless seas. Once again, the points of comparison of worldwide and of west Africa demonstrate that west Africans followed pretty much those of the rest of the world **and did so on several counts.**

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