

# The Paradox of the Loop

By Bill Keister

WARNING: What I have put down here will do nothing to help your casting or teaching for that matter it is only an interesting anecdote.

We love our loops. We practice our loops. Even our internal publication is called 'The Loop'. We talk about the line going around the loop. But does the line really go around the loop?

If we put a dot on the fly line and trace it as it passes through the loop, it would trace a figure which is completely different from a loop. The dot starts in the fly leg moving forward towards the loop. As it moves from the fly leg to the rod leg where it comes to rest the figure it makes looks like this. (I can't find the name for it.)



How could this be? (We have pictures that show loops.) The fly line does unroll during the cast but how does the line actually move? Figure 1 shows an idealized loop. Five positions have been placed on that loop and the wheel to its right. These positions indicate where a dot that starts at the top will be positioned as the wheel and loop is rotated counter clockwise one eighth of a turn at a time.

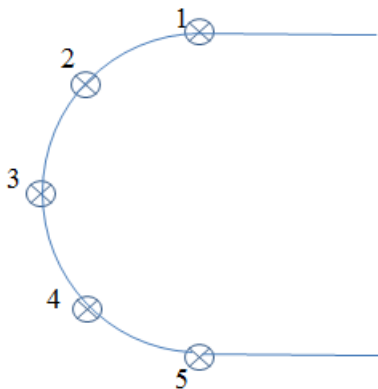
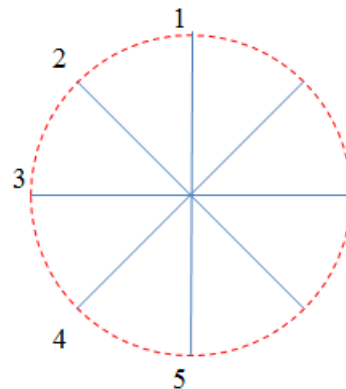
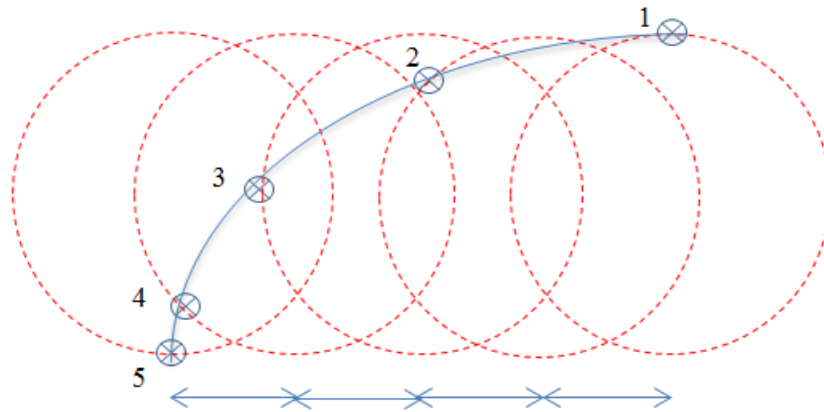


Figure 1



Now let us take the wheel in Figure 1 and roll it from right to left counter clockwise one half turn. And let's take a dot which starts at position "1" and follow its path as it moves from the top of the wheel (the fly leg) to the bottom of the wheel (the rod leg) in Figure 2.

Figure 2



So the dot does not smoothly roll around the loop as it moves from the fly leg to the rod leg. It travels forward, dives downward, slows until it come to rest in the fly leg with their last motion at right angles to the fly leg. Figure 3 represents the path that is taken by five separate dots as they get to the positions in the loop illustrated in figure 1. So the loop can be thought of as a large number of individual elements all following the same trajectory one after another as they traverse the 'process' of the loop. The elements are connected together by tension. So the dots show the movement of the line and the tension between them is the loop.

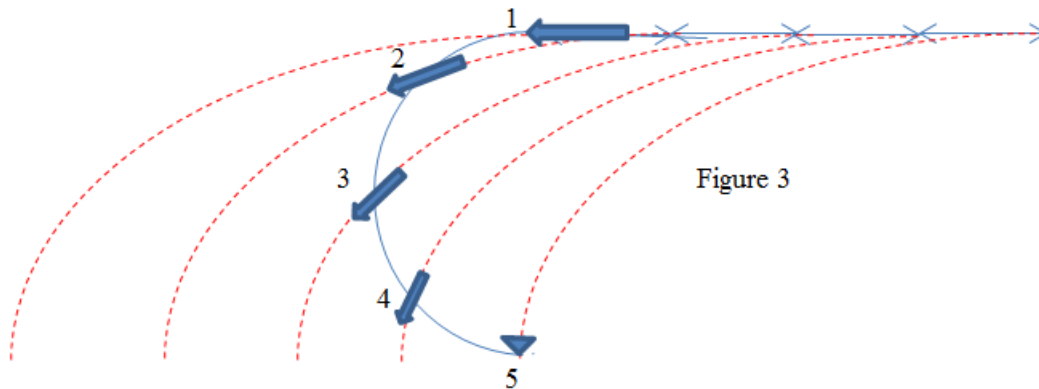


Figure 3

I have always rationalized the need for small loops as being desirable because they minimize the air resistance, which they do. But, I saw the nose of a big loop as presenting a large amount of vertical surface which was moving sideways through the air. When in reality the line at the nose is moving downward at a 45 degree angle at about 70% of the speed of the fly leg.

About the only thing this view will do is help to explain why fly lines kick without a leader. If you follow the path that dot 1 in Figure 3 is going to take it is very clear. If dot 1 is the end of the line there is no more line in the fly leg. Therefore there is no tension to slow it down as it reaches the rod leg. The trajectory it is following will be extended and the last few feet of the fly line will try and follow a path that is the mirror image of the path it took to get to the rod leg only below the fly leg.