

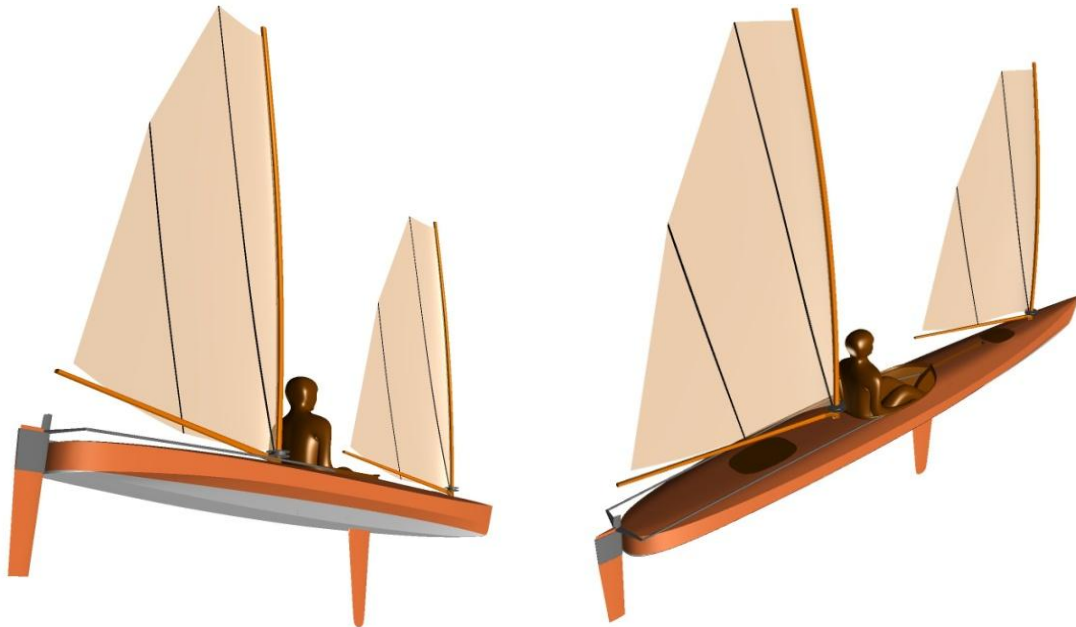
# Helsa Rediviva

a 50/50 paddle and sailing canoe



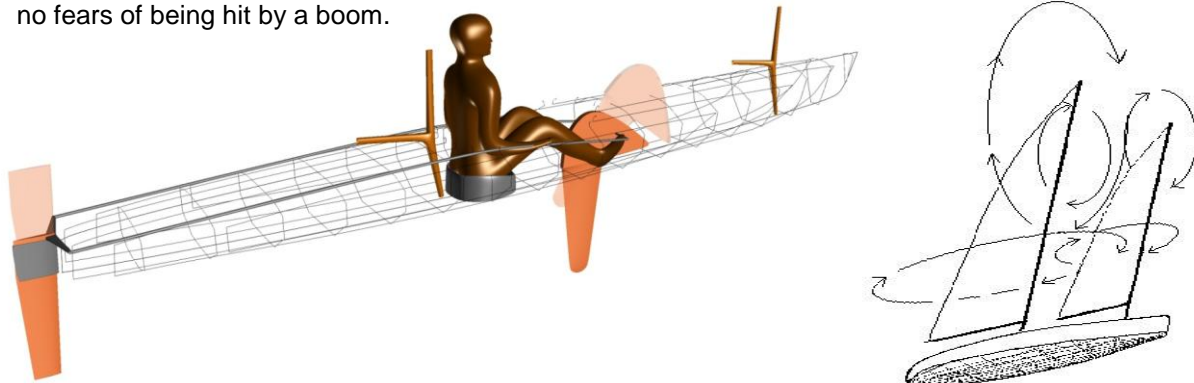
The background of this design is to create a modern boat with the same characteristics as my own "Helsa", designed by Carl Smith, built in 1882. It is a "50/50" paddle and sailing canoe, probably the most versatile type of boat that also can be easily transported on a car roof. "50/50" means a sailing canoe design which is equally happy being paddled with a double kayak paddle or sailed. Both aspects work really well.

The length of this one-man boat has been optimized to 5.2 metre; it is the most appropriate relationship between the length and the current total weight. The corresponding two-man boat would be about six meters long. The hull shape is partly based on experiences from my sailing canoes in the Swedish C and E classes, the development of rowing boats and kayaks for touring and exercise.



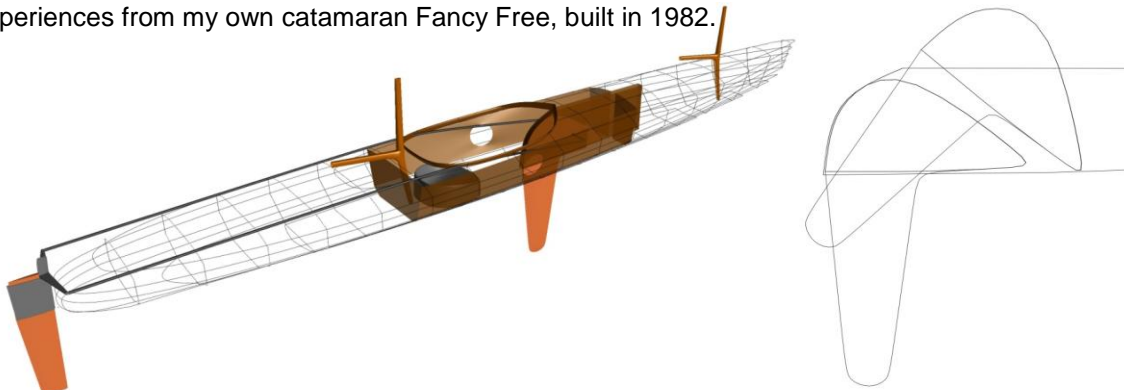
The hull is characterised by its wide stern and the chine along the freeboard. This gives a low wave drag, large dynamic stability, longitudinal and transverse, as well as dry ride in seaway, much more effective than a fully round-bottomed hull form. The trapezoidal midship section is selected because the boat is built in the plywood. This shape gives almost the same minimum wetted surface as a fully circular bottom. The depth is slightly less, leading to flatter lines in the afterbody. Freeboard height and width amidship is selected to get comfortable and effective paddling with a double paddle. A proper seat where the whole of the upper body is free to move also contributes to more efficient paddling.

By placing mainsail mast aft and the smaller foresail mast in front the weight is concentrated closer to the centre of the boat. This means that the radius of gyration is held down and the boat responds easier in the oncoming seas. Sail and mainsail are positioned far apart to allow optimum tuning of longitudinal balance. In addition, the cockpit is free so that the sailor can move freely and quickly, with no fears of being hit by a boom.



Mast and boom are mounted on a Y-shaped unit that rotates around an inclined axis. This avoids the strongly heeling forces that a twisted sail creates. Downwind the mast is tilted over to windward and the sail pressure point is then closer to the boat's centre line. The sheet forces becomes very small as the sails are balanced around the inclined axis.

The booms are positioned near the deck. This contributes to greater stability and less aerodynamic drag. In summary, the boat can go higher to windward with this configuration. On a schooner rig the headsail tip vortex contributes positively to the airflow over the mainsail. A ketch or yawl has less windward ability because the mizzen sail is located in the mainsail wind shadow. The sails with standing battens are reefed by rolling up on the rotatable masts. This system is based on the positive experiences from my own catamaran Fancy Free, built in 1982.



The L-shaped centreboard has the advantages of both the daggerboard and the centreboard, small opening slot in the bottom and still folding up when grounded. This design has been successfully used on my designs from the smallest dinghy up to a 13.5 meter cruising catamaran. The rudder blade depth can be adjusted for shallow water by pulling it up in a U-shaped cassette. The steering is done by hand or by feet with two rods to the rudder cassette yoke.

The canoe is built entirely in plywood according to the stitch and glue method. It is the simplest and strongest construction method with the shortest construction time. Inside the hull is reinforced with longitudinal and transverse watertight bulkheads. The boat is thereby completely unsinkable, stable and can easily be emptied in the event of capsizing. Most of the water flows out by itself when on her side due to side tanks. If the centreboard is ballasted and masts are watertight the canoe can be self-righting.

In summary, here we have created a very versatile, easily operated and safe canoe suitable for most needs.