trajectory and load the rod. To properly perform the cast, the acceleration must be smooth and continuous during the stroke, or an improper bend in the rod tip will misdirect the line. The rod-tip path can vary and produce poor loops but a straight path is crucial to forming an efficient loop shape. The caster begins the stop sequence by decelerating the rod and as a result, the energy loaded into the bend of the rod unloads, transferring itself to the line and the line overtakes the rod tip. It is at this point the loop is formed above the rod-tip. The caster waits for the unrolling of the loop before starting the forward cast.
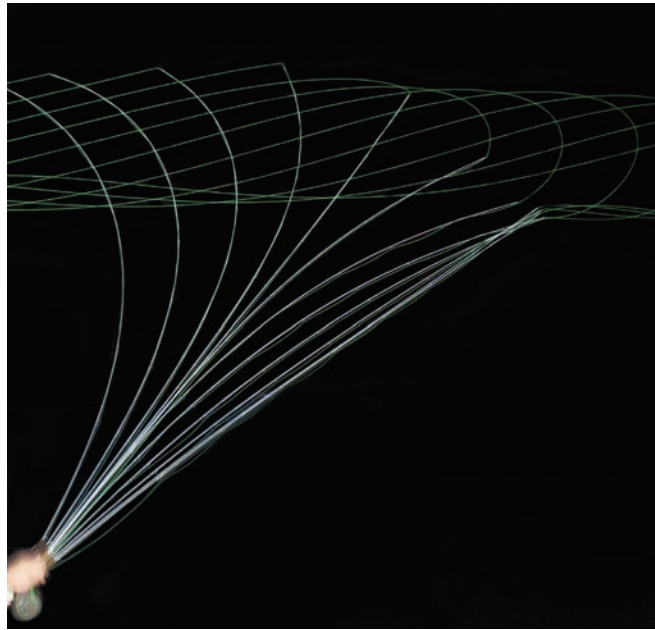
In this forward cast, the rod unloads and straightens, then bends in the casting direction and back. This is the process of counterflex and rebound.

After the rod unloads, it passes through a cycle of vibrations, straightening and flexing until it rests or is cast again. When the rod bends past straight in the casting direction, the motion is called counterflex. After counterflex, the rod tip returns back to a straight position. This straightening is called rebound.

During this rebound, the loop is unrolling and before it falls, the caster reverses casting direction by starting the forward stroke with a forward acceleration of the rod hand which finishes the rod loading at the end of the stroke. The stroke is ended by the intentional muscle contraction in the arm, wrist, hand and shoulder, or when the casting arm and other skeletal movement are fully extended at the completion of the delivery stroke. On the forward cast, the rod moves through a similar cycle as on the backcast, but I'm about to examine a forward delivery cast, with emphasis on loop creation.

The shape of the delivered loop is created by the combination of a straight rod-tip path, the timing and duration of the stop sequence and line release and their relation to the oncoming line. Bill Gammill, International Federation of Fly Fishers Casting Board of Governors member and author of *The Essentials of Fly Casting,* Federation of Fly Fishers, 1993 and others, have taught us to make the rod tip travel in a "straight line" path to form an efficient loop. This concept can help in rudimentary learning, but we know it is not perfectly accurate. In a good cast the tip path is almost straight, or photography has shown straight segments.

The rod-tip bends downward during deceleration and out of the way of the oncoming line. If in reality the path would be perfectly straight, the line would often collide with itself and the rod tip. The same would be true if we used a perfectly vertical rod casting