

## PLAYBOOK SERIES #3

Issue 130

### Downwind Strategy & Tactics

Running makes up roughly half of most races we sail these days, so to be successful you need a repertoire of proven downwind strategies and tactics that will work for all types of boats across a wide range of conditions. That's what this issue is all about.

For several reasons, runs are different and even more challenging than beats. First, there is a lot more choice about the angle and speed you sail. You can go high and fast or low and slow and still have about the same velocity-made-good to leeward. This makes it harder to find the groove, but gives you more strategic and tactical options.

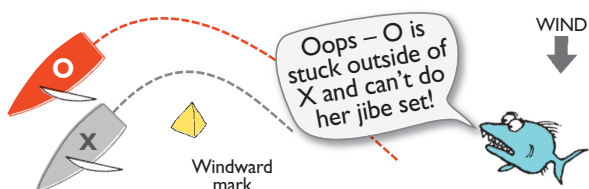
Second, it's harder to feel and see the wind on a run. Your apparent wind is a key performance factor downwind, but it's a bit elusive because a) it's coming from behind; b) it changes frequently in strength and direction; and c) it is often quite light because you're sailing in the same direction as the wind. It's very important to have a feel for the wind on runs, but it's often hard to get a handle on this.

Third, many of the standard rules of thumb for runs are opposite to the rules that are so familiar on windward legs. For example, instead of tacking on the headers so you can sail on the lifts, downwind you should jibe on the lifts in order to sail on the headers.

This third issue in our Playbook Series is full of plays to help you be more successful downwind, both strategically and tactically. Turn the page to see more Xs and Os! •

#### PLAY 1: Begin each run with a plan

If you want to perform well downwind, both strategically and tactically, you have to think ahead. Like every other leg, runs almost always go better when you minimize the number of decisions you have to make on the fly. Before you get to the windward mark, therefore: 1) find the leeward mark; 2) look at the positions and actions of all other boats; 3) think about what the wind will do on the run; and 4) make a plan for how to begin that leg. Then follow your strategy! If your plan calls for a jibe set, for example, don't round the windward mark overlapped to windward of (outside) another boat.



Jacqueline Campbell photo

## The psychology of racing downwind

Runs are fun for the boats behind and challenging for boats ahead because, unlike beats, they tend to bring the fleet closer together rather than stretch it apart. The boats in the back get puffs first and are often able to bring this pressure up to the leaders. And tactically, the boats astern can use their wind shadows to slow or control the options of boats ahead.

If you're fortunate enough to be one of the leaders around the windward mark, keep pushing. It's easy to relax when you turn the corner because the boat doesn't heel as much on a run and crewmembers have

more freedom to move around the boat and grab things like drinks and food. But don't let up! For the reasons I just described, your position in the race is threatened more than ever when you head downwind and the rest of the fleet is on your breeze.

If you're not doing as well as you want when you round the windward mark, remember runs offer a great chance to catch up to or pass boats ahead. So keep working. Follow your overall strategic plan for the leg and use tactical weapons (e.g. your wind shadow) only for boats close ahead that are in your path.

*One thing that runs share with beats is the need for a strategic plan that will help you get to the leeward mark as quickly as possible. This should include information about wind pressure, wind direction, current, waves and the layout of the course (i.e. the orientation of the course axis to the wind direction). Once you have a strategic plan, use boat-on-boat tactical moves to help you follow that strategy amidst the fleet you are trying to beat. Tactics slow you down, though, so use them only as necessary and almost never as an end in themselves.*

### STRATEGY

is the plan you make for getting to the leeward mark as fast as possible in the absence of any other boats. It's the course of action that you would choose if you were sailing around the race course against the clock, taking into account factors such as wind, waves and current.

### TACTICS

are the boat-on-boat moves and maneuvers you make to follow your strategic plan. Tactical maneuvers help you stay in control of your race and stick to your gameplan when you are fighting against a fleet of boats nearby.

### PLAY 2: Beware of moving laylines

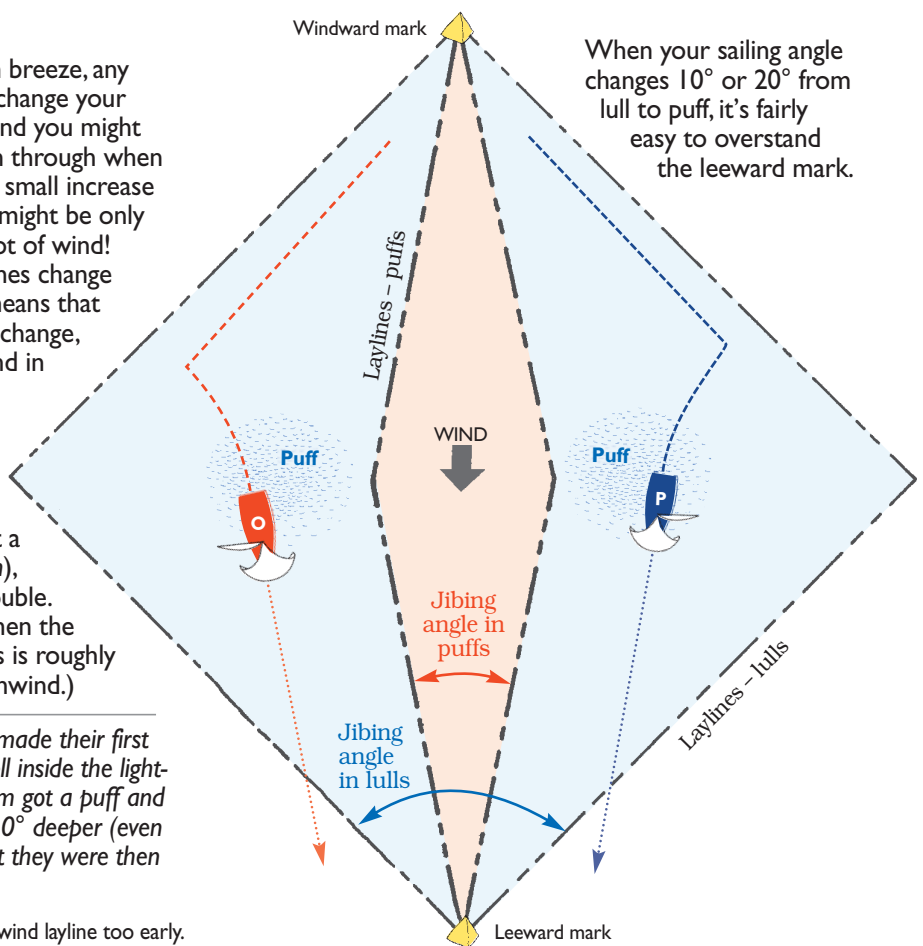
When you're sailing on a run in a light to medium breeze, any small increase (or decrease) in wind velocity can change your laylines dramatically. For example, in 6 knots of wind you might have a jibing angle of 80° (the angle you must turn through when going from one jibe to the other). But if you get a small increase in wind velocity to 7 knots, your new jibing angle might be only 60°. That's a 20° change due to just one more knot of wind!

Whenever your jibing angle changes, your laylines change correspondingly. A 20° shift in your jibing angle means that each downwind layline will move 10°. That's a big change, but it's not unusual when you are racing downwind in light and puffy conditions. In fact, changes in wind velocity have a much bigger impact on downwind laylines than they do on upwind laylines.

The important thing is to be aware that laylines shift in puffs or lulls and plan accordingly. If you are just part way down the run and you get a puff that lets you sail below the mark (see diagram), then you probably went too far and may be in trouble. (Of course, downwind laylines will also change when the wind shifts, but the effect of a windshift on laylines is roughly the same whether you are sailing upwind or downwind.)

*Both O and X started this run in light air. When they made their first jibe about half way down the run, both boats were well inside the light-air laylines to the leeward mark. But then each of them got a puff and this extra velocity allowed them to sail about 15° to 20° deeper (even though the wind direction did not change). That meant they were then overstanding the leeward mark by a lot!*

• See page 11 for 5 reasons why you shouldn't get to a downwind layline too early.



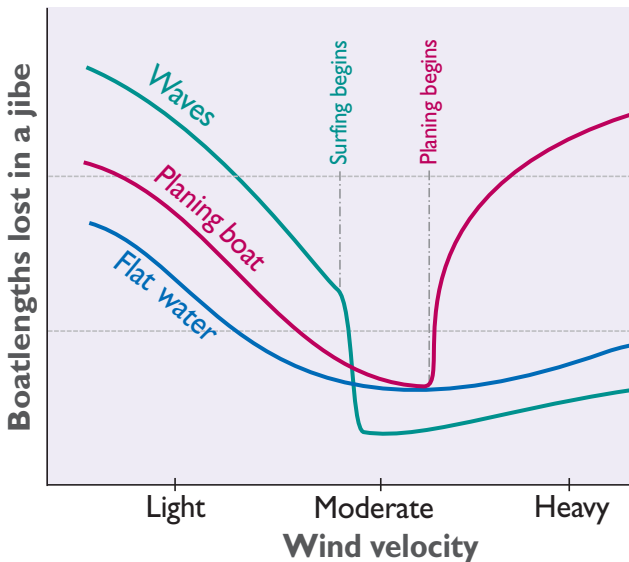
### PLAY 3: Take into account the cost of jibing

The cost of a jibe is different for every combination of boat, crew, wind velocity and wave condition. Sometimes a jibe hardly costs any distance at all, and you can jibe on even the smallest whim. But other times you pay a huge price to change tacks, so every jibe better be important and necessary!

The key is knowing how much you give up by jibing at any moment on a run. Will a jibe cost you one boatlength, four boatlengths or somewhere in between? This is critical to know for both strategic and tactical planning. If a jibe doesn't cost much at all, you can jibe to play small windshifts or go for subtle increases in pressure. But if you give up a lot of distance every time you jibe, you must minimize maneuvers and jibe only for the most significant strategic factors.

Other than crew experience and boat type, the main factors that affect the cost of a jibe are wind velocity and wave height. In general, jibes are more expensive as the wind gets lighter and the waves grow bigger (see graph). In flat water and moderate air (blue line) your strategic plan can include a lot of jibing. But as it gets lighter and lumpier (green), or windy enough that the fleet is planing (red), you should cut out any jibes that are not absolutely necessary.

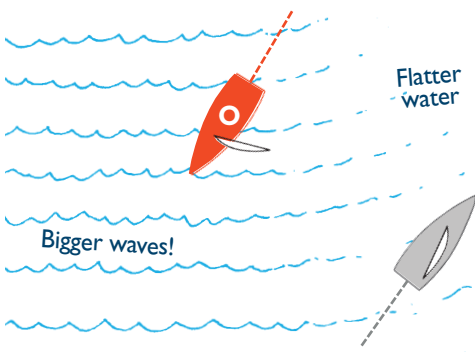
When jibing is difficult, think ahead to minimize maneuvers. Play macro trends in the breeze only, and look for long-lasting lanes of clear air.



The 'cost' of a jibe varies with a number of factors including boat type, wave height and wind velocity. Jibing is usually most costly in light air, especially in waves. But once boats start planing, jibing is also expensive because it means going slow while other boats are fully planing (red line). The easiest time to jibe is when you have surfing conditions (green) – a jibe while going down a wave often costs almost nothing.

### PLAY 4: Head for the 'big surf'

On most racing days, the waves move in roughly the same direction as the wind, so they push you to leeward. This is not good when you're trying to sail upwind, but it's great when you're going downwind. On reaches and runs, waves are your friends because they help you surf and plane and move faster to leeward. Therefore, whenever wave size varies across the course area, a good rule of thumb downwind is to head for the areas where the waves are bigger.



Another reason why this guideline works is because bigger waves often mean more wind velocity, which almost always makes you go faster on runs and reaches. However, there is one major exception to this rule of thumb. Larger waves might also indicate more current flowing against the wind (or less current flowing with the wind). This would not be good for racing downwind.

## SPEED & Smarts

### PLAYBOOK 3



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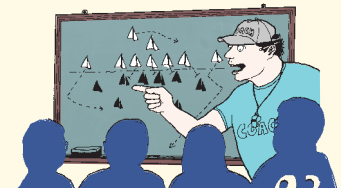
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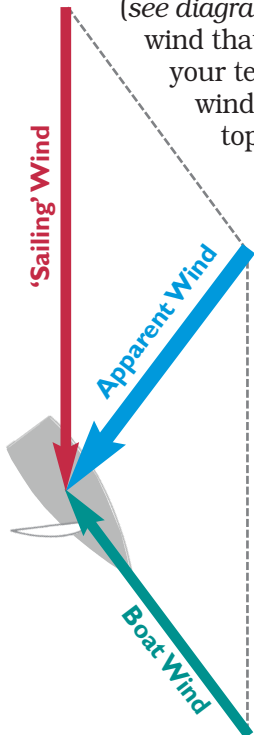
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## Tune in to the wind

If you want to sail smart and fast downwind, you need to be aware of the wind around you, especially your *apparent wind* direction. The apparent wind is the wind you feel on your face (or on the back of your neck) while you're racing. It's a vector sum of the wind in which you are sailing plus the wind created by your speed through the water (see diagram). It is also the wind that is shown by your telltales and the wind pennant at the top of your mast.



*The apparent wind direction is key because it gives you a bunch of info about where your next puff is coming from, what angle you will be sailing after a jibe and whether or not you are in bad air (or giving bad air to another boat).*



### PLAY 5: Look behind!

This may seem obvious, but when you're racing downwind you have to look behind to see the wind you will be getting (unless you're in an AC 72 cat that goes faster downwind than the wind speed!). Yes, it takes more effort to turn your head and look astern (a problem you don't have when beating), but this is essential. One solution is to have a forward crewmember sit facing aft so they can call the wind continuously without always turning.

### PLAY 6: Get higher off the water

When you're going downwind pressure is critical, so it's important to identify puffs and pressure lines as far in advance as possible so you'll be able to get to them. The best way to see what's happening on the water to windward is by getting your eyes higher up off the water surface. We all know how well you can see puffs and lulls when you're standing on a bridge looking down at the water below. In fact, if your eye is 8 feet above the water surface you can see roughly twice as far as when your eye is just 2 feet off the water. So, one of the best ways to look for wind on runs is simply by standing up on your deck or cabintop and looking aft (upwind).

### PLAY 7: Use other boats to see the wind

Other boats on the race course are great resources for seeing puffs and shifts that are coming. Of course, when you're sailing downwind you have to look at boats that are upwind of (i.e. behind) you. This could be boats that are sailing either upwind or downwind. I find it easier to judge puffs and shifts by looking at boats that are sailing closehauled. Boats on runs sail a wide range of headings and their heel doesn't change much, so you're never sure whether their course is the result of an actual shift in wind direction or just a change in velocity.

Often there are boats in your own fleet still sailing to the windward mark, or boats in another fleet sharing the same race area that are going upwind. You can get a good estimate of wind direction by looking at their closehauled courses on each tack. And you can get a pretty accurate view of wind velocity by looking at their heel angle and the position of their crew.

If you can't see any boats going upwind, use boats that are running – but keep in mind that their heading may be greatly affected by variations in velocity.



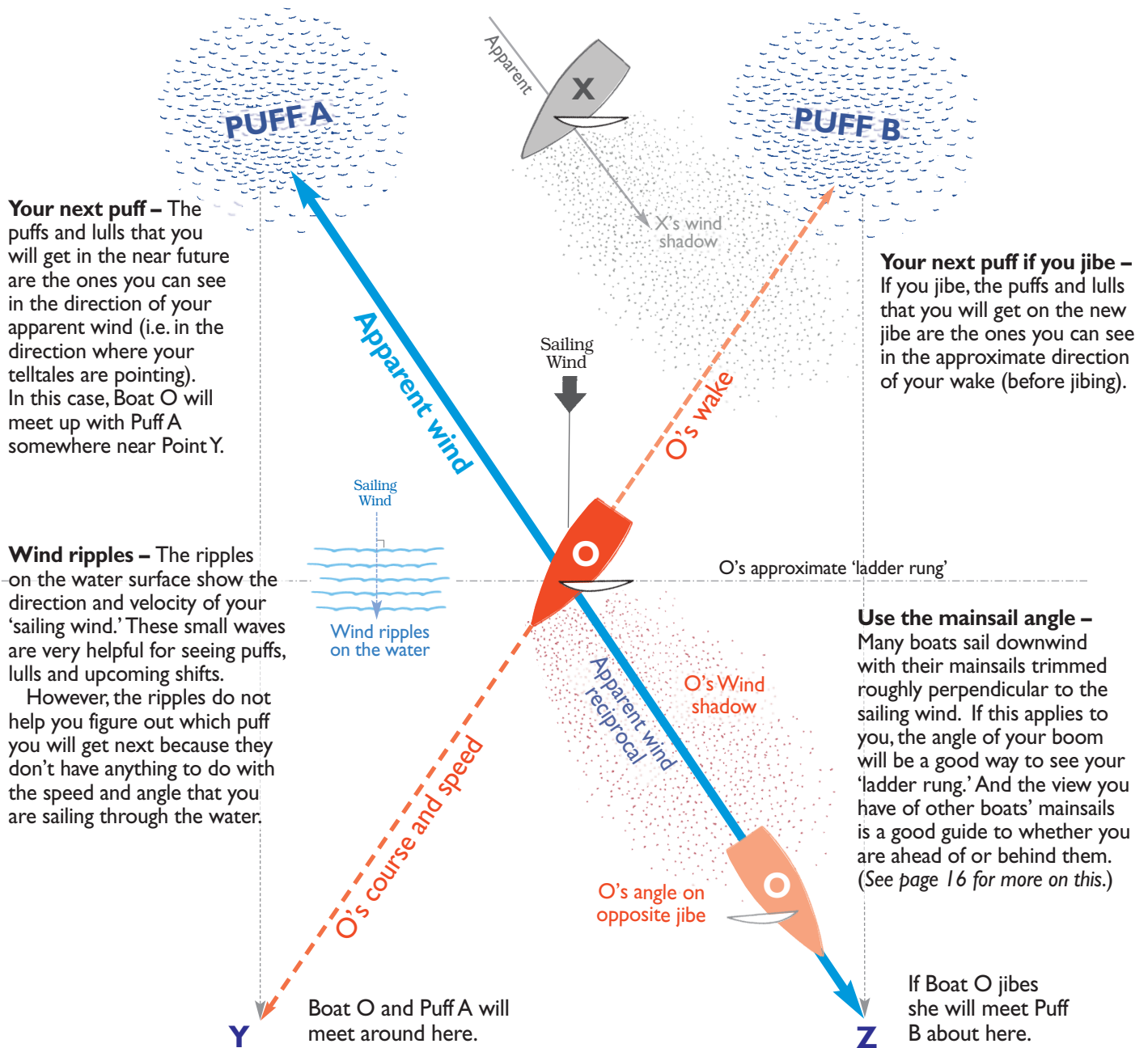
JH Peterson photo

Knowing your apparent wind angle and recognizing all the information it provides is especially key for cats, skiffs, scows and boats with asymmetrical chutes because they sail downwind at high angles and fast speeds. On these boats the apparent wind is often very different from the sailing wind, which makes it harder to identify jibing angles, the location of wind shadows and the direction from which your puffs are coming.

**PLAY 8: Use all available wind clues to help with downwind strategy and tactics**

When you are sailing your optimal downwind angle on a run, there are some great tricks you can use to sail faster and smarter. All you need to know is your apparent wind direction. The apparent wind is the wind you feel on your skin while you are racing – it's also the wind shown by your telltales. This page illustrates some things you can learn from your apparent wind angle.

**Are you in bad air?** – Even though X is directly upwind of O, she is not giving O bad air because X's wind shadow extends to leeward in the direction opposite to her *apparent* wind. Therefore, X's wind shadow is behind O. O can see this by looking at X's masthead wind pennant – it should be pointing behind O, not directly at her.



**Your next puff** – The puffs and lulls that you will get in the near future are the ones you can see in the direction of your apparent wind (i.e. in the direction where your telltales are pointing). In this case, Boat O will meet up with Puff A somewhere near Point Y.

**Your next puff if you jibe** – If you jibe, the puffs and lulls that you will get on the new jibe are the ones you can see in the approximate direction of your wake (before jibing).

**Wind ripples** – The ripples on the water surface show the direction and velocity of your 'sailing wind.' These small waves are very helpful for seeing puffs, lulls and upcoming shifts.

However, the ripples do not help you figure out which puff you will get next because they don't have anything to do with the speed and angle that you are sailing through the water.

**Use the mainsail angle** – Many boats sail downwind with their mainsails trimmed roughly perpendicular to the sailing wind. If this applies to you, the angle of your boom will be a good way to see your 'ladder rung.' And the view you have of other boats' mainsails is a good guide to whether you are ahead of or behind them. (See page 16 for more on this.)

**The unapparent apparent wind** – It's harder to feel your apparent wind on runs because you are sailing with the wind so the pressure is much less. The best way to keep track of apparent wind direction is by watching your telltales and masthead wind pennant.

**Calling laylines** – If you jibe, where will you be heading? The course you will steer after jibing is approximately the reciprocal of the direction of your apparent wind just before the jibe. Use this to help you know when you are getting near the layline to the leeward mark.

## Two reasons why wind velocity is key downwind

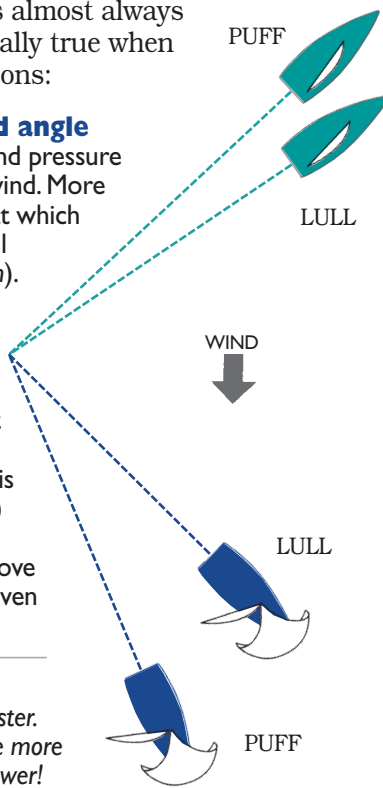
When it comes to wind velocity, more is almost always better for performance. This is especially true when you're sailing downwind, for two main reasons:

### 1. Puffs have a big impact on speed and angle

Unless it's already very windy, any increase in wind pressure will make you go faster, both upwind and downwind. More wind will also affect your heading (i.e. the angle at which you can sail to the wind). A puff allows you to sail higher on a beat and lower on a run (see *diagram*).

When you're sailing downwind in light or moderate wind, even a small amount of extra pressure can make a huge difference in how deep you can sail. For example, if you are sailing in five knots of wind and you get just a two-knot increase in wind velocity, you may be able to sail 10° or 15° lower! Obviously, the ability to sail this much deeper (and to go faster at the same time) will get you to the leeward mark sooner. That's why puffs are so valuable downwind – they improve your speed and help your angle as much as (or even more than) shifts in wind direction.

When you're sailing upwind (top) and you get more pressure, you can sail a little bit higher and a little faster. But when you're racing downwind (right), even a little more pressure often means you can sail faster and a lot lower!



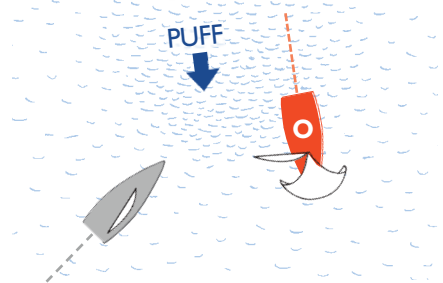
### 2. Puffs stay with you longer

The fact that extra pressure allows you to sail faster and often a lot deeper on runs is only half the reason why puffs are so valuable downwind. The other factor is simply that you spend much more time sailing in each puff you get (compared to upwind).

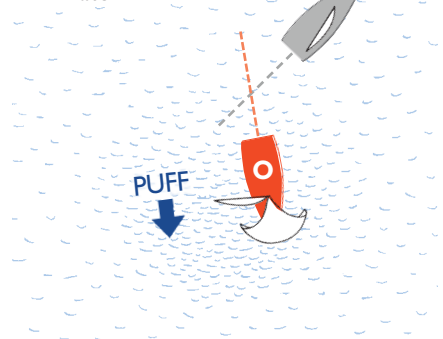
Imagine two boats sailing near each other in a race, one beating and the other running, and then a puff hits them both. The boat going upwind is moving in the opposite direction as the puff, so she sails through the puff relatively quickly (see *below*). But the boat going downwind is moving in the same direction as the puff, so she is able to stay with the puff a lot longer.

The puff improves the performance of both boats, but this advantage lasts much longer for the boat that's going downwind. This is another reason why better pressure is so valuable on runs.

Both boats get a puff



30 seconds later



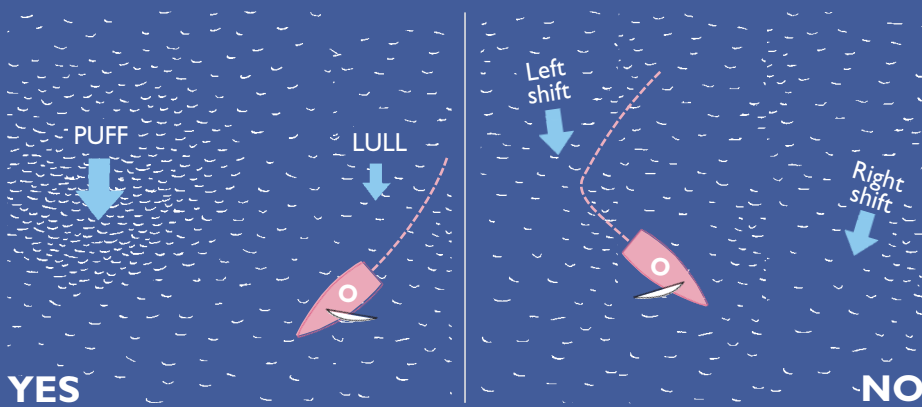
When you're sailing downwind, you get fewer puffs than when you're sailing upwind. But each puff you get stays with you longer because you're sailing with the wind (not against it). So be proactive in going for better velocity, and maximize the time you spend in each puff.

## PLAY 9: Chase puffs, not shifts.

When you're racing downwind in a shifty, puffy breeze, your strategy should be to stay in the best pressure and/or on the headed jibe as much as possible. The key is keeping a good lookout to windward (behind) so you can take advantage of the puffs and shifts that are coming down the course. But it's not always easy to know what to do. Often you see other boats in a great puff or shift that looks like it may pass you by. Should you turn and head for that puff or shift?

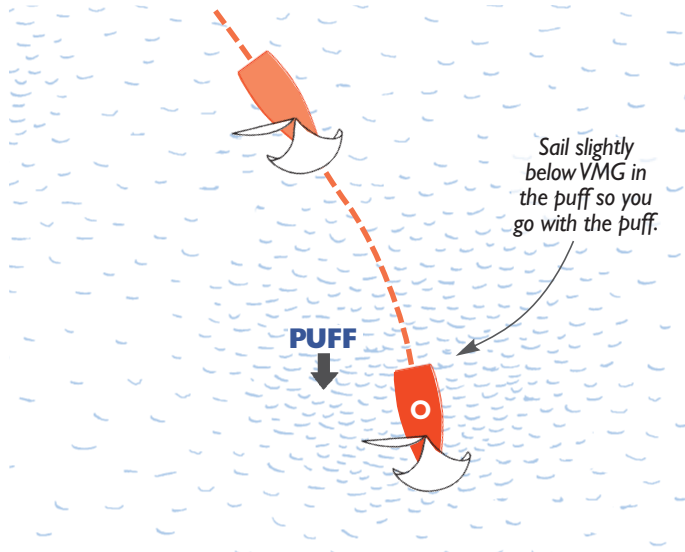
A good rule of thumb is to chase puffs but not shifts. Even a little extra wind can make a huge difference downwind, so it's worth going out of your way to get more pressure. Plus there's no reason to sit passively in a lull – you will gain by sailing high and fast to go through the lull and get to the puff sooner.

The problem with chasing a windshift is that you normally have to sail the 'wrong way' in order to get there. In other words, you typically have to sail on a lift in order to get to a header. And sailing on the lifted jibe is not usually a good idea. So be careful about giving up too much in search of directional shifts.



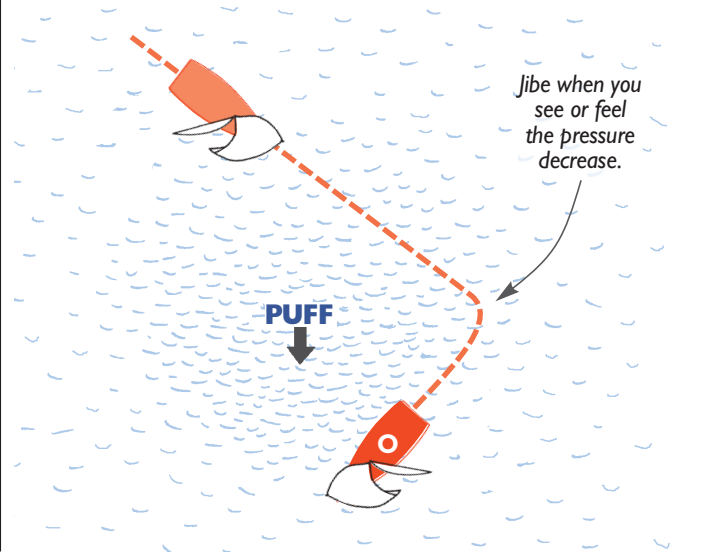
### PLAY 10: Bear off to stay in a puff

To maximize your time spent in each puff, try to sail a course that is close to the direction in which the puff is traveling. When the puff hits, bear off to your new velocity-made-good (VMG) angle for that wind pressure, and then bear off a little more (of course, you must have a certain minimum amount of breeze or bearing off this far will be too slow). If you can sail close to dead downwind, you will go almost directly with the puff. It's often better to do this than to sail a higher (normal) angle that would take you out of the puff sooner. This move is especially good for boats with symmetrical spinnakers because they sail lower angles downwind and they can often sail a little lower than normal without losing too much VMG.



### PLAY 11: Jibe to sail back through a puff

Bearing off with a puff is not always the best option. When the wind is quite light or you're in a boat that doesn't want to sail dead downwind, a better choice may be to jibe when you get to the edge of the puff and sail back through the pressure. As soon as you feel the wind velocity start to decrease (e.g. you feel your boat straighten up slightly) or when you see less wind on the water ahead, jibe. This will take you back through the puff so you can milk the extra velocity as long as possible. This works especially well for skiffs, cats, scows and boats with asymmetrical chutes because they normally sail higher angles that take them across the wind (instead of straight downwind), and they go very slowly if they sail too low.



Sailing in bad air (like Thistle #3849) is a lot like sailing in a lull. You have less wind pressure so you will be slower and you'll have to sail higher to keep the boat going. You can realize all the advantages of getting a puff simply by clearing your air (see page 15 for more about this).

### PLAY 12: Key off the boat (s) ahead

Here's a trick that works well for boats that sail high angles on runs (such as any boat in light air, or for cats, skiffs, scows or boats with asymmetrical chutes in almost any wind). If you have trouble seeing puffs and lulls on the water (e.g. because the changes are very subtle), use other boats to gauge pressure across the course. Usually this means looking at the boats behind, but the boats directly in front of you are also very important because they are sailing in the wind that you'll soon be getting. If you see a boat in front of you lose pressure (e.g. the boat stands straighter up, or the crew moves weight to leeward), jibe to avoid that lull and to sail back through the pressure you just had.



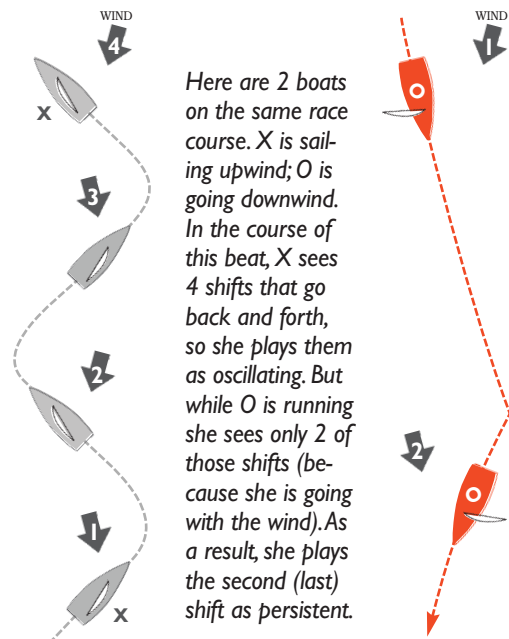
## Change your approach

When it comes to playing windshifts, there is a huge difference between what works upwind and what works downwind. A few principles remain the same; for example, you should go for more pressure no matter what leg you are on. But many downwind strategies are totally opposite to their upwind corollaries. On a beat, for example, you should sail **toward** the next wind shift you are expecting, but on a run you should sail **away from** it. So once you round the windward mark, alter your thinking to downwind shift-playing mode. Here are some rules of thumb.

### PLAY 13: Play shifts as persistent

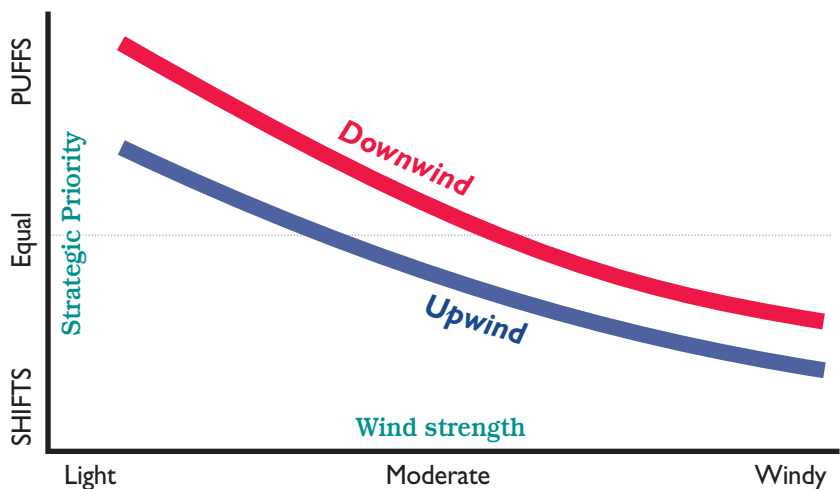
When you're sailing upwind, one of the most important strategic considerations is whether to play the windshifts as oscillating or persistent. In most sailing venues, oscillating shifts are more common on a beat, so typically you end up tacking on the headers to sail on the lifts.

On runs, it's a little different. If the shifts are oscillating, you should jibe on the lifts to sail on the headers. However, oscillating shifts are less likely on runs. That's because boats going with the wind (downwind) don't see nearly as many shifts as boats sailing into the wind (see below). Even if you have oscillating shifts on a beat, these often act like persistent shifts on a run because you may only get one or two of them. When you're in doubt, therefore, play shifts on a run as persistent, especially as you get farther down the leg and the current (or next) shift is likely to be your last before the leeward mark.



In heavy air, boats with symmetrical chutes don't get too far apart because their jibing angles are very narrow and they go almost dead downwind. This is especially true when there are surfable waves that allow the boats to sail even deeper. In these conditions, there is not much separation between boats, so wind shifts don't produce big gains and losses like they do on beats or light-air runs.

### PLAY 14: Go for puffs in light air, shifts in breeze



When racing downwind, sometimes you have a choice of sailing toward the next windshift or jibing to head for an area with more wind pressure. The better choice often depends on how much breeze there is overall.

In heavy air, most boats already have plenty of wind. They are probably going close to hull speed most of the time, so getting more wind velocity will not increase their speed very much. Since there is not much benefit in getting to a puff, playing the shifts is more valuable and therefore a priority.

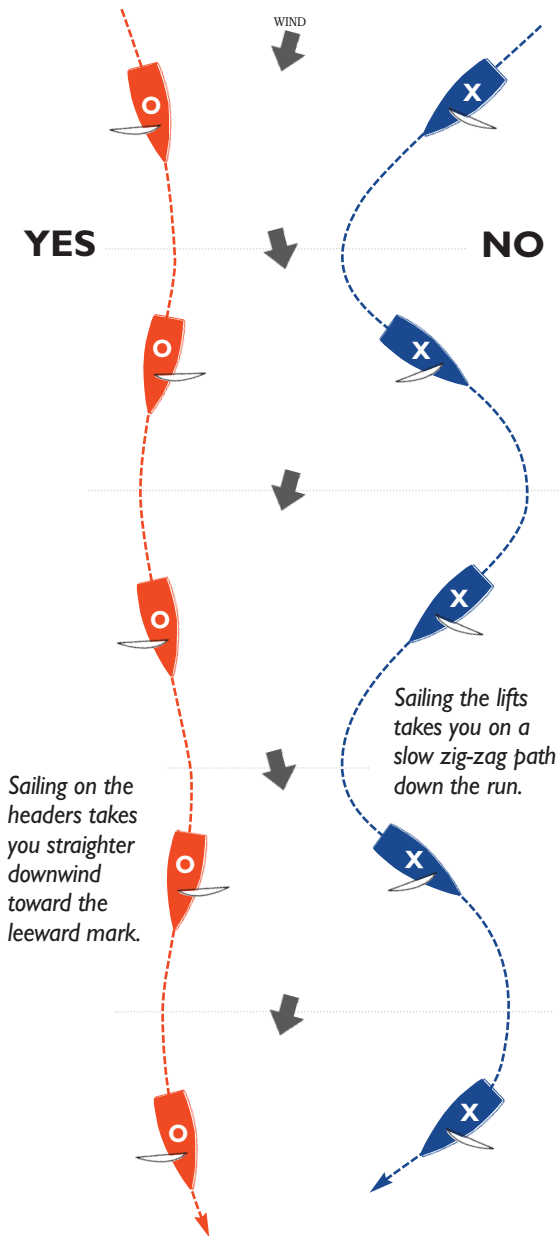
In contrast, boats are always underpowered in light air, so more wind pressure is extremely valuable. A puff will make a large difference in your speed through the water, plus it will let you sail lower (sometimes a lot lower!). Therefore, on light air runs you should almost always look for better pressure first and windshifts second. As the wind gets stronger and additional wind will no longer help your speed very much, change your priority to looking for shifts.

This general philosophy (of going for pressure in light air and shifts in breeze) applies both upwind and downwind. However, there is an even greater emphasis on going for pressure downwind because of the huge difference it makes for boats on runs (see page 6).



## PLAY 15: Jibe on the lifts so you sail on the headers

When you're racing upwind in an oscillating breeze, you should tack when you get headed so you sail on the lifts. On runs, however, the best way to play oscillating shifts is by jibing when you get lifted so you continually sail on a header. By staying on the headed jibe, you'll be able to sail lower and therefore much closer to the leeward mark. Jibing on lifts works because it complies with the downwind strategic rule of thumb that says to sail **away from** the next shift (see Play 16).



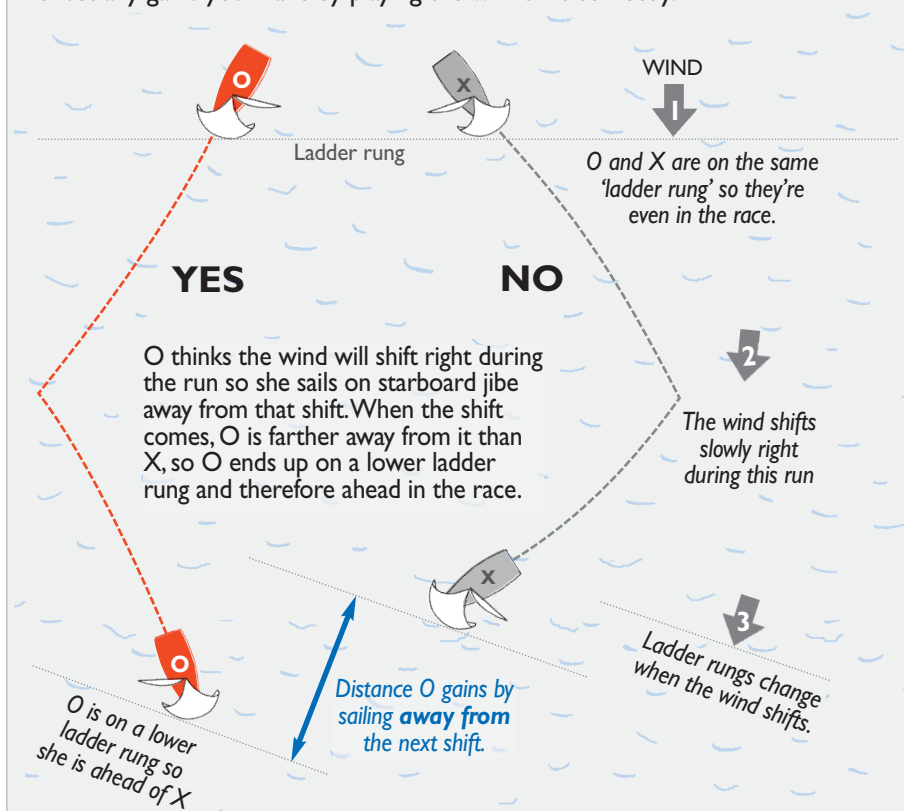
In this diagram, the Red boat jibes on the lifts so she always sails on a header, while the Blue boat jibes on the headers and always sails on a lift. The Red boat's strategy allows her to make much quicker progress **down** the 'ladder rungs' (see the explanation at right), which is your goal on runs.

## PLAY 16: Sail away from the next windshift

On a beat you will gain by sailing **toward** the next windshift because when the shift comes you will be on a higher "ladder rung." On a run, the opposite is true. You should sail **away from** the next shift (see below) because you are trying to make progress downwind, not upwind. By getting farther away from the direction of the next shift you will end up on a **lower** ladder rung when that shift comes, and this means you will be closer to the leeward mark.

One exception to this rule is when the next wind shift also brings an increase in wind velocity (a common occurrence). We know pressure is critical on runs, especially in light-to-medium air. So when there's a conflict between sailing away from the next shift and sailing toward the best velocity, err on the side of going for the pressure. More wind will often make up for any distance you lose by not playing the shift exactly right.

Of course, if you sail away from the next shift you have to be careful not to overstand the leeward mark when that shift comes. Many boats (e.g. singlehanders, boats with symmetrical chutes) have narrow jibing angles that make it easy to reach a layline too early, especially if there is any kind of windshift. This is not fast (see Play 20) and could more than offset any gains you make by playing the windshift correctly.



**Ladder rungs** are imaginary lines drawn on the water surface perpendicular to the wind direction. Boats on the same ladder rung are equal in the race (e.g. O and X at position 1), but if the wind changes direction the angle of the ladder rungs (and therefore the boats' positions in the race) will also change.

On a run, the object is to climb **down** the ladder to the leeward mark, so boats on lower ladder rungs are ahead of boats on higher ladder rungs. When you expect the wind direction to change during a run, the basic strategic move is to sail **away from** the next windshift. For example, if you think the wind will veer (shift clockwise), sail on starboard tack first (above). That way when the wind shifts right you'll be farther to leeward and therefore more advanced in the race.

## Sail the longer jibe first

The relationship between the course layout and the wind direction is one of the most important strategic factors on any downwind leg. If the course axis is not square to the wind, one jibe will be longer than the other and this could have a big impact on which direction you sail.

As a general rule of thumb, you should sail the longer jibe first, especially when you're uncertain about what the wind will do next. The more skewed the jibes are, the more critical it becomes to sail on the jibe that is longer. If one jibe is much longer, there's a high probability that it will be better to get on that jibe right away. But if the jibes are very close in length (which is probably the case if you have a hard time figuring out which one is longer), then this guideline will not be very helpful.

### PLAY 17: Use the '2:1 ratio' rule of thumb

When you're making a gameplan for the run, you must consider the option of sailing the longer jibe first. This strategic principle is especially important when one jibe is a lot longer than the other, but it's not very critical when the jibes are much closer in length.

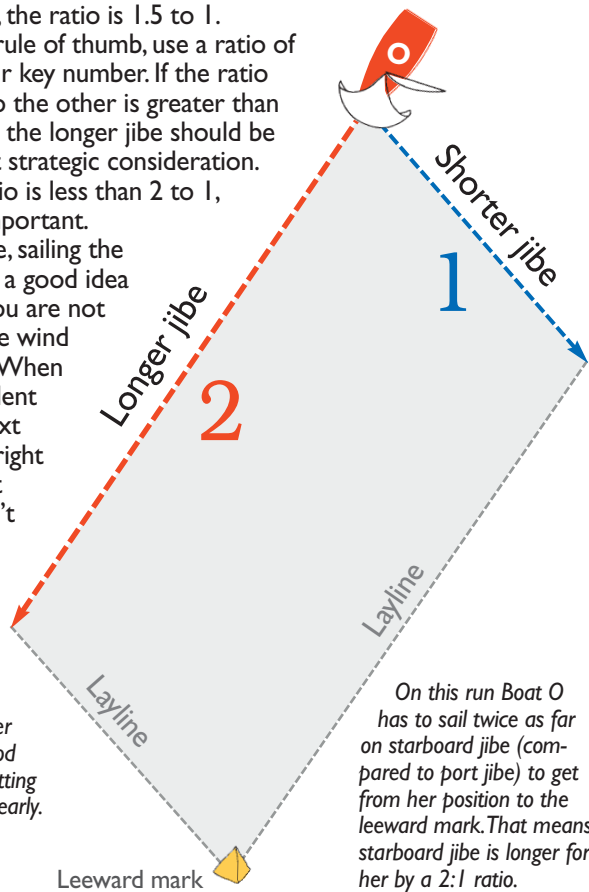
Here's a simple way to figure out how much emphasis to give to this principle: First, estimate how far you have to sail on each jibe to reach the leeward mark (this could be in terms of distance or time). Then calculate the ratio of the longer jibe to the shorter jibe.

For example, if you have to sail .75 miles on port tack and only .25 miles on starboard tack, the ratio is 3 to 1. If you have to sail for 6 minutes on starboard tack and 4 minutes on port tack, the ratio is 1.5 to 1.

As a basic rule of thumb, use a ratio of 2 to 1 as your key number. If the ratio of one jibe to the other is greater than 2 to 1, sailing the longer jibe should be an important strategic consideration. But if the ratio is less than 2 to 1, it's not so important.

Of course, sailing the longer jibe is a good idea only when you are not sure what the wind will do next. When you're confident about the next shift, do the right thing for that shift and don't worry about the ratio.

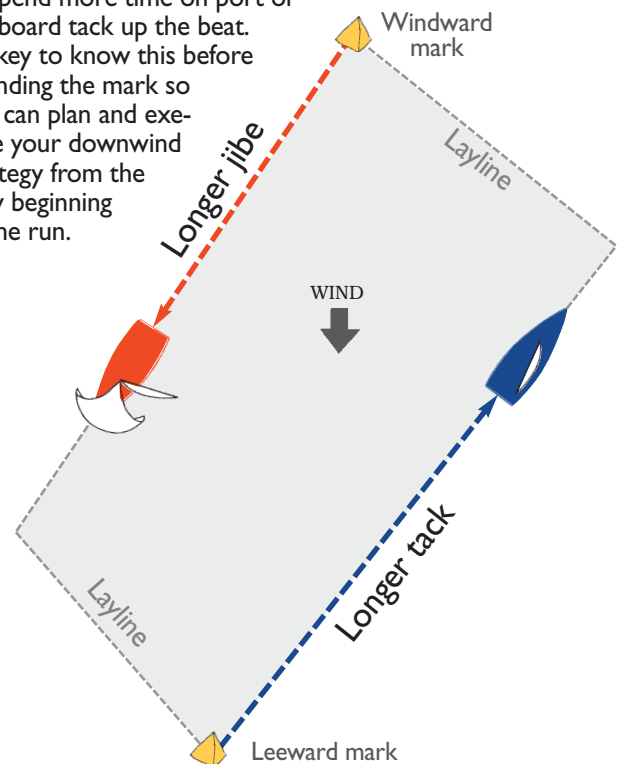
*Sailing the longer jibe first is a good way to avoid getting to a layline too early.*



### PLAY 18: Use the longer tack upwind to identify the longer jibe downwind

This may be obvious, but if you have to spend more time sailing upwind on port tack to get to the windward mark, then you will spend more time sailing downwind on starboard jibe to get back to the leeward mark. In other words, the longer jibe downwind is the one that's opposite to the longer tack upwind.

The advantage of knowing this is that you can easily predict which jibe will be longer on the run before you actually start sailing the run. Just look around at the boats going upwind and figure out whether they had to spend more time on port or starboard tack up the beat. It's key to know this before rounding the mark so you can plan and execute your downwind strategy from the very beginning of the run.



Chris Howell - J/70 Class



**Above:** Unless you're very confident about what the wind will do next, your chances of success on a run are better when you sail the longer jibe (i.e. the jibe where your bow points closer to the leeward mark). In this J70 race, the wind shifted left on the previous beat, which made starboard jibe longer on the run. That's why few of these boats have jibed to port.

### PLAY 19: Play the same side on the run as on the beat?

If the right side paid off on the first beat, should you play the same side on the ensuing run? This is a great question that seems to come up fairly often.

The answer is "it depends" on what is happening with the wind direction, pressure, current and so on. Strategic conditions are always changing, so you can't assume that just because a certain side of the course was favored on one leg it will also be favored on the next.

On the other hand, there are often trends that can help you predict what will happen on the next leg. Some of these trends favor the same side of the course both upwind and downwind. For example, if the right side of the beat was better because of more pressure, that would favor the same side on the run. However, if the right side was favored upwind because of better current, that favors the opposite side on the run. So before you sail blindly back to the same side, figure out why it was favored and whether this will apply downwind.

### PLAY 20: Five reasons to avoid laylines downwind

When boats approach the edges of a run (i.e. the leeward-mark laylines), too often they overstand the mark, miss windshifts, get stuck in traffic or end up in bad air. As a result, it's common to see big gains and losses among the fleet near laylines.

Of course, every boat has to get to the layline sooner or later in order to round the mark. In fact, it's often a smart tactical move to hit the starboard layline at least a few boatlengths before you reach the zone (at the leeward mark) so you will be inside with mark-room. But the farther you are from the mark when you get to the layline, the more risk you take.

Here are five reasons why you should avoid laylines:

**1. Bad air** – The laylines always seem to attract a crowd. So if you get there too early, it's likely that another boat will jibe on or converge onto your wind. When that happens, you either have to sail in bad air all the way to the mark, do two jibes to clear your air or head up or off to get out of their wind shadow. All of these options are bad.

**2. Sailing extra distance** – It's hard to judge the layline when you're far from the mark, so it's easy to end up sailing unnecessary distance. Each boatlength you sail past the layline is distance you lose to every other boat in the fleet. Even if you pick the layline perfectly, you will sail extra distance if you find yourself lifted, headed or in another boat's bad air.

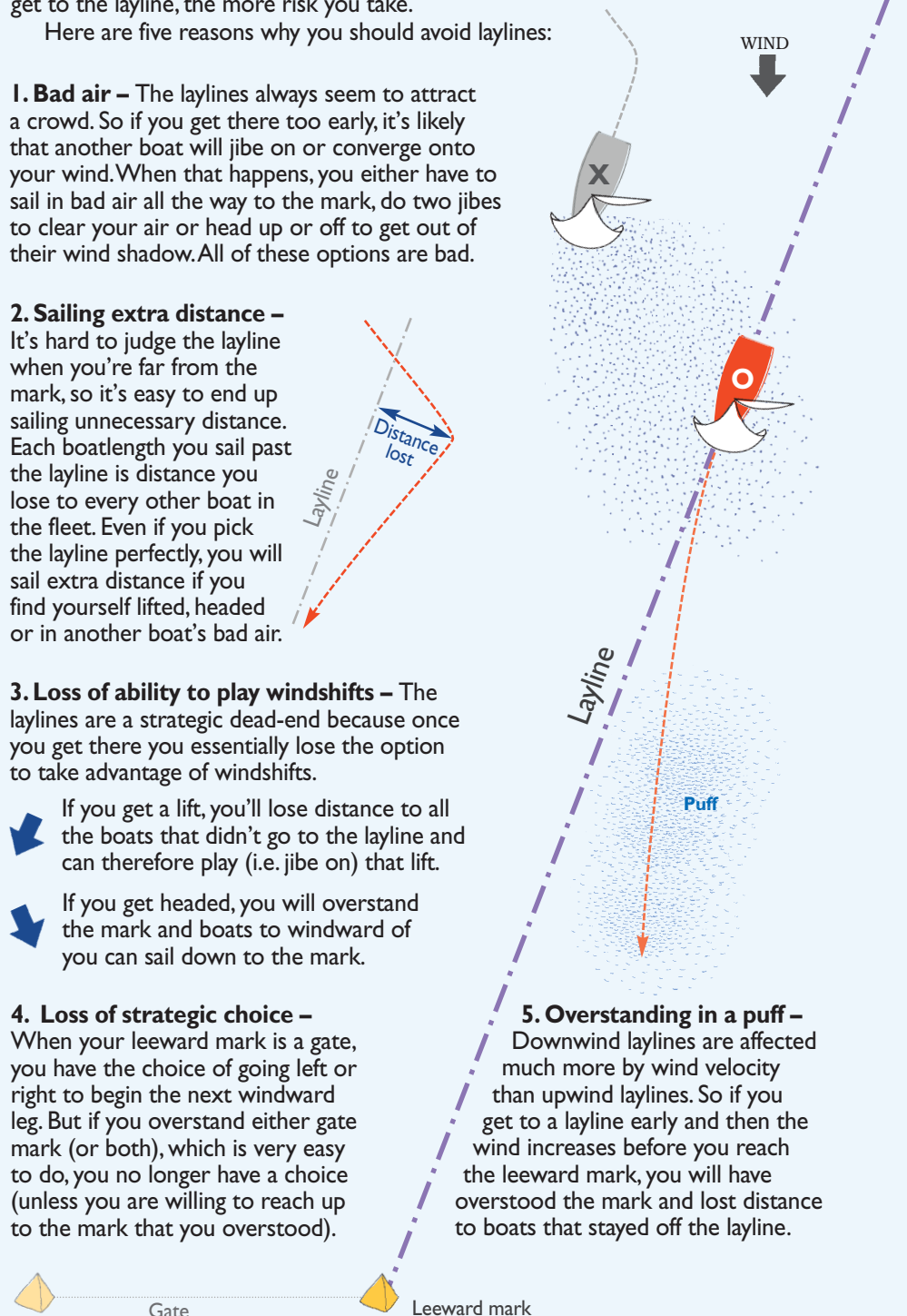
**3. Loss of ability to play windshifts** – The laylines are a strategic dead-end because once you get there you essentially lose the option to take advantage of windshifts.

➡ If you get a lift, you'll lose distance to all the boats that didn't go to the layline and can therefore play (i.e. jibe on) that lift.

➡ If you get headed, you will overstand the mark and boats to windward of you can sail down to the mark.

**4. Loss of strategic choice** – When your leeward mark is a gate, you have the choice of going left or right to begin the next windward leg. But if you overstand either gate mark (or both), which is very easy to do, you no longer have a choice (unless you are willing to reach up to the mark that you overstood).

**5. Overstanding in a puff** – Downwind laylines are affected much more by wind velocity than upwind laylines. So if you get to a layline early and then the wind increases before you reach the leeward mark, you will have overstood the mark and lost distance to boats that stayed off the layline.



## A reaching review

Reaches are coming back into vogue currently, so let's look at key strategies and tactics. Reaching legs often seem a lot like parades. Unless conditions are unusual, there is seldom much passing. But there's a lot of change in distance between boats, and this is critical.

On most reaches the leaders sail straight to the next mark while the rest of the fleet sails higher and higher. As a result, the fleet almost always 'telescopes' apart. This is great for the leaders, but not good if you are fighting in the pack behind them. In that case your only goal on many reaches should be to stay as close to the front of the fleet as you can. It is usually much better to hold your place in line than to pass one or two boats but lose 100 yards to the leaders. Be patient and wait for the best time to attack!

### PLAY 21: Handicap reaching

When racing against boats of various sizes, focus on strategies that will get you down the rhumbline quickly and try to avoid tactics involving your competitors.

**Small boats stay high.** It's usually better for a smaller, slower boat to take the 'high road' since this forces bigger boats to pass you to leeward and helps you avoid their bad air. But going too high can also be slow, so go just high enough to discourage overtaking boats from passing to windward.

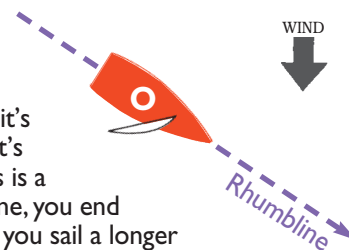
**Don't pass close aboard.** If you're a bigger, faster boat, try to set yourself up so you pass slower boats at least several lengths away on either side. If you try passing to windward and you aren't up in the 'passing lane,' you'll get luffed and that will be slow. It's safer to pass other boats to leeward, but if you're too close you'll be in their bad air and wake and may have trouble getting through.

**Try to 'draft' faster boats.** One good thing about being a smaller boat on a downwind leg is that you can often get a free tow on the quarter wake of faster boats. On a tight reach it's better to tow on the windward side of the faster boat, so let them pass you close to leeward and then quickly drop down into their first or second wave. On broad reaches, it's better to tow on their leeward side.



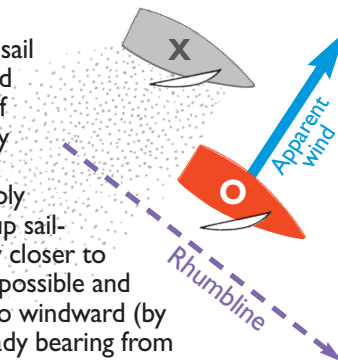
### PLAY 22: Minimize distance sailed

On a reach, the rhumbline is a straight course from the last mark you rounded to the next mark. In the absence of other boats (and certain strategic factors), it's usually fastest to sail straight down the rhumbline. That's because the shortest distance between any two points is a straight line. When you sail high or low of the rhumbline, you end up sailing an arc rather than a straight line. This means you sail a longer distance which usually takes longer to do. The easiest way to sail down the rhumbline is by getting a range on shore behind the next mark when you begin the leg. If you keep that range lined up with the mark, you will sail right down the rhumbline, straight toward that mark.



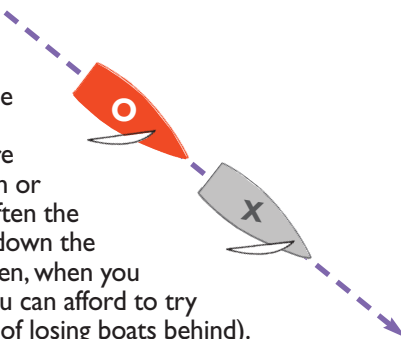
### PLAY 23: Sail just high enough

When the boat(s) behind you go high, you often can't sail straight down the rhumbline without getting rolled and passed. You can try convincing them to sail lower, but if this doesn't work you need to head up yourself to stay in clear air. The key is to keep your apparent wind in front of the other boats. This is usually easy to do simply by sailing higher, but the problem is that you can end up sailing a very high arc and losing to boats behind that stay closer to the rhumbline. The trick, therefore, is to sail as low as possible and still keep your wind comfortably in front of the boat to windward (by using your masthead wind pennant). Try to keep a steady bearing from you to the other boat while moving farther to leeward. This will minimize distance sailed and maximize your gain (or minimize loss) on the other boats.



### PLAY 24: Cooperate to stay ahead

Sometimes when you're behind you don't want to be too aggressive. If you're happy with your position in the race (e.g. you are second out of 50 boats), there's not much sense in taking a lot of risk just to pass one more boat. The last thing you want is to get in a luffing match or to sail really high and let the boats behind catch up. Often the best move is simply to follow the other boat straight down the rhumbline so you get to the leeward mark quickly. Then, when you have both extended your lead on the boats behind, you can afford to try some moves to pass the boat ahead (without the risk of losing boats behind).



It's usually fast to sail straight down the rhumbline, but sometimes you need to go high or low. An arcing course may actually be faster due to strategic factors (e.g. a persistent windshift), or it could be a tactical necessity.

## PLAY 25: When to sail HIGH on a reach

Sailing a high arc on a reach is usually a loser, but there are certain times when it can be a good idea:

**The breeze is building.** Sail high to keep speed in lighter air early in the reach; then sail down to the mark when you have more breeze near the end of the leg.

**The breeze is heading.** Sail high to go fast at the beginning of the reach when you are in a relative lift; then sail down to the mark as you get headed during the leg.

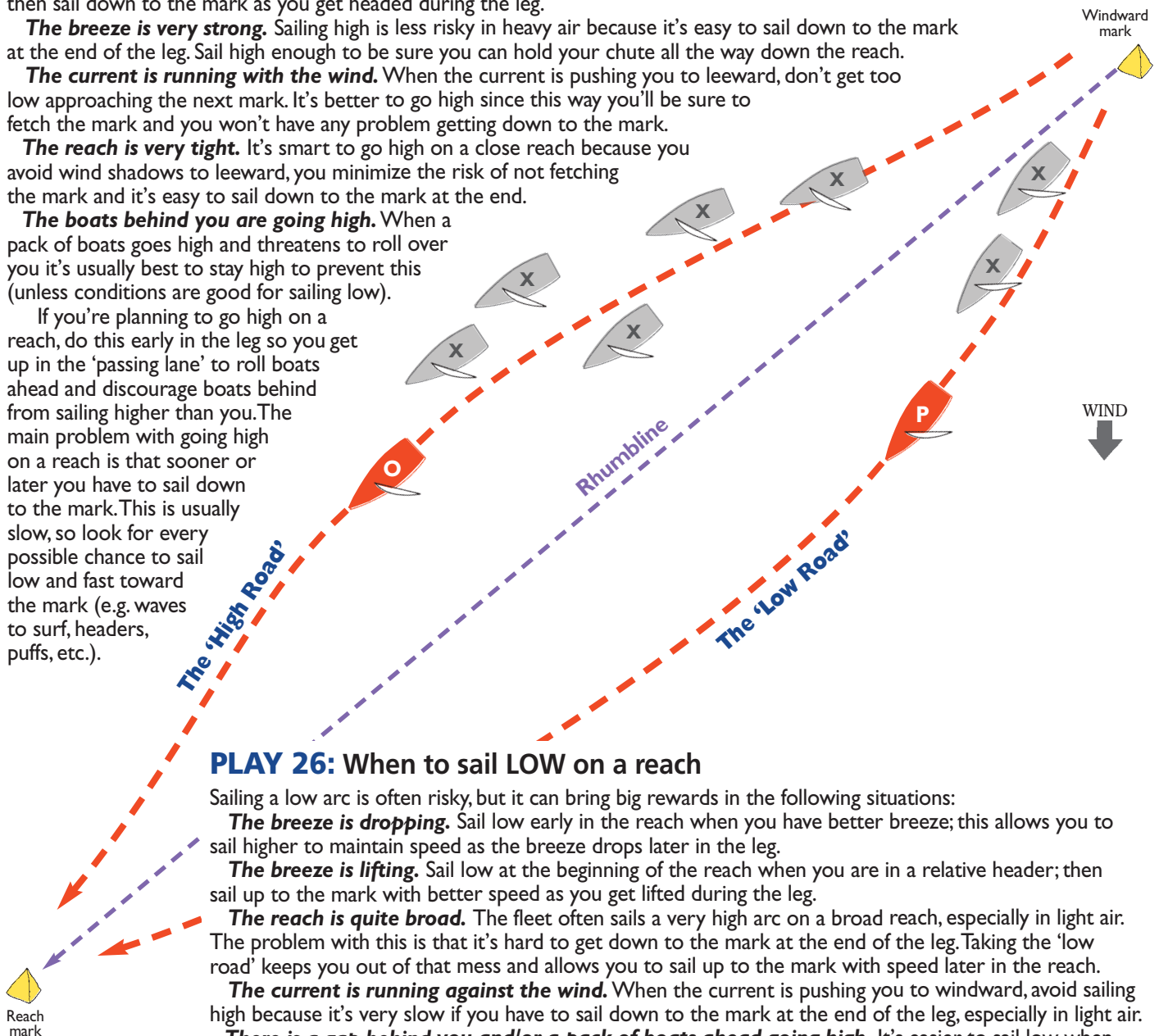
**The breeze is very strong.** Sailing high is less risky in heavy air because it's easy to sail down to the mark at the end of the leg. Sail high enough to be sure you can hold your chute all the way down the reach.

**The current is running with the wind.** When the current is pushing you to leeward, don't get too low approaching the next mark. It's better to go high since this way you'll be sure to fetch the mark and you won't have any problem getting down to the mark.

**The reach is very tight.** It's smart to go high on a close reach because you avoid wind shadows to leeward, you minimize the risk of not fetching the mark and it's easy to sail down to the mark at the end.

**The boats behind you are going high.** When a pack of boats goes high and threatens to roll over you it's usually best to stay high to prevent this (unless conditions are good for sailing low).

If you're planning to go high on a reach, do this early in the leg so you get up in the 'passing lane' to roll boats ahead and discourage boats behind from sailing higher than you. The main problem with going high on a reach is that sooner or later you have to sail down to the mark. This is usually slow, so look for every possible chance to sail low and fast toward the mark (e.g. waves to surf, headers, puffs, etc.).



## PLAY 26: When to sail LOW on a reach

Sailing a low arc is often risky, but it can bring big rewards in the following situations:

**The breeze is dropping.** Sail low early in the reach when you have better breeze; this allows you to sail higher to maintain speed as the breeze drops later in the leg.

**The breeze is lifting.** Sail low at the beginning of the reach when you are in a relative header; then sail up to the mark with better speed as you get lifted during the leg.

**The reach is quite broad.** The fleet often sails a very high arc on a broad reach, especially in light air. The problem with this is that it's hard to get down to the mark at the end of the leg. Taking the 'low road' keeps you out of that mess and allows you to sail up to the mark with speed later in the reach.

**The current is running against the wind.** When the current is pushing you to windward, avoid sailing high because it's very slow if you have to sail down to the mark at the end of the leg, especially in light air.

**There is a gap behind you and/or a pack of boats ahead going high.** It's easier to sail low when there aren't other boats threatening to roll you from behind. Also, there's not much to be gained from following boats high; hopefully they will push each other too high and you can pass them by staying low.

When your strategic plan says go low, head that way right after rounding the windward mark. It's key to get away from the bad air and disturbed water of the windward boats as quickly as possible, so set your chute early and sail a course that diverges from the windward boats until you're far enough away to have clear air. Avoid sailing in the middle of the fleet for very long.

As you get closer to the end of the reach, don't head up too soon. When you converge with the windward boats you will sail into their bad air and slow down. Therefore, stay low until the last minute – this gives you clear air as long as possible and saves your higher, faster angle for your final approach.



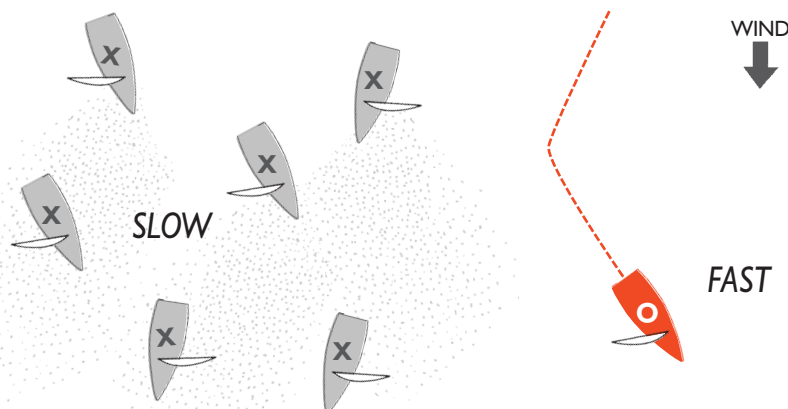
Luffing on a reach or run is the ultimate lose-lose tactic (unless you are so far ahead of the fleet that no one else can catch you). Every second that you are not sailing the fastest possible course to the leeward mark is a second that you are losing to every other boat in the fleet. Getting involved in a luffing match is a great demonstration of the classic “win the battle but lose the war.” In a fleet race, you are racing against all the other boats, so don’t waste time and/or distance by getting tangled up with one or two competitors.

**PLAY 27: Don’t catch ‘clumpitis’**

When you’re racing downwind, the most important thing is to follow your strategic plan – by playing the shifts, finding the best pressure and so on. Being near other boats will almost never help this. Your competitors get in the way by casting wind shadows and blocking your path, so an important tactical rule of thumb is simply to avoid the rest of the fleet as much as possible.

On a run it’s easy to get caught up in a pack of boats, all of which are going about the same speed and not separating too far apart (because they’re sailing deep angles on both jibes). A clump of boats sailing close together like this will almost always travel more slowly than a single boat sailing by itself for three reasons: 1) Wind shadows. Any boat near the front of a clump will likely be in bad air and will get reeled in by the pack; 2) Bumpy water. All the boats in a clump will have to deal with the wakes and disturbed water of the other boats; 3) Interference by other boats. It’s difficult to play the shifts, puffs and waves in a clump because your ideal path is often blocked by a right-of-way boat or a wind shadow.

Therefore, avoid ‘clumpitis’ as much as possible. Of course, it may be necessary to fight with a pack at certain times (like near marks), but if you can sail by yourself most of the time you will definitely go faster than your competitors in clumps.



**Use tactics only ‘as necessary’**

Sometimes the best tactical plan downwind is simply to avoid other boats as much as possible. Of course, you can’t always do this when you’re fighting to follow your strategy amidst a big fleet. But if you can accomplish any or all of your run objectives without getting too close to other boats, that is usually a good idea. There are very few advantages to being near your competitors, so stay away from individual boats and especially packs whenever you can.

**PLAY 28: Use your wind shadow to slow boats ahead**

When it’s later in the race, or when you have only one or two boats to worry about, you can afford to be more aggressive tactically. If you’re behind, the best weapon you have is your wind shadow, which gives you a fair chance to catch any boats close ahead of you.



The most effective way to make gains is by putting the other boat in the middle of your wind shadow. Do this by positioning yourself directly in line with her mast-head wind pennant (so you are lined up with her apparent wind direction). If you can’t see her wind pennant very well, you may be too far away to hurt her.

Another advantage you have as the boat behind is that you’ll get puffs first. These may bring you close enough to the boat(s) ahead that you can capture them in your wind shadow.

The most common mistake made by boats behind is not getting far enough forward to affect the other boat. You have to be lined up with the other boat’s *apparent* wind, not her sailing wind, which means you must usually be farther forward on her than you think.

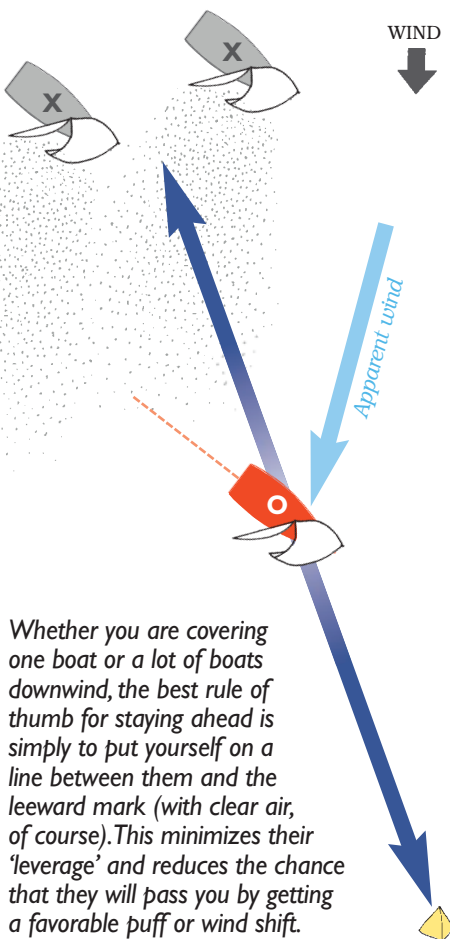
Even when it’s hard to slow the boat ahead, you may be able to use your wind shadow to control where she goes. For example, you might position your bad air to force her toward a layline or corner.

## PLAY 29: Stay between boats behind you and the next mark

**Covering** on a run is different than covering on a beat. The goal is still the same – to stay ahead of boats behind – but your method must change a little. Since you can't use your wind shadow to slow or control the boats behind, your main tactic for staying ahead is simply to minimize the separation, or 'leverage', between you and the boats behind. By not allowing other boats to get too far away, you minimize the gains they will make if the wind shifts in their favor.

To implement this tactic, position your boat on a line drawn from your nearest competitor to the next mark. If you are covering more than one boat (which is common), stay between the center of that group and the mark.

Of course, covering downwind has one more big difference from covering upwind – you have to worry about keeping your air clear of all the boats behind. This means sometimes you may not be able to stay exactly between those boats and the next mark.



PLAYBOOK: *Downwind*

## PLAY 30: Be proactive to avoid bad air

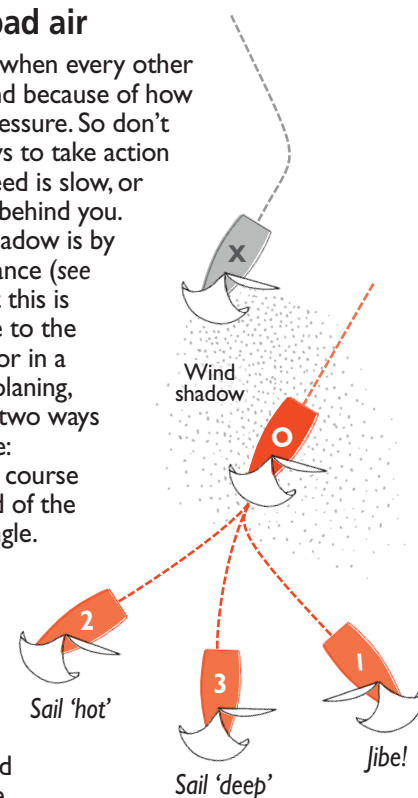
Sailing in bad air is slow. It's like sailing in a lull when every other boat is in a puff. This is especially bad downwind because of how much faster and lower you can sail in more pressure. So don't hang out in wind shadows. Here are three ways to take action when your spinnaker droops, your relative speed is slow, or your masthead wind pennant points at a boat behind you.

**1. Jibe!** – An easy way to escape a wind shadow is by jibing. Often jibing doesn't cost you much distance (see *Play 3*), so it's a good way to clear your air. But this is not a great option when you are on the layline to the leeward mark, sailing toward the favored side or in a condition where jibing costs a lot (e.g. you're planing, or in light air and chop). In that case, here are two ways to clear your air while staying on the same jibe:

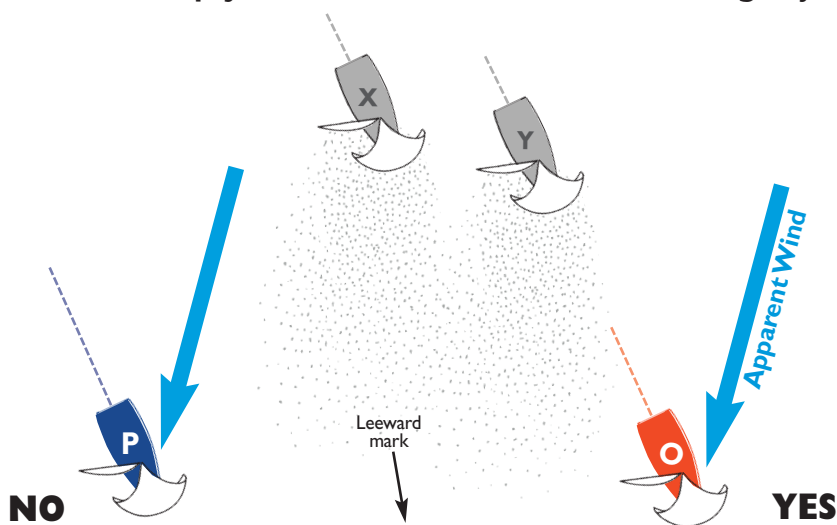
**2. Sail 'hot'** – Head up above your normal course downwind until your apparent wind is forward of the boat behind – then bear off to your normal angle.

**3. Sail 'deep'** – Bear off below your normal downwind course so you are sailing by the lee (this doesn't work for boats or conditions where you can't sail this low without losing a lot of speed). Hold this course until your wind is clear behind the other boat; then head up again.

Both of these are quick ways to escape wind shadows without losing much time or distance.



## PLAY 31: Keep your wind clear ahead on the longer jibe



When covering downwind, the goal is to keep your air clear while staying between the other boat(s) and the leeward mark. But sometimes it's not possible to do both. In that case, sailing in clear air should be your priority, and you just have to stay as close as you can to the line between your competitors and the next mark.

There are basically two different places where you can position yourself – on the left side of the other boat(s) and their wind shadow (P) or on the right side (O).

The better choice is the side where your apparent wind is clear ahead of the other boat(s) on the longer tack to the mark. In this situation, it's better to be O. P is not in a strong position because all these boats are sailing on the longer tack to the leeward mark and P's wind is aft of the two boats behind. In order to get to the mark P will, sooner or later, have to sail through the wind shadows of X and Y, and that could be a problem.

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## PLAYBOOK: Downwind

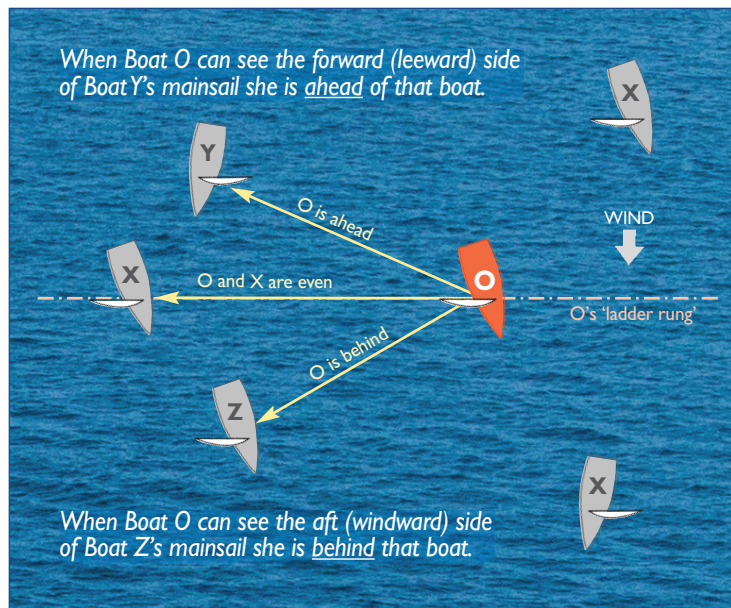
## More tactics

### PLAY 32: Use other boats to judge gain and loss

By keeping a close watch on whether you are gaining or losing to other boats on a run, you can learn a lot about your speed and whether you're on the correct side of the course or not. Luckily, there's an easy, reliable technique that works for most boats on a majority of downwind legs. I call it the *downwind mainsail rule*. It goes like this: 'When you can see the front of another boat's mainsail, you are ahead of that boat. When you see the back (aft) side of their main, you are behind them.'

This rule of thumb works for two reasons: 1) When racing to a leeward mark, boats on the same 'ladder rung' (line perpendicular to the sailing wind) are even in the race; and 2) In most cases, boats sail downwind with their booms perpendicular to the sailing wind.

So, if you are on an extension of the line defined by another boat's boom, you are on the same ladder rung and therefore even in the race. If you can see the forward (leeward) side of the other boat's mainsail, you are ahead of her; if you see the aft (windward) side of her main, you're behind her in the race (see below).



### PLAY 33: Protect starboard and inside

When you're approaching the windward mark, a good rule of thumb is to protect the right. By staying on the right side of other boats you will have the right of way on starboard tack when you converge at the mark.

On a run you should follow a similar principle, but you want to protect the left side (looking downwind). This tactical move is even stronger than on a beat, for two reasons. First, if you go left late in the run, it means you will approach the leeward mark on starboard tack, which gives you the right of way. Second, by coming in from the left side you will also be inside at the mark (assuming you are rounding it to port), and there's a good chance you will get mark-room from other boats.

Of course, if there is a strategic or tactical advantage on the right side (e.g. more pressure there), that could easily outweigh the advantages of getting to the inside. Also, if you are rounding the leeward mark to starboard, or if the leeward mark is a gate, the advantages of protecting the left side at the end of the run are not nearly so great.

