

## Adaptive Thinking

One accepted sign of intelligence is the ability to apply understanding from one area to a problem in another area for a new solution, and pool offers us many opportunities to show off our adaptive thinking skills. I remember the first time I saw Grady Mathews demonstrate a technique for jumping the cue ball over a nearby obstructing ball when there's no way around it to the next shot. Before then I had inadvertently jumped the cue ball hundreds of times after hitting an object ball but lacked the cleverness to see the action as anything more than a mistake. That one memory of being taught how to exploit something I already did routinely but accidentally still leads me to doubt my own intelligence.

In Diagram 1 we see a common 9-ball situation where the shooter has no direct shot at the 5 ball lying near the short rail. Shots like this one arise frequently, and most good players agree on the best way to shoot them. Whenever shooting rail-first to hit an object ball that sits within a couple ball widths of a short rail, the best approach employs a two-rail kick to hit the object ball coming off of the short rail from behind. Any contact close to full will send the 5 ball down table to the other end while the cue ball stays close to the top rail. On those occasions when we miss so badly that we fail to get behind the object ball but graze it instead, the cue ball returns back down table while the object ball stays up top. Either way, the shot usually winds up with the cue ball and object ball at opposite ends of the table for a tough leave. The biggest potential problem with these shots is the occasional scratch in the upper-left corner after caroming off the back side of the object ball. But here, with the 9 ball blocking the corner pocket and begging to be knocked in for the game winner, we might cross our fingers and hope for that scratch.

It turns out that someone with a little 3-cushion knowledge can replace mere hope with a measure of certainty by approaching this setup as a basic billiards shot, as shown in Diagram 2. Among the dozens, maybe hundreds, of diamond systems from 3-cushion billiards, the most commonly used is the corner-5 system, one so fundamental that it's taught to a duck in the 1959 Disney cartoon, *Donald in Mathemagic Land*. To summarize quickly, we have numbers for the diamonds on the first and third rails, depicted in red, and a value for the cue ball's location, shown in white. Here's how the system works: Subtracting the first-rail's aiming point from the cue ball's value gives the spot on the third rail that the cue ball will hit. **CB-FR=TR** The benchmark shot starts with the cue ball in the lower left corner at a value of 5 and shoots with a tip of running (left) english at diamond 3 on the upper-right, side rail, to move along and hit the upper-left, side rail, or the third rail, at diamond 2. **5-3=2** If the table plays on system, that shot returns the cue ball to the lower right corner pocket.

Armed with the formula and the assumption that the cue ball will rebound from the second rail at 45 degrees, you're ready to tackle the shot in Diagram 2. Step one is to find the target on the third rail by laying your cue one-half ball width behind the 5 ball, at 45 degrees to the short rail as shown with the dotted line that crosses the third rail just past diamond 3 at 3.3 (TR). Then you will determine the cue ball's value and its relationship to the first rail to complete the calculation. Lay your cue over the cue ball with the tip pointed at the first rail and the butt passing over the bottom rail. Swivel your stick over the cue ball while mentally matching up the cue ball's number (where the butt crosses the short rail) with the first rail value (where the tip points) until you find the spot where the difference between the cue-ball value and the first-rail value equals 3.3. Both numbers will change together as you rotate your stick over the cue ball. Try starting with whole numbers. With your stick passing over the white 6 and the center of the cue ball, you'll see that it points directly into the far-right corner pocket and that can't work. After moving your cue enough and working the numbers you will arrive at the correct target on the first rail. The diagram shows the line that crosses the short rail at 5.7 (CB) and continues through the cushion to the first rail at 2.4 (FR) to complete the equation.  **$5.7 - 2.4 = 3.3$**  For this setup you would aim at 2.4 on the first rail, hitting the cue ball with a half-tip high and a tip of running english. The values will of course change for balls in various locations, but the same basic formula always applies. Also, tables roll differently from one another and may call for some adjusting. On a table that rolls short I might lay my cue down a full ball width or more from the 5 ball to yield a smaller value on the third rail. If the table tends to roll long I might use a 45-degree line that touches the back of the object ball.

I know that all of this may seem too complex and crazy but I promise that after a few trials, it's not so difficult in practice as it appears in print. This technique will in fact pocket the 9 ball with amazing consistency. Now, I must confess that before Dr. Cue showed me this shot, I already possessed all the knowledge that goes into making it work. And to further my embarrassment, I had also picked up the same 45-degree method from one of Robert Byrne's books and used it routinely on the billiard table for shots that go two rails first to the back of a ball. Unfortunately I had failed to assemble the pieces to complete the puzzle we're looking at here. I'm afraid that if Newton's famous apple had landed on my head I probably wouldn't have seen much more than a free snack in the experience. Thank God for smart people.



