David Dellenbaugh's
# SPEED&Smarts™
*The newsletter of how-to tips for racing sailors* Jan/Feb 2011

# Don't believe all you hear.

Perhaps you have watched the entertaining TV show called 'Mythbusters,' which explores (and often debunks) common misconceptions about things in life. A recent episode explored the belief that humans use only about 10% of their brains. Is that a myth, or the truth? After extensive use of technology to find an answer, the hosts 'busted' this myth by showing that well over 10% of the brain can be active at once.

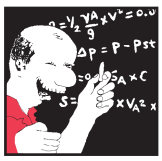
Though I'm not aware of any Mythbuster shows about the subject of sailing, our sport definitely has many myths. One great example is the whole area of current. There are many misconceptions among sailors about what happens when you race in moving water (especially when the current is flowing at right angles to the wind).

In *Speed & Smarts* Issue #108, I looked at four common beliefs about current and the reasons why we should treat those as myths. While I was working on that issue I made a list of other misconceptions that affect racing, and these are the subject of this issue. They range from slight misunderstandings to full-fledged myths.

By 'myth' I mean a piece of conventional racing wisdom that is never, or at least not always, true. The reason for busting myths? Misconceptions lead us to do things on the race course that hurt performance. So the goal of this issue is to emphasize the importance of differentiating fact from fiction.

JH Peterson photo

**Myth or Truth?** ***When you are trimming the spinnaker, you should ease the sheet out until the luff of the sail curls and then trim just enough to get rid of the curl.*** **Most spinnaker trimmers have heard this advice, but is this really the best way to go fast downwind? As racing sailors we must question 'conventional wisdom' and make sure we are not doing something just because we were told to do it that way. Perhaps it would be faster to keep a small curl in the spinnaker luff, but that depends on a number of variables such as the shape of the sail.**



## BRAIN TEASER

## Who wins?

Last year the Lazy Bones Yacht Club ran a week-long regatta for their summer championship. The sailing instructions said that there were seven races scheduled (one race per day), and that each boat's series score would be the total of her race scores excluding her two worst scores. There were ten boats entered in the series, and the results would be determined using the Low Point System.

At the end of the week, after a very tough battle, the top three boats had the following scores (shown in order of the races):

**Boat A** 1 - 3 - 2 - 7 - 1 - 4 - 2

**Boat B** 2 - 1 - 3 - 1 - 3 - 2 - 3

**Boat C** 5 - 2 - 1 - 3 - 2 - OCS - 1

You were the regatta's chief scorer. After the last race, you sat at your computer with these scores on the screen and a rulebook in your hand, trying to calculate the results before the awards ceremony started. Which boat won the regatta? And who got second?

*See the answer on page 16.*

## ISSUE #115

### BUSTING MYTHS!

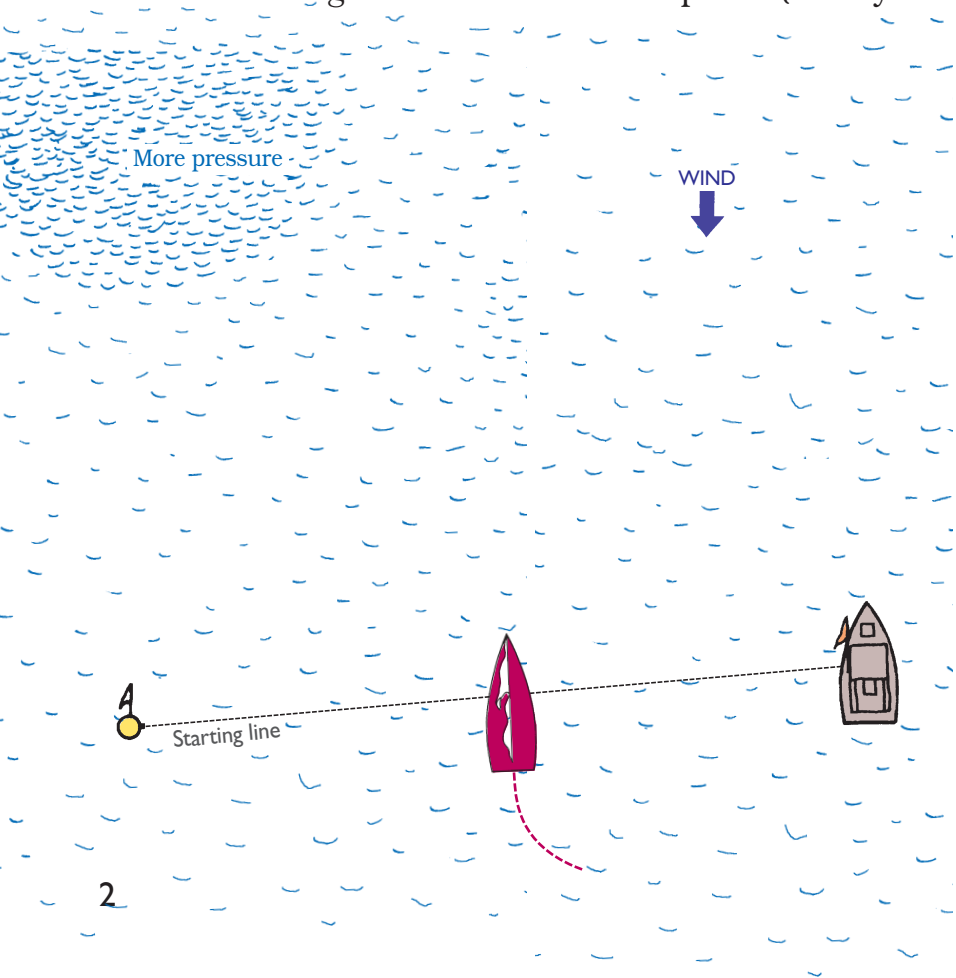
# Starting

Photo by Mark Miller

## MYTH *At a windward start, the 'favored' end of the*

*If you are in the middle of the starting line and you turn up so your bow is pointing straight into the wind, the end of the line that is closer to your bow is the end that is favored. That end is farther upwind (i.e. on a higher 'ladder rung,'), so boats starting there will be in a better position than boats starting at the other end (which is on a lower ladder rung).*

**Truth:** Going head to wind in the middle of the line will help you determine which end of the starting line is farther upwind, but that end is not necessarily 'favored.' The favored end of the starting line is the one that will get you to the windward mark sooner, taking into account a number of strategic and tactical factors including which end is farther upwind (and by how much).




This myth has very deep roots in the way that most of us are taught to race. Somehow we became confused about the terminology we use to describe the ends of the starting line. The 'favored end' should be the end we favor for starting (after weighing all the factors and deciding which end is a better place to start).

But 'favored end' no longer means that to most sailors. For quite a long time, the 'favored end' has meant the end that is farther to windward. That's why when we shoot the wind at mid-line and our bow points a little closer to the committee boat, we say to our teammates, "The committee boat end is favored!"

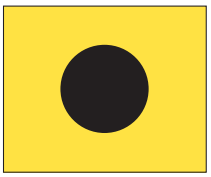
This is confusing. If one end is favored, that should mean it is a better place to start. But we wouldn't necessarily decide to start near an end just because that end is farther upwind. What about all the other factors that go into determining 'favor'? Like windshifts, pressure, current, waves, location of the first mark and so on?

In the situation shown here, the boat end of the line is farther upwind, but there is a lot more pressure to the left. Therefore, it is likely the pin end is 'favored' even though it's on a lower ladder rung. The key is to make sure all your crew are on the same page about what it means when someone says one end is 'favored.'

**MYTH** ***You should be more careful at the start when the race committee has signalled that a starting penalty is in effect.***

*When the race committee displays the I flag, Z flag or Black flag at your preparatory signal, it means you will receive a severe penalty if you are on the course side of the line during the minute before the start, or at the start. Because of this, you should be more conservative as you approach the line.*

**Truth:** Even when there is no special starting penalty in effect, the consequences of being over the starting line prematurely can be severe. Therefore, you should not change your approach to the start just because one of these flags is displayed.



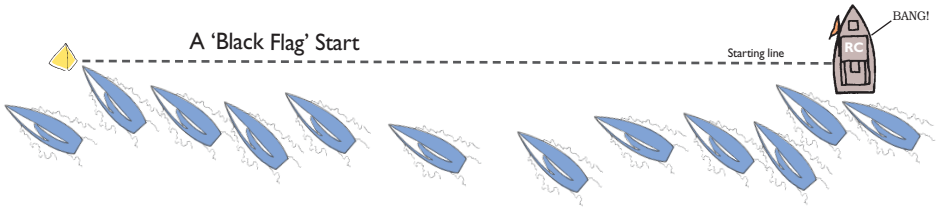
*30.1 I Flag Rule*

*30.2 Z Flag Rule*

*30.3 Black Flag Rule*

Consider a start where the race committee does not display any starting penalty flag, and you are on the course side of the line at the start. If you realize that you are OCS and you go back to re-start, there is still a good chance this will be your discard race. If you don't know that you were over the line early (this probably happens at least half the time), you will be scored OCS and this will definitely be your throwout.

Even when there is no starting penalty in effect, being on the course side of the line at the starting signal is not a good idea. The same is true when the RC displays the I, Z or Black flag – if you are OCS, this will be your discard race. In other words, the penalty for being over the line with a starting penalty is not much different than (and is often exactly the same as) being over the line without a penalty. So don't be more timid when you see one of these flags!




I love it when the RC uses the I, Z or (especially) the Black flag. It's amazing how much these flags scare most sailors away from the line. Even in very aggressive fleets that have a lot of general recalls, everyone seems to become very conservative as soon as the RC puts up a flag that is at least partly black. If it's the I flag they all move toward the ends; if it's a Black flag they move farther to leeward. This is great because it makes getting a good start (especially a start in the middle of the line) that much easier.

I like it when this happens, but I don't understand it. Sailors seem very willing to push the line when there is no starting penalty even though being over early will probably result in an OCS (because typically they don't know they are over, or they can't hear the RC hails). So why not do the same thing at a start with the I, Z or Black flag? I can understand hanging back a bit on your approach (since the I, Z and Black flags apply during the last minute). But at the gun, being over early doesn't involve much more risk.

**The monster of all myth-makers!**

# CURRENT

*Nothing creates more misconceptions than racing in a current that is flowing across the course. Here are summaries of four myths about current that were explained in more detail in Issue 108.*


## CROSS-CURRENT MYTHS

- **Your apparent wind will be different on each tack.**

Since you sail faster over the bottom on the downcurrent tack (starboard tack above), you'll feel more wind on that tack and this will affect sail trim and speed.

**Not True!** The apparent wind of both boats is affected equally by the current, so you will feel the same wind (and therefore need the same sail trim) on each tack.

- **If the starting line is square to the wind, it's better to start at the upcurrent end.**

On the first beat, boats that start at the downcurrent end will have to sail against the current longer than boats that start at the upcurrent end.

**Not True!** All boats are being pushed in the same direction by the current, so it doesn't matter where you start on the line (as far as current is concerned).

- **On a beat, it's always better to sail the upcurrent tack first.**

In a cross-current, boats that get upcurrent of the mark will be ahead of boats that are downcurrent of the mark.

**Not True!** Current affects all boats equally, so as long as you don't overstand the mark it doesn't matter where you are. But if the up-current tack is much longer, it may be better to sail that tack first.

- **You can improve VMG by pinching to get the current on the leeward side of your bow.**

Ah, the old lee-bow effect. Pinch up and let the current push your bow upwind!

**Not True!** It doesn't matter where you are heading since the current only pushes your boat in the direction it is moving. So pinching will be slower.

# Upwind Strategy/Tactics

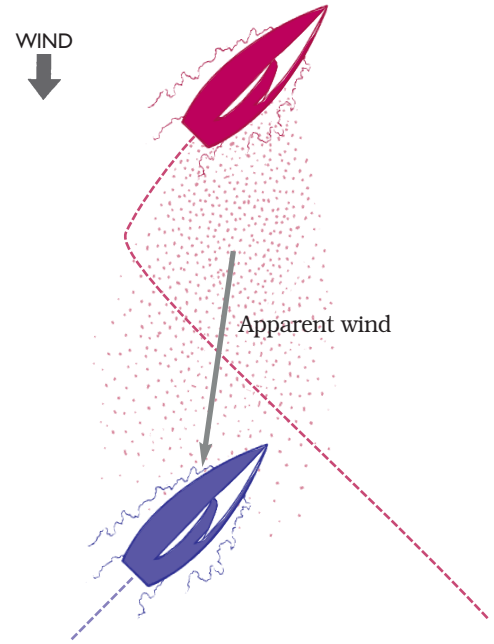
**MYTH** ***The best way to stay in front of another boat is by tacking ahead and to windward of her.***

*When you are trying to cover a competitor, tack directly upwind of them, between the other boat and the windward mark. This is a strong position because it reduces your risk and puts your wind shadow in a place that will slow the other boat.*


JH Peterson photo

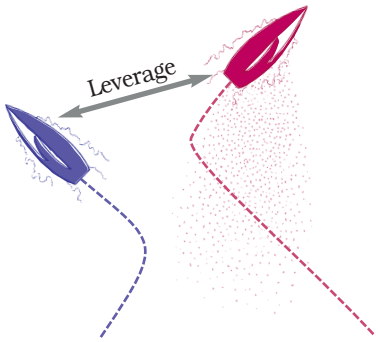
**Truth:** Tacking in a place where your wind shadow will be directly on the boat you are trying to beat is probably not the best way to 'cover' them.

The most common reason why a boat gets passed on a beat is because she lets the boat behind go too far away and then there is a windshift. The idea, when you are protecting a lead, is to minimize the leverage, or separation, between you and the boat behind (so that, even if the wind shifts in their favor, they won't gain enough to pass you). We have all been told that the best way to do this is to tack directly upwind of the other boat. But think about that – if you tack on another boat's wind, they will tack right away and then the distance between boats will be increasing.



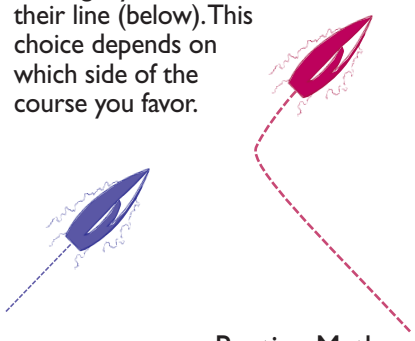

This myth says that the best way to cover (i.e. stay ahead of) another boat is to tack directly in line with their apparent wind direction (so they end up in your bad air). But usually this just forces them to tack away from you.

Tacking into this position is not <u>always</u> a bad idea. It works well, for example, when tacking is not a good option for the other boat (e.g. they are on the layline or sailing a big lift).




The problem with tacking right on the wind of another boat is that you force them to tack away from you. Instead of minimizing separation between boats, you are actually increasing it. This is not a big problem when you know that the side you are protecting is favored, but the last thing you want to do is send the other boat toward any chance of better pressure or a shift.

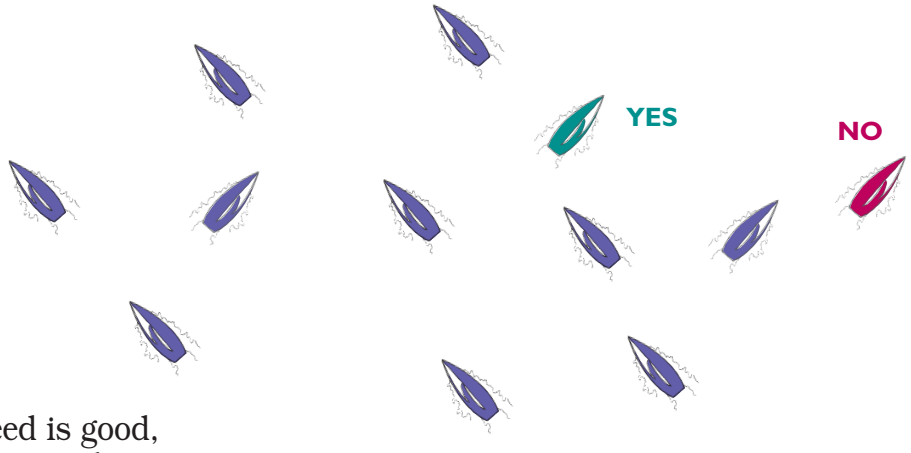
The separation that results after tacking is not a big problem if you have the option to tack again right away. But in heavier boats or in conditions (e.g. light air and chop) where it takes a long time to get up to speed, tacking on another boat's wind will create a lot of separation.



There are two basic alternatives when you want to 'cover' a boat behind without tacking right on their wind. Both are 'loose covers' that encourage the other boat to keep sailing the way you are going. You can tack to windward of (and roughly bow-to-bow with) the other boat (above) or ahead and slightly to leeward of their line (below). This choice depends on which side of the course you favor.

## MYTH *When you have very good boatspeed, you can (and should) take more tactical and strategic chances.*

*Extra boatspeed makes it a lot easier to recover from any mistakes you make. Therefore, you don't have to be as conservative as you would be when your speed is not so good.*




**Truth:** When your boatspeed is good, you should take *fewer* risks than when you are going slow.

If you are relatively fast, all you have to do is stay near the other boats and you will probably beat them. The last thing you want to do is split very far away from the fleet – in most cases, the only way they will beat you is if they get a windshift that puts them so far ahead you can't catch up with speed.

Don't believe the myth that says you can take more chances if you have good boatspeed. When you are fast, the best way to realize your advantage is by sailing in exactly the same wind as your competitors. The farther away you get from them, the more likely you will be sailing in different breeze and the less likely it is that speed will decide who wins the race. Unless you are very sure of your strategic plan, put your speed to work by staying near the middle of the fleet (Green boat) rather than on the fringes (Red boat).

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## MYTH *In an oscillating breeze, wait for the maximum header that you expect and then tack.*

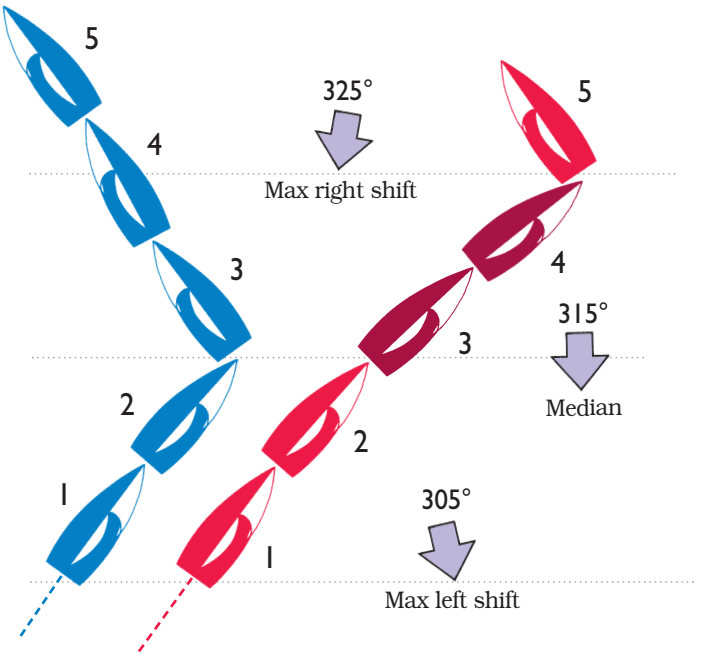
*When sailing upwind in a breeze that shifts back and forth, you should tack on the headers so you sail on the lifts. To realize the maximum benefit from each shift, wait until you are fully headed before tacking.*

**Truth:** Tacking on headers is the right strategy, but don't wait until you are headed all the way. Tack when you are headed to your median course.

When racing in an oscillating breeze, the goal is to sail on the lifted tack (and avoid sailing on the headed tack) as much as possible. That's why you should tack when you are headed – so you can sail a lift on the other tack. But exactly when should you tack?

If you delay your tack until the wind heads you all the way (i.e. the wind reaches its full oscillation in that direction), then you will have sailed on the headed tack for half the shift. That is not fast, so tack when you have borne off to your median heading.

If the shifts are coming very quickly, there won't be much of a time interval between these strategies – so just tack when the header hits you. And, of course, there may be other factors at work. For example, on some days you have to sail farther into a shift to avoid falling out of it after you tack.




In this scenario, two boats (Blue and Red) are sailing upwind in a breeze that is oscillating regularly and slowly. Both start out on the same port-tack lift (Position 1). The Blue boat tacks when she is headed to her median course on port tack; the Red boat waits until she reaches the maximum header and then tacks. If they continue this strategy up the beat, which boat will get to the windward mark first?

By tacking when the wind is at its median direction, Blue always sails at her median heading or higher. Red, however, spends half of each shift (Positions 3 and 4) sailing *below* her median heading. Blue's strategy will get her upwind faster.

# Boatspeed 1

*What makes a boat go fast? The answer to this question requires a fairly high level of scientific understanding. The complex nature of sailboats, sails, spars, wind and water makes boatspeed seem a bit mysterious for many sailors. And whenever something is difficult to understand, it inevitably creates myths. That is certainly true with speed as you'll see on the next four pages.*

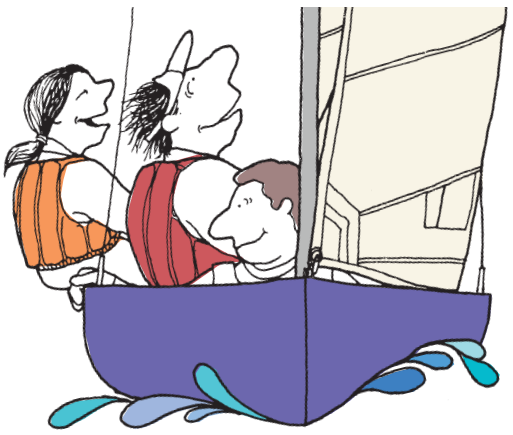
## MYTH *Don't sail upwind with your boat*

*Sailboats and sails are designed to function most effectively when they are heeling to leeward. If you flatten a boat beyond vertical, this disrupts the flow of wind around the sails and water around the blades.*

**Truth:** You should sail your boat at whatever heel angle makes it go upwind the fastest. For some boats in certain conditions, this might mean heeling to windward.

Sailboards are a great example of how angling a sailplan to windward can produce speed. One reason why boards go so fast is because when the wind hits the sail there is actually an upward component of the resulting force – this unweights the board slightly and helps it skim more easily across the water.

Sailboards are obviously very different from most racing boats, but there is nothing sacred about leeward heel. If heeling slightly to windward of vertical gets you the right amount of helm, try it and see what happens (be careful since you will probably have a narrow groove). Also, when it feels like you have windward heel, often you don't (it just feels that way because we're so used to leeward heel), so it's usually OK to flatten a little more than you think.



JH Peterson photo

## MYTH *Pull your cunningham tight enough to remove horizontal wrinkles along the luff of the mainsail.*

*Sails are designed to be smooth, so use your cunningham to achieve this shape. When you see wrinkles, the sail does not have as much exposed sail area as it could – so put more tension on the luff to give the sail its full, fast shape. Also, wrinkles are slow because they create extra drag when the wind passes over them.*

**Truth:** The purpose of the cunningham is primarily to control the fore-and-aft position of the draft (fullness) in the sail. It is not intended for getting rid of wrinkles.

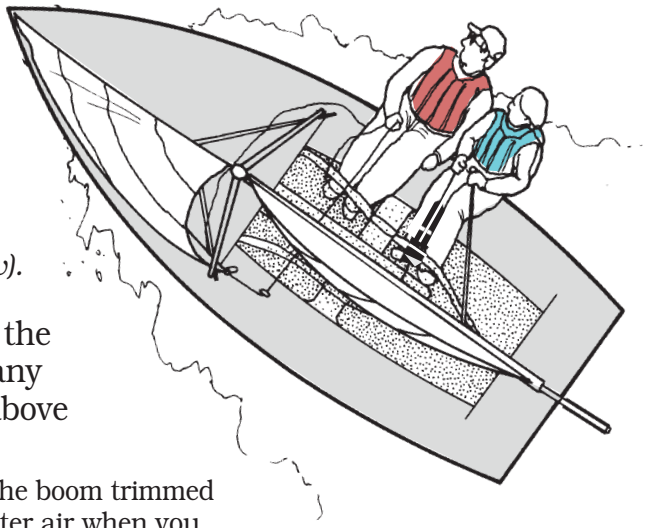
The most important thing about trimming your mainsail is to make sure it has the right shape for the wind and wave conditions in which you are racing. Cunningham tension has a big effect on mainsail shape – pulling it harder makes the sail flatter and more draft-forward; easing the cunningham makes the sail fuller and more draft-aft. In general, you want the cunningham to be tighter in breeze and looser in light air. Also, you generally need little cunningham tension in new sails and more to keep the optimal shape as sails get older.

The appearance or amount of wrinkles along the luff of the main is seldom a concern. It is almost always better to have the right sail shape with a few wrinkles than to make the sail look cosmetically perfect but have a slower shape.

Since most mainsails must cover a wide wind range, these sails are built with a forgiving design. This means the sail will have wrinkles in light air – if it didn't then it would be too flat and wouldn't have enough range. If the wrinkles along the luff are severe, then they indicate a deeper problem (e.g. too much mast bend). In this case, simply removing the wrinkles with more cunningham tension will not make you go faster.

## MYTH *When sailing upwind, never trim the sheet or traveler so the boom is higher than centerline.*

*If the boom is actually on the windward side of the boat, the lower part of the mainsail will be angled to windward. This creates a very wide 'angle of attack' (angle between the chord of the sail and the boat's apparent wind), which will generally produce too much drag (and therefore be slow).*



**Even when you position the boom above centerline, the vast majority of the mainsail is still on or below centerline – only the very bottom and aft section of the main would be (slightly) on the windward side.**

**Truth:** There is nothing magical about keeping the boom on or below centerline. In fact, many racing boats sail very fast upwind with their booms above centerline, so experiment with this.

The Sonar, for example, is one boat that goes fast upwind with the boom trimmed several inches to windward of centerline. This works best in lighter air when you need a decent amount of twist in the sail. By pulling the boom to windward, you can get enough twist and still keep most of the sail relatively close to centerline. If you drop the boom to centerline (or below), however, you won't be able to get the bulk of the sail far enough to windward without overtrimming the main too much. As the wind comes up and you trim the main harder (with less twist), start dropping the boom – if you keep it above centerline too much of the sail may be on the windward side of the boat and this will create too much drag.

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## MYTH *When sailing upwind in waves, you should position your crew weight as close together as possible near the middle of the boat.*

*A basic speed principle is to keep weight out of the 'ends.' For example, you should minimize weight at the top of the mast to reduce pitching moment and heeling force. The same idea applies to your hull. The less weight you have in the bow and stern, the less the boat will 'hobby horse' in waves. The best way to get weight away from the ends of the boat is by concentrating crew weight in the middle.*

**Truth:** It may actually be faster, when racing upwind in waves, to spread your weight out a bit fore and aft.

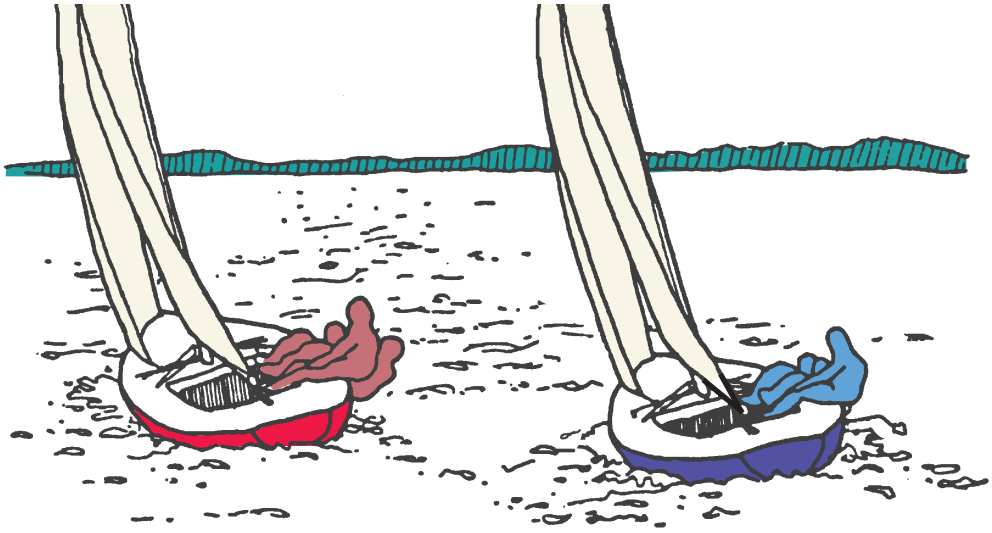
Squeezing your crew weight together in the middle of the boat is a good idea and you should try that. But sometimes, even when you have your weight as close together as possible, the boat still seems to pound excruciatingly through the waves. If this happens, it could be that your weight distribution is not optimized for the frequency of the waves. Perhaps your set-up is compounding, rather than dampening, the wave motion. Try moving farther apart (test different distances) and see which arrangement minimizes hobby-horsing.

JH Peterson photo

# Boatspeed 2

**MYTH** ***You don't have to tune up with another boat in order to have really good boatspeed.***

*With the use of instruments and/or a good sense of feel, you can work on boatspeed by yourself and still have a good chance of being as fast as the fastest boats in your class.*



**Truth:** The only sure way to improve your boatspeed is by comparing your speed and height directly to other boats that are similar to yours. The difference in performance between a fast boat and a slow boat is usually so subtle that you cannot measure it with even the most sophisticated instruments or the most experienced sense of feel. That's why all the top sailors do lots of two-boat testing.

Comparing your performance to that of a nearby boat is by far the most efficient way to improve speed. It's great if you can do this in a controlled training session environment, but that's not absolutely essential. Often you can find another boat that wants to tune up just before your next race. Also, use any opportunity you have during a race (while sailing side by side) to compare and work on your speed. Of course, not all boats have tuning partners available. If there are no boats near you, or no other boats like yours, you may have to work on speed by yourself.

JH Peterson photo

**MYTH** ***The bigger the seas, the more you should steer your boat around or through the waves.***

*The best way to weave your way through waves without excessive pounding or slowing is basically to head up (turn to windward) on the front sides of the waves and then bear off down their back sides.*

**Truth:** In many boats, the fastest way through waves is simply to hold the rudder so it's straight and can't move.

Turning your rudder creates drag and slows the boat, so keep it straight unless there's a good reason to turn. With some small and light boats (e.g. Lasers), it's fast to use the rudder to work the boat over and around bigger waves. But for longer, heavier boats that don't turn or accelerate so quickly, try keeping your rudder perfectly straight through waves. Move it only gradually for medium-term acceleration, pointing or bad-wave avoidance.


JH Peterson photo

**MYTH** ***It's fine to leave the jib sheet cleated most of the time while you are racing upwind.***

*There are several reasons why it's OK to cleat the jib sheet on windward legs. First, on many boats the jib is fairly small, generates a relatively minor portion of the boat's overall power and has a narrow trimming range. In addition, the jib is often difficult to hold or impossible to trim from the windward side. And if you change the trim too much it makes the boat hard to steer.*

**Truth:** You would never cleat the spinnaker sheet while you are racing, and for the same reason you should not cleat the jib sheet (nor the mainsheet).

The wind and waves are always changing, so to keep going fast you must continually change your sail trim to match the new conditions. You can't do this if your sheets are cleated. Even though many of us have grown up with a 'cleat-the-jib-sheet' mentality, this is definitely slower. Though the jib is smaller than the main on many boats, it actually makes a relatively large contribution to the boat's overall performance. In some cases, playing the jib is more critical than playing the main. While there are a lot of excuses for cleating the jib sheet (*see comments above under 'Myth'*), you should try not do this unless you absolutely have to (e.g. you cannot hold it any longer).

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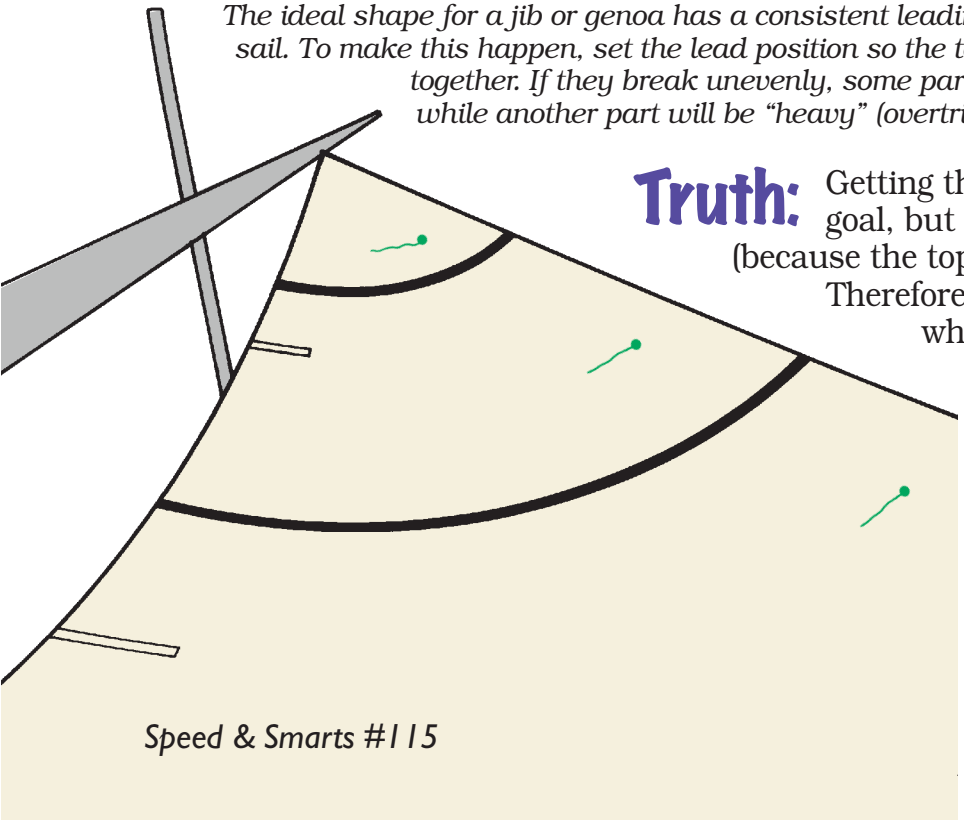
**MYTH** ***Set the fore-and-aft position of your jib lead so the***

*The ideal shape for a jib or genoa has a consistent leading edge angle all the way up the luff of the sail. To make this happen, set the lead position so the top, middle and bottom telltales all move together. If they break unevenly, some part of the sail will be 'light' (undertrimmed) while another part will be "heavy" (overtrimmed), which is not efficient (nor fast).*



**Truth:** Getting the telltales to break evenly is a good goal, but in most cases it's difficult to achieve (because the top one almost always flutters first). Therefore, don't worry too much about telltales when adjusting the jib lead position.

It can be frustrating to trim your jib if you think you have to get all the telltales breaking evenly from top to bottom. Instead of worrying about that, do two things: 1) Set the lead position so the foot and leech of the sail trim in to their proper positions at the same time; and 2) Steer the boat using the middle telltale (not the bottom one which is easier to see but usually gives a false reading compared to the rest of the sail).

# Leeward Mark

**MYTH** ***The fastest way to round a leeward mark is to swing wide and then cut it close.***

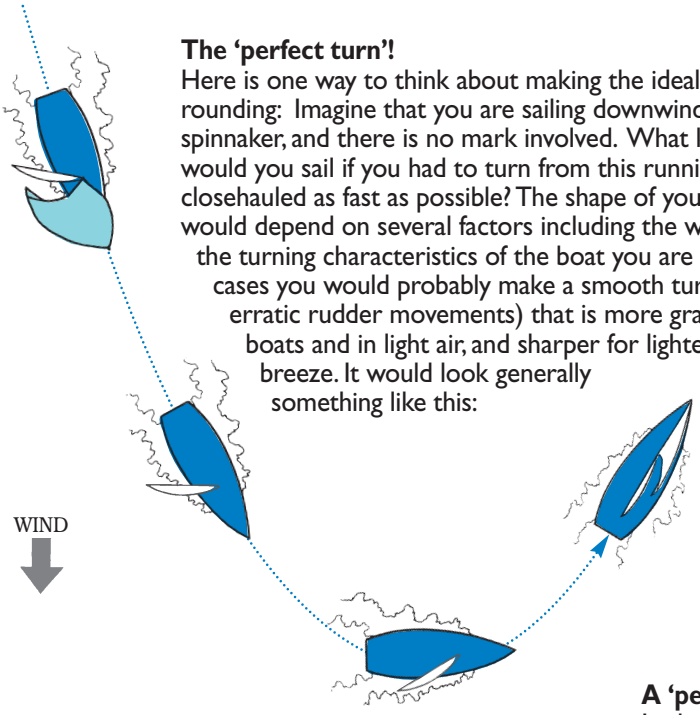
*After you round the leeward mark you will be sailing upwind, so you want to be on a closehauled course as you pass the mark. In order to do this, you have to swing wide on your approach to the mark so you can cut close to the mark on the far side and be sailing closehauled as you begin the beat.*

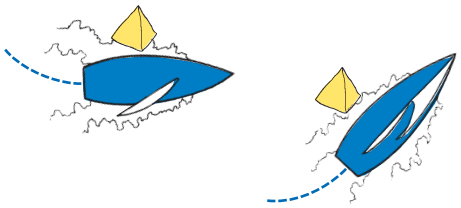
**Truth:** The best way to round a leeward mark, in the absence of other boats, is to pass it on a reach so the mark is at the bottom (the most leeward part of) your turning arc. This will ensure that you carry good speed and sail the least distance needed to get around the mark.

The "swing wide, cut close" mentality has been ingrained in most sailors' minds for quite some time. This strategy of being closehauled at the mark is a good one when there is another boat right ahead of you (and you'd like to round the mark slightly to windward of their line to minimize bad air) or when another boat is right behind you (and you want to keep them from getting clear air). But any other time, your rounding will be slow if you sail any farther downwind than is necessary to pass the mark.

**The 'perfect turn'!**

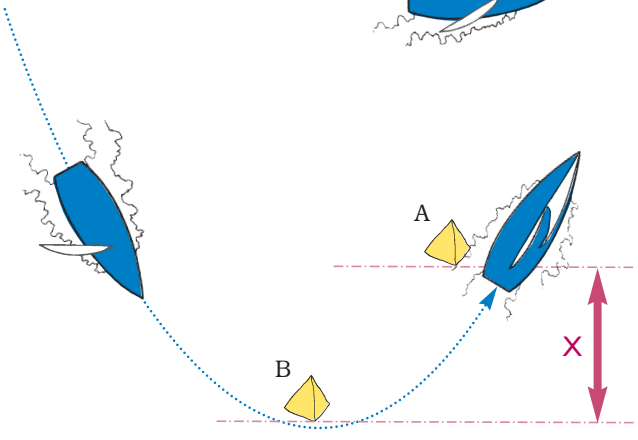
Here is one way to think about making the ideal leeward mark rounding: Imagine that you are sailing downwind with your spinnaker, and there is no mark involved. What kind of course would you sail if you had to turn from this running angle up to closehauled as fast as possible? The shape of your 'perfect turn' would depend on several factors including the wind speed and the turning characteristics of the boat you are sailing. In most cases you would probably make a smooth turn (without erratic rudder movements) that is more gradual for heavy boats and in light air, and sharper for lighter boats in breeze. It would look generally something like this:



**Pass the mark on a beam reach**

The traditional way of rounding a leeward mark is to be on a closehauled course when you pass it (*above right*), but that is not the best option unless there is another boat right ahead of or behind you. A faster rounding is to make your approach so the mark will be at the bottom of your turning arc (*see below*). Doing this will put you on a beam reach as you are pass the mark (*above left*).




**A 'perfect turn' at the leeward mark**

In the absence of tactical concerns (i.e. other boats), the shape of your turn at a leeward mark should be the same as your fast turn without the mark. So, take the shape of your perfect turn (above), and mentally superimpose this image onto a leeward rounding.

Now we get to the really important question: Where will you make this perfect turn relative to the mark? Should the mark be at Point A (the classic 'swing wide, cut close' rounding) or at Point B (the bottom of the arc)?

It's clear from this diagram that if the mark is at A, then you have sailed farther to leeward than necessary by a distance of X. This means you will also have to sail that distance to windward to get back to the mark. By making your turn so the mark is at B, you'll sail the least distance downwind from the windward mark.


JH Peterson photo

## MYTH *In order to get mark-room, you have to hail for room at the mark.*

*When you approach a leeward mark (or any other mark), the boat that's on the inside at the zone is entitled to mark-room, but only if she makes a hail to that effect to the boat required to give her mark-room. There are so many times when it's not clear whether the boat behind has an overlap or not, so the outside boat is entitled to rely on a hail to determine whether she has to give room.*

**Truth:** There is absolutely no requirement in the rules for a hail in order to get mark-room.

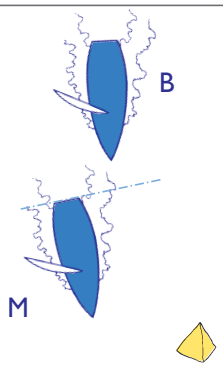
Hailing for room at the mark is a common misunderstanding. There is some logic in expecting an inside boat to hail for mark-room when they are entitled to it, but the rules don't require this. Instead, they say simply that the outside boat must give mark-room to the inside boat.

That's not to say, however, that a hail won't help your cause. By communicating with nearby boats, you can often avoid getting stuck in messy situations that result from misunderstandings.

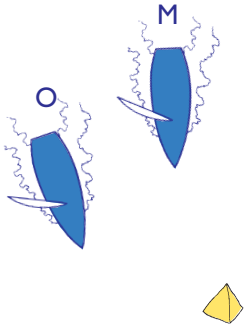
It's especially helpful to hail *before* you get to the zone. Your goal is to get the other boat to agree that either a) you do have an inside overlap, or b) they don't have an inside overlap, when you are five or six lengths from the mark. Then, if they claim to obtain or break an overlap right at the zone, the onus will be on them to prove it.

## MYTH *When a boat is entitled to mark-room, she can take only enough room to make a 'seamanlike' rounding.*

*A boat entitled to mark-room must sail 'to' the mark, which means she cannot take any more room than she needs to round the mark in a seamanlike way.*

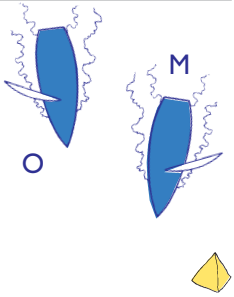



**Truth:** In many situations, a boat entitled to mark-room can take much more room than the limited space she needs to make a seamanlike rounding. The amount of room she gets depends on the relationship between the two boats at any moment.



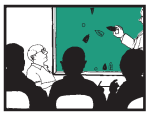

**A. M gets only enough room for a seamanlike rounding.** The amount of room that M (the boat with mark-room) can take depends on whether or not she has the right of way. When M is the give-way boat (as shown here), she can take only enough space to sail to the mark in a seamanlike way (and then room to sail her proper course while she is at the mark). If M breaks a rule (e.g. she fails to keep clear as the windward boat), she will be exonerated, but only if she is taking no more space than the amount permitted by mark-room. The only time when M can take more room than what is permitted by mark-room is when she can do so without breaking any rule relative to O (or to any other boat).

**B. M can take enough room to sail her proper course.** The difference between this situation and A (above) is that now M has right of way. Therefore, O must keep clear. Even though M is entitled to mark room, she is not limited to taking only mark room. In other words, M is not limited to making a seamanlike approach to the mark. In fact, if it were not for rule 18.4 (Gybing), M could sail as wide of the mark as she wants here. However, since M is an inside overlapped right-of-way boat and must jibe at the mark, she may sail no farther from the mark than needed to sail her proper course.




**C. M can sail any course.** This situation is different from A and B because M (who has mark-room because she got to the zone clear ahead of B) holds the right of way and does not have a boat overlapped outside her. Therefore, M is not limited to mark-room, and she doesn't have to sail a proper course. As long as M keeps the right of way and doesn't go outside the zone, she can sail any course.

But if B jibes, M becomes a give-way boat (port-starboard). If M fails to keep clear of B, M will be exonerated as long as she is taking mark-room. But if M is sailing farther from the mark than needed for mark-room, she would be penalized.



RULES CORNER

# When three boats meet on a beat

*One common and tricky situation that happens on a beat is when two boats on port tack approach a boat on starboard tack. Before you can think about the tactics of this scenario, it's important to know exactly how the racing rules apply so you will understand your options. Here are some comments and answers to typical questions to help explain how rules 19 and 20 apply here (relevant text of these rules is located on page 15).*

**1) Is the starboard tacker (S) an *obstruction* to PW and PL?**
Yes. The definition of *Obstruction* says, ". . . a boat racing is not an obstruction to other boats unless they are required to keep clear of her . . ." Since PW and PL are both on port tack and must keep clear of S on starboard tack, this means S is an obstruction to both other boats.

**2) What are the options for PL in this situation?**
Because PL is on a collision course with a right-of-way boat, her first priority is to keep clear of S. There are two ways PL can avoid S – by ducking behind S or by tacking before she gets to S. Both of these options may be affected by the nearby presence of a third boat (PW).

**3) If PL wants to avoid S by tacking, what does she have to do?**
Because PW is in the way (*see below*), PL cannot simply throw her helm over. However, she does still have the option to tack. Since S is an obstruction, PL can use rule 20 (Room to Tack at an Obstruction) to get room to tack.

However, there are several conditions that must exist. First, PL must be sailing closehauled or higher. Second, she must need to make a substantial course change to avoid the obstruction. And third, PL cannot use rule 20 if the obstruction is a mark and PW is fetching it. If all these conditions are met, PL can hail for room to tack and both boats must follow the specific steps described in rule 20.

**4) Can PL hail for room to tack, then change her mind and duck?**
No. Once PL makes a hail under rule 20 she is committed to tacking as her method of avoiding the obstruction. If PL continues on port tack behind S and does not tack, she will not comply with rule 20.2d, which requires her to tack as soon as possible after PW responds.

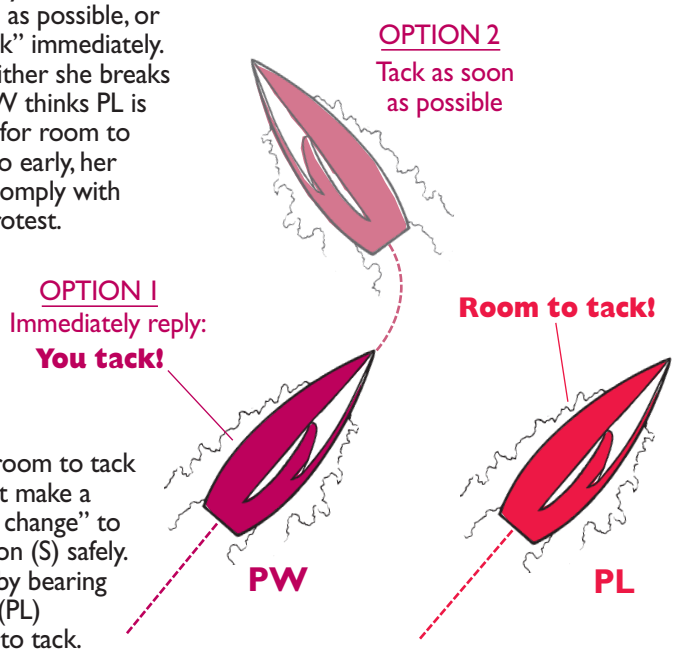
**5) Can PL hail for room to tack, and still put a close leebow on S?**
Probably not. Once PL makes her hail, she loses control of the timing of her tack. That's because she must wait for PW to tack or say "You tack," and then she (PL) must tack as soon as possible.

If PL hails a little early (as she should) and PW responds promptly, PL cannot delay her tack until she reaches S. On the other hand, if PL waits longer to hail (in order to put a close leebow on S), she takes a big risk if PW is slow in responding. So it's unlikely that PL could legally tack into a perfect leebow on S.

## PL chooses to avoid S by tacking (Rule 20)

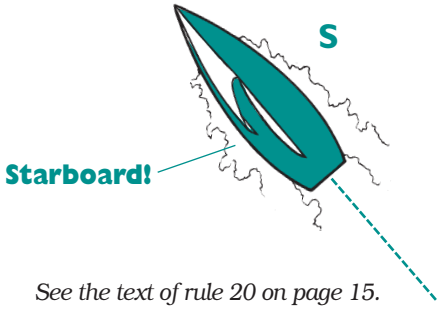
☛ When PL hails for room to tack, PW must respond by either:
1) tacking as soon as possible, or
2) hailing "You tack" immediately.
If PW doesn't do either she breaks rule 20.2. Even if PW thinks PL is not entitled to hail for room to tack or is hailing too early, her only remedy is to comply with rule 20 and then protest.

☛ PL may hail for room to tack only when she must make a "substantial course change" to avoid the obstruction (S) safely. If PL could avoid S by bearing off just slightly, she (PL) can't hail for room to tack.




☛ Hailing for room to tack is usually not a great idea for PL because she will end up squeezed between PW and S. One time this might work is when PL tacks on the layline to the windward mark and doesn't have very far to go on starboard tack.

☛ If PL needs room to tack, she should not wait until the last second to hail PW. She must leave enough time and space (between her and S) to make a second hail if PW does not hear or does not respond to her first hail.




*See the text of rule 20 on page 15.*


J-H Peterson photo

**6) Does it make a difference if PW could cross clear ahead of S?**
No. As long as PL has to make a substantial course change to avoid S, she can hail for room to tack under rule 20. The only exception is when the obstruction is also a mark and PW is fetching it. In that case, PL is not permitted to hail for room to tack (rule 20.1c).

**7) If PL wants to bear off behind S, what does she have to do?**
Basically she just has to bear off and pass astern of S. However, if PW also wants to pass behind S, PL may have to do more than a simple duck. In that case, we would have two boats passing an obstruction (*see diagram below*).

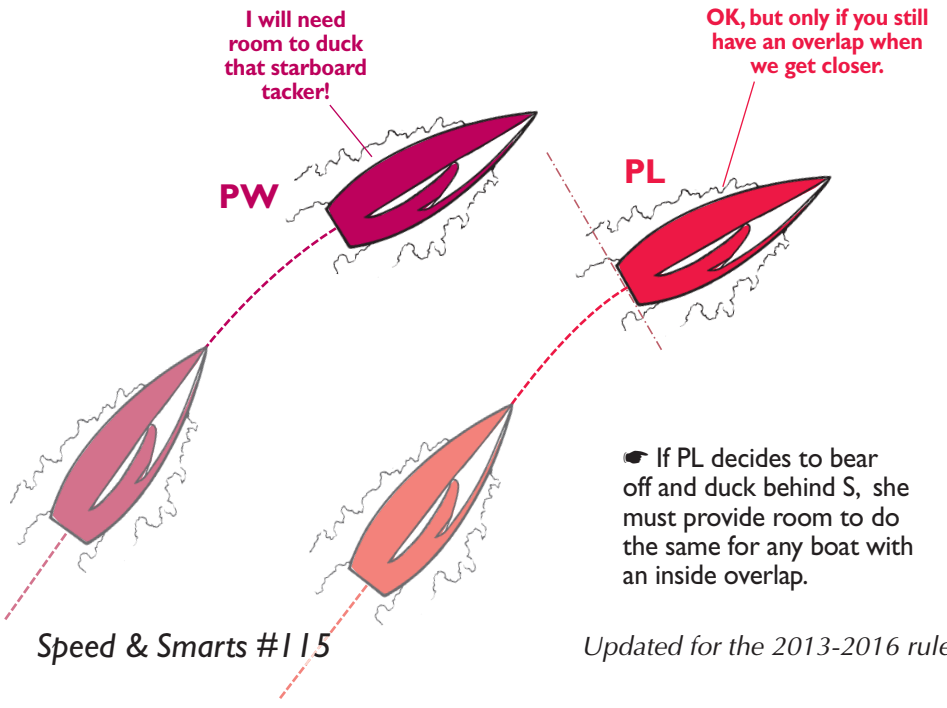
According to rule 19 (Room to Pass an Obstruction), "When boats are overlapped, the outside boat shall give the inside boat room between her and the obstruction . . ." In this situation, PL is the outside boat and PW is the inside boat, so PL must bear off far enough to allow PW to pass between her and S.

Note, however, that rule 19 applies only when the boats are overlapped. If PL bears off to duck S and pulls clear ahead of PW in the process, for example, she no longer has to provide room under rule 19 (note also there is no 'zone' at an obstruction, unless it is a mark). PW is never required to pass behind S – she always has the option of tacking before she gets to S.

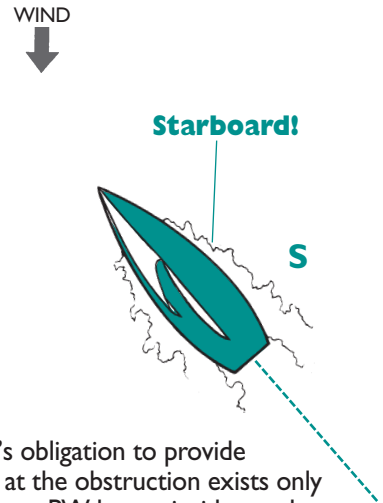
**8) What if PL wants to tack but PW wants to bear off behind S?**
According to rule 19.2(a), "A right-of-way boat may choose to pass an obstruction on either side."So PL gets to choose. Once she hails for room to tack, PW must comply with rule 20. At that point PW is no longer entitled to room between PL and S (even if she had previously asked for room to duck S) because PW and PL are no longer passing the obstruction to port – i.e. PW is no longer an inside boat.

Once PL hails for room to tack, PW must respond by either tacking as soon as possible or by immediately replying "You tack." If PW wants to pass behind S (and if she is not too close to PL), she can say "You tack," and then bear off to go behind both PL and S. •

## PL chooses to avoid S by ducking (Rule 19)




☛ If PL decides to bear off and duck behind S, she must provide room to do the same for any boat with an inside overlap.




☛ PL's obligation to provide room at the obstruction exists only as long as PW has an inside overlap. If PL bears off to go behind S and pulls clear ahead in the process, she no longer has to give room to PW.

*See the text of rule 19 on page 15.*



# Three questions about the rules

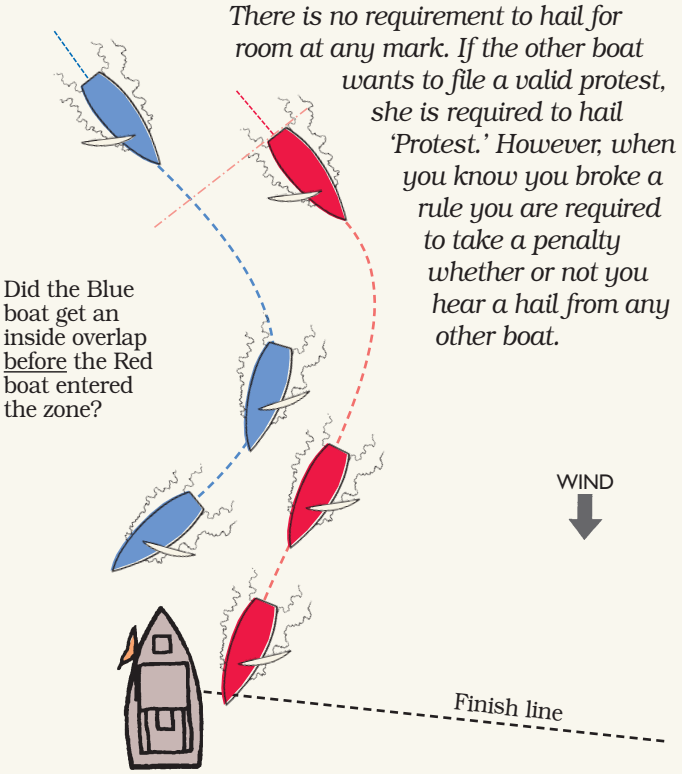
## Room at a finish mark?

"We were approaching the finish line on a port broad reach in light air. The next closest boat was on port tack, clear astern by one length and a length or two to leeward. We were sailing almost parallel to the finish line so we jibed toward the committee boat end of the finish line (which we had to leave to starboard).

"After completing our jibe, we hailed 'Starboard' to the other boat, and they jibed into a windward overlap. However, there was not enough room for them to finish without hitting the RC boat or us, so they luffed to the wrong side of the RC boat. They did not call for room or hail 'Protest.' Did we break any rule?" – JA, IN

*David: The key factor is the relationship of the boats when the first one (probably you) reaches the zone at the committee boat. If you (Red boat below) enter the zone clear ahead of the other boat, they have to give you mark-room. But if the other boat was overlapped on your inside at the moment you became three lengths from the RC boat (either before or after you jibed), then you have to give them mark-room, irregardless of which tack you or they were on (see rule 18.2b). It's just like sailing to a leeward mark that you must round to starboard.*

*Since the port-tack boat jibed into a windward overlap, there is a good chance she had an inside overlap when you got to the zone. In that case, you should be penalized for failing to give her mark-room. However, if you entered the zone on port tack while you were still clear ahead, then you did not have to give her mark-room. There is no requirement to hail for room at any mark. If the other boat wants to file a valid protest, she is required to hail 'Protest.' However, when you know you broke a rule you are required to take a penalty whether or not you hear a hail from any other boat.*



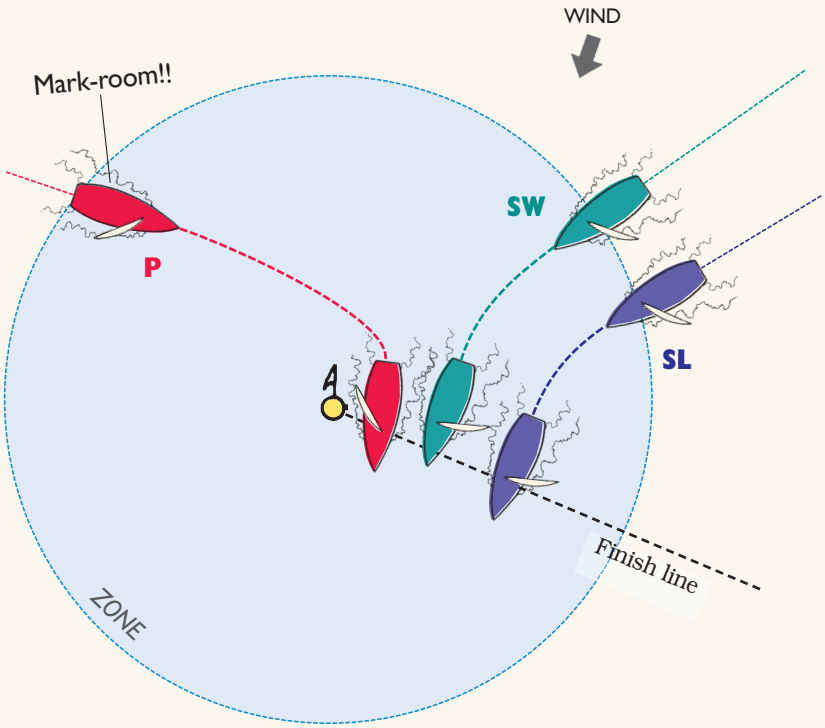

## More room at a finish mark.

"In a recent light-air race, three boats were sailing downwind toward the pin end of the finish line (which was very favored). Two of the boats were reaching on starboard tack and the third was tight-reaching toward the pin on port tack. As the boats converged, the port tacker (who needed to jibe around the pin to finish) hailed the windward starboard tacker for mark-room at the pin end of the line.

"What were the rights and obligations of the boat on port tack? It is quite possible that her true wind angle was slightly forward of abeam. Also, the windward starboard tacker had limited maneuvering ability because she had a right-of-way boat to leeward of her. Does Port get room to finish?" – RM, CT

*David: Yes, the port tacker (P) gets mark-room at the pin end of the finish line. Rule 18 (Mark-Room) applies here because 1) all three boats are required to leave the finish pin (mark) on the same side (to starboard), and 2) at least one of them is in the zone (see rule 18.1). P and SW (and SL) are overlapped because neither one is clear astern of the other (the overlap does not depend on P's sailing angle in this situation because, even though the boats are on opposite tacks, rule 18 applies). Therefore, SW and SL must give P mark-room to sail around the pin and finish.*

*Since P does not have the right of way, she cannot take too much room when rounding the pin. Also, SL must give mark-room to both SW and P. This means SL must plan ahead and make sure she bears off enough to allow both boats to pass between her and the pin.*



## Collision at the start.

"During a recent race I was approaching the starting line on a closehauled course to the committee boat. A boat that was over the line very early rounded the committee boat and aimed between me and the RC boat's transom. I trimmed in to prevent him from barging, but he was just able to cross my bow. He went slightly below my line and then began to luff up toward the RC boat.

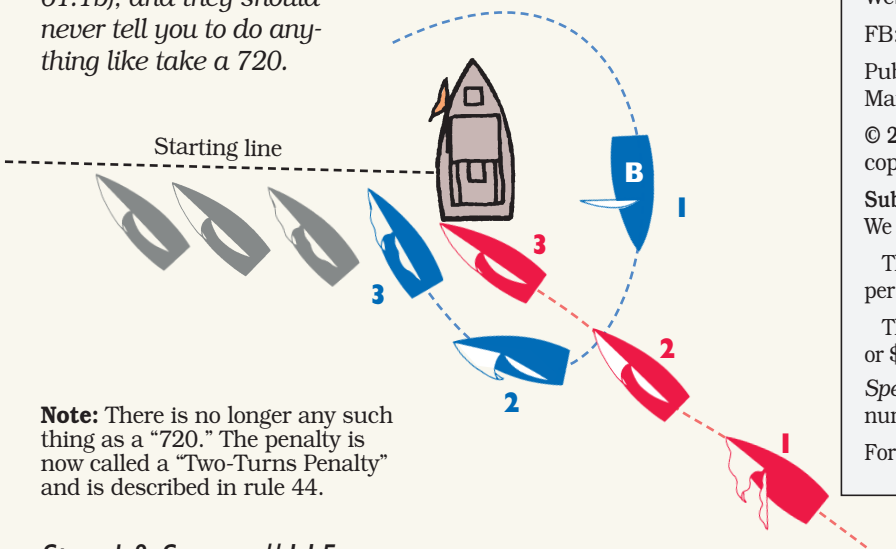
"At that point I was going faster and could no longer bear off behind him. I had to choose between hitting his windward side or grazing the stern of the committee boat. I chose the RC boat (aluminum skiff) and no damage was done, but the PRO yelled 'Protest' and told me to do a 720 (which I did after getting clear). Was that the right thing to do?" – TJ, ME

*David: While the other boat (B) is rounding the RC boat, you have the right of way because you are on starboard tack (or, if B is on starboard tack, you are the leeward boat). During that time B has to keep clear of you and she is also 'barging.'*

*Once B crosses your bow and jibes, she gains the right-of-way as a clear-ahead boat. At that point you must begin keeping clear of her (and you have to be careful of 'barging' yourself). However, if B changes course, she has to give you room to keep clear (rule 16).*

*From position 2 until 3, B was constantly changing course. During that time, did you do everything possible to keep clear of her? If you did but there was still no way to avoid hitting the RC boat, you should protest B and, if you win, you will be exonerated for touching the mark.*

*However, if you had an opportunity to keep clear of B but did not take it, you broke rule 31 (Touching a Mark). In that case, you did the right thing by taking a penalty. While the RC can protest you if they see you break a rule, they should not inform you of that fact until after the race (rule 61.1b), and they should never tell you to do anything like take a 720.*




**Note:** There is no longer any such thing as a "720." The penalty is now called a "Two-Turns Penalty" and is described in rule 44.

Here is relevant text of rules 19 and 20 (and the preamble to Section C), which are discussed on pages 12 and 13.

### Preamble to Section C

*Section C rules do not apply at a starting mark surrounded by navigable water or at its anchor line from the time boats are approaching them to start until they have passed them.*

### 19 ROOM TO PASS AN OBSTRUCTION

#### 19.1 When Rule 19 Applies

Rule 19 applies between boats at an *obstruction* except when it is also a *mark* the boats are required to leave on the same side. However, at a continuing *obstruction*, rule 19 always applies and rule 18 does not.

#### 19.2 Giving Room at an Obstruction

(a) A right-of-way boat may choose to pass an *obstruction* on either side.
(b) When boats are *overlapped*, the outside boat shall give the inside boat *room* between her and the *obstruction*, unless she has been unable to do so from the time the *overlap* began.
(c) While boats are passing a continuing *obstruction* . . .

### 20 ROOM TO TACK AT AN OBSTRUCTION

#### 20.1 Hailing

When approaching an *obstruction*, a boat may hail for *room* to tack and avoid a boat on the same *tack*. However, she shall not hail if
(a) she can avoid the *obstruction* safely without making a substantial course change,
(b) she is sailing below close-hauled, or
(c) the *obstruction* is a mark and a boat that is fetching it would be required to respond and change course.

#### 20.2 Responding

(a) After a boat hails, she shall give the hailed boat time to respond.
(b) The hailed boat shall respond even if the hail breaks rule 20.1.
(c) The hailed boat shall respond either by tacking as soon as possible, or by immediately replying 'You tack' and then giving the hailing boat *room* to tack and avoid her.
(d) When the hailed boat responds, the hailing boat shall tack as soon as possible...
(e) From the time a boat hails . . .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**IN THEORY**

# Eliminate fiction

The lesson from this issue is that you should take everything you hear with a 'grain of salt.' Yes, there are certain generalizations that can help you be more successful in sailboat races. In fact, a recent issue of *Speed & Smarts* was all about 'rules of thumb.' These high-percentage principles can be invaluable guides, especially when you are not sure what to do in a particular situation.

However, not every rule of thumb is completely reliable, at least not all the time. One cool thing about sailing is that every situation in every race is completely different from any other situation or race you have ever faced. No two windshifts or waves, for example, are ever the same. Therefore, you must always treat every part of each race as a unique event that requires a totally new response.

A rule of thumb that works in one situation may not be much more than a myth in another. Just as with anything in life, it's hard to solve a specific problem with a general solution. The challenge, then, is to constantly sort out fact from fiction as you apply all the things you "know" (i.e. what you have learned) to racing situations.


## TEASER ANSWER (From page 1)

When you exclude each boat's two worst scores and add their remaining race scores, you get the following:

| | | |
|---|---|---|
| Boat A | 1-3-2-(7)-1-(4)-2 | 9 pts |
| Boat B | 2-1-(3)-1-(3)-2-3 | 9 pts |
| Boat C | (5)-2-1-3-2-(OCS)-1 | 9 pts |

The boats are tied on points, so you must look at rule A8 (Series Ties) in Appendix A. Rule A8.1 says the first way to break a tie is to list each boat's scores in order of best to worst. When you do that, you get:

| | |
|---|---|
| Boat A | 1-1-2-2-3-(4)-(7) |
| Boat B | 1-1-2-2-3-(3)-(3) |
| Boat C | 1-1-2-2-3-(5)-(OCS) |

Rule A8.1 says, ". . . at the first point(s) where there is a difference the tie shall be broken in favor of the boat(s) with the best score(s). *No excluded scores shall be used.*" Without using any excluded score, the boats have exactly the same finishes; therefore, rule 8.1 does not break the tie. We then have to go to rule A8.2 which says to rank the boats in order of their scores in the last race (even if these are excluded scores).

Since C won the last race with A second and B third, that will also be the overall finish order in the series. No longer does it matter which boat beat the other boat(s) in more races.