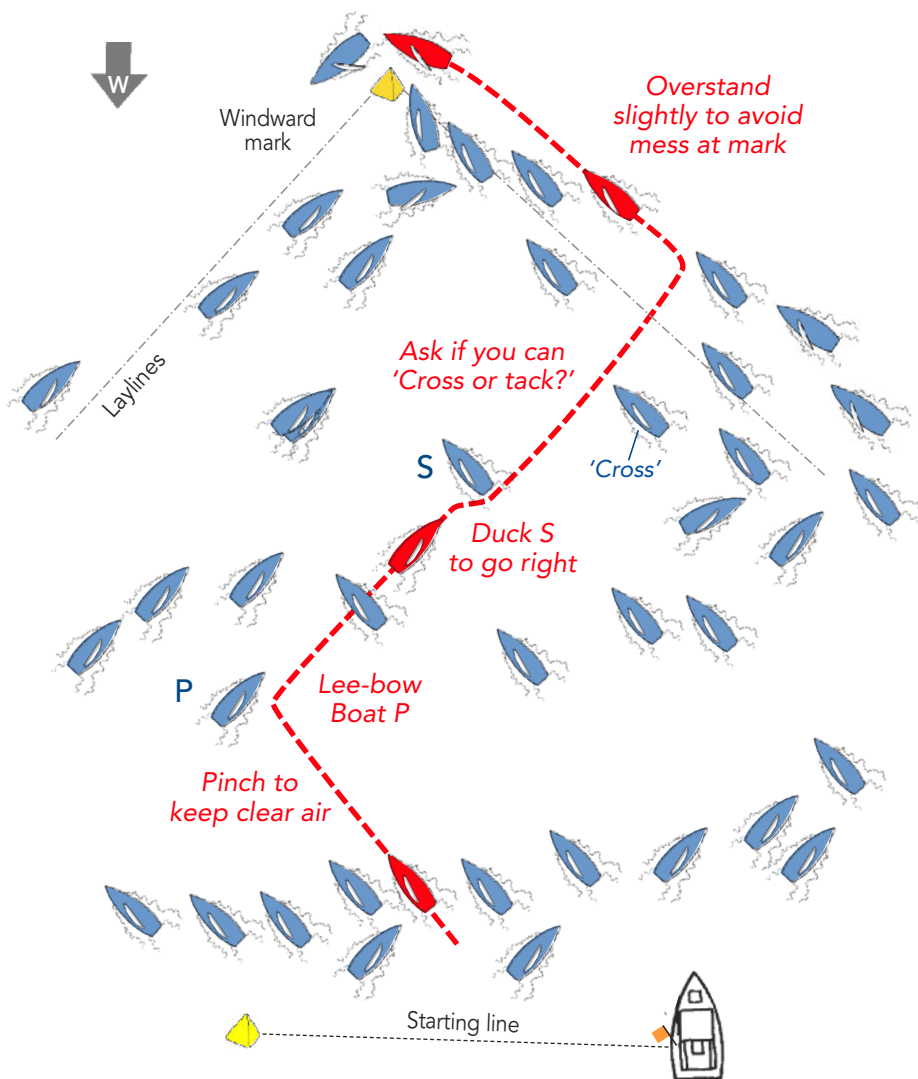




Deal with the crowd

In the last issue (#146) we discussed upwind strategizing – how to gather information about wind and current to make a plan that will get you to the windward mark as quickly as possible. It's very valuable to have a well-thought-out strategic plan, but all your work will be worthless if you aren't able to carry out the plan while you're in the middle of a fleet of boats. That's what this issue is all about.



TACTICS

Tactics are the maneuvers you make relative to other boats around you. They include lee-bow tacks, ducking a starboard tacker, and pinching to get rid of a windward boat so you can tack. The purpose of tactical moves, when you're racing to the windward mark, is to help you follow your strategic plan in the midst of a fleet of boats who are all trying to do the same thing. Here are a few different types of tactics:

Boat-to-boat tactics – Moves that you make relative to one other boat such as luffing a competitor (these are the most common tactics).

Fleet tactics – The positioning moves you make on the race course because of your location relative to the rest of the fleet.

Strategic tactics – Maneuvers that you employ to help you follow your strategic plan (this includes the vast majority of your tactical moves).

Tactical tactics – Moves that you make to catch or stay ahead of individual boats (e.g. covering).

SPEED & Smarts™

WORKBOOK 4

Upwind Tactics

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This issue is the fourth in a series of new 'workbooks.' The next issue, Downwind Strategy, will explain how to sail smart on runs and reaches.

ISSUE #147

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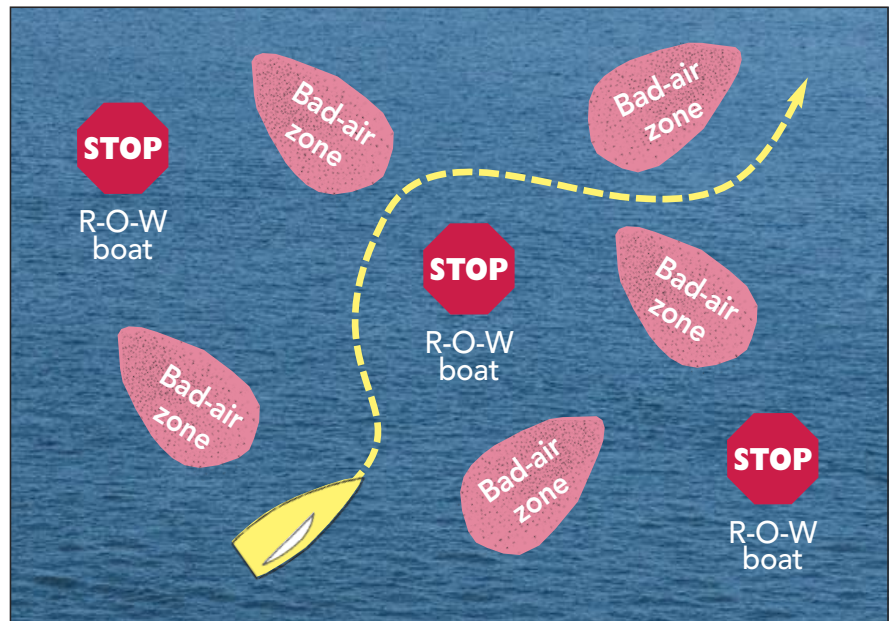
This issue includes some material from the workbook that goes with the Speed & Smarts seminar on Upwind strategy and tactics. If you like this issue, you might be interested in attending one of our seminars normally held from January to June. You can find more info [here](#).

Avoid other boats!

After a race, have you ever heard sailors say how much they gained by being near lots of other boats during a windward leg (or any other part of a race)? No! That's because messing around with other boats is almost always slow. Most of the best sailors minimize how much they interact with their competitors. For example, when Buddy Melges describes his secret to success, he says all you have to do is 'start first and increase your lead' (if only it was that easy)! In other words, sail your own fast, smart race and try not to get caught in battles with your competitors. Below are several reasons why avoiding other boats is generally a good idea.



Don't mess with the rest!



There are not many good reasons to position yourself near your competitors during a race. In fact, getting close to other boats often results in one or more of the following problems:

- Other boats have the **right of way**, so you must keep clear (i.e. get out of their way and let them go where they want);
- Their **bad air** slows you down. This is a major tactical issue;
- They **block** your strategic options. Even a boat without the right of way can make it difficult for you to go where you want;
- You can be slowed by their **wakes**.

Question: If tactics are bad, why is this whole issue about them?

Dave: That's a good question! We need to learn about tactics because, even when we try hard to stay away from other boats, there are times when we can't avoid them. In those cases we need good tactics to follow our strategic plan and avoid being pushed around by our competitors. But it's a good point – you don't want to make tactical moves just because you know how to.



This is a great photo because it shows a team of sailors who all have their 'heads out of the boat' as they approach other competitors on a beat. A key component of successful tactics is making sure you will have no surprises! If other boats show up unexpectedly around you it will be difficult to stick with your strategy and stay in control of your race. Therefore, make sure someone in your crew is always looking around so they can tell the team when there may be a situation developing with another boat. Anticipation is key because having more time to consider options usually results in better decisions.

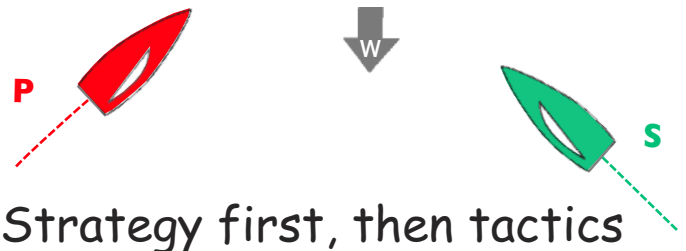
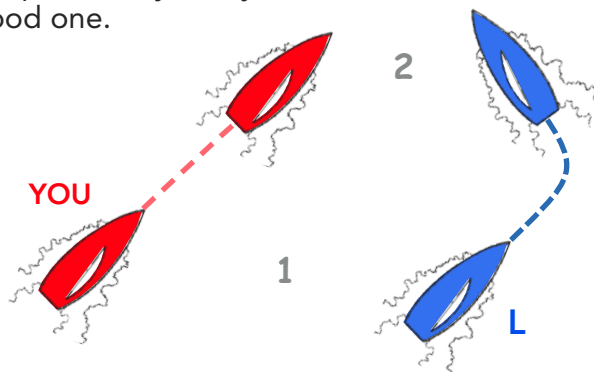
Anticipate!

Imagine that you are racing upwind on port tack (see below) and a boat close to leeward (L) tacks to starboard. Suddenly you have to make a tactical choice. Should you: 1) tack to leeward of L, or 2) bear off behind her? You have only two seconds to decide!

If you haven't thought previously about how you would respond if L tacked, your chances of making the 'right' decision are probably not much better than 50/50. If you make very many tactical decisions with a 50% chance of doing the wrong thing, your race will probably not go well.

To greatly improve your chances of success, think ahead and make this decision before L tacks. Anticipate what the boats around you may do, and for each possible action they might take, figure out what tactical option you will pursue to best follow your strategic game plan.

The more time you give yourself to consider decisions like this (by thinking ahead), the higher the probability that your tactical choice will be a good one.



A strategy is the big-picture plan you develop to get to the windward mark as fast as possible using wind shifts, pressure, current and other such factors to your advantage. Tactics are the small-picture moves you execute with regard to nearby boats in order to pursue your strategy. In almost all cases you should start with strategy (the big picture) and then apply tactics (the small picture).

In the situation above, for example, the port-tack boat (P) has to make a tactical choice to avoid the starboard tacker (S). Should she tack into a lee-bow position or bear off to pass astern of S? The better option depends on P's strategic plan. If she likes the right side she should bear off and duck; if she likes the left side she should tack.

The point here is that you should not make tactical choices in a vacuum. Pick the boat-on-boat moves that will best help you strategically.

Every time you make a tactical maneuver because of another boat, you lose time and distance to every other boat in the fleet.

Risk: A tactical concept

There is risk in almost everything we do, and sailboat racing is no exception. **Risk** is exposure to the possibility of loss. In sailing, it's the chance that you will lose one or more of the boats you are trying to beat. Every time you make a choice, you are taking a certain amount of risk along the continuum from 'no risk' to 'lots of risk.'

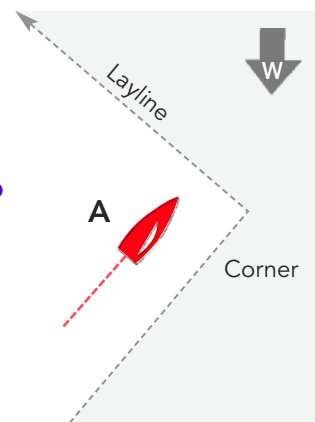
In sailing, risk is inherently a tactical concept (except in cases where you risk something other than your finish position such as injury or damage). Risk is tactical because the most important goal of most races is to beat as many other boats as possible. A risky move, therefore, is one that could cost you places in the race.

In most races, it doesn't matter how long it takes you to sail around the course, as long as you do it faster than your competitors. Consider a boat (A) that sails to one side of a windward leg when she's pretty sure the other side is favored. Is this a risky move? Not necessarily. Boat A may not get to the windward mark as quickly, but the level of risk depends on the location of other boats.

If all of A's competitors are also going to the unfavored side, then going that way could be a smart move without much risk. But if the rest of the fleet is headed the *other* way (see below), A could be taking a big risk, especially when she is doing well in the race and has a lot to lose.

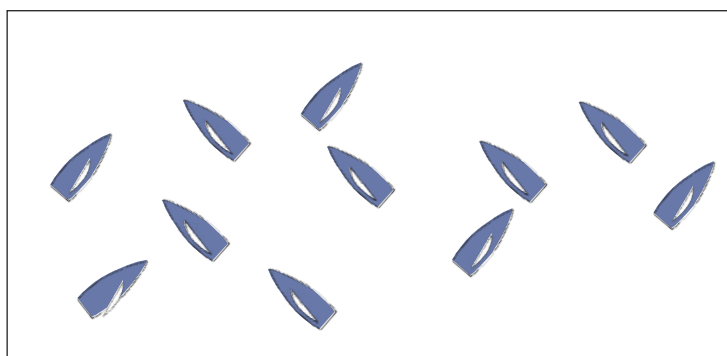
So when you are evaluating how much risk you'll take at any point in a race, look around at your competitors and think about whether the move(s) you are considering will increase or decrease the chances they will pass you.

Is it risky for a boat (A) to sail all the way into the corner of a windward leg?



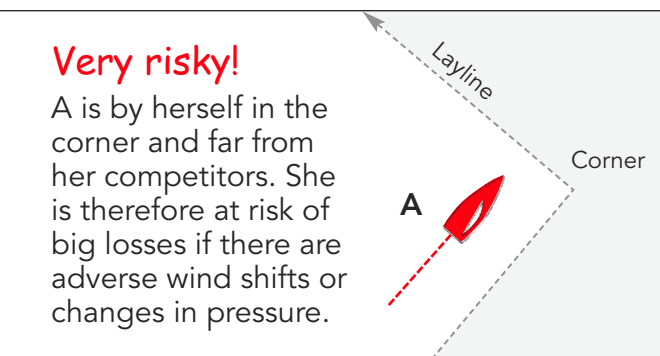
The answer to the question above is: **It depends!** Since the goal in every race is to beat the other boats in your fleet, risk is a function of how big a chance you take relative to those other boats. Are you in a risky place where you are likely to lose distance to those boats? Or are you in a less-risky place where you have a minimal chance of losing?

It's hard to know whether Boat A above is taking a risk or not because we have no idea where the rest of her fleet is. As you will see from the hypothetical examples below, the position of other boats makes a big difference.



Very risky!

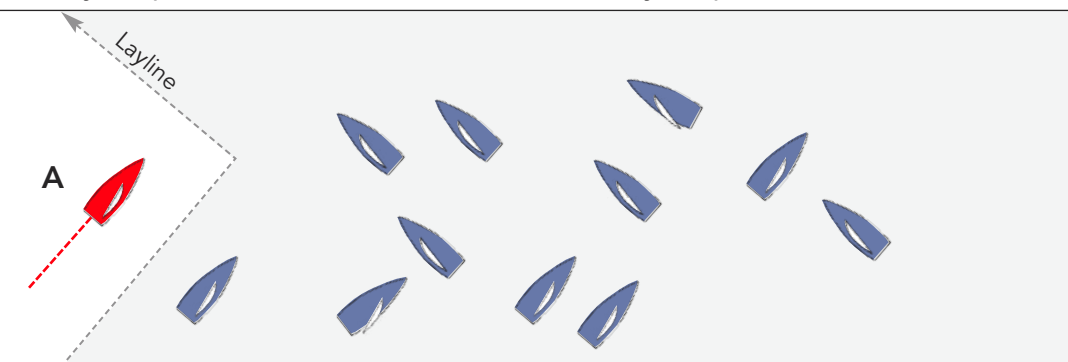
A is by herself in the corner and far from her competitors. She is therefore at risk of big losses if there are adverse wind shifts or changes in pressure.



Risk is primarily a function of your position relative to other boats, not your position on the course.

Not risky

A is still by herself in the corner but the entire fleet is out past the corner, so A is actually in a conservative, safe position.

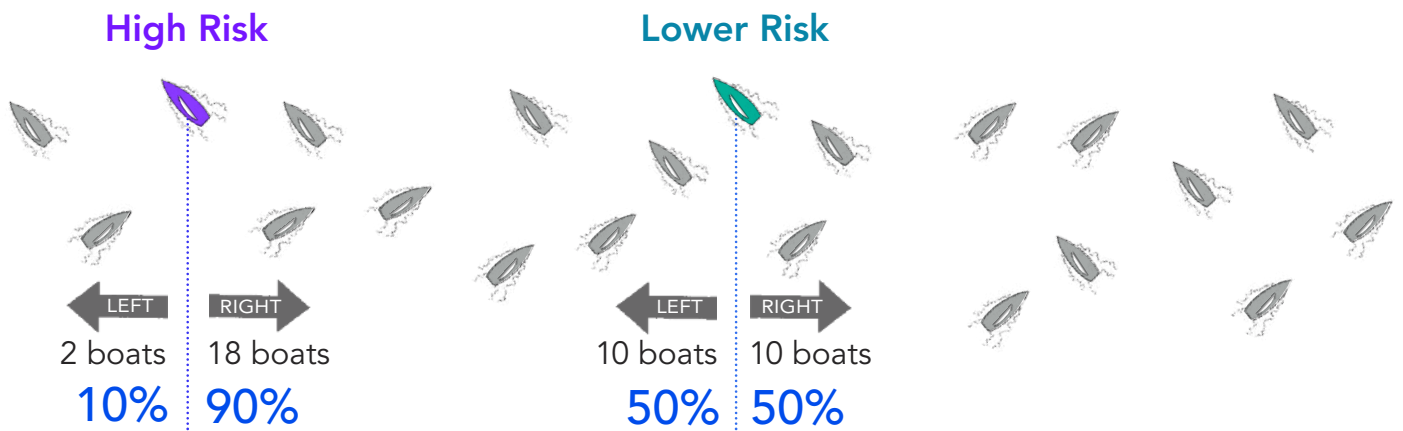


Tactics: Big picture vs. small picture

When we talk about upwind tactics, most of the time we are thinking of the maneuvers that one boat makes relative to one other boat. These moves include ducking, making a lee-bow tack, luffing, covering, avoiding bad air and so on.

But tactics also happen on a much larger scale. Because you are always racing against a fleet of boats (not just the boat that happens to be near you), you have to be aware of your position with respect to all your competition. This is key to understanding your exposure to risk.

When I'm racing upwind, I usually want to know how many boats are on our left side, and how many are on our right. This balance (or imbalance) provides a lot of info about risk.



Playing the percentages

Tactical risk is mostly a function of your position in the fleet. Boat A, for example, is the farthest boat left in this fleet. Her risk level is high because even a small wind shift to the right will put every other boat ahead of her. Boat B, on the other hand, is right in the middle of the fleet so her exposure to risk is a lot lower. A right shift may put her behind most of the boats to her right, but it will also put her ahead of most boats to her left. When you are not doing well (like Boat D), playing the percentages is often not as important as getting clear air and picking one side to play.

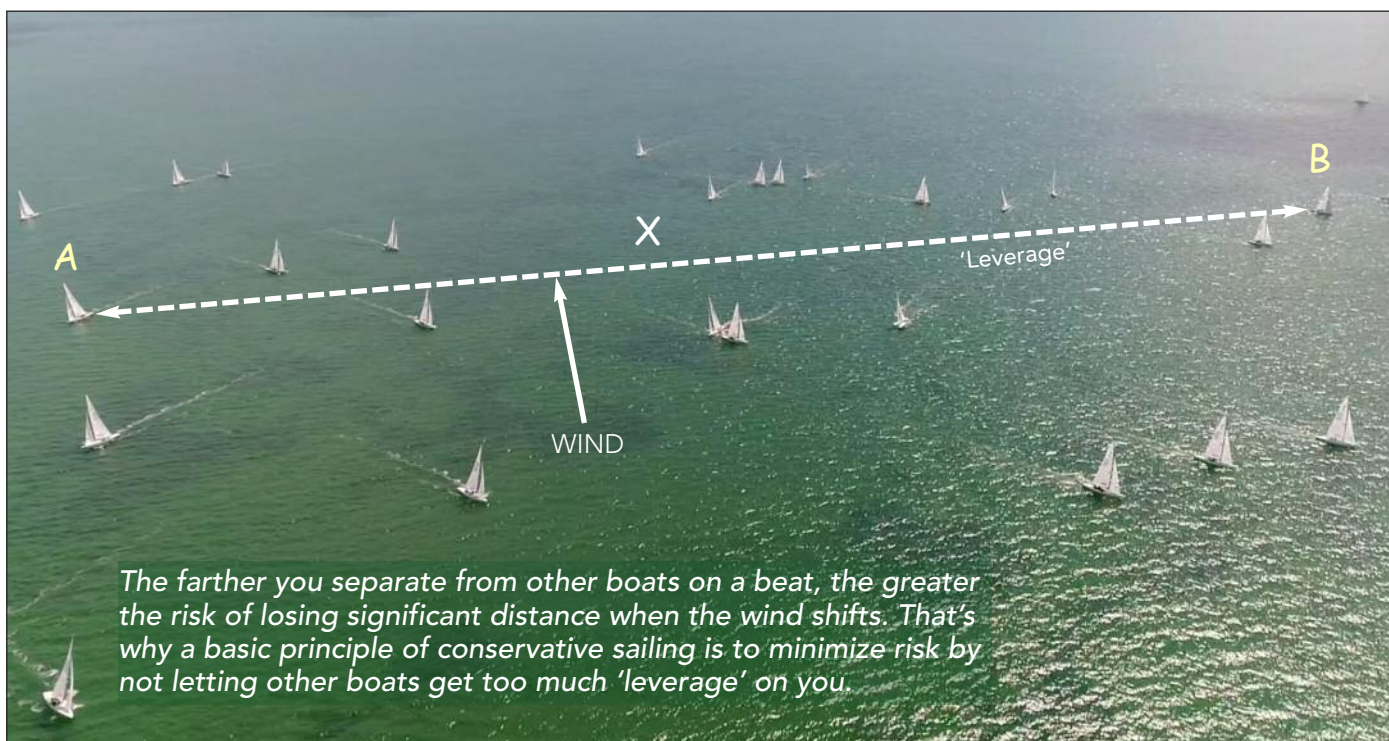
High risk: 100% Left 0% Right

Minimal risk
50% Left
50% Right

High risk
0% Left
100% Right

Not much to lose.
Pick a side, get clear air
and hope your side
comes out ahead.

Aerial photos by Felipe Juncadella



The risk of separation

Wind shifts happen all the time in sailboat racing, and when they do, some boats gain and others lose. This is a big consideration for managing the amount of risk you take relative to other boats.

When the wind changes direction, the amount of distance that boats gain or lose as a result depends on two primary things: 1) the size of the wind shift, and 2) the distance between the boats (see chart at right). For example, a 10° wind shift means a gain (or loss) of roughly 20% to 25% of the lateral separation between boats. If the boats are far apart, that's a lot of distance!

So what does all this mean for tactics? First, 'leverage' (i.e. the lateral distance between boats) really matters. When you want to minimize risk (which is often the case when you're doing well in a race, for example), you should also minimize the separation between you and the boats that are closest behind you. By keeping the other boats' leverage over you to a minimum, you will reduce the potential distance they could gain if the wind shifts in their favor. This is the basic idea behind the tactic of covering (see page 14).

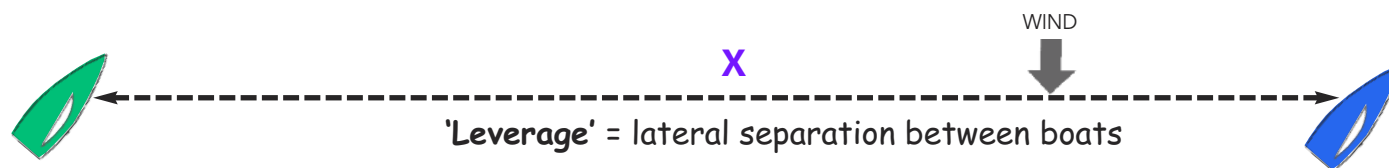
Gain and loss upwind in shifts

Your boat's tacking angle	Size of the wind shift			
	5°	10°	15°	20°
90°	12%	25%	37%	48%
80°	11%	23%	34%	45%
70°	10%	21%	31%	42%

Gain or loss as a % of lateral separation (X)

This chart shows how much distance boats gain or lose when the wind direction shifts. As you can see, the gain or loss depends on the size of the shift, the separation between boats and, to a lesser extent, on the boats' tacking angles.

Predicting future wind shifts and deciding how to play them is a strategic matter. But knowing how wind shifts affect your position relative to other boats is a tactical one. For example, if boats that tack through 80° experience a 10° wind shift to the right, the boat on the right will gain about 23% of the distance between those boats.



Upwind convergences

One unique thing about upwind legs is the number of times you converge with boats on the opposite tack. In many races it seems like you are constantly meeting other boats, and each of these encounters has potential for gain or loss. If you lose even a quarter boatlength in each convergence, for example, this can have a large negative impact on your overall success. The goal, therefore, is to optimize each meeting. Anticipate each convergence, maintain speed during the situation, exit from each encounter in the right direction (based on your strategic plan), and keep your strategic and tactical options open. Here are two questions to answer before or as you approach each upwind convergence:

1. What is your strategic plan?

It's always important and useful to have a basic strategic gameplan for the leg on which you are sailing. In simple terms, at each moment while you are racing you should know whether you prefer to go left or right. This is critical when you converge with boats on the opposite tack since your goals for each encounter are to: 1) exit the situation headed in your strategically desirable direction, and 2) keep control of your own race and not be pushed around by the other boat.



When boats come together on opposite tacks, the port boat's first problem is that she must keep clear of the starboard tacker (S). We know S has the right of way, but that doesn't guarantee she will come out of the encounter going the way she wants. The first thing for both boats is to figure out (before they come together) which way they want to be going after the convergence, and then they must consider the possible tactical moves they can make to accomplish that. These options are the subject of the next four pages.

2. What maneuvers are possible given the relative position of the boats?

As two boats converge on a beat, they should each consider all the tactical options they have to pursue their strategy. For example, a port-tack boat that likes the left may want to tack in a lee-bow position. However, this is an option only if she is far-enough advanced on the starboard tacker. That's why both boats need to make a realistic assessment of their relative position and determine what maneuvers are actually possible.



JH Peterson photo

When two boats are converging, it's helpful for both to understand their position relative to the other boat. For example:

- Can P cross ahead of S?
- If not, how close is P to crossing?
- Can P do a lee-bow tack?

Here are some things that crew members on each boat might say to describe the convergence:

- 'We are bow to bow.'
- 'We are almost crossing ahead.'
- 'The other boat will have to make a small duck to miss us.'
- 'We aren't crossing, but we can make a strong lee-bow.'
- 'If we do nothing we will hit them at their leeward shroud.'

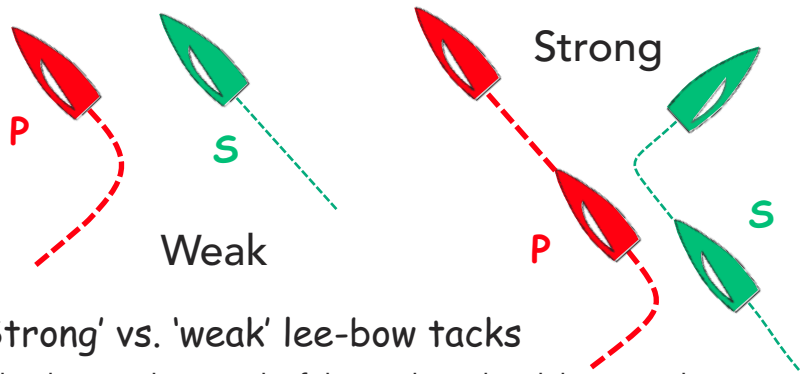
(Describing how the boats would hit if both kept going straight is a good way to understand the convergence.)

Can the port tacker make a 'strong' lee-bow tack?

When two boats on opposite tacks are converging on a beat, it's important for both of them to know whether the port-tack boat (P) will be able to tack into a 'strong' lee-bow position (see right for description of a 'strong' lee-bow).

Executing a successful lee-bow tack depends on several factors including: the type of boat (e.g. how well it tacks), the boathandling (i.e. tacking) ability of the crew, the wind speed, the sea state (e.g. is it flat or wavy?) and, of course, the relative positions of the two boats as they approach each other.

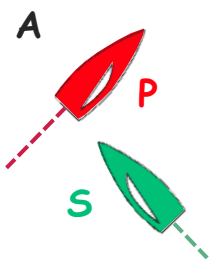
Below are some comments about how these factors affect the port-tack boat's ability to execute a strong lee-bow tack.



'Strong' vs. 'weak' lee-bow tacks

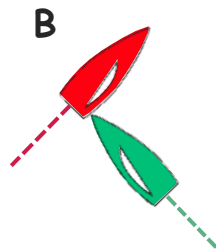
A lee-bow tack is 'weak' if the starboard-tack boat can keep sailing straight (in clear air) after the port tacker tacks (above left). This is undesirable because P is then 'pinned' from tacking back to port. This usually happens when P tries to lee-bow from a position that is not advanced enough (relative to S).

A 'strong' (i.e. successful) lee-bow (above right) happens when P tacks close enough in front (or to leeward) of S that P's bad air/water slows S and forces S to tack away for clear air after a very short time. This is strong because P quickly regains the option to sail on either tack.



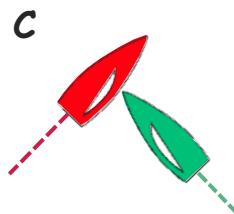
Yes

P is crossing just clear ahead of S. P should be able to lee-bow from this position unless she is a very fast boat that doesn't tack well (e.g. skiff, cat).



Probably

P cannot quite cross clear ahead of S. P is usually able to lee-bow from here, but maybe not in a heavier boat in light air and waves.



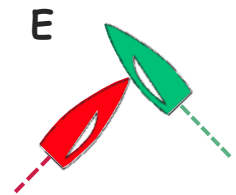
Possibly

P is 1/2 boatlength ahead, and S would hit the middle of her leeward side. P can lee-bow in good conditions (e.g. flat water) if she is able to tack easily.



Probably not

The boats are even in the race and would hit bow to bow. A lee bow is usually not possible unless it's light air with flat water and P can roll-tack very well.



No!

P is behind in the race and would hit the leeward side of S. A strong lee-bow is not possible even for the best tacking boat in ideal conditions.

The effect of wind speed and sea state on lee-bow tacks

Wind strength	Position needed for a strong lee-bow tack	
	Flat water	Waves
Light	D B	B/C A
Medium	D C	C B
Heavy	C B	B/C B

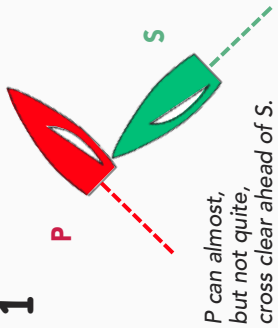
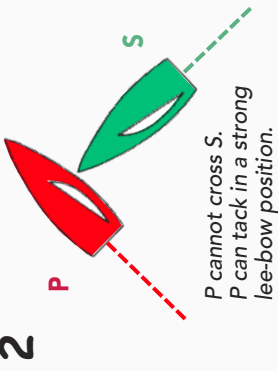
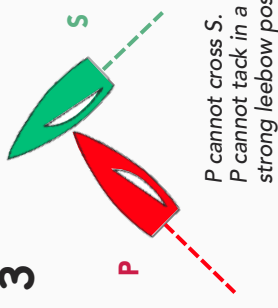
Think about your boat and crew in each of the six wind and wave combinations described in the chart at left (flat water or waves in light, medium and heavy wind). How far advanced would you have to be on port tack to be confident that you could place a strong lee-bow tack on S?

The letters in this chart come from the five meeting points shown above, and they are best guesses for these two general types of boats:

- Fast, light, roll-tacking dinghy
- Slow, heavy keelboat

Converging Tactics for upwind legs

Here's a chart that shows tactical options for boats converging on port and starboard tacks based on their strategic preferences (left) and three relative positions (top).

Meeting points → Strategic Preferences →		PORT TACKER		
		1	2	3
You like the LEFT SIDE of the course.	You like the RIGHT SIDE of the course.	 <p>P can almost, but not quite, cross clear ahead of S.</p>	 <p>P cannot cross S. P can tack in a strong lee-bow position.</p>	 <p>P cannot cross S. P cannot tack in a strong lee-bow position.</p>
		<p>Tack right in front of S (or slightly to leeward of her path) so: a) you are heading left, and b) you force S to tack and sail toward the unfavored right side.</p>	<p>Tack into a strong lee-bow position on S so you are going left. Work hard on pointing so S falls into your bad air or tacks to clear her wind. Your goal is to re-gain the option to tack if necessary.</p>	<p>Tack early before you get too close to S. Try to be at least 3 lengths away from (to leeward of) S so she will not prevent you from tacking back to starboard if that becomes necessary.</p>
You like the LEFT SIDE of the course.	You like the RIGHT SIDE of the course.	<p>Ask S (verbally or non-verbally) if you can cross in front of her. If you don't get a clear 'Yes,' go behind her or, in a boat that tacks well, tack right in front of S, force her to tack and then tack again to go right.</p>	<p>Bear off and pass behind S. In a boat that tacks well (when going right is not too urgent), one option is to place a strong lee-bow on S, force her to tack, and then tack again to head right.</p>	<p>Bear off and pass behind S. If you are worried S might tack right in front of you, aim straight at her leeward side, do a late duck and yell, 'Don't tack too close.'</p>
		<p>When P is still several lengths away, yell 'Go ahead' and wave your arm to signal that she can cross. Be loud and clear. Bear off early to show that you are intending to let her cross in front of you.</p>	<p>When P is several lengths away, bear off slightly (5° to 10°) and aim at her (be sure to give P 'room to keep clear'). Force P to tack earlier than she wants – then use your extra speed to head up and hold a lane above her going left.</p>	<p>Keep sailing fast straight ahead on your normal, optimal upwind angle. Don't worry about P since she is not close enough to lee-bow or otherwise affect you.</p>
You like the RIGHT SIDE of the course.	You like the RIGHT SIDE of the course.	<p>Don't let P cross in front of you. Yell 'Starboard!' Force P to tack and then tack yourself to head toward the favored right side.</p>	<p>Sail normally upwind until P tacks into a lee-bow position; then tack and go right. If P starts to bear off to go behind you, tack into a lee-bow position on port tack (being sure to give P 'room to keep clear').</p>	<p>Tack early before you get close to P. Or tack into a lee-bow position so you end up to leeward and ahead of P on port tack, headed for the favored right side.</p>



When P wants to go left

When P wants to sail left, her tactical choice is simple – just tack! P is already to the left of S so there’s nothing that keeps her from going that way. In fact, if P really wants the left, why is she on port tack heading right? There’s no reason for P to sail close to S and risk getting tangled together. Her best move is to tack early, at least several boatlengths from S – this gets her to the left sooner and gives her the option to tack back to port if and when she wants.



When S wants to go right

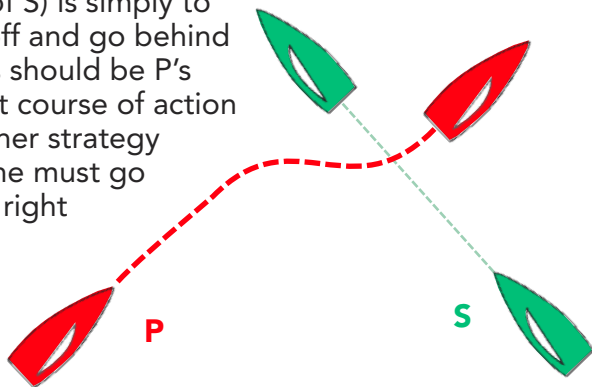
When S wants to sail right, her tactical choice is simple – just tack! S is already to the right of P so there’s nothing in her way of going to that side. In fact, if S really wants the right, why is she on starboard tack heading left? There is no reason for S to sail close to P and risk getting tangled together. A good move is to tack early, at least several boatlengths from P – this gets her to the right sooner and gives her the option to tack back to starboard in the future without tacking too close to P.



When P wants to go right

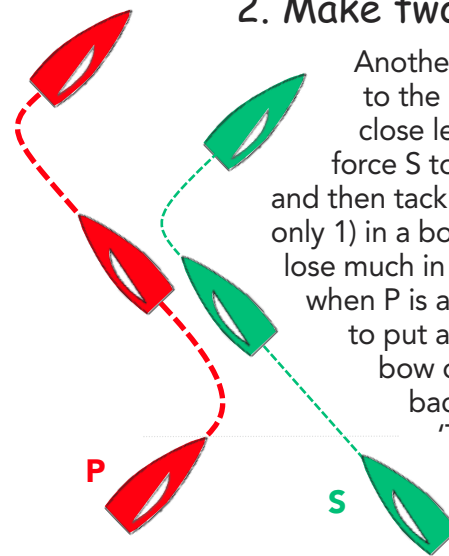
1. Just duck

The safest, easiest and most reliable way for P to continue going right (and simultaneously keep clear of S) is simply to bear off and go behind S! This should be P’s default course of action when her strategy says she must go to the right side.



2. Make two quick tacks

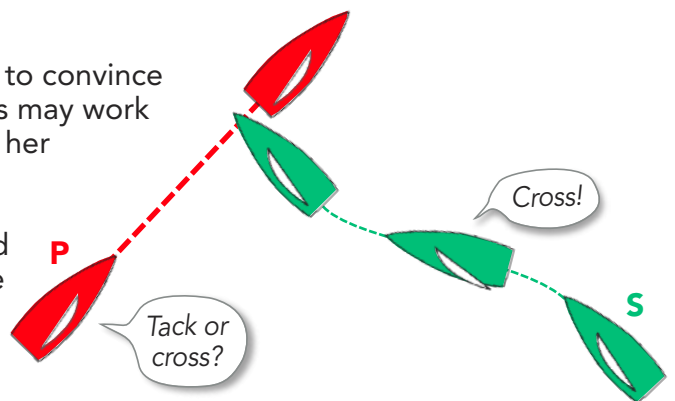
Another way for P to get to the right is to make a close lee-bow tack on S, force S to tack right away, and then tack again. This works only 1) in a boat that doesn’t lose much in a tack, and 2) when P is advanced enough to put a very strong lee-bow on S. (It’s also a back-up plan when ‘Tack or cross?’ doesn’t work – see below.)



3. Make a deal to cross ahead

When P can almost cross ahead of S, she may be able to convince S to make a small duck and let her (P) pass ahead. This may work if S wants to go left and is worried about P tacking on her lee-bow (which would force S to tack to the right).

However, this tactic requires good communication from P to S and back, so it’s a challenge in strong wind (when it’s noisy) or if the boats are going fast (because the hail must be made farther away). Non-verbal gestures can help, but if P has any doubt about S’s intentions, P should assume S will not let her cross.



When S wants to go left

1. Let the port tacker cross you

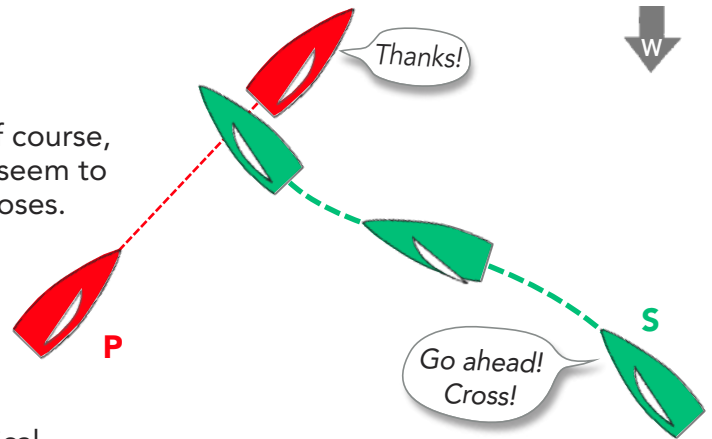
The starboard-tack boat (S) has the right of way, of course, so the port-tacker (P) must keep clear. That might seem to make it easy for S to go to whichever side she chooses. But if S's strategy is to keep sailing on starboard tack toward the left side, she will have a problem if P tacks into a strong lee-bow position. In that case, S would be forced to either sail in bad air or tack to clear her air (which would require two extra tacks and delay her trip to the left).

To prevent a lee-bow tack by P, the easiest tactical move for S is simply to let P cross in front of her. Even if S has to bear off to pass behind P, this would be better than letting P force her to go right.

So S shouldn't automatically yell 'Starboard!' whenever she approaches a port tacker. If she wants to go left, let P cross ahead by taking one or more of these actions:

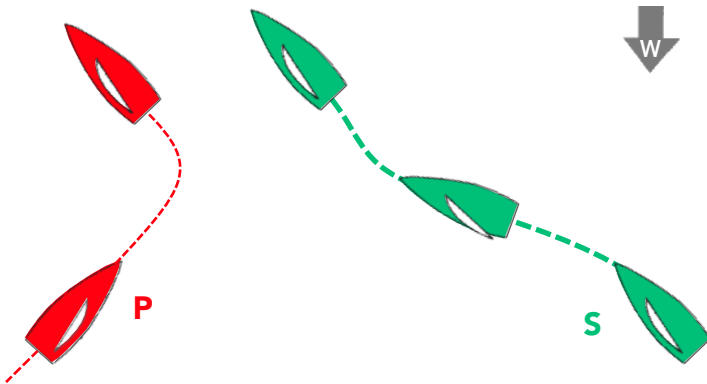
- Bear off early and aim behind P to make it clear that she (S) will let P cross ahead;
- Yell 'Go ahead' or 'Cross' early and often; and
- Make non-verbal signals with her hands and arms to wave P across.

Letting P cross will not only help S follow her short-term strategy but may generate some good will in the long run.



The boat that enters a situation with more speed usually leaves it with more success.

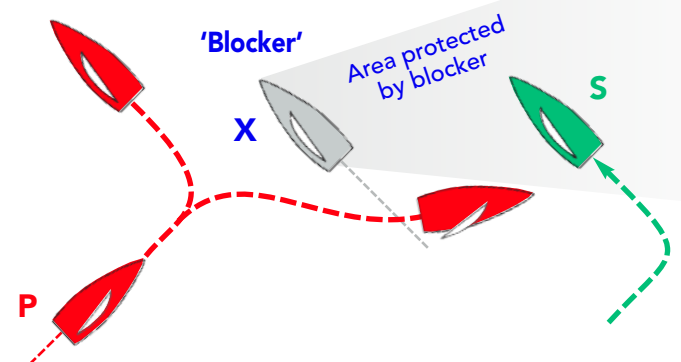
2. Bear off and aim at P



Here's a very proactive tactic to help S go left when P is advanced just enough to apply a strong lee-bow tack. When S is a few lengths away, she bears off and aims at P (being careful not to break rule 16 - Changing Course). This forces P to tack sooner (to keep clear of S) and makes it difficult for P to tack in a good lee-bow position. It also increases S's speed. As soon as P begins to tack, S luffs up slightly above closehauled, using her extra speed to gain windward separation from P (so S can sail longer on starboard tack with clear air).

Warning: May be too aggressive for casual racing!

3. Use a 'blocker' to guard your lane



When S wants to maintain a lane of clear air going left, it's helpful to have another boat on starboard tack acting as a 'blocker' to leeward and ahead. Ideally this blocker (X) is a boatlength or two in front of S and 2 or 3 boatlengths to leeward. S can get into this position by ducking X, sailing three lengths and then tacking. The purpose of the 'blocker' is to deflect incoming port-tackers. A boat (P) that might have been in a position to lee-bow S (if X wasn't there) cannot duck X and then lee-bow S. P will now have to either lee-bow the blocker, or bear off behind both X and S.



Wind Shadows...

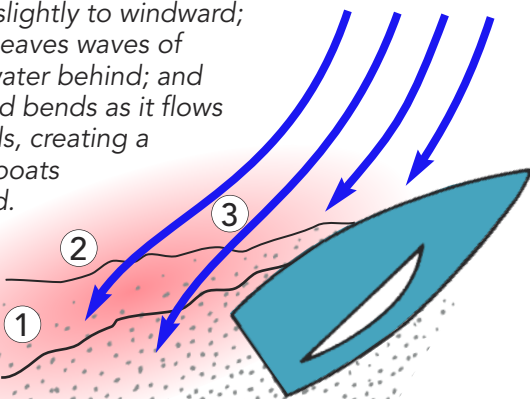
Are a huge tactical factor. You can't see them, but they are all over the race course! Think of bad air as a lull and clear air as a puff. Sail in puffs!

Focus on apparent wind

Bad air makes you go slower and point lower, so avoiding wind shadows from the boats ahead is a key tactical priority whenever you're racing upwind. To do this you have to think about the direction of their *apparent* wind. Because boats are moving forward, their wind shadows don't go straight to leeward, so even when you are directly to leeward of a windward boat you will probably be in clear air. But if the other boat's wind pennant is pointing directly at you, get out of there!

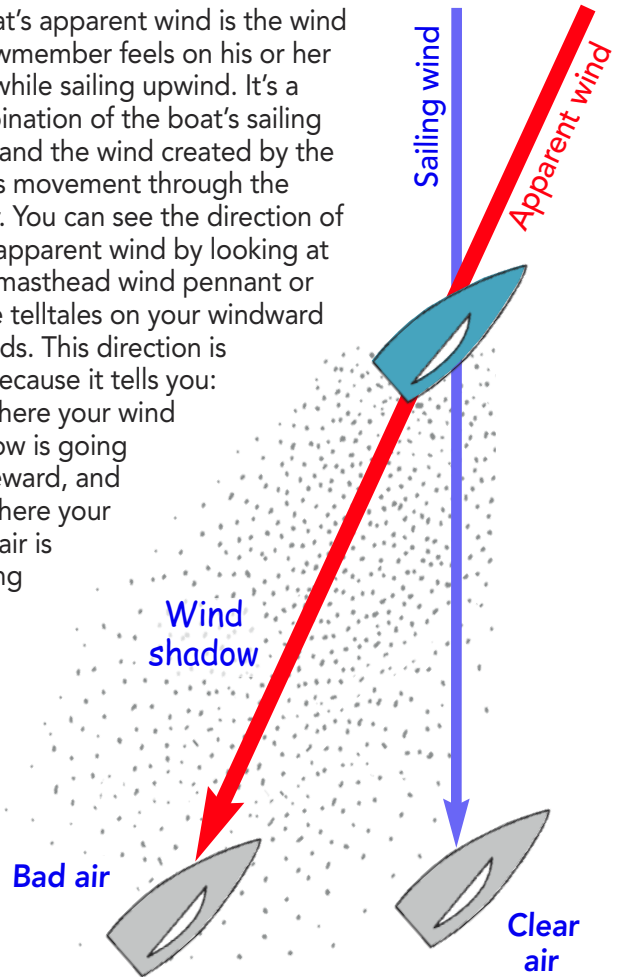
A boat's wind shadow extends mostly to leeward, but there are three reasons why it's also slow to be close to windward or astern of another boat (the red zone):

- 1) Some of a boat's disturbed wind shadow goes astern and slightly to windward;
- 2) A boat leaves waves of disturbed water behind;
- 3) The wind bends as it flows past the sails, creating a header for boats to windward.



A boat's apparent wind is the wind a crewmember feels on his or her face while sailing upwind. It's a combination of the boat's sailing wind and the wind created by the boat's movement through the water. You can see the direction of your apparent wind by looking at your masthead wind pennant or at the telltales on your windward shrouds. This direction is key because it tells you:

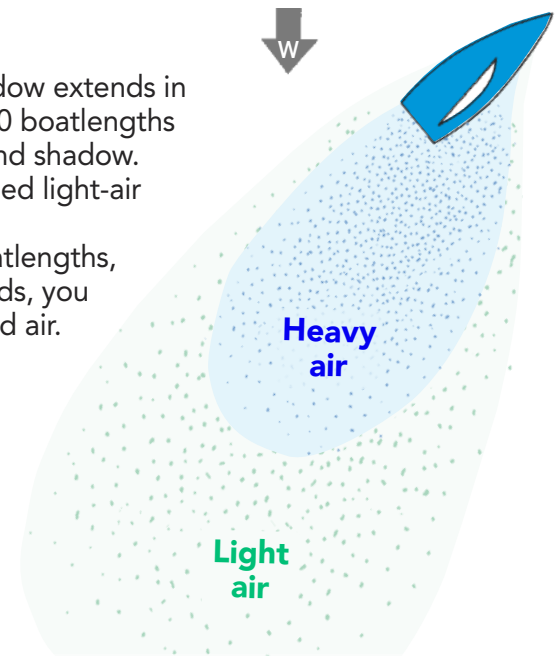
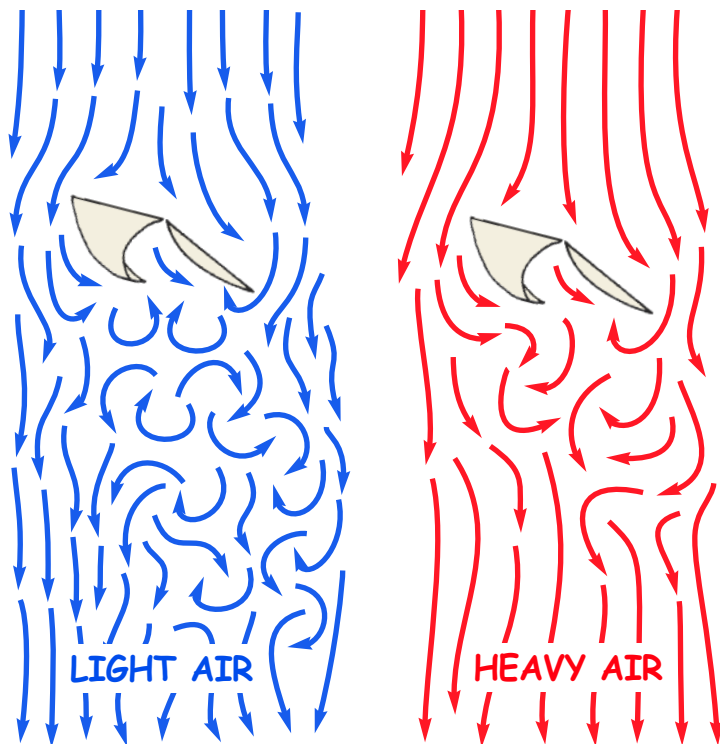
- 1) where your wind shadow is going to leeward, and
- 2) where your clear air is coming from.



Wind shadows are worse in light air

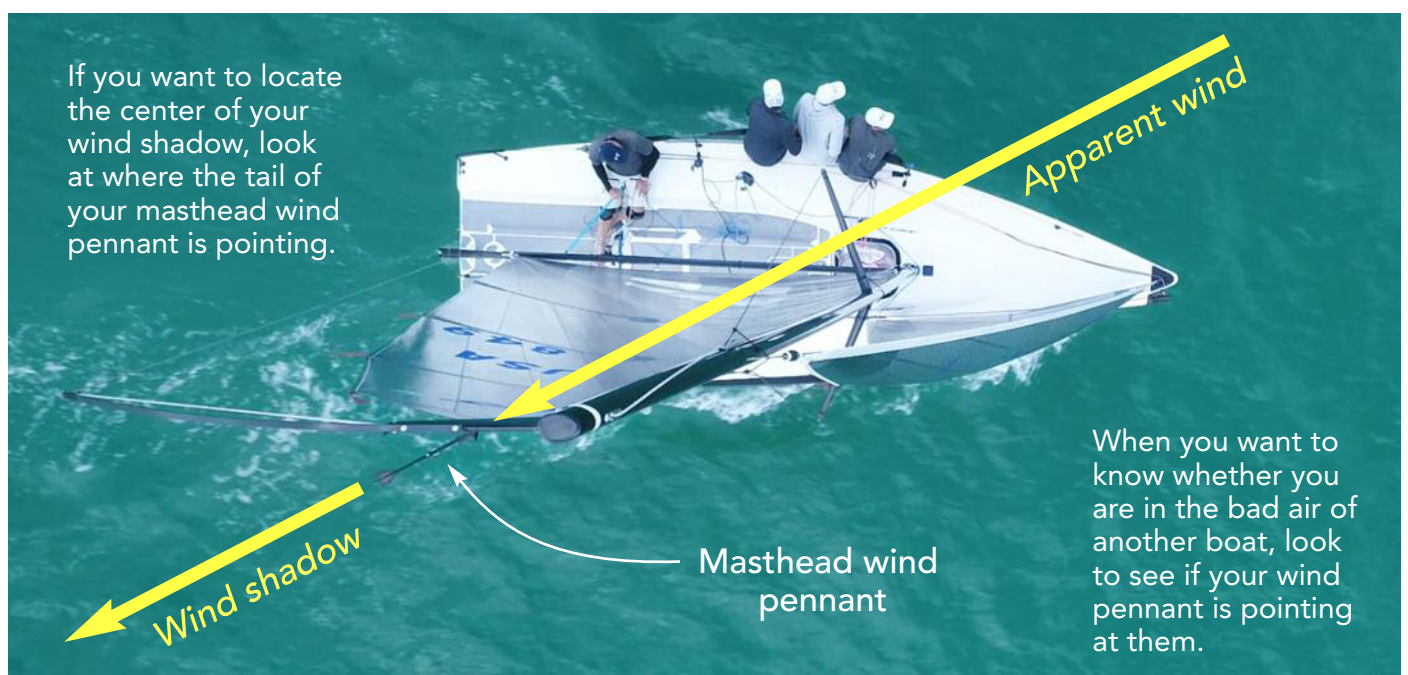
Think about the boat you normally race and how far its wind shadow extends in light wind. In most boats, you probably have to be at least 8 or 10 boatlengths (or more) away from a windward boat in order to escape their wind shadow. That's farther than many sailors realize. And it's why, on a crowded light-air beat, it can be very difficult to find lanes of clear air.

In heavy wind, however, your bad air might go only 5 or 6 boatlengths, or about half the distance of light-air wind shadows. In other words, you can be much closer to other boats and not be slowed by their bad air.



◀ When the wind blows against a solid object (like a sail), it bends around that object, breaks into turbulent eddies (which form a boat's wind shadow) and eventually returns to laminar flow.

The slower the wind is moving, the longer it takes to return to normal flow. In light air (far left), a boat's wind shadow is relatively large (maybe 10 boatlengths long) and very harmful when you're in it. But in heavy air (left), the wind has enough energy to re-establish flow more quickly, so it's not as big or as damaging. That's one reason why you can sail closer to leeward of a boat on windy days without being affected by her wind shadow.

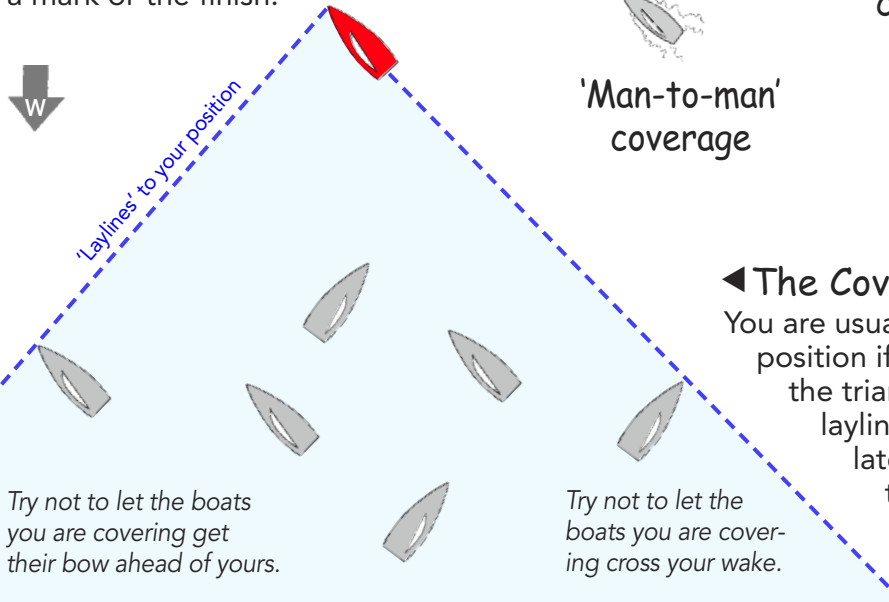


If you want to locate the center of your wind shadow, look at where the tail of your masthead wind pennant is pointing.

When you want to know whether you are in the bad air of another boat, look to see if your wind pennant is pointing at them.

COVERING

Covering is a tactic that's useful when you are happy with your position in a race and you want to defend that position by staying ahead of one or more boats close behind. Covering another boat often takes you away from your ideal strategic plan (since you are going where the other boat goes, not necessarily where you want to go), so use this tactic only when strategy is not a big priority, such as when you are approaching a mark or the finish.



Covering Basics

When you're trying to stay ahead of boats behind you, position yourself between them and the next mark. This minimizes how much 'leverage' they have on you and makes it hard for them to pass you even if there are changes in the direction or speed of the wind.

◀ The Covering 'Triangle'

You are usually in a pretty safe upwind covering position if the boats behind you are within the triangle formed by the close-hauled laylines to your position. By minimizing lateral separation between you and the boats you are covering, you minimize the distance they will gain from any wind shift.

Tight Cover

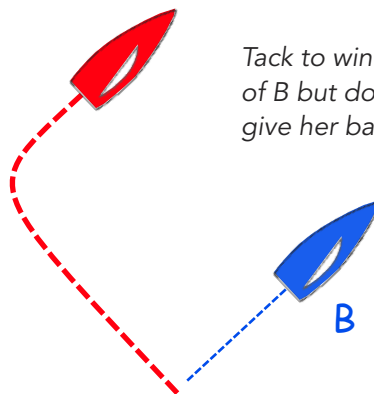
Tack right on B's apparent wind to give her bad air



A **tight cover** usually causes the boat behind (B) to tack, so use it only when you want to make her go the other way. This may be a good idea when the other boat is on the lifted tack, heading toward the favored side of the course, or on the layline.

Loose Cover

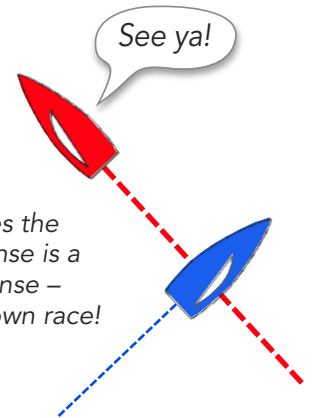
Tack to windward of B but don't give her bad air



Use a **loose cover** to 'stay in touch' with another boat when you don't want to make them tack. This could be a good tactic when you're not sure which side is favored, the other boat is headed the 'wrong' way, or you don't want to be aggressive.

No Cover

Sometimes the best defense is a good offense – sail your own race!



Do not cover a boat behind when you are doing the right thing strategically (e.g. sailing on a lift or toward the favored side of the course). In theory at least, if you keep sailing fast and smart other boats won't be able to pass you.

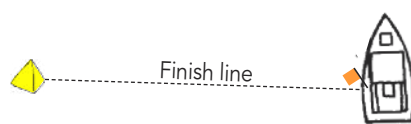
When to cover?

The tactic of covering most often occurs on the final beat when boats are heading toward the finish line. By that point it is usually clear what each boat has to do for the rest of the race – either catch a boat(s) in front of them, or stay ahead of the boat(s) behind them (by covering).

By the time boats are on the final beat to the finish, the fleet has also usually spread out a lot. This means you can focus on covering one boat without the risk of losing other boats (which could happen early in a race).

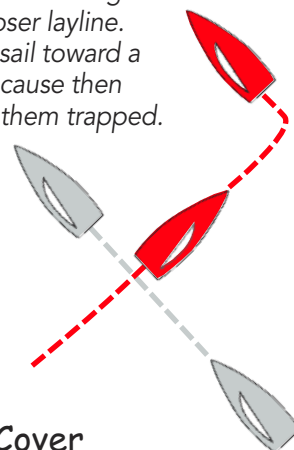
Tight or loose?

Many sailors think ‘covering’ means crossing in front of a boat and then tacking so they are in your bad air. This is one option (a ‘tight’ cover), but you wouldn’t use this tactic unless you wanted to force the boat behind to tack (since that is what happens almost every time you tack on another boat). So when you’re debating a tight versus loose cover, think about whether you want the other boat to tack or not. Here (at right) are a couple of examples.

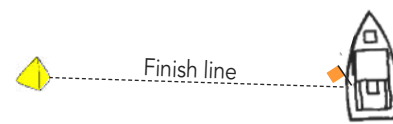


Give the boat behind you a **loose cover** when you want them to keep sailing on the same tack. Times you might do this include:

- They are going the ‘wrong’ way (i.e. toward the unfavored side). In this case you want to ‘protect the favored side’ by staying on that side of the boat you are covering.
- They are on starboard tack. If in doubt about how to cover, protect the right side so you will be on starboard tack with right of way when the boats come back together; or
- They are heading for the closer layline. Let them sail toward a layline because then you have them trapped.

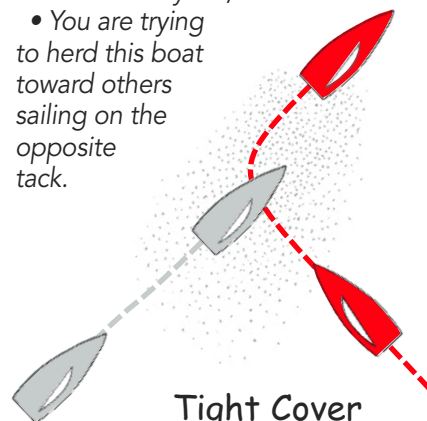


Loose Cover



Give the boat behind you a **tight cover** when you want to make them tack. Times you might do this include:

- They are going the ‘right’ way (i.e. toward the favored side). In this case ‘protect the favored side’ by going that way and forcing the other boat to tack.
- They are on port tack. If in doubt about how to cover, make the other boat go left so you will be on starboard tack when the boats come back together.
- They are sailing on or very close to the layline; or
- You are trying to herd this boat toward others sailing on the opposite tack.



Tight Cover

‘Herd’ the boats behind

When you’re trying to cover just one boat close behind, your task is relatively clear – simply stay between that boat and the next mark or finish. But if you’re trying to remain ahead of two or more boats, things can be a lot more complicated.

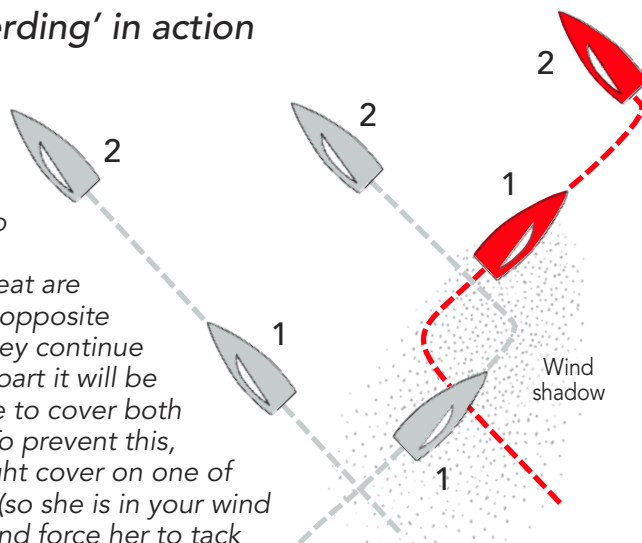
The toughest tactical challenge is when the boats behind you split to opposite sides. Should you cover the boat going right? The boat going left? Or stay in the middle? No matter which option you choose, there is a significant risk that one of the boats may get enough of a wind shift to pass you.

The solution? Don’t let those boats split to opposite sides of the beat. Instead, ‘herd’ the boats so they both (all) go the same way (see diagram). That will make your job of covering a lot easier.

‘Boatherding’ in action

1. The two boats you need to beat are sailing on opposite tacks. If they continue splitting apart it will be impossible to cover both of them. To prevent this, place a tight cover on one of the boats (so she is in your wind shadow) and force her to tack to clear her air.

2. Now both boats will be on the same tack and you can tack to apply a loose cover. This will: a) minimize their leverage, and b) put you roughly between them and the next mark.



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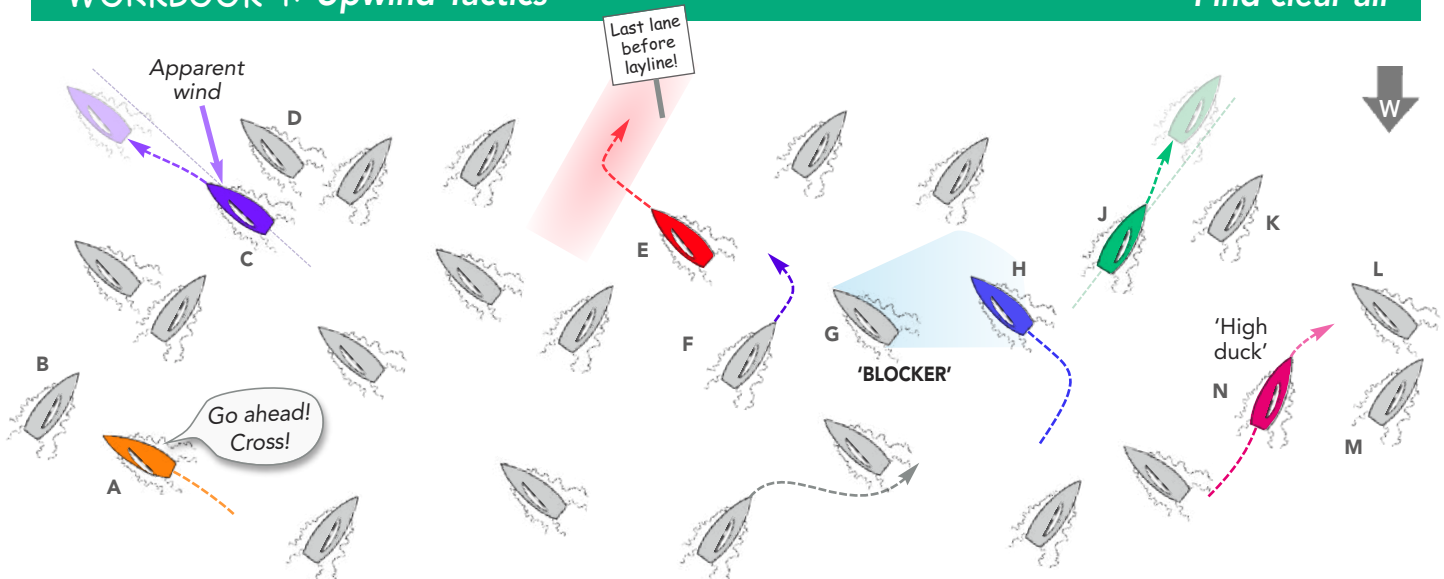
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WORKBOOK 4: Upwind Tactics

Find clear air



Fight for clear air

From a tactical point of view, the most important consideration on a beat may be the ability to sail in clear air as much of the time as possible. In big fleets (and even in competitive small fleets), finding and maintaining clear air is a huge priority. Often it's better to go the 'wrong' way with clear air than to go the right way if it means sailing in bad air for part of the beat. Of course, the ideal thing is to go the right way with clear air. This diagram shows a bunch of things that boats can do to keep a lane of clear air while sailing toward the side they think is favored.

Notes on boats following their strategy and avoiding bad air

A – Boat A is following her strategy to the left and has right of way, but if she yells 'Starboard!' B will do a lee-bow tack and force A to sail in bad air or tack the wrong way. Instead A yells 'Cross!' and bears off to let B pass.

C – Boat C is at risk of getting 'rolled' by Boat D. To avoid sailing in bad air or having to tack (C favors the left side), C sails low and fast to keep her apparent wind in front of D.

E – Boat E wants to go farther left but she sees a lot of boats ahead of her on that side so she tacks early to make sure she gets a lane of clear air on the longer tack to the windward mark.

H – Boat H wants to keep going left so she sets up to windward of a 'blocker' (G). Now any boats that might have lee-bowed H (e.g. Boat F) will meet up with G first and H can keep her wind clear longer.

J – Boat J wants to go right but she is at risk of falling into the bad air (and wake) of K. To keep clear air as long as possible she sails higher than normal to get farther to windward of K and avoid K's wind shadow.

N – Boat N likes the right side and is just clear to windward of M. M is clear behind starboard-tacker L but N has to duck L. A normal duck would put N in M's bad air, so N sails higher and slower to delay the point at which she will pass behind L. This way she can keep a clear lane above M.