TO SAIL OR NOT TO SAIL?

82 years after the ghostly remains of the Sutton Hoo ship were discovered the debate still rages - was the longboat propelled by sail, oar or a mixture of both?

Daniel Fisher/Sutton Hoo Ship's Company

Words Bruce Stannard

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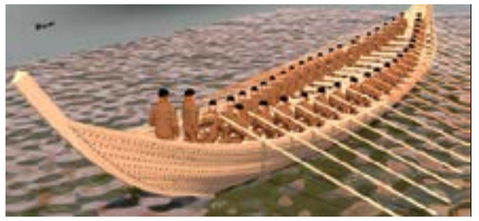
LEFT: The original archaeologists who uncovered the Sutton Hoo Ship in 1939 took detailed measurements, allowing the replica to be designed and built

Although rapid advances in technology such as ground penetrating radar and carbon dating have taken much of the guesswork out of modern archaeology, there are times when the absence of hard evidence need not be an insurmountable barrier to intuitive understanding. The Sutton Hoo Ship, one of the most important discoveries in British archaeology, is the case that underscores the point. When the astonishingly vivid imprint of the ship was uncovered in 1939, a team of archaeologists from the British Museum took great care to measure and record in detail every aspect of the ship and the golden grave goods buried with the body of King Rædwald, the 7th century ruler of the Anglo-Saxon kingdom of East Anglia.

After 1,400 years underground, the oak used in the ship's construction had been eroded and compressed into an ultra-fine skin of carbon, but it showed the regularly spaced locations of 14 pairs of thole pins on the gunnels which once served as the fulcrums for the oars of a rowing crew of 28. Although no oars were found, the position of the pin remains clearly pointed to oars as a means of propulsion. There was however one intriguing anomaly. On either gunnel, about amidships, there were no thole pins. Their absence could reasonably be interpreted as evidence for the possible location of what we now call chainplates – attachment sites for the shrouds that may once have helped to support a mast. But this theory is roundly dismissed by the British Museum, which states it's not possible to know 'if the ship had a mast and was sailed in the open sea, or if it just had oars for rowing along the coast and rivers.'



With the greatest respect, the sailors among the Sutton Hoo Ship's Company beg to differ. The team at Woodbridge on the River Deben in Suffolk are building a replica of the 90ft clinker-built slender longboat using 150-year-old green oak and hand-forged iron tools. There is a strong probability that the original ship was not propelled exclusively either by oar or by sail but by a common-sense combination of both. When the wind served, she would have sailed; when calm, she was very likely rowed. Sails were in use throughout the Roman occupation of Britain (43-410AD) and perhaps even earlier. Digital reconstruction and computer simulation tests on the Sutton Hoo ship's lines, carried out by the University of Southampton, have already shown that the ship, like the Viking longships of the 8th and 9th centuries, had plenty of reserve buoyancy and even without a significantly projecting keel, would have been capable of sailing.

METICULOUS RECONSTRUCTION

Arriving at this point has involved years of careful preparatory work. The ship is conceived as a time machine, one in which the unrelenting pursuit for authenticity is absolutely essential. That quest began as all boats do, with a set of lines lofted to guide her artisan builders. But arriving at a fair set of lines has been far from easy.

After 1,400 years underground with the enormous pressure of many tons of soil piled on top, the elegant shape of the Sutton Hoo ship was subjected to distortion including twist and tilt. Planking at either end of the vessel was absent with 2.2 metres lost from the bow and 1.76 metres lost from the stern. The extreme ends of the ship, as conceived in 1939, are therefore largely conjectural. However, in 1973 the distinguished British naval architect, Colin Mudie looked again. His lines showed a faired interpretation of the strake runs which attempted to retain the ship's 3,598 bog-iron rivets and planking to their original positions prior to spreading.

In 2015, powerful computers at Southampton University were harnessed to draw a beautifully fair set of digital lines that resolved all the issues and finally allowed reconstruction of the full-size ship to start. Cork-based traditional shipwright Pat Tanner, Dr Julian Whitewright, a senior teaching fellow in marine archaeology at the University of Southampton, and Joe Startin, a director of the Sutton Hoo Ship's Company worked for six months before they produced the definitive guide for the Sutton Hoo Ship's reconstruction. Dr Whitewright pays particular tribute to Pat

ABOVE: It is still not clear if the Sutton Hoo Ship was used for transporting goods or was a royal barge

ABOVE: A CGI representation of how the Sutton Hoo Ship might have looked

Daniel Fisher

BELOW: The wood for the keel, which took hours to cut and shape

Tanner, who is now recognised as one of the world's leading experts in digital reconstruction. 'He played the really important role in making the Sutton Hoo Ship come out of the ground, so to speak. I've found the public sometimes struggles to understand a lines plan. But seeing the digital modelling, people understand what it is. If we only had a traditional naval architect's sheet of rolled-out paper, we'd all be sat around looking at something that only half of us understood.'

It was Dr Whitewright who had the inspiration for placing a human-sized digital figure beside the ship to give people an eye-popping idea of the scale, showing just how enormous the vessel was. I asked him if he might hazard an informed guess as to whether the ship was propelled by oars, by sail or by a combination of both.

BY OAR OR SAIL?

'This is one of those conundrums that the Saxons left to puzzle archaeologists 1,400 years down the track. I've thought about it quite a lot over the last few years and I'm still not certain. From a rowing perspective, the best place to row the ship is in the middle. It's the lowest point and the angles, the geometry would seem to work down there. There were certainly no thole pins down there but you could speculate that they removed them to build the burial chamber. However, we can clearly see from the reconstruction now and the siting of model people in it, that there's really not much space anywhere else in the ship for a party of dignitaries to sit. There's barely any space for two oarsmen on the aft bench. If this was the king's personal ship, he was either steering himself, which is entirely possible, or he was somewhere else. As for the sailing element, we just don't know. There's nothing in the archaeological evidence that says definitively either way that the ship had a sailing rig. What I can say with certainty is that if you put an appropriately sized mast and sail on her, she would sail fine. It would sail very well downwind and may even sail across the wind with a bit of leeway. I'm not sure it would sail upwind terribly well but if you've got 40 rowing, you probably don't need to sail upwind.'

BELOW: Traditional tools are used for the building of the replica boat

Sutton Hoo Ship's Company

The argument will be resolved when the reconstructed ship is launched and the propulsion theories are tested.

This is not the first time that the sail versus oar argument has come up at Woodbridge. In 1993, Edwin Gifford built *Sæ Wylfing*, a half-length replica of the Sutton Hoo Ship to test his theories about her sailing abilities. Modern accounts and photographic evidence shows that *Sæ Wylfing* sailed very well indeed with the wind abaft the beam. She showed a clean pair of heels when reaching on the smooth waters of the River Deben but, with a single square-rigged sail, she was not so impressive going to windward.

Sutton Hoo Ship's Company

Joe Startin, a trustee and guide with the Sutton Hoo Ship's Company, has tried to steer a middle-course between the protagonists but admits that 'the romance of sail is strong'. He said although there are no written records that early Anglo-Saxons sailed, there is evidence of Scandinavians using sail from around 800CE onwards. Pictures carved in standing stones on the Baltic island of Gotland show a square-rigged sail using lines for tack and sheet starts. The sea-faring Kingdom of Dal Riata covering north-east Ireland, the Inner Hebrides and the Scottish coast, was flourishing around 600CE. Their ships were called 'seven-benchers' with two men at each oar. But they were also said to have a mast and a single sail as well.

Startin makes the point that in the middle of the 6th century the trading route from Byzantium to Scandinavia was interrupted. Goods went instead via the mouth of the Rhine and along the coast through the Wadden Sea to Jutland and beyond. The trade grew, becoming dominated by the Frisians. Trading settlements sprang up on the continental side with counterparts on the English coast.

On the other hand there are those who believe the ship may have been a royal barge. Whatever the outcome of the debate, the Sutton Hoo Ship's reconstruction provides a window on a world before England existed. It is a world well worth exploring – a voyage of discovery we can all make through this beautiful vessel.

For details about volunteering or donating, visit www.saxonship.org

ABOUT THE AUTHOR

Bruce Stannard is one of Australia's most experienced journalists. His enduring passion is sailing and maritime history. A Life Member of the Australian National Maritime Museum, he was responsible for securing many of the museum's most significant historic vessels including the *Endeavour* replica and received the Membership in the Order of Australia.