

## Qajaq build 2006 - Dick & Tom

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While paddling our first boats, Tom and I discovered that they didn't precisely match the way we wanted to use them. Our first boats were built as described in the books by Morris/Cunningham for Tom's Greenlander and by Wolfgang Brinck for my baidarka. The resulting boats were relatively high-volume and had high back decks. In my baidarka it was very difficult to sit with legs spread against the gunwales because of the peaked deck beams. And even though the paddling characteristics of the boats were fine what we wanted were lighter, lower-volume boats for daytrips equipped with bulkheads and hatches both aft and front and low aft decks for easy layback rolls. Luggage space should be no more than necessary for a weekend at most. There also was a wish for higher cruising speed if possible.

With these demands in our heads we scoured the net, books and the brains of several people we knew. Tom went for a west Greenlander again, but this time with an aft deck that would be only 4 cm, (1.5 in) above the waterline and a width that went from 56 cm (22 in) to 52 cm (20.5 in). The idea for bulkheads and hatches came from Pavia Lumholt who we had seen demonstrate how to do this in Denmark the year before.

I had seen a boat by Harvey Golden, his 1819 Liapunova replica. His description of the handling characteristics made me very enthusiastic but the boat is very narrow and has a relatively high aft deck. That meant a partial redesign! I lowered the sheer in profile to 4 cm (1.5 in) above the waterline directly aft of the cockpit in a flowing curve, leaving bow and stern at the original height. Then I widened the hull by 11.5 % to 46 cm (18 in). A mock-up showed me to fit into that perfectly, narrower wasn't possible. The original flat horizontal deck I changed into a Greenland style deck construction. That allowed me to shorten the cockpit and made laybacks way easier.

In my boat hatches and bulkheads were drafted in as well, although that had to be done slightly different than in Tom's boat as we found out later.

This time we had taken a week vacation for building so we could get some decent speed in the beginning. The mother of a club member had the perfect space for building that we were allowed to use and where we could leave our tools lying around so we could use our time efficiently. The first day we spent selecting, buying, sawing and planning wood. Planing to thickness we did with a simple rig of an electric plane in a workmate. It actually worked quite well! Two weeks before we were donated the freshly cut trunk of an oak tree, that we had cut into boards and planed to thickness (6 mm, 0.23 in) for ribs.

The rest of the first week went into building the deckstructures of the boats. At high speed the western red cedar gunwales were planed and trimmed to size just as the deck- and hull stringers and the deck beams. Then the deck beams (fir for the footbrace (tukerumiag) and aft cockpitbeam (isserfik), western red cedar for the rest) were fastened using tenons and mortises.

The bow and stern blocks for the baidarka were made of red cedar and pegged and glued to the gunwales and the ends of the greenlander gunwales were kerf-cut using electric jigsaw and pegged. Then it was time to build the fir bow and stern plates of the baidarka, so the three-part keel could be sawn out in the correct curve. The last thing there was time for that week was to plane a flat surface to the keelparts so an ash rub strip could be glued on top.

Once that was done our week was out and we had to go back to working in the evenings again. From that moment on, more was done at home to keep things going. The first thing to do was planning the keel parts to shape and lashing the parts together over 5 molds to give the right curve. Because the red cedar is a very soft wood that would easily get cut by the lashings, I glued in ash dowels at the lashing sites through which a hole was drilled for the lashing. This worked perfectly so all lashings through cedar were done this way.

The molds also showed the locations of the stringers and the chine. Temporarily lashing a wooden strip over these places showed the hull shape and helped with determining the length of the ribs and how to bend them when steaming.

In the meantime Tom had cut out the bow and stern plates for the Greenlander and glued on a pine cutwater. They were lashed into place and the keel was bent over a mold and connected to them with pegs. Then we cut the oak for the ribs to width (25 mm (1 in) for the Greenlander and 8 mm (0.3 in) for the baidarka) and selected the best wood. That took some time so it took us a while to get to steaming.

We had invited some people over to see the steaming session and (off course) we had some ribs break on us (most of them actually). Tom was having far less problems with the wider ribs of the Greenlander, but it took me three sessions of steaming to get all 42 frames in. At the end I had 2/3 of all ribs break once or twice. Especially in the ends with the tight curves I had a hard time.

The next step was clamping the stringers into place and lashing them to the ribs and keel. That took me a full day, but at the end of the day the clean shape of the hull is visible for the first time! Once that's done we got to making the last two bent deckbeams, the *masik* and *ajaaq*. We laminated these from alternating layers of fir and western red cedar over a mold. After the epoxy had hardened they were cleaned up, the faces were planed flat and they were made to a perfect fit and pegged and lashed to the gunwales. We had to take good care to get a good fit with the gunwales while getting the height right as well. Lastly the deckstringers fore and aft were lashed into place.

All parts of the frame were then finished so only the loose cockpit rims still had to be made. They were made at the club in two sessions. We steamed and bent the 4 cm (1.5 in) x 1 cm (0.4 in) rims around the mold we had until at split with a loud crack. Luckily it turned out we could glue it up using epoxy. Tom's shorter and far rounder rim didn't give any problems. At home we laminated wooden flanges around the rims using epoxy resin. That goes rather easily and gives a very strong flange.

Then my rim turned out to be slightly wider than my boat! Because I didn't have any oak left and didn't want to redo it all, I cut out a wedge at the aft end of the rim and reglued with epoxy and bamboo skewers. Sanding the flange and rim took care of the last finishing. Then the rim got trimmed to 2.5 cm (1 in) height and drilled with 2 mm (0.08 in) holes at 1 cm (0.4 in) interval.

Getting on the skin was an adventure in itself. Tom had found some 300 grams (8 oz) cordura at a German firm. When we got the sample, it turned out to have a slightly fuzzy surface. I made a test frame and found that drapeability was good enough. Then took a torch lightly over the surface to get rid of most fibers and coated it using Coelan Boatcoating. It turned out the stuff had to be sanded, which was easy and went quite fast, after which a second and third layer gave a glassy smooth surface. We then decided to use this and group-ordered sufficient cloth for 7 boats of which most was for others. If I had known then what followed I would never have ordered this @#\$\$\*! cloth!

Tom and I wanted to dye these boats a nice yellow, so we dyed a testpiece using Dylon which is easily obtained here. That gave a slightly crumpled but even and deep yellow result. Then we dyed the cloth in a washing machine to get the same result, though slightly less deep in colour saturation. The crumpling gave some character to the skin (it remained vaguely visible in colour after being flattened).

Then the sewing of the bulkheads started. It immediately turned out the Pavia's method doesn't work for a baidarka with its multiple stringers. I cut out bulkheads from a piece of cloth that was large enough and made cut-outs around the stringers and keel. Then a long straight strip was folded over the stringers and keel and sewed onto the bulkhead along its contour.

When these bulkheads were put into place we started sewing the skin itself. The cloth was tightened over the hulls and temporarily fastened to the gunwales using pins. Then the bottoms of the bulkheads were stitched to the skin while we could still reach them.

The sewing technique was using a rolled seam as Morris does. That gives a very tight skin by itself while giving a very neat straight seam. In our case the nylon lines used to roll into the seam were fastened to stainless steel rings over which the cloth was sewn. That gave a very stable base for sewing on the hatches afterwards.

Other than in my first boat I decided not to cut the bifid bow open this time but rather sew the cloth over and through the split. Easier and more rugged. Then the cockpit rims were sewn on Greenland style, finishing the sewing.

Then we came to painting&hellip;I thought. First thing was to burn off the fuzz, which went well over the first three quarters of the hull. Then the wind blew the flame slightly longer against the cloth and a hole melted into it! Luckily it was in a place where I could reach it through a hatch to sew in a patch. So I cut the hole into a lenticular shape and stitched in a patch.

Then followed the first layer of varnish. For financial reasons we choose the same solvent based polyurethane cork flooring varnish we had used before. That wasn't the best choice. This far thinner varnish made every hair on the surface stand up and harden. The skin resembled sandpaper and, worse, it turned out to be far more difficult to sand than the sample I had tried! It took me 14 hours of sanding to get the skin smooth enough to my taste. Tom hadn't gone quite that far and had given up sooner. There followed 4 layers of the same varnish and a final coat of the far thicker, tougher and expensive Coelan Boatcoating.

Remained the mounting of the hatches and decklines. A fellow club member had cut a perfect circular groove into the plastic hatches to protect the threads against abrasion. I drilled holes through the groove at 1 cm (0.4 in) centres, through which the hatches got sewn onto the skin using 3M 5200 bedding compound. That's a messy job because needle and thread get covered with the 3M. The decklines were fastened using nylon webbing screwed onto the gunwales using stainless steel screws.

The most important lessons learned: buy a SMOOTH type of nylon and take the higher cost of the Coelan. It will save you a lot of work and frustration!

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