

# A MODERN ADAPTATION OF THE CHINESE JUNK

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**A**s a former officer of the French merchant navy, I have sailed the oceans for many years; and I visited China, Indochina and Japan many times. At the time, a few hundred traditional Chinese junks still existed.

One such junk in Hong Kong “swept me off my feet” and was to become the catalyst for my later work: it was a large trade junk of 37m loaded with cotton bales and concrete. I had the privilege to sail on board this junk several times, notably from Hong Kong to Formosa, unexpected storm mid-way included! I was sold on the concept: 6 knots on average, fantastic directional and hull stability and a very honourable performance when sailing close hauled.

Years later, after designing many different styles of sail boats: cutters, sloops and schooners, which were gratifying but did not add much to my research in naval architecture; I went back to the junk rig that had so impressed me; it needed to be reinvented. The challenge was to design a modern junk to suit modern construction methods, but without betraying the aesthetics and qualities of the traditional Chinese junk.

Aesthetics set aside, the characteristics of the junk rig are such that a holistic approach was needed to design a hull capable of working harmoniously and efficiently with a rig which does not correspond to any of our European criteria of sail design.

The Jonque de Plaisance hulls retain all the main characteristics of the traditional Chinese junk: shallow draught, centreboard, rear bridge replacing the cockpit and above all, the exceptionally efficient rig: bamboo-battened sails, flexible unstayed timber masts (strip-planked, no knots please!), a rig easy to manoeuvre on a spacious uncluttered deck; without mentioning the huge saving in deck hardware. I adopted the strip-planking construction method (based on Herreshoff’s) because it is hard to walk away from the appeal and natural properties of good timber, and the method is well suited to the amateur boat builder.

The Jonque de Plaisance is a cruising junk, designed to live on board, for long-term sailing. Therefore, everything has been done to achieve a maximum acceptable draught, whilst preserving the comfort of passengers: spacious poop deck and coach roof,

generous saloon and cabins often have their own 'bathroom'. The result is a cruising junk whose displacement is identical to those cruising sail boats offered by renown shipyards.

The Jonque's hull works very well even in heavy seas, her bow does not plunge into the sea (only spray wets her fore deck). It takes winds of 30 knots to wet it (not submerge it) and the side decks remain at 15–20cms above sea level. The line forms below the waterline are relatively flat so that, when sailing close hauled, the Jonque finds her balance near the bilge and remains there, with an angle of list of say 10 degrees – a very safe sail boat with excellent directional stability once the rig have been correctly adjusted.

The masts on the Jonques de Plaisance are unstayed and both have a forward rake. An appropriate distance (slot) between the foresail's leech and the mainsail's luff allows the two sails to function independently of each other. The forward rake on the foremast is quite pronounced and this is absolutely essential when tacking: pull the foresail back and the junk starts tacking of her own accord (Fig. 1). Release the tack line once the path of the wind is crossed, the sail returns to its natural state (Fig 2) and the junk resumes her course – pure Chinese finesse: the junk is self-tacking. The presence of a jib on a junk rig is a sure sign that something is amiss.

FIGURE 1  
TACKING  
SAIL PULLED BACK

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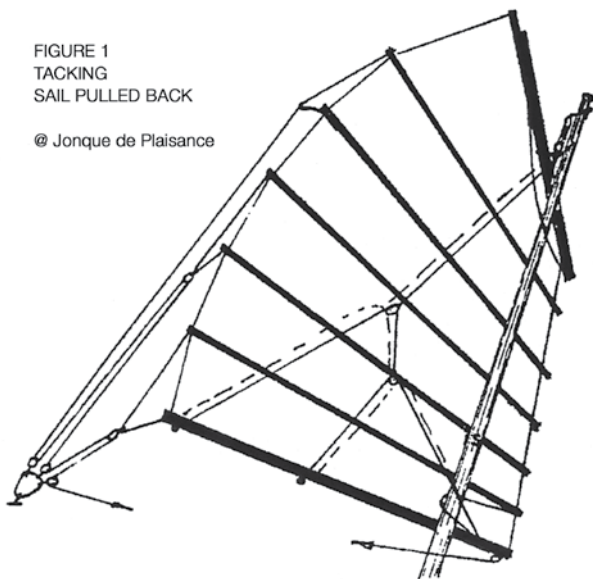
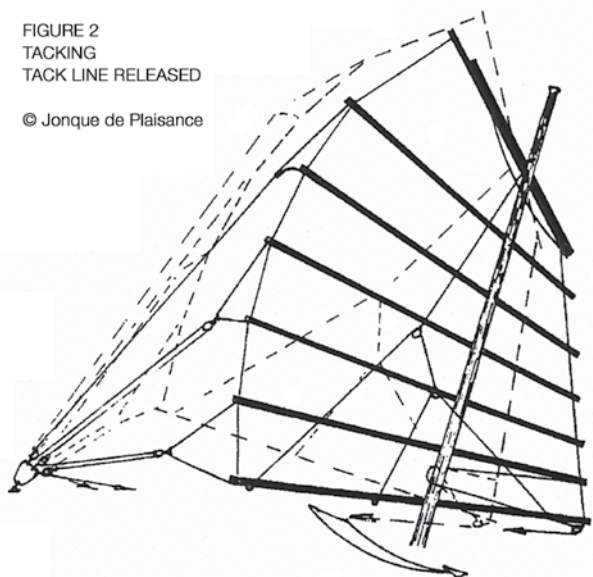


FIGURE 2  
TACKING  
TACK LINE RELEASED

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Traditionally, the Chinese sail is cut flat (no cambers) and bamboo battens are used to reinforce it. I have retained these characteristics with good reasons: bamboo is not only strong, it is flexible and it is this flexibility which gives the sail its ability to curve fully with the wind. Contrary to popular thinking, the junk sail is not and should not be rigid.

The bamboo battens must not be tied to the sail too tightly as this would impede the curving of the sail. For example, where added strength is required, the bamboo battens are doubled: the first bamboo is tied to the sail (leaving a small gap, see photo) and the second bamboo is tied to the first. The multiple sheets controlling the bamboo battens thus control the curvature of the sail. Once a sail is finely tuned, it never flaps regardless of its orientation and further adjustments are rarely necessary (the reason why solo sailors so often adopt this rig). The Chinese junk rig is full of resources and ingenuity. One last point: the Chinese usually set the sails on each side of the masts.

It is interesting to note that, even when the Chinese were able to obtain better fabrics for their sails, they did not modify their design in any way, having quickly realised that even badly torn, the junk sail functions very well. Other than peculiarities based on locality or intended usage, we are faced with the fact that in over a thousand years, the design modifications brought about to the design have been minimal.

The junk rig on the Jonques de Plaisance is probably the most faithful modern adaptation of the traditional Chinese junk rig that can be found today in our part of the world. The modifications I made to the rig are in fact minimal and were aimed at reducing the overall weight of the rig and simplifying its handling; for example the elimination of metal wires the Chinese are so fond of to secure the bamboo battens. I also removed a number of tack lashings around each mast, keeping only one starting from the first batten above the 'boom'. As stresses are evenly distributed at the extremities of each bamboo, lighter fabrics are sufficient (Dacron 270–300g/m<sup>2</sup>) and the sail area is set at its maximum for light weather since reefing is so quick and easy.

My belief is that, if we wish to adopt the junk rig for all its advantages, we need to adopt it in its totality. We need to experience it and understand its full capabilities before 'innovating'. There is a trend to adapt these marvellous sails to our western hulls and, in some cases, this is possible; but, if and only, if we respect the "why's" and "how's" of their forms, their surfaces and their placements.

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See also the Geoff's article on the handling of his 12.5m Jonque de Plaisance «Duma»



ideogram meaning junk

Often placed on the sail of a  
Jonque de Plaisance