

BREEZY BUSINESS

Nowcasting In Regatta Competition

by Mark Powell



In my last weather article we looked at what causes some of the most common local winds for general boardsailing conditions and how to recognize them through Nowcasting. Remember "nowcasting" is the observation of current weather conditions from your board while sailing, and the simultaneous deciphering of that information to enhance your boardsailing performance. Now let's look at some of the ways that we can use nowcasting to improve our performance in competition.

Perhaps the most important attribute a good racing sailor can have, after boardhandling skills and a working knowledge of the rules we compete by, is the ability to determine wind shifts. If you can correctly observe the occurrence of a wind shift, and properly apply this knowledge to your tactics in the race, the benefits can be enormous. Time and time

again we hear sailors after a race and it can seem like they are speaking another language. "Yeah, I tacked out to the layline too early, didn't get the header I was looking for, and got hammered," or "I sailed into the header a little bit further so I could tack and be on the inside of the lift." What are these people talking about? Automobile parts? Hitch hiking? In this article we'll look into the different types of wind shifts; what causes them, how to observe them and how to use them to improve your tactics during different portions of a typical race over a triangular course.

TYPES OF WIND SHIFTS

The three basic types of wind shifts are illustrated in figure 1. The most common type of wind shift is the *oscillating* shift. As the name implies, the wind oscillates back and forth in time. Sometimes these shifts are only

five or 10 degrees and very subtle and difficult to recognize. This happens in stable onshore winds when the water is cooler than the air such as the sea breeze. At other times the shifts can be as much as 20 to 30 degrees and can slam dunk you if caught unaware. These are usually in unstable offshore flow when cool air is moving over warm land and water such as a northwest wind after a cold front passage.

The next type of shift is the *persistent* shift. This shift is caused by some type of weather system moving in or a local wind gradually developing. This shift does not oscillate but either: 1. suddenly shifts and then stays in the same direction or 2. gradually continues to shift clockwise (veering) or counterclockwise (backing).

The last type of shift is the *geographical*. This shift is caused by the way the wind flows around the land topography. Examples of geogra-



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phical shifts are the increase of wind as it channels through a cut between two islands, or the bending of the wind around a point.

In any kind of wind shift not only does the wind direction shift, but the speed can also change. In stable flows the gusts and lulls are only 20 to 30 percent higher or lower than the average speed. In unstable flows we can expect to see gusts that can be as much as 100 percent higher than the average wind. This is because

unstable flows mix down winds from higher levels which are usually much stronger and have a different direction than the surface winds.

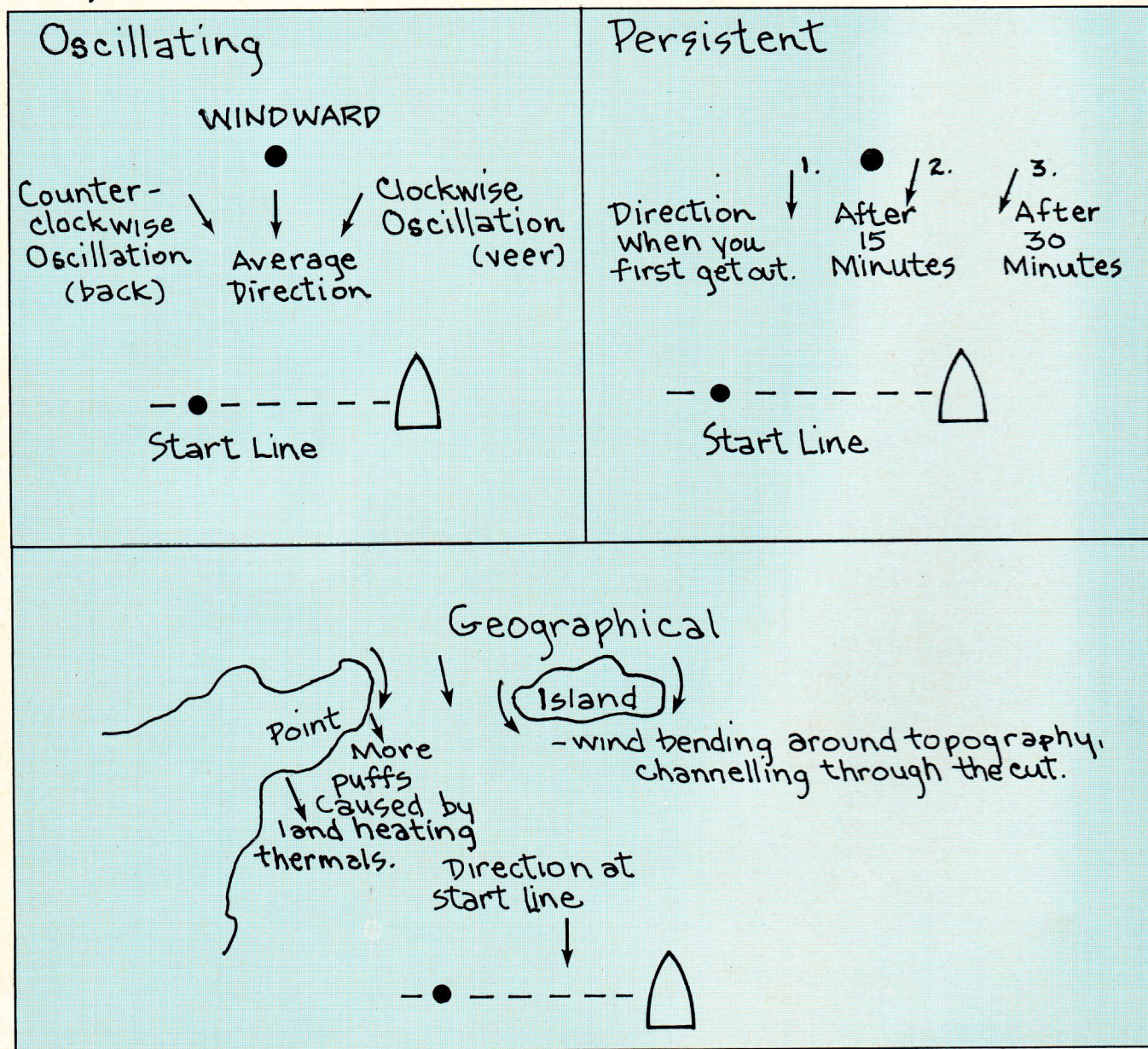
Most dinghy and ocean racers have the convenience of a compass to tell them when the wind shifts. Compasses are not practical on a board and besides they cost too much! How then, can sailboard racers tell wind shifts? In order to find shifts from your board, you have to improvise by using nowcasting and your own sensors (your eyes). When sailing upwind or closehauled towards a windward mark, for example, the wind can shift one way or the other, either to the left or the right. Any shift that causes you to be

able to point closer to the mark is called a "lift." Any shift that causes you to have to head down away from the mark is a "header." You can hear these terms at any sailing race anywhere in the world. Some of the world's top racers can tell whether an approaching shift is a lift or a header just by looking at the pattern of the wind on the water surface. For the rest of us however, and with no compass to tell us whether we've been lifted or headed, we have to rely on landmark bearings and the position changes of our boards with respect to the boards around us.

BEFORE RACING

When first getting out to the race

Figure 1. Types of shifts



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course before the start it is a good idea to get out early to warm up and get an idea for how the wind is behaving. Stop at the leeward mark and/or the starting line mark and act as if you are rounding it to go upwind or start. Make a mental note of any landmarks that you are heading for while pointing as high as you can, as if you were racing (see figure 2). Sail for a couple of minutes and note how much the wind is shifting by noting how

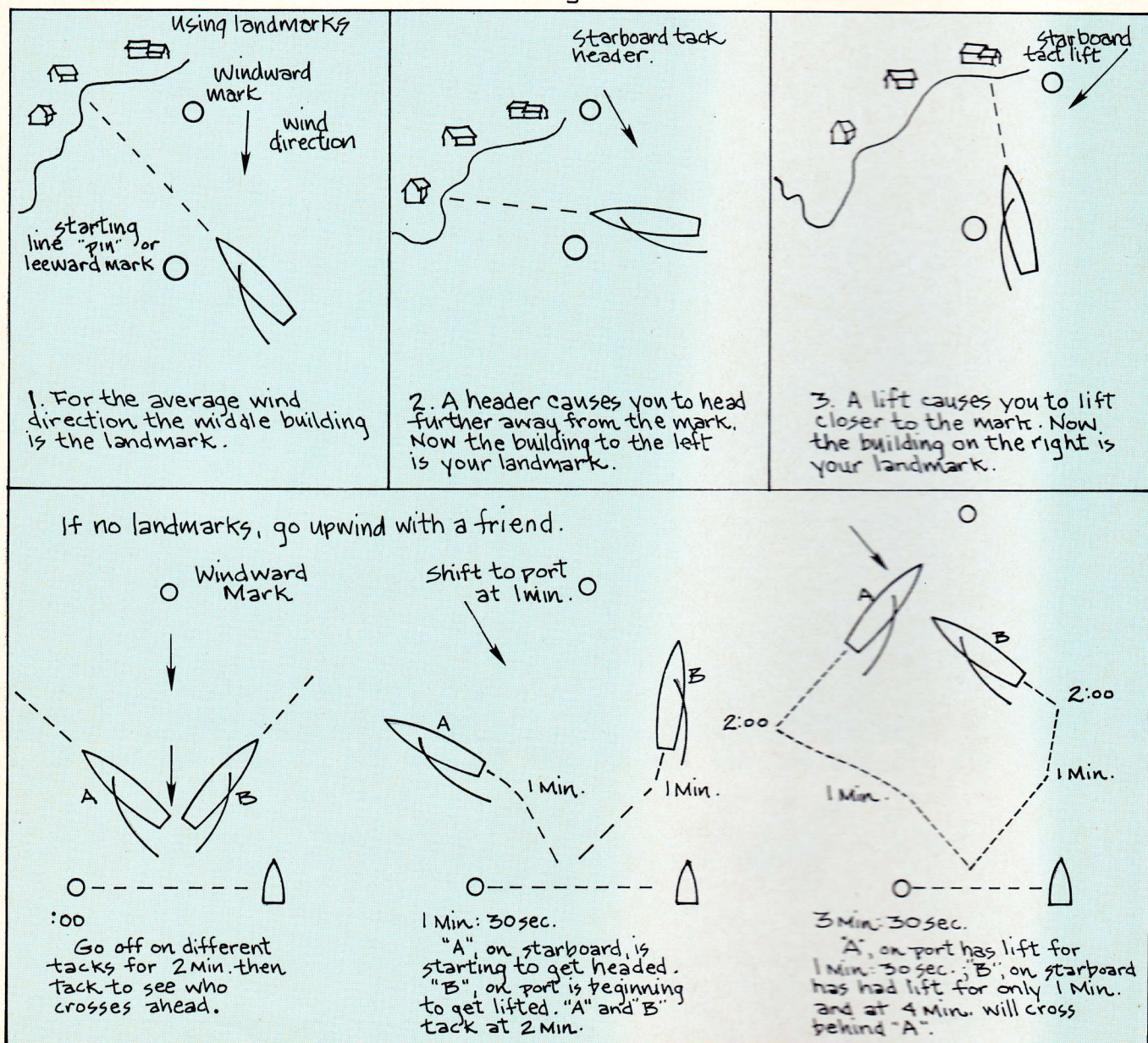
much your landmarks change. Return to the mark and then go off on the other tack and repeat it for landmarks on the other side of the course. If you have time, repeat this again on both tacks. This exercise will let you know the size of the shifts and how often the wind is oscillating. It will also give you an idea as to whether one side of the course might be influenced by a *persistent* or *geographical* shift. Unfortunately, some race courses will not have handy landmarks to observe on the shore while sailing upwind. If this is the case then it is helpful to have your training partner, or someone that you'd really like to know better, go out early with you to check out the wind.

Ideally this person should be about the same speed as you or slightly faster, rich, and good looking. (Well, one out of three ain't bad.)

As soon as you get to the race area, start upwind on opposite tacks for two minutes and then tack. After two minutes on the new tack whoever crosses ahead most likely received a favorable wind shift or lift that enabled them to sail farther upwind than you in the same amount of time. This process is indicated in figure 2. Now switch sides and repeat the process a couple more times, if time allows.

If your buddy crosses several lengths ahead of you each time after several of these exercises, then he or she is just faster than

Figure 2. How to tell if the wind is shifting.



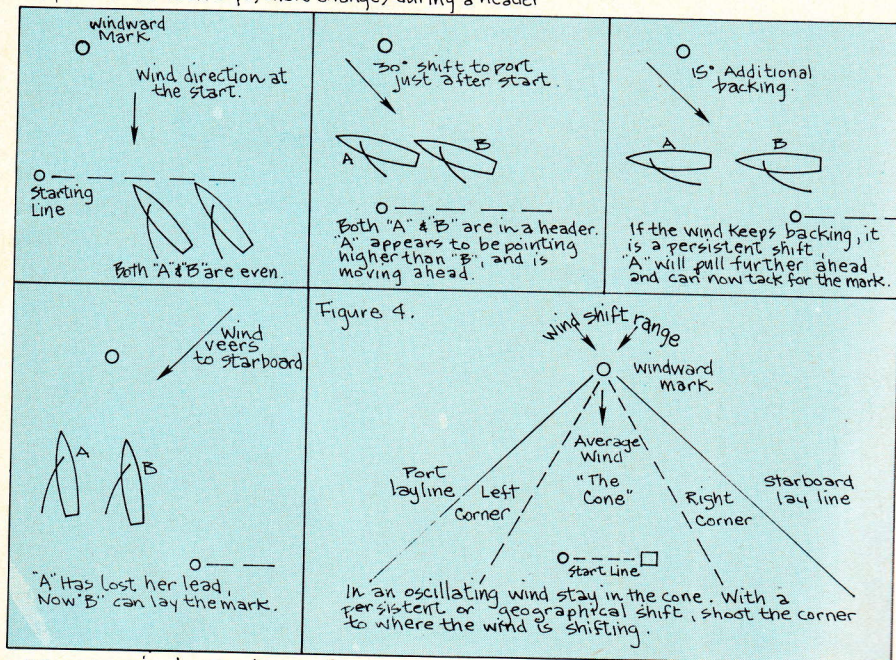
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you and you may have to adjust your sail or try someone more your speed. If the two of you are fairly equal, you may notice that whoever went to one side of the course

first made more ground. If that is the case then that side of the course is favored due to a geographical or persistent shift, or perhaps due to different current. If you and your buddy keep switching the lead when you cross, then no particular side of the course may be favored and the wind is oscillating. Whatever the cause, the important thing is that you go out and experiment before it

counts in the race. The key to sailing well upwind in an oscillating breeze is to keep an eye on the windward mark and stay on whatever tack has you pointing closest to it. This means you have to tack whenever you are being headed. Remember a header causes you to point further away from the windward mark. Once you tack, you will be on a lift and pointing closer to the mark.

Figure 3. Relative position changes during a header

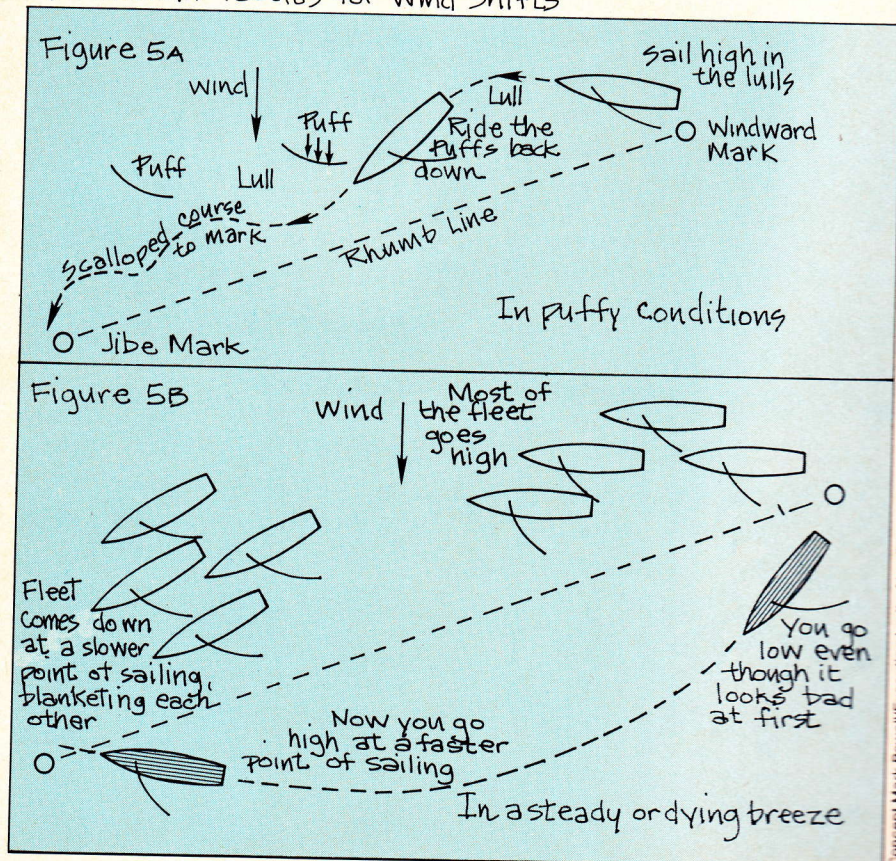


ON THE COURSE

In a race, it is easier to tell if you are being headed or lifted by looking at the boards around you and how your positions change with respect to each other. For instance, let's say you just got a good start at the pin end of the starting line and there are several boards on your weather quarter (that's nautical talk for being slightly behind and to windward). Suddenly you look over your shoulder and it looks like you are pointing higher than the other boards (see figure 3). In reality you are all sailing into a header and the relative positions are changing such that it looks like you are pointing higher. The thing to do, if it is an oscillating wind, is to tack as soon as you can to be on the lift. If it is a geographical shift or a slow persistent shift you may want to sail into it further until you reach the layline in order to take full advantage of it to sail the shortest distance to the mark.

The layline is an imaginary line indicating the position where you could tack and be pointed toward the mark on the new tack. Sailing to the layline is known as "banging the corner" or "going for the big one." It can either pay off dramatically, or, if you misread the shift and the wind oscillates back over to the other side, you can get badly burned. Therefore, in an oscillating wind, you do not want to bang the corner or go too far to one side of the course. It is much better to watch the mark, watch the other boards, tack on the headers, and sail up the middle of the course. Graham Hall, a former top collegiate sailing coach, called this "staying in the cone." In other words, don't sail directly to the layline, but stay in the cone shaped area between the laylines for the average wind. The larger the oscillations in wind direction, the

Downwind Tactics for Wind Shifts



Concept Mark Powell/Execution Lorita Atwell