

## Placing Bombproof Protection with Opposition

Placing gear in opposition can keep it from rotating—and that can save your life.

Several years ago, I was belaying a new partner as he led the first pitch of C'est La Morte in Eldorado Canyon. He placed a Camalot in a horizontal crack, and then moved up and left and placed a second Camalot. About six feet past the second piece and fifty feet from the ground, he ran out of steam. Thinking his gear secure, he let go. Although I pulled in quickly on the rope and then locked down, I barely felt a tug before he was sitting right next to me, dazed and trying to get up. A quick response from Rocky Mountain Rescue got him a trip to Boulder Community Hospital with a broken vertebra. When he fell, the sideways pull caused each piece of gear to rotate, loosen, and come out. Had he placed only one point of protection using both pieces in opposition, he probably would not have suffered the ground fall.

I'll give one other example. Late one afternoon last summer, I was leading Wingtip, a short, single pitch climb in Boulder Canyon. Although it was within my ability, the sticky heat did not facilitate a cool focus. After traversing out right over a descending ramp, I placed a green Alien and then ascended a pumpy dihedral. I placed a very small Camalot in a shallow crack about eight feet higher (that was likely to hold little more than body weight). Struggling, I placed a 0.5 flexible Friend three feet higher in the shallow crack. I was one sequence away from a solid stance with good gear. As I stepped up, my fingers greased out of the crack and I fell backwards, head down. I felt the 0.5 Friend come out along with the Camalot a few seconds later. In full clarity and slow motion, I flew past the green Alien. My helmet just grazed the ramp below at the lowest point in the fall. A tight belay on double ropes clipped separately (one to the Alien and the other to the upper two pieces) had literally saved my neck. (My partner, not so lucky, suffered road rash getting dragged down the ramp as he held the fall.) The 0.5 Friend pulled out because it rotated up as I fell backwards even though it was placed in a vertical crack. This Friend would probably have held had I placed even a weak upward pointing piece below it in opposition.

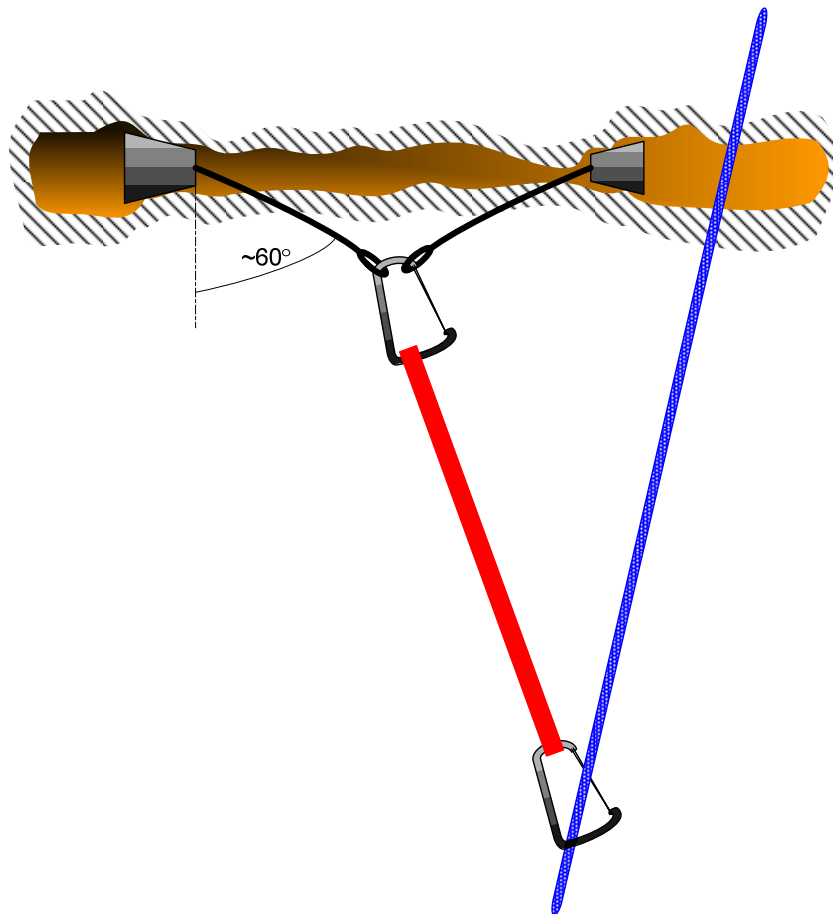
The whole idea with placing gear in opposition is to prevent rotation that causes the piece to loosen up or come out during a fall or simply from rope drag. A rule of thumb is that almost all gear in horizontal cracks should be placed in opposition unless you are only depending on the gear to hold when you're very close to it. This is because it is likely that you will be at least a little to the side of your gear as you climb, causing rotation in the event of a fall.

*Figure 1* shows two camming devices placed in opposition at approximately a 60° angle from the vertical. During a fall, this angle would probably decrease to 45° or less. However, this small change in angle would not have loosened up the gear. These opposing pieces could probably sustain a fall with a significant sideways pull, i.e., much further to the left than the belayer.



*Figure 1: Two points of protection, each with opposition  
(Terrie Cole on the Green Dihedral, Mickey Mouse wall, south of Eldorado)*

If the gear is placed at an angle approaching  $90^\circ$ , the sideways pull on each piece is dramatic during a fall. However, as the angle decreases, the side-pull on each piece of protection decreases and so does the opposing force.



*Figure 2: Two chocks are shown in opposition in a horizontal crack, both at approximately 60° angles. The long red sling reduces the chances that the movement of the blue rope will effect the overall placement.*

A good compromise is to have an angle between 30 and 60° as in *Figure 2*. Of course, if the protection is placed symmetrically in a horizontal crack, each piece holds half of the weight. At 60°, the force on each piece during a fall is actually the same as the force on a single piece of protection hanging vertically. At 45°, the force on each piece of protection is only 70% compared to that of a single piece hanging vertically.

I learned about placing gear in opposition in the days of EBs, through Royal Robbins' primer, *Advanced Rockcraft* (La Siesta Press, 1973). On page 23, the master says that placing gear in opposition "... was first discovered while experimenting with chocks at one of our Rockcraft climbing courses, and first publicized in an advertisement in *Summit Magazine* for 'Peck Crackers'."

Placing gear in opposition is a creative mix between art and engineering and is an important skill to learn and cultivate for traditional climbing. Elegance usually lies in simplicity, and unnecessary slings and carabineers slow down and complicate the placement. Enjoy!