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"A PANE IN THE GLASS"

The Drag Effect

by Bill Tschirhart

There is a most interesting phenomenon that occurs when curling stones are touching one another or are close together. It's called "the drag effect" and you hear about it from time to time on TV broadcasts of major events. It's worth understanding! ***At least once in each season, knowledge of the drag effect can win you a game and a lack of knowledge of the drag effect can lose you a game.***

To see it in action, it appears almost magical but it's not difficult to understand. Essentially when stones are "frozen" or are "close together" (I'll explain the "close together" concept in due course), when the lead stone is struck to the side of its "nose", the stone frozen to it tends to move in the same direction. In other words, the "back" stone's path can be altered and that's the key to the drag effect.

One point of clarification needs to be made and it's about the term "nose'. If you are asked to hit a single, stationary stone "on the nose" it's that point of the striking band closest to the shooter (in essence the center of the stone). That's the definition of "nose" with which we're all familiar but when the drag effect is involved, the term "nose" can take on a different meaning. If you draw a line bisecting the frozen stones, you establish a second "nose". I like to refer to it as "the nose of the tandem" and if the frozen stones are aligned so that they are positioned in vertical fashion as in fig. 1 then it's possible for the nose of the lead stone and the nose of the tandem to be superimposed. That's rarely the case of course. Stones which are frozen or close together (be patient, I'll get to it) are usually at an angle to one another creating two noses on the lead stone, the one in the center of the stone as viewed from the shooter and the nose of the tandem. In the remainder of this essay, I'll refer to both and you need to also make the same distinction on the ice when you are taking advantage of the drag effect.

The best way to explain the drag effect is with fig. 1. We see three stones positioned on the tee line and the frozen stones, in that vertical fashion on the center line. It's worth remembering this alignment of stones!!! Here's how the drag effect works!

By striking the blue stone at different points, the red stone's direction can be altered enough so that it will strike any one of the stones on the tee line. If I wanted to make contact with the green stone, I'd strike the blue stone to the left side of its "nose" sending it in a left-to-right direction which will "drag" the red stone with it and therefore come into contact with the green stone. Conversely, if I wanted to move the black stone, I'd strike the blue stone to the right of the nose, sending it in a right-to-left direction, dragging the red stone with it, altering its path enough to make contact the black stone. If I wanted to make contact with the yellow stone, well, that's where the two "noses" are superimposed. I'd strike the blue stone on its nose moving the red stone straight back, making contact with the yellow stone.

The first and perhaps most important point is therefore already made. ***When stones are frozen, it matters where you strike the lead stone because that contact point plays a huge role in the direction the back stones travels!***

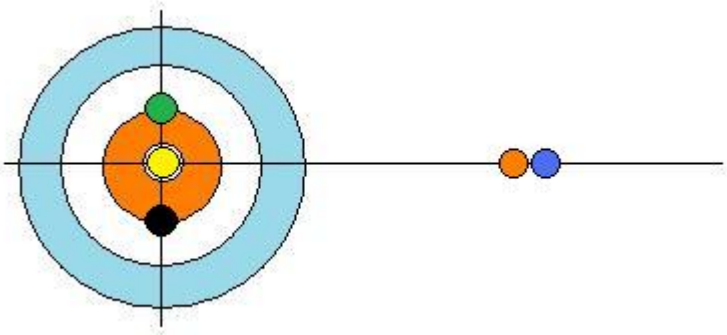

Fig.1

Clearly the situation illustrated above is contrived but again it's worth remembering and here's why. It's one of the best ways to check to see if the drag effect is still present when the stones are not frozen, but close together. To check simply move the frozen stones progressively apart until the drag effect described earlier is no longer (ahem) in effect. You will be surprised to learn that for most sets of stones, they DO NOT have to be frozen for the drag effect to still be useful. I have seen the drag effect cease to exist almost immediately after separating the stones. But on another occasion, it was still

present with over five centimetres of separation (that's really rare). The determining factor is the profile of the striking bands of the stones.

If you carefully place a stone on its edge (the striking band) you will be able to see its profile. Some striking bands are wide, some are narrow, some are convex, some are concave and some are straight (flat). Generally speaking, when striking bands are wide and straight the drag effect will be somewhat more pronounced and still be present even with some separation. Conversely when striking bands are narrow and either convex or concave, the drag effect is not as pronounced even when the stones are frozen and disappears instantly with any separation. But how can you measure this?

At most important events, teams are provided with a pre-event practice session (as opposed to a pre-game practice). Pre-event practice sessions usually follow a format whereby each team has a prescribed amount of time to practise on each sheet. My suggestion quite simply is to set up the stones on one of the sheets according to the fig. 1. Stand close to the lead stone of the frozen tandem and drive another stone into the lead stone to the right of its nose, the left and on the nose to see the different paths the back stone takes. That will confirm that the drag effect exists at all. Then begin to separate the frozen stones and repeat the process until the drag effect is no longer present. It does not take much time and can be very useful at some point later in the event. Mentally record the separation distance for which the drag effect is present!

It's not necessary to test for the drag effect on each sheet but I say that based upon the assumption (famous last words) that the profile of the striking bands for the entire set of stones being used is the same. A brief discussion with the ice technician to confirm or dispel that is always a good idea!

Earlier in this essay I made the statement that knowledge of the drag effect can win you a game. In fig. 2 we see a much more realistic drag effect situation.

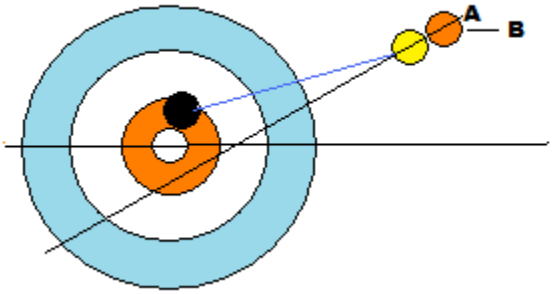

Fig. 2

Two stones are frozen together in the free guard zone to the side of the center line. With peels from center line guards, this situation occurs more frequently than most curlers realize. The tandem is not lined up with the black stone, the stone that you must remove from its location. What I did not include in the figure were lots of other stones that make direct removal of the black stone all but impossible. But, an eagle-eyed front end player, charged with the responsibility of watching for potential drag effect alignments (a good idea by the way) notices the frozen pair in the illustration. But alas, upon examination, they are not lined up to the black stone (as shown by the black line [A]). But, and here's where knowing the differences between those "noses" comes into play, by striking the red stone on its nose (B), it will move the red stone straight back and "drag" the yellow stone with it and in all likelihood alter its course just enough (blue line) to make contact with the black stone. Viola, shot made and quite possibly the shot that wins the game!

But, I also made another statement that a lack of knowledge of the drag effect might lose you a game. Examine fig. 3! It looks eerily familiar to fig. 2 but you will see that in this case, the frozen stones are perfectly aligned with the target, black stone. That same eagle-eyed front end player referred to earlier might utter the classic, albeit disastrous phrase, "Heh, they're lined up perfectly. All we have to do is hit the red stone ***anywhere*** and we'll make the shot!" Yikes, good luck with that!

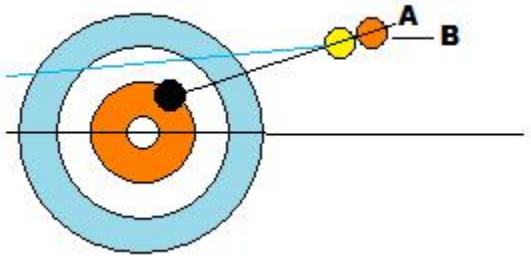

Fig. 3

If you strike the red stone (on the nose) and move it straight back, it will drag the yellow stone with it, altering its course just enough to miss the target black stone (blue line). To make this shot you would have to strike the other nose, the "nose of the tandem" (A).

The point of this is to make sure everyone on the team is aware of the different noses and which one is the contact point to make the drag effect do what you want it to do!

It's worth spending time in practice to become familiar with this phenomenon. Remember, if you do, it will win you a game and it just may be the most important game in your season. Ignore the drag effect and it could cost you dearly!

But perhaps the best is still to come on this "drag effect" topic. This is a personal opinion but the forgotten shot in curling just might be a variation on the drag effect. Most everyone who DO know about the drag effect, see it as a take-out tactic. But there is another use for the drag effect. Check out fig. 4!

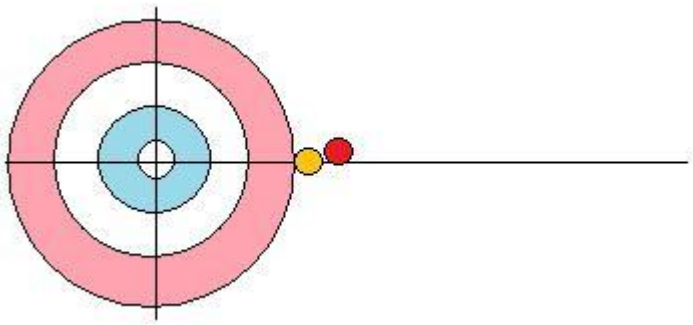

Fig. 4

Here we see a situation that occurs frequently although elite teams know and understand that overlapping guards are most undesirable*. In our illustration, the red stone (an opposition stone) is frozen to the yellow stone, on the center line at a slight angle. By playing tee line weight or slightly more, the yellow stone can be raised almost straight back to the four foot with (and here's the best part) the red stone and the delivered yellow stone coming to rest in such a way as to provide guards for both rotations. How good is that! And to accomplish this seemingly magical feat, the red stone needs to be contacted slightly to the left of its "nose" (see fig. 5).

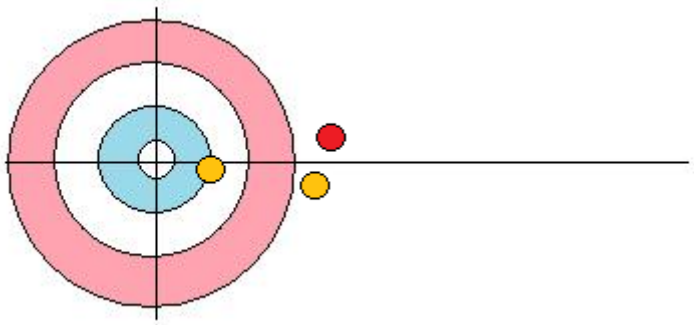

Fig. 5

And there you have it, the “drag effect” and two versions just for good measure. If knowledge of the drag effect wins you a game, send me an email and let me know the details.

If this concept of the drag effect is new to you, I suggest you take a copy of this essay onto the ice with you and set stones up and try it!

I’ll see you soon behind a pane in the glass!

*The cardinal sin for a lead is to be light on an attempted come-around leaving the shooter and the stationary stone in an overlapping position. A good team will draw around that and with the guards overlapped leave its stone fully protected (unless of course you can use the drag effect to remove it)!