
Supporting narrated video (NV) demonstrations, high-speed video (HSV) clips, technical proofs (TP), and all of my past articles can be accessed and viewed online at billiards.colostate.edu. The reference numbers used in the articles help you locate the resources on the website.

I have written much about cue ball (CB) control over the years, covering applications of the 90° rule for stun shots, the 30° rule for rolling-CB shots, and the trisect system for good-action draw shots. These three references are useful for predicting and creating CB directions for a wide range of shots including “tweeners” with various amounts of top or bottom spin. If you are not familiar with these useful CB control principles and how to apply them at the table, check out the info, articles, and video demonstrations under “[where the CB goes for different types of shots](#)” on the “cue ball control” resource page in the FAQ section at billiards.colostate.edu.

In this article, I show how CB control principles can be applied to cut shots close to a rail. **Diagram 1** illustrates how to predict CB direction for a rolling-CB rail cut shot, where the 30° rule applies. The Dr. Dave peace sign (see the gray hand in the diagram) can be used to visualize the expected natural angle off the object ball (OB) into the rail. If the rail were not there, the CB would continue to travel in the “30° rule direction.” Since the CB will rebound off the rail at roughly the same angle at which it approaches (“A”), the 30° natural-angle direction can simply be mirrored to predict the “final CB direction” (see “mirror of angle A”). This is very easy to visualize at the table and can be very useful in play, especially if you don’t yet have a good feel for where the CB heads on rail cut shots like this.

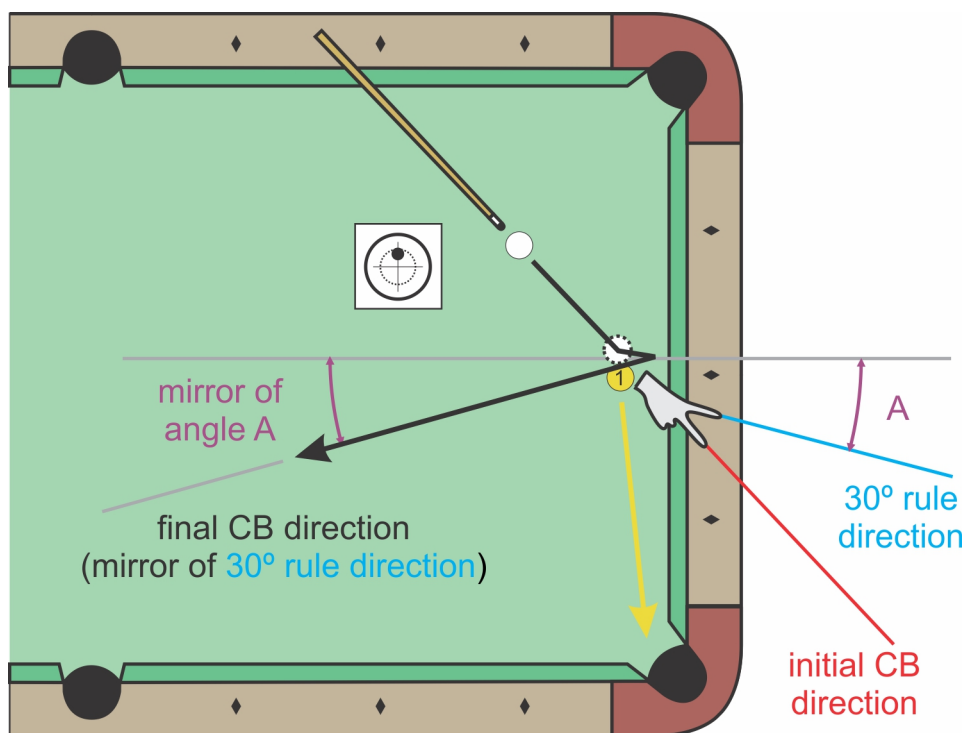


Diagram 1 Mirrored 30° rule rail-cut mirrored-CB path

Diagram 2 illustrates how the same mirror approach can be used to visualize the final CB direction for good-action draw shots into a rail. With good-action draw, the trisect system predicts that the total angle between the initial and final CB directions is three-times the cut angle of the shot (see the angles labelled “1,” “2,” and “3”). As before, the “final CB direction” is simply the mirror image of the “trisect system direction.”

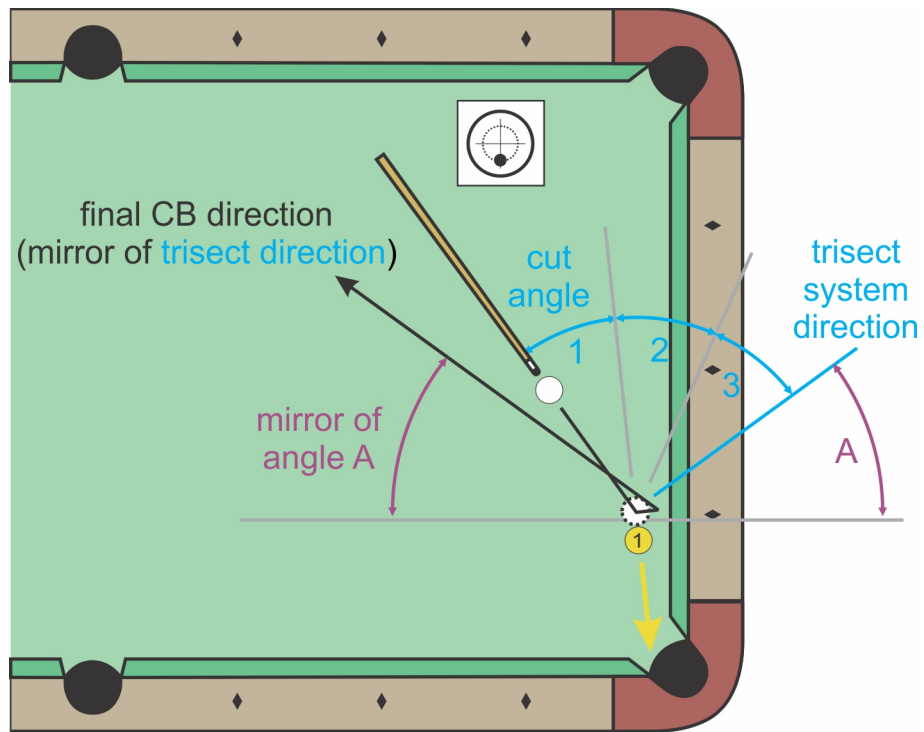


Diagram 2 Mirrored trisect system rail-cut CB path

As with most pool shots, speed is also important. **Diagram 3** illustrates the effect of speed on a rolling-CB shot. Here, the OB is far enough from the rail that the CB will develop full roll and finish curving before reaching the cushion. The faster a shot is, the longer the CB persists along the 90° tangent-line direction before curving forward. This effectively shifts the CB path down the tangent line. However, the final natural angle is still the same for each of the shots in the diagram. The only difference is the sideways shift.

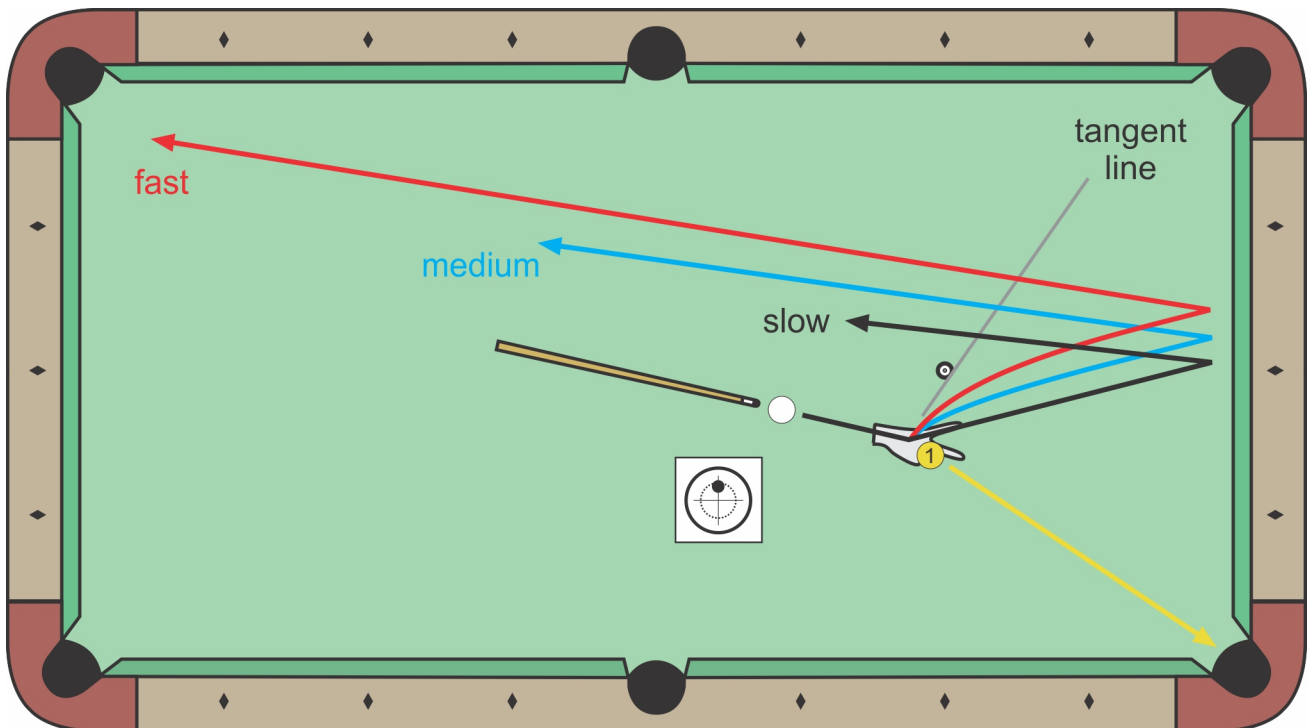


Diagram 3 Speed effects far from the rail

Diagram 4 shows another important speed effect. When the OB is close to the rail like this, the CB might not have enough distance to curve forward completely before hitting the cushion. Because of this, some topspin remains on the CB causing curving to occur after rebound. And because the CB loses some speed when rebounding off a rail, the topspin on the CB can have a greater effect causing the CB to curve forward more than it would otherwise. With the slow shot in Diagram 4 (see the black CB path), the CB does most of its curving before hitting the cushion. Therefore, the CB comes off close to the expected mirrored natural-angle direction. With the medium-speed shot (see the blue CB path), the CB heads more in the tangent-line direction into the cushion and initially comes off at a steeper angle, but the forward spin causes more curve than might be expected. This is evident in the difference in final CB directions shown by the extended gray lines in the diagram. This effect is even more exaggerated with the “fast” shot (see the red CB path).

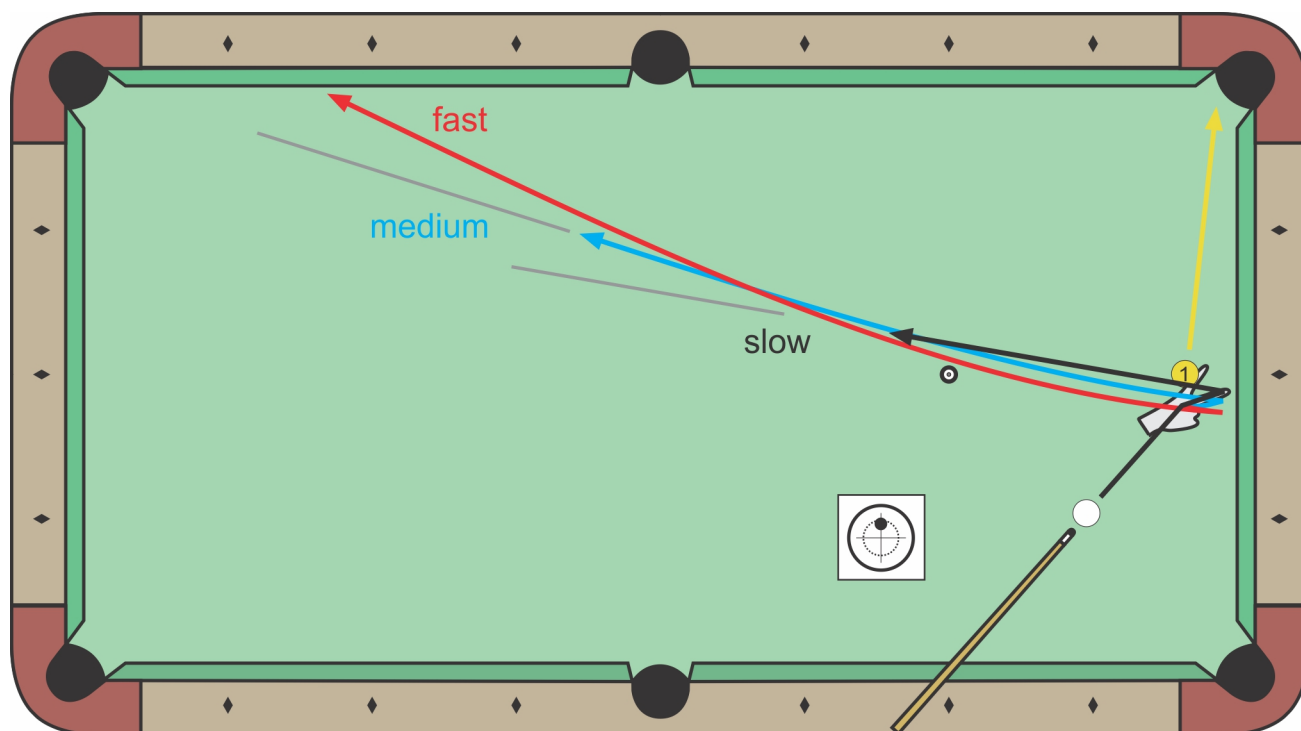


Diagram 4 Speed effects close to the rail

It is important to point out that with shots like these, the CB path can also be affected by how much you actually cut the OB and by how much sidespin gets transferred to the CB from the hit (called cut-induced spin). If you hit the OB thinner or fuller than you expect (but still pocket the ball by “cheating the pocket”), the resulting CB path will be different due to slight changes in CB speed and direction off the OB. And cut-induced spin, which depends on ball conditions, will also change the rebound angle off the cushion. In other words, don’t always expect the CB path to be exactly along your predicted line. However, your predictions should be close if you correctly visualize the mirrored direction and take speed effects into account.

I hope the info in this article helps you control “whitey” even better than before, especially when coming off a rail.

Good luck with your game,
Dr. Dave

PS:

- I know other authors and I tend to use lots of terminology, and I know not all readers are totally familiar with these terms. If you ever come across a word or phrase you don’t fully understand, please refer to the [online glossary](http://billiards.colostate.edu) at billiards.colostate.edu.

Dr. Dave is author of [The Illustrated Principles of Pool and Billiards](#) book and DVD, and co-author of the Video Encyclopedias of [Pool Shots \(VEPS\)](#), [Pool Practice \(VEPP\)](#), and [Eight Ball \(VEEB\)](#), and the [How to Aim Pool Shots \(HAPS\)](#) and [Billiard University \(BU\)](#) instructional DVD series, all available at: [DrDaveBilliards.com](#).