

Vane Sailing School Part 2

by David Mathers

This is the continuation of the articles about using vane gear, especially for people who are new to vane sailing and wish to understand it. People who have felt that they would like to learn Vane sailing but felt confused by its apparent complexity. This is for you, all of what was in articles one and this article, number two, are applicable to all versions of vane gear. Article three, in the next edition, will be more specific to the Ezi-Built vane gear by Graham Reeves, described in Turning Pole No 26.

In Part 1, we looked at the basic principles of the vane gear and how it worked for sailing a reach. We know how to do it now, but let's look at what the vane actually does as the wind changes direction.

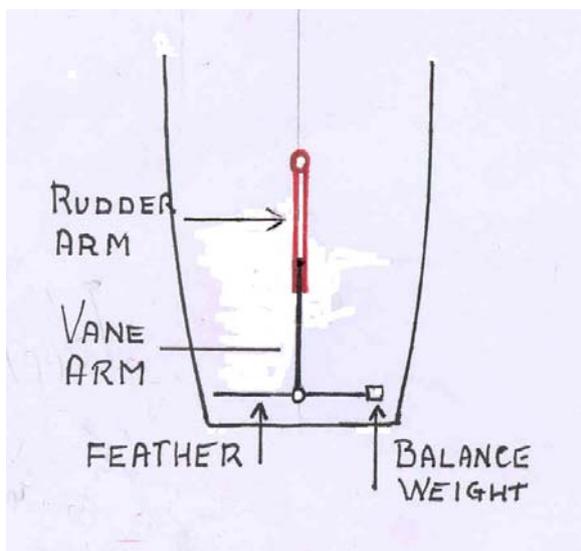


Fig 9

Fig 9 shows the parts that we are familiar with from part 1, the feather, the balance weight, the vane arm going forward, the rudder arm (in red) coming back with the rudder underneath it.

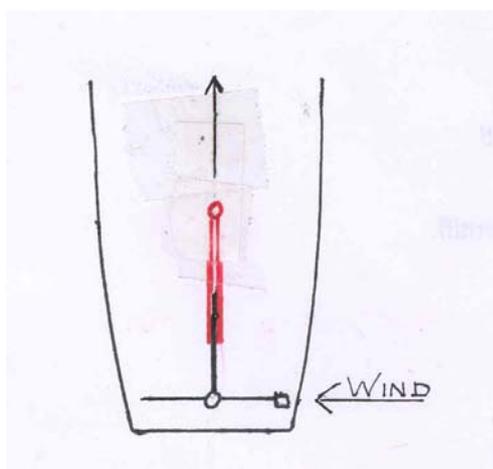


Fig 10

Fig 10 is the starting point that we are used to. The boat on a reach with the wind coming from the east or the starboard side, the boat sailing straight ahead, north. If a gust of wind comes from the north-east then the vane will be blown like a weather vane to the position in Fig11.

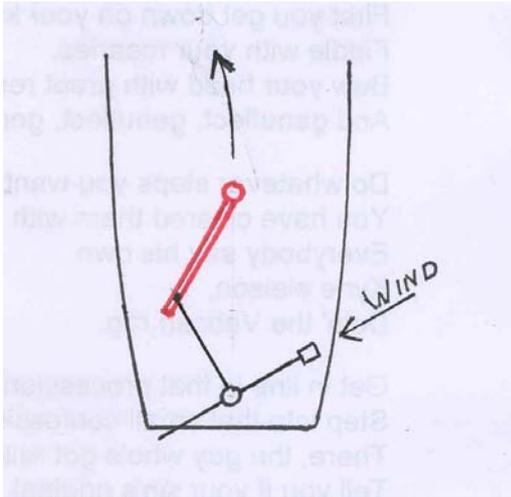


Fig 11

The vane arm moves the rudder arm, connected to the rudder. So that the rudder steers the boat to port until it settles in the position in Fig12.

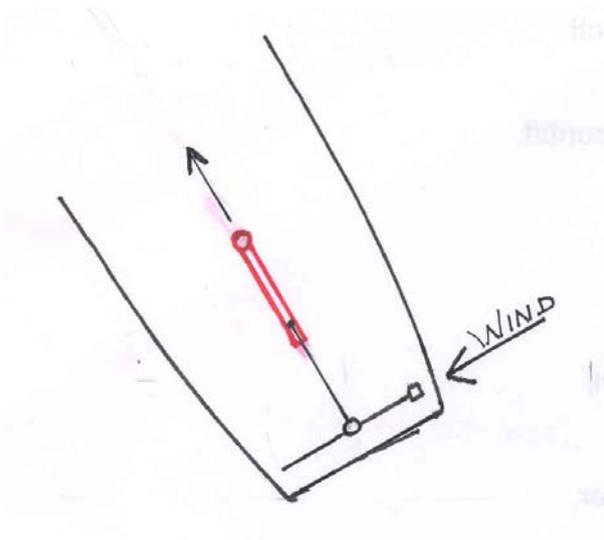


Fig 12

As the gust passes, the wind returns to the east and the vane and rudder arm take up the position in Fig13.

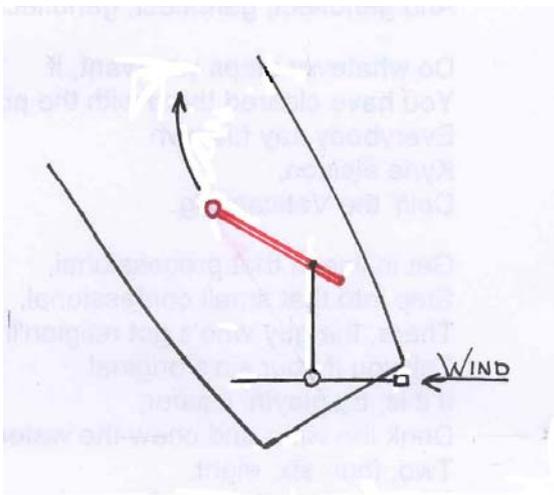


Fig 13

The rudder steers the boat to starboard so that it will be back as in Fig 14. Which is the same as the starting point, Fig 10.

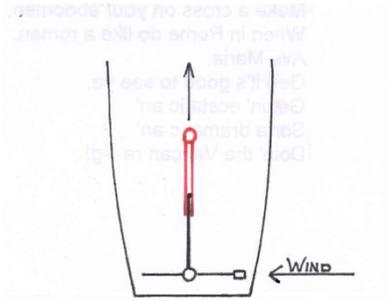


Fig 14

So we have seen how a gust of wind blows the vane feather, which steers the boat onto a new course until the gust stops and the wind returns to its original direction. Then the vane steers the boat back onto its original course. Remembering that the vane steers the boat at a constant angle to the wind, not on an exact course to the bank.

We have now examined the reach in some detail. So let's go on now to look at a run, that is with the wind coming from directly behind the boat. You set the sails out to be at almost 90 degrees to the boat. Now the vane; do you remember when I describe setting the boat for a reach, I said, "rotate the vane gear so that the balance weight is pointing directly into the wind". The same applies here. Rotate the vane gear so that the balance weight is over the back of the boat and the feather is pointing towards the mast, with the rudder straight ahead. As in Fig 15 .

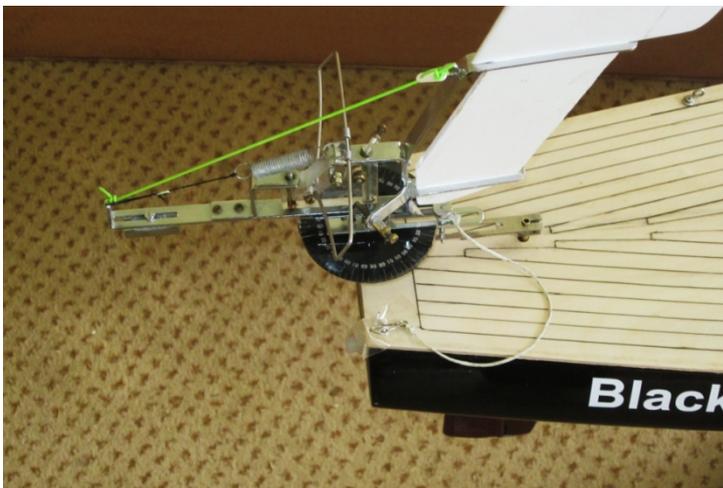


Fig 15

As the main sail is over one side, this has a very slight tendency to affect the course of the boat. If the boom is on the port side, there is a tendency for the boat to turn to starboard. So if you want the boat to go directly down wind, "gull wing" it, so that the jib is on the opposite side of to the boom to counteract it.

If you feel so inclined, you can do a similar set of drawing Fig 10 – Fig 14 to see how it works for a run. (When I first started vane sailing, I thought that when the wind came from the opposite direct,

then everything would be the wrong way around and it wouldn't work. But I was wrong, it does work).

So we have looked initially at "reaching" and now at "running", I am sure that you can work out what we do for an intermediate position such as "broad reach" where the wind is coming from behind but at 45 degrees. Pull the sails in a little from a run, and set the vane with the balance weight pointing directly into the wind, that is about 45 degrees as in Fig 16. Check that the rudder is straight ahead.

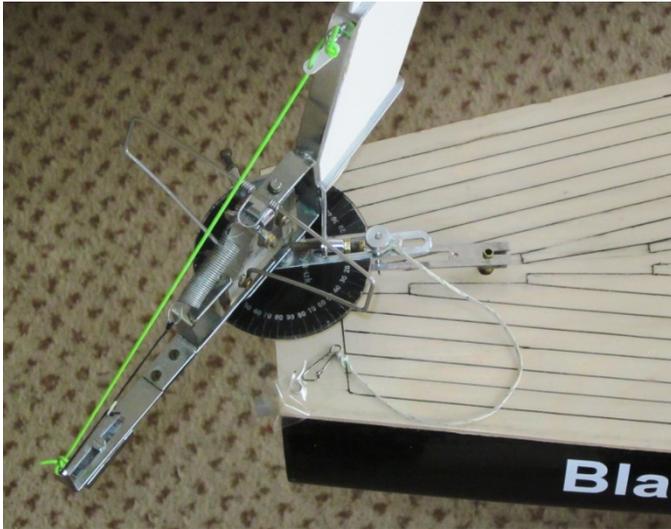


Fig 16

Now to the final point of sail, close hauled. When you try Vane Racing, it is carried out by racing boats in pairs the length of the lake and then back again. Ideally the wind would come directly down the length of the lake so that one leg is a run and the other is tacking up into the wind. Scoring is 2 points for the winner of the "run" and 3 points for the winner of the "upwind" or "close hauled" or "tacking" race. So you see how important the up wind leg is (more points). That is why I have left it until you have already learnt a bit about vane sailing.

As I am sure you know, a boat can't sail directly into the wind, the best that most of our boats will do is about 45 degrees. So from what we have learnt already, you would assume that we would pull the sails almost all the way in, then set the vane gear balance weight to point directly into the wind, at 45 degrees. You are almost right!

Let me digress a minute. Imagine you are in a car with your head out of the sunroof. It is a warm summers day with a wind coming directly towards the car front at 10 mph. If the car drives slowly forward at 5mph then, for you in the car, it will feel like a 15mph wind coming straight towards you.

Now let's think of the car driving across the wind. The wind is still 10 mph and the car is still travelling at 5mph but this time at 90 degrees to the wind direction. As you have your head out of the sun roof, the wind will feel as if it is coming partially from the side. If you want to do the maths, it is 11.2 mph at an angle of 64 degrees to the angle of travel of the car. This change of direction of the wind, when the vehicle that you are in moves, is called "Apparent Wind".

Going back to our vane gear, when we want to sail close hauled, into wind at an angle of 45 degrees, we have to allow for this “apparent wind” change of direction. So we set the vane, not to the expected 45 degrees but to about 35 degrees, Fig 17 .That is with the balance weight pointing about 35 degrees from the centre line of the boat and, as we have said already, with the sails pulled in quite tight.

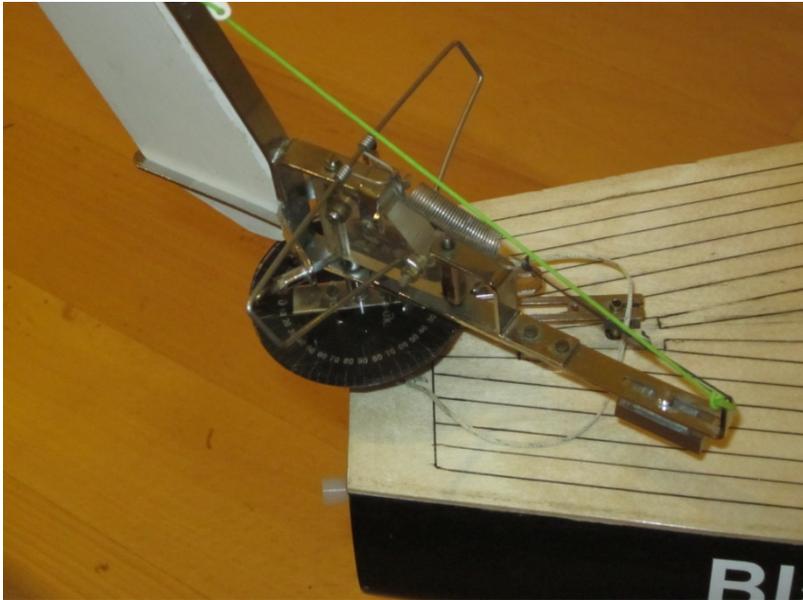


Fig 17

When we are sailing on other courses, such a reach, there is also an “apparent wind” effect but it is quite small so for practical purposes, we ignore it.

Going back to sailing “close hauled”, I have used the phrase “about 35 degrees”. This is because it varies between boats. An older boat it may be as high as 40 degrees, for a more modern boat it may be as low as 30 degrees. You can only find this by sailing your boat close hauled, starting at 40 degrees and slowly reduce it until the boat stops making forward progress. Increase it a bit. Now play with the sail settings to see if you can get it to go faster. As the boat will hopefully now be travelling faster, the “apparent wind” effect will have increased so see if you can reduce the vane angle slightly.

Repeat the above paragraph until you can’t improve. Then come back on a day with a different strength wind and do it all again. It is quite simple to do, be methodical and make a note of the best settings for your boat, for future use.

So we have looked at the reach, run, broad reach and close hauled. That is all of the points of sail covered. In the pictures, you have probably noticed the green elastic and springs on the vane gear, these are for the next article when we talk again about sailing close hauled and sailing “fixed” or “broken” and how to “guy”.

The photos in this article are of Black Prince, one of the boats that you will be able to practice with. It came from MYSA for a very reasonable (small) price when they were having a clear out. I took the flaky Formica deck off, repaired the beams underneath, put a 1.5mm ply deck on and suitably lined it. The fittings I made from bent stainless steel wire as was common at the time. The mast came from SailsEtc and rigging I bought from Nylet but they are available from most of the suppliers. Plus

a big thank you to David Bell for making the sails. See some pictures of her sailing in the report from Birkenhead, the first Vintage meeting that we have held there, on April 2016.

In Charles's page.

Vane School will be running through out the summer at most our Sailing Days, but David won't be able to take the boats to every event. So check on the web site for exact details. David is also willing to take the boats etc. at other times and places, contact him to make arrangements. Contact details inside the front cover under webmaster.

The vane gear used for Vane School, Graham Reeves' Ezi-built vane gear, initially in TP 26 is now also on the web site under Resources – Plans. With an additional plan of the assembled vane gear.