Some thoughts after the Tallship 2018 in Stavanger
.. and after experiences with sailing Frøken Sørensen and Ingeborg over the last years...

From Thu 26th to Sun 29th July, Stavanger was visited by the Tallship 2018 armada. The ships were quite a sight and the 3-days+ show was a fine event, in great weather. On Sunday, as the ships were departing, we decided to sail over and take as many photos of them as we could.

..my home waters, the Lundsvågen harbour at (1).

We headed out at 12 o’clock, sailing westwards to the inlet of the fjord (2 in the map) to Stavanger harbour. The wind was a good breeze from between SE and SW, with some howling gusts from time to time. To make it a bit less exciting, I decided to slow Ingeborg down with only two panels up, something I hadn’t tried in earnest before. The idea was to romp back and forth around point (2), taking photos - and avoid colliding with any of the other spectator boats (all but one motoring). Question one was: Will Ingeborg tack on only two panels? She surely did. We must have tacked 10-20 times only 2-up, and we came around nicely, every time.

After a while, it dawned to us that we had moved upwind quite a bit without really trying. We were too busy with manoeuvring and taking photos to notice. In the end we found that it would make more sense to sail up and back home via the harbour (3). Since the density of boats was gradually dropping, we raised another panel to set a grand total of 15sqm, and planned to meet the last ships just as they were leaving harbour. Now Ingeborg really came to life, and we sailed quite fast and close to the breezy wind. Only in the inner harbour did we set panel four, to help us through the calm patches in the lee of buildings. Then we went home (via point 4).
.. at 12:55, approaching point (2), looking NW, the sail reduced to two panels...

.. at 13:57, closer to town we passed the mighty 4-masted barque, Kruzenshtern...

How could that be?
After saying farewell to the last ship, and on our way home, we were on cloud nine. The ships were great to watch, but our biggest surprise was how Ingeborg had performed to windward
with so little sail up. I could understand how the super-nimble and directionally unstable *Frøken Sørensen* (*FS*) could tack on two panels, but *Ingeborg* is of a different breed: If you stop pushing the tiller halfway during tacking, she will stop turning, and then lose speed until she falls off and start sailing again. The point is that those two panels are powerful enough to give her the needed momentum to come about.

As for sailing 3-up, I had done that many times in *FS*, and now *Ingeborg* showed that she was equally happy under this top section. How can that be?

Over the years I have bored you folks sick with telling (bragging?) about my boats and their rigs. I have often been met with phrases like ‘apples and oranges’, ‘horses for courses’, ‘fjord flyers’, ‘over-rigged’ and ‘wrinkles’. I have also been instructed that my ‘2-D barrel only’ way of constructing the sail is not as good as more advanced (= complicated) ways. During later years a new ‘truth’ has been developed: Lower yard angles and shorter yards are more efficient or just ‘better’ than full-length high-peaking yards.

I had mostly accepted this. One reason for it was that *Johanna* was beaten quite easily to windward by mate Allan’s Nordic Folkboat, *La Barca*. That happened every time we met. I had also heard that good boats, like Slieve McGalliard’s *Poppy*, could tack inside 90°. On my *Johanna*, I had found it necessary to tack a bit outside 90°.

However, after some experiences I have had over the last five years in *FS* and *Ingeborg*, I am less willing to give in so easily.

- *Frøken Sørensen* outperformed every other sailboat up to 24’ to windward, except the Albin Express (*FS* is 6.5m).
- Last year, we in *Ingeborg* met an Alo 28 (sister of *Johanna*), setting good, new sails. In spite of that, we easily overtook her simply by tacking inside the bigger boat. “Aha! So it was the boat (keel, me thinks) and not the rig that failed in *Johanna*?”
- This spring, after I fitted *Ingeborg* with a new wind indicator with vanes set at 32° from the centreline, I suddenly was able to find the right tacking angle quickly, and now I too tack inside 90°. I don’t pinch either; I really sail.

Take a look at the diagram of *Ingeborg*’s rig (overleaf). It shows both the BR and my JR, and it shows the JR reefed to only three panels. Is there something wrong with that yard - too pointy, maybe? Really? Look at the shown sail area above the mast top and compare it with the tiny triangle of the BR mainsail. The sail area of *Ingeborg*’s JR spreads out rapidly, up there. Moreover, look at the 70° yard. It only lacks one degree on being parallel to the forestay of the original rig. This is why I regard the yard of my junkrigs to be an extension of the luff, and this is why I always cut a bit camber in the top panels. The telltales at the leech of the top panels clearly indicate that there is attached airflow behind those panels.

I think this is the secret to the performance of these sails: All the panels are producing good drive, *with attached airflow*.

(...or else, *Ingeborg* would not have performed so well when sailing only 3-up...)

3(7)
Note that this 70° yard angle stays constant down to, and including, three panels set.

Ingeborg’s as-built sail, showing how well it makes use of the 9.5m mast height.
So what about the other factors; my barrel-cut, and Amateur method B, compared to more sophisticated ways of constructing the sails? Quite frankly, I think there is not much between them as long as the same camber is chosen. Adding broadseams to the barrel cut will probably not speed up the boat more than two whisky drams would speed up a barrel of beer.

.. at 14:51, *Ingeborg* reaching for home, 4-up.. When watching the top section, one may wonder why those two top battens don’t do more harm to the sail’s performance. I thinks the answer must be that the most important things happen on the leeside of the sail.

.. at 14:51 Approaching home (at point 4 in the map), tidily reefed...
Other factors are a lot more important, such as good helmsmanship, correct sheeting, correct twist in the sail, a clean bottom, a low-drag propeller, and last but not least, good sail-to-boat balance to avoid using the rudder as a brake.

**Conclusion:**
Until the opposite has been proven, I claim that the Johanna-style version of the HM-rig, sewn with camber in all the panels, assembled in the barrel-only fashion and using **Amateur Method B**, will be as fast as any other JR with the same mast height. Moreover, I claim that it will be so at any state of reefing. I may well be proven wrong on this, but I no longer buy armchair claims.

Stavanger, 31th July 2018,

*Arne Kverneland*

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PS, 31.1.2019:
It appears that my conclusion above sometimes has been interpreted to be a firm statement that the Johanna-style rig simply is superior. That is not *quite* what I meant. It would not surprise me the least if a newer JR-design would outperform the Johanna-rig to windward. My hunch is that my boat with the plain, cambered-panel JR, will struggle against a sister boat with **Sliève McGalliard**’s Split JR, both to windward and (even more) on a reach. Moreover, these days, **David Tyler** is working on his hybrid JR-wingsail design, to be fitted to his Hunter Duette, *Weaverbird*. This could well end up as a hot upwind performer as well. Still, I stand by my conclusion, and let it be a challenge to you fellow rig-fiddlers. I am confident that the Johanna-rig will still play in the premier league, if not leading it.

Sooo, please, let us not be too serious about this. The article above was written by an *enthusiast*, right after coming home from a glorious day on the fjord.

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PPS: In case there are new readers who don’t know the boats I have been talking about, here they are:
Ingeborg, 7.87m, 35sqm (mine 2014 - )