

# Introduction to Sail and Rigging Types

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# What this presentation will cover

- Sail types: what are Bermudan, Gaff, Lug and Square sails?
- Rig types: what are catboats, sloops, cutters, yawls, ketches, schooners, brigs, brigantines, barques, barquentines and ships?

# The Roots of European Sailing

## Arab Dhow



- Lateen rigged; one of the earliest fore-and-aft rigs.
- Good at sailing upwind.
- Poor at sailing downwind.

## Viking Longship



- Square rigged; arguably the oldest sail type.
- Poor at sailing upwind.
- Good at sailing downwind.

# Square Sails

- So called because, when at rest, the sail sits across the vessel.
- One type of sail; many, many configurations.
- Generally unsuitable for small boats.
- Best for Downwind sailing.



# Square Rig

- An ancient rig type, very rare for private yachts.
  - Excels downwind over long distances.
- Trapezoidal sails held onto Spars called Yards.
  - Immensely complex rigging.
- Requires large amounts of crew to operate

# Fore-and-aft Sails

- So called because when at rest, the sail sits along the length of the boat, fore-and-aft.
- Comes in many varieties, of which the most popular nowadays are Bermudan, Gaff and Lug.
- Good for small boats due to relative simplicity of rigging, ease of working and superior manoeuvrability.

# Lug Rig

- An evolution of Square and Lateen rig.
- Trapezoidal sail attached to a single Yard at the top.
- Many varieties.
- Simple rig setup.
- Two main types: Dipping Lug and Standing Lug.



# Gaff Rig

- An evolution of Lug rig.
- Trapezoidal sail set behind the mast with a spar at the top called the Gaff and one at the bottom called a Boom.
- Sail raised by two Halyards.
- Flexible sail type.
- Extra spars give options for setting sails.
- Doesn't require as high rig tension as Bermuda rig.



# Bermudan Rig

- An evolution of Gaff rig, is now the most common sail type for modern yachts.
- Roughly triangular sail set behind the Mast with a Boom along the bottom.
- Sail raised by a single Halyard.
- Easy to handle.



# Headsails

- Headsails is the generic term for the range of sails hoisted before the mast.
- Most common types are Staysails, Jibs and Spinnakers, though others do exist.
- Usually hoisted on a halyard on older vessels, though modern vessels often have roller furling headsails.

# Staysail

- Triangular sail shackled onto the Stay that keeps the top of a Mast from moving too far aft.
- Raised by a single Halyard
- Two sets of sheets: Port and Starboard.
- Very quick to set; useful for manoeuvring in confined spaces.
- Usually very strongly made so as to fly in most wind conditions.



# Jib

- Triangular sails usually hoisted from a Bowsprit to the top of a Mast.
- On smaller vessels with a Bowsprit, are often hoisted out to the end of the Bowsprit on a Traveller Ring
- On larger vessels with a Bowsprit (especially Square Rigged ones), are often hanked onto Stays in the manner of a Staysail.
- Two sets of sheets: Port and Starboard
- Cannot function as close to the wind as most Mainsails.



# Spinnaker

- Massive sails designed to supplement the Bermudan sail's relatively poor downwind performance.
- Cannot function upwind.
- Come in two varieties: Asymmetric and Symmetric.
- Asymmetric Spinnakers are usually mounted on a bowsprit and easy to Gybe.
- Symmetric Spinnakers can be sailed directly downwind but are more difficult to Gybe.



# Rig Types

We will now examine different mast and sail configurations and what they are called. Before we begin, however, these are the most common names for masts.

- Foremast: this is usually for the Mast nearest the Bow.
- Mainmast: this is usually for the largest or central Mast.
- Mizzenmast: This is usually for the mast nearest the Stern.



## Catboat

The simplest rig type: a vessel with a single Mast with a Mainsail of any kind.



# Sloop

A vessel with a single fore-and-aft rigged Mainmast. One Headsail.



## Cutter

A vessel with a single Fore-and-aft rigged Mainmast. Two or more Headsails.



## Lugger

Generic term for Lug rigged vessels with more than one mast. This is a three-masted Lugger, though two-masted Luggers are more common.



## Yawl

A vessel with two Fore-and-aft rigged Masts; a Mainmast forward and a small Mizzenmast aft behind the Rudder Post. Any number of Headsails.



## **Ketch**

A vessel with two Fore-and-aft rigged Masts; a Mainmast forward and a Mizzenmast aft before the Rudder Post. Any number of Headsails.



## Schooner

A vessel with two or more Fore-and-aft rigged masts; a small Foremast, a larger Mainmast and then up to five more masts roughly equal in size to the mainmast. Any number of Headsails. Has hundreds of varieties.



## **Brigantine**

A vessel with two masts; the Foremast being Square Rigged, the Mainmast being Fore-and-aft rigged. Any number of headsails.



## Brig

A vessel with two masts, both of which are Square-rigged. Any number of Headsails.



## Barquentine

A vessel with three or more masts; the Foremast being Square-rigged, the others being Fore-and-aft rigger. Any number of Headsails.



## Barque

A vessel with three or more masts of which all but the aftermost are Square rigged, the aftermost being Fore-and-aft rigged.



## **Fully-Rigged Ship**

A vessel with three or more masts, all of which are Square-rigged. Any number of Headsails.

# Why do vessels have different rigs?

- Larger sails generate more power, but become increasingly difficult to use.
- Splitting up the sail area over several masts leads to multiple smaller, more manageable sails rather than a single massive one.
- With multiple sails and masts the options for what sails to fly, where and when increase exponentially.

# What is the point of this presentation?

A vessel's rigging must work together with the hull to fulfil the purpose it was designed for. If you design a hull for upwind sailing and then fit it with square sails your rig and hull do not complement each other's strengths and the vessel will perform poorly. If you have a clear idea of what the vessel is supposed to do, design it so that the hull and rig work together to fulfil that purpose.