THE LASSO

A Rational Guide to Trick Roping

Carey Bunks

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by

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With Illustrations by the Author

version 1.1

July 8, 1996

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Preface

I first became seriously interested in trick roping in August of 1985 when I saw a copy of Frank Dean's book *Will Rogers' Rope Tricks* [4]. Using this book as my guide I worked hard trying to learn the different tricks but my progress was slow and frustrating. Since I thought that a more visual approach might be helpful I started looking for the film from which many of the photos in Dean's book were taken. This film, called *The Roping Fool*, was a black and white made in 1925 [12]. My search for it was literally from coast to coast. I called film libraries in New York, Washington DC, California, and even the Will Rogers' museum in Claremore, Oklahoma. After many months of searching I succeeded in tracking down a copy of it. Ironically it had been waiting for me all this time at a small film distribution company not 20 miles from where I lived.

Will Rogers' film helped, however, the master keys to understanding most of the tricks seemed to remain just outside of my grasp. As time went by I had the good fortune to meet some talented trick ropers such as Vic Shore, Vince Bruce, and Serge Holtz to name a few. These ropers were very generous with their time and their advice. Nevertheless, even with the book, the film, and the good advice it seemed that the secret to learning each trick could only be discovered one way ... by lots of hard work and a lot of trial and error!

Curiously, as I slowly succeeded in learning tricks, I began to realize that most of them are not difficult once you know the secret. So why were they so hard to learn? The answer is that the physics of the lasso is based on rotational mechanics and most people don't have a good feel for how rotating objects react. I began to try and identify the different principles that each lasso trick depended on. As my catalog of principles grew I discovered that I could apply them to tricks I hadn't already mastered and that this greatly accelerated my learning curve.

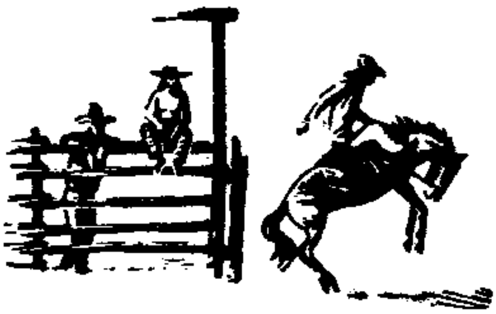
Over the years I've taught trick roping to many people and I feel that my knowledge of the underlying physical principles has greatly aided my students to more rapidly learn lasso tricks. The objective of this book is to describe these principles in an intuitive way. Don't worry you won't have to be a rocket scientist to understand them! Once you're familiar with them you'll have the know-how to learn any lasso trick.

This book takes an original approach to learning trick roping. The method is not just descriptive since the explanation of the underlying physical principles describes dynamic aspects of the lasso which are otherwise not readily apparent. This knowledge of the dynamics greatly leverages the learning process. Of course understanding the physical principles of the lasso doesn't translate directly into being able to do the tricks. Nevertheless, knowing about how tricks *should* work is like knowing about certain landmarks that you expect to see on the way to a new destination. If you don't see the landmarks you start to suspect that you are no longer on the right path. The principles of the lasso are similar since they provide a point of reference that can help you decide whether or not you are practicing in the right way. This book explains the underlying principles of the lasso and this in turn provides landmark information on the road map to trick roping.

Although the number of books on the lasso is not legion there are some other resources available. You will find a pretty complete list in the references at the end of this book. Of particular interest is the book by Clare Johnson called *How to Trick Rope* [8] which is the most complete compendium of lasso tricks available. Also listed in the references are the names and addresses of suppliers of roping equipment [1], [9]. If you need to buy rope or want a lasso ready-made you'll be able to buy them here. They also offer a selection of books and videos on roping as well as on a wide variety of other interesting western and circus skills.

It is my hope that this book will provide insights into trick roping and aid others interested in learning this wonderful art from the wild west days. Since this book is the product of desktop publishing it's easy to revise and I'm interested in improving it. In this perspective your comments and ideas are of great interest to me. Is there a part of this book that you don't understand? Is there a part you think is well done?

Send me your questions, criticisms, and kudos! They can be addressed to Carey Bunks, 220 Commonwealth Ave., Boston, MA 02116 USA (or for those of you who have a connection to the Internet you can send e-mail to cbunks@bbn.com). If you let me know that you have a copy of the book I'll try to keep you informed on revisions. Hope to hear from you, and have fun roping!



THE LASSO

A Rational Guide to Trick Roping

Chapter 1

The Flat Loop

A New Yorker by birth and raised in Westport, Connecticut, the lasso had always been a powerful archetypal image of the old west to me. Nevertheless, except for television cartoons and Wonder Woman comics (yep, I read those), I had never seen anyone really handle a lasso. Sure, on several occasions, as a kid, I tried to tie the end of a cord into a loop and throw or spin it . . . what kid hasn't? In fact, my earliest memory of the lasso dates to when I was about four years old when I tried to make a lasso out of a shoelace. It didn't seem to work very well and the next morning when my dad tried to put on his shoes he got pretty red in the face and excited when it became clear that he was going to miss his train to go to work.

Well the negative reinforcement I got from that little experiment discouraged me from trying that again anytime soon and so you can imagine that for many years I harbored a lot of pent-up but repressed lasso desire which was just waiting for an opportunity to come to the surface. That moment came in the summer of 1985. My roommate and friend, Alex Feldman, a juggler and variety arts entertainer, had just received Frank Dean's book *Will Roger's Rope Tricks* [4], a lasso, and some other juggling equipment he was interested in experimenting with. Since I was then 28 and felt relatively assured that I'd be safe from any paternal reprimands I decided to leaf through the book which led me to discover some interesting facts. First, I learned that shoelaces are not standard roping equipment. More surprisingly, however, I read that Will Roger's had had a ranch in Westport, the town I'd grown up in.

Wow! Was this what it felt like to step into the twilight zone?

Call it coincidence or call it destiny. I knew I was going to learn how to trick rope! I started reading some of the descriptions in Dean's book and working on the first trick roper's trick the *Flat Loop*. After about a half hour of effort out in the yard I successfully got a wobbly horizontal loop to spin in front of me. Boy, was I thrilled! On writing this I still recall the enormous pleasure this gave me and I think that you'll be thrilled, too, when you succeed with the same trick. This chapter gives a detailed description of the Flat Loop. Also described here are many of the basic principles useful for lasso tricks to be presented in subsequent chapters.

1.1 The Elements of the Lasso

I begin by giving a physical description of the lasso. Referring to Figure 1.1 a lasso is a length of cord which has a small loop at one end called the *honda*. The other end of the cord is passed through the honda

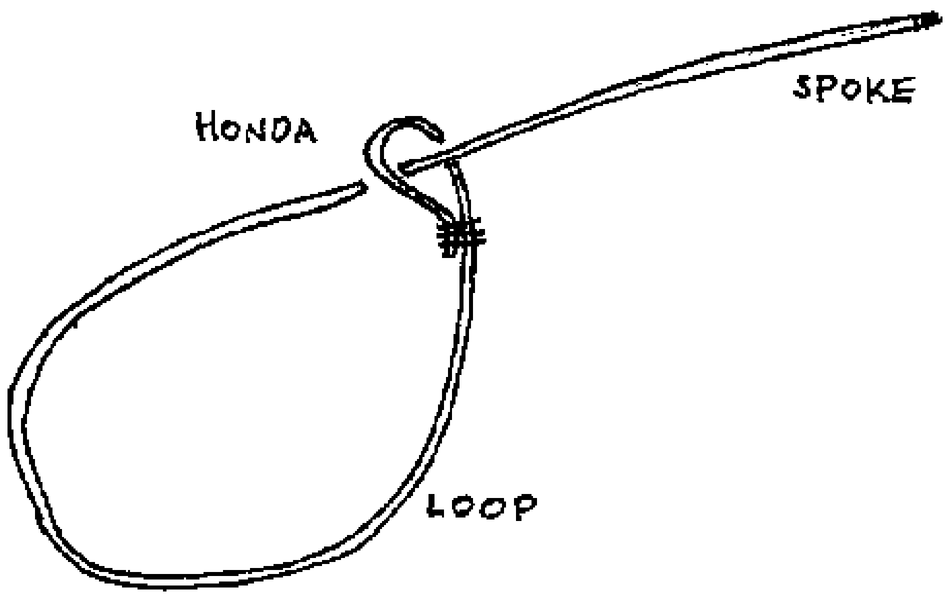


Figure 1.1: The Lasso

thus dividing the cord into two parts called the *spoke* and the *loop*. The honda must be big enough to allow the spoke to slide freely. If the lasso is long it might be necessary to gather the excess end of the spoke into a *coil* which is held in the free hand.

The rope of preference for trick roping is Samson spot cord #12 although for some styles of roping maguey or poly might be used (see [4], [7], and [8]). Samson spot cord is a double-helical, braided cord that resists becoming a tangled mess (within limits) under a lot of twisting. Once you begin trick roping you'll see that this is a very useful property indeed! For vertical loops (discussed in Section 3.1) Samson spot cord #10 or even #8 may be preferable to #12 since these cords are thinner and thus much lighter (your arm is going to get very tired learning this trick). Samson spot cord can be bought at many hardware stores in the US. The last time I checked, a one hundred foot hank could be had for about $25.

If you have problems finding Samson spot cord you can contact Samson directly by telephoning or writing them (see [13]). They should be able to tell you the location of their closest retail distributer. Another source of Samson spot cord is Mark Allen Productions [9] which offers a catalog of a wide variety of western arts equipment and produces the newsletter of the Wild West Arts Club [14] containing valuable information about people and activities in trick roping. Brian Dube, Inc [1], a manufacturer and supplier of juggling equipment, is also a source of ready made lassos.

In fact, you should know that there are two types of Samson spot cord. The type that is sold in hardware stores has a synthetic core and the type sold by Mark Allen and Brian Dube has a cotton core. The cotton core rope is a bit stiffer than the synthetic and it is the cord that was traditionally used by trick ropers. When Samson developed the new synthetic core the cotton core rope became unavailable. Recently, however, due to the efforts of Brian Dube and Mark Allen, Samson has agreed to remanufacture the cotton core rope. I started roping with the synthetic core rope but there are those who swear only by the cotton core.

An average beginning Flat Loop lasso is about 15 ft (4.6 m) long. If you're smaller than average, though, this may be too long for you. You can get a good idea of how long your Flat Loop should be by measuring the distance from the center of you palm to the base of your armpit and multiplying it by eight. The last three inches (7.6 cm) of the Flat Loop are folded back to form the honda. The honda is sewn in place with either cooking string (a string used in sewing up roasts) or with copper wire. Cooking string can be found in most supermarkets and copper wire in most hardware stores. If copper wire is used an awl will be needed to pierce holes in the rope to allow the wire to pass through. For the cooking string a regular wide eyed needle will suffice. The copper adds more weight to the honda than the cooking string and lasso will be "faster".

Although sewing makes for a very solid honda it's also possible to simply use a few wraps of plastic electrical tape to hold the honda in place. Another common thing to do is to insert a metal sailing thimble in the honda. Sailing thimbles are used for finishing cables and lines on boats and are available in a variety of sizes, weights, and materials from marine hardware stores. The stainless steel varieties are probably the most suitable for rope spinning. There are two advantages to using the thimble. First, for advanced roping it is much easier to manipulate the diameter of the loop when using a metal honda and, second, the honda will never wear out from the cord of the spoke rubbing against the cord of the honda. From experience I'd say that the sailing thimble used should be about 10 or 11 grams. This is rather hard to find and you may be obliged to use one a little heavier which you can try to cut down with a jeweler's saw. By the way, if you decide to use a sailing thimble do not use tape to fix the honda in place since the thimble can become a dangerous projectile if the tape becomes undone while you are spinning your lasso.

1.2 The Description of the Flat Loop

The Flat Loop is the trick roper's first trick. It is the most basic and the easiest of all the rope spinning tricks and it is an important foundation trick on which many other roping tricks are based. The Flat Loop also has the virtue of illustrating most of the basic physical principles of trick roping. These principles are discussed in detail in the following sections.

As the name suggests, the Flat Loop consists of spinning the loop in a flat horizontal plane. The spoke leads downward from the hand to the loop at about a 45 degree angle with the vertical axis as shown in Figure 1.2. The hand is at about waist level and is placed far enough for-

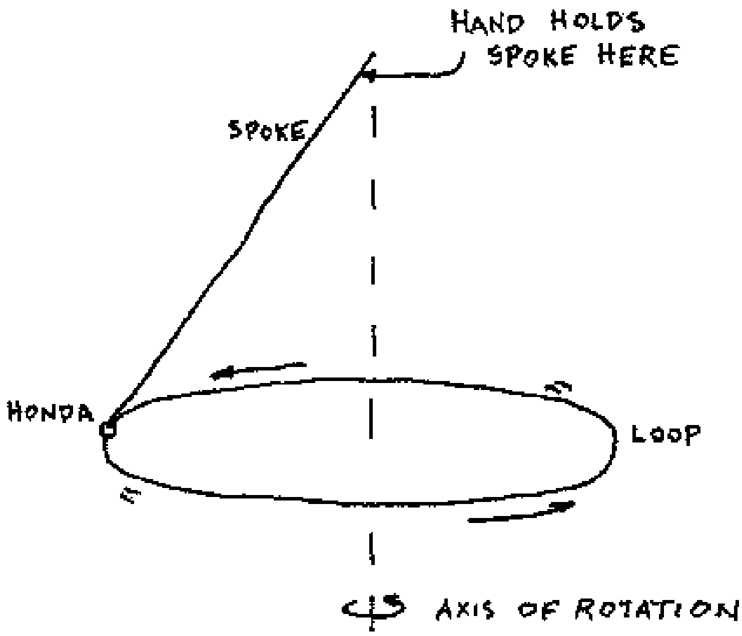


Figure 1.2: The Flat Loop

ward and high enough so that the spinning loop does not brush against the legs or against the floor while it is turning.

Before describing how to learn the Flat Loop let's take a moment to understand how this works. Why does spinning the loop make it form into a circle? The answer is that the turning motion of the loop creates a centrifugal force which makes every part of it want to fly away from the center of rotation. The force with which the loop wants to flee the center depends on the speed of the rotation. A greater rotation makes the loop flee the center with a greater force. Spinning makes all parts of the loop flee the center at the same time thus forming it into a circle.

The above explanation raises an interesting problem. If centrifugal force is making the different parts of the loop flee the center what keeps the diameter of the loop from getting bigger and bigger? The answer is that gravity is also acting on the loop, pulling it downward and trying to make the diameter of the loop smaller. This point is clear in the limiting case when the loop is not spinning at all. Under these conditions the downward pull on the loop closes it completely.

Thus spinning opens the loop and gravity closes it. Successfully mastering the Flat Loop depends on finding the right equilibrium between these opposing forces. We see right away that trick roping is a Taoist pursuit, an activity which seeks the middle way! Read on as some of the less metaphysical aspects of mastering the flat loop are discussed in the next section.

1.3 Starting the Flat Loop

Starting is probably the hardest part of the Flat Loop to master. I've taught the Flat Loop to many people and my favorite way to do this is to start the Flat Loop myself and to hand it off to the person I'm teaching. Normally, it just takes a few tries to succeed at this since the Flat Loop almost works by itself. It's a very stable trick. It does take a bit of work, however, to master the start. In this section I try to minimize the pain by giving a detailed description of the starting configuration and a discussion of some of the rational landmarks that should help you along your way.

It is important to examine Figure 1.3 carefully so as to get the starting configuration correct. The view in Figure 1.3 is that of the roper looking at his or her own hands. The left hand is palm down and grips the loop between the thumb and forefinger. The right hand is palm up gripping the loop with the thumb and forefinger and holding the end of the spoke with the remaining three fingers. The exact geometry of the honda and spoke are important so examine the figure again carefully. The spoke length is between a quarter and a fifth of the loop circumference. A handy way to get the correct spoke length[1] is to form a square out of the loop by placing the hands and feet in the loop at the locations of the four corners of a square. Arrange the square so that the honda is at the right foot and make the spoke length just a touch shorter than

[1] It was my roping friend David Lichtenstein who first suggested this to me.

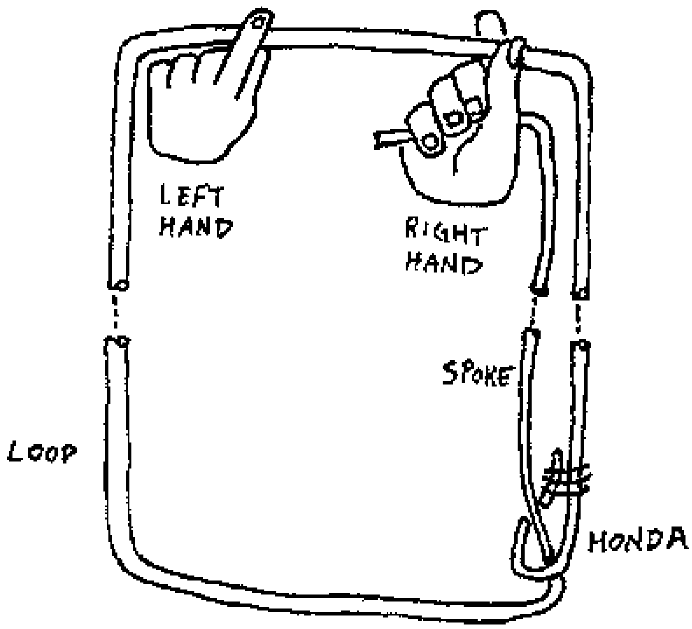


Figure 1.3: Starting Configuration

one side of the square. This may take some adjusting of the hands and feet to get everything right. In any case, after a few tries the correct spoke length will be easy to estimate by eye and the square method can be abandoned.

Before starting the Flat Loop I'd like to point out some of the rational landmarks. The goal is to spin the loop counter-clockwise[2] in the horizontal plane in such a way so that the hand holding the spoke makes a small circular motion and in such a way so that the hand is always a quarter of a circle ahead of the honda. The difference in circle position between the hand and the honda is called the phase of the hand with respect to the honda. It is very important to pay attention to the phase of the hand in all lasso tricks, and more about phase is discussed in Section 1.4. I point out that the description of the starting configuration (using a square to correctly position the hands with respect to

[2]The direction that the loop turns will always be from the roper's point of view, i.e., as the roper looks at the loop while roping.

the honda) means that even before starting the Flat Loop the hand is already positioned at a quarter of a circle ahead of the honda. Thus, we can conclude that in starting the Flat Loop the hand mustn't make any extraordinary accelerated spinning movements. Before releasing the loop with the left and right hands the spoke hand already has a quarter circle phase advance on the honda and it is important to maintain this phase difference after the release of the loop and throughout the entire action of the Flat Loop.

The initial turning action on the loop is started with both hands. The right hand describes a large, horizontal, counter-clockwise circle in front of the body. As the right hand circles from right to left the left hand passes underneath the right arm to facilitate the rotation of the loop. It is at this point that the loop is released by the thumb and forefinger of both hands. At the moment of release the right hand travels in a spiral path from the loop edge to a position near the center of the circle formed by the now horizontally turning loop. Through this entire operation the hand must remain a quarter circle ahead of the honda. To achieve this you must *observe* the rotational speed of the loop at the moment of release and then do your best to match this speed with the right hand. It is only in this way that you will be able to learn how to maintain the quarter circle phase advance during the start of the Flat Loop.

Before moving on to some more subtle ideas about handling the Flat Loop I'd like to point out two common mistakes made by many beginning Flat Loop disciples. The first is starting the trick by throwing the loop of the lasso away from the body. Since the loop is attached to the spoke it will just swing back towards the body like a pendulum and collide into the legs. This kills the spin and you'll be forced to start over. To avoid this just lay out the loop in front of you with the spoke positioned directly over the center of the loop.

The second mistake is trying to drive the Flat Loop with large arm motions directed from the shoulder or the elbow. A large arm motion is required at the start of the Flat Loop but once started the Flat Loop requires little energy to keep it going. Thus, most of the time a small wrist action is all that is required. Furthermore, limiting the driving force of the Flat Loop as much as possible to a wrist action diminishes the probability that the loop will stray into the legs, killing the spin and forcing you to start over.

1.4 The Quarter Circle Phase Advance

Figures 1.4(a) and (b) illustrate a front perspective and top view, respectively, of the Flat Loop. In both figures (a) and (b) the large circle is the loop, the small circle represents the path that the hand moves in, and the straight line between the two circles is the spoke. In the figures both the loop and the hand are turning in the counter-clockwise direction.

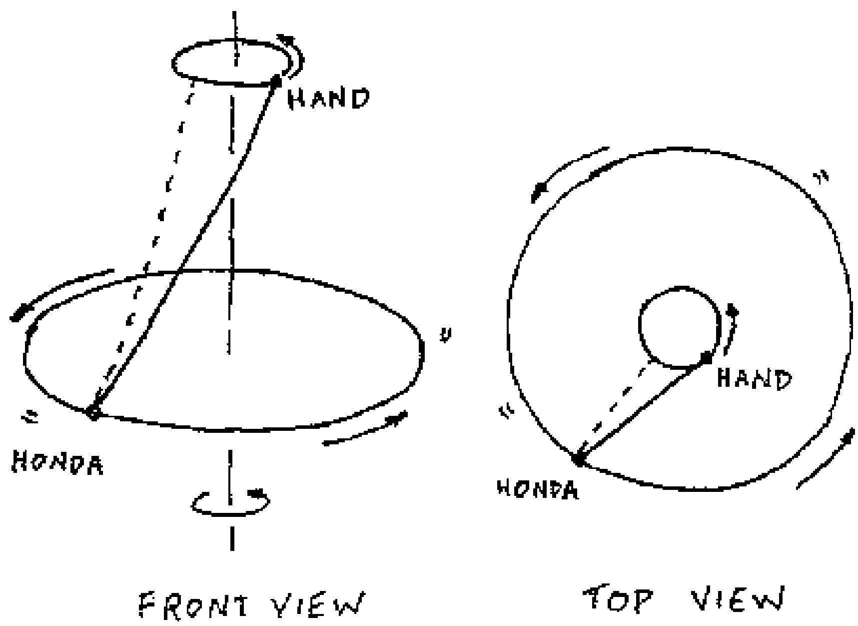


Figure 1.4: Phase of Hand for the Flat Loop

The position of the hand on its circle with respect to the position of the honda on the loop circle is very important. As depicted in the figures the hand must be a quarter of a circle ahead of the honda. The quarter circle phase advance is necessary to keep the loop turning efficiently. We can think of the tension in the spoke as being decomposed into two parts. As illustrated in Figure 1.5 one part of the spoke tension is tangential to the loop and the other component is perpendicular to it. Since it is the tangential component of the spoke tension which makes

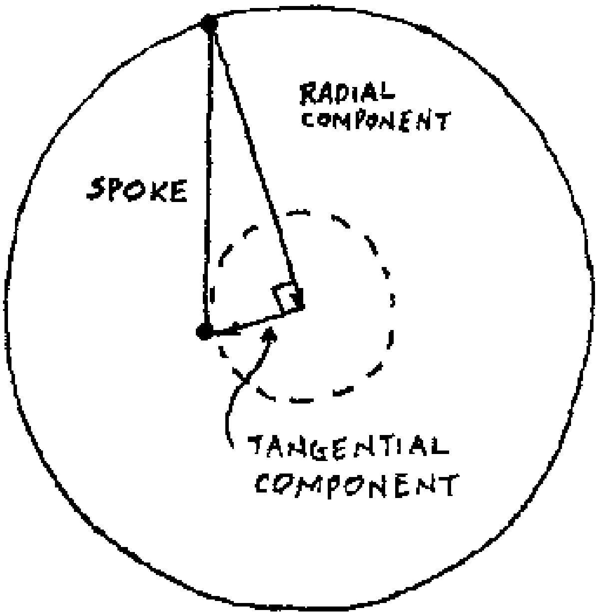


Figure 1.5: Tangential Component of Spoke Tension

the loop turn we can intuitively see that it is the quarter circle phase advance which most efficiently keeps the loop spinning.

In Figure 1.5 the tangential component is largest when the end of the spoke is located at the point illustrated on the small circle (i.e., a quarter circle phase advance with respect to the position of the honda on the large circle). Note that the small circle illustrated in Figure 1.5 has been represented at a larger scale than it is in practice in order to better illustrate the principles involved.

There is an exercise you can use for cultivating the feel of the quarter circle phase advance principle. Unthread the end of the lasso from the honda and starting from the end of the spoke, coil about half of the lasso's length into the left hand. As shown in Figure 1.6(a) allow the honda end of the lasso to hang down from the right hand and, by moving

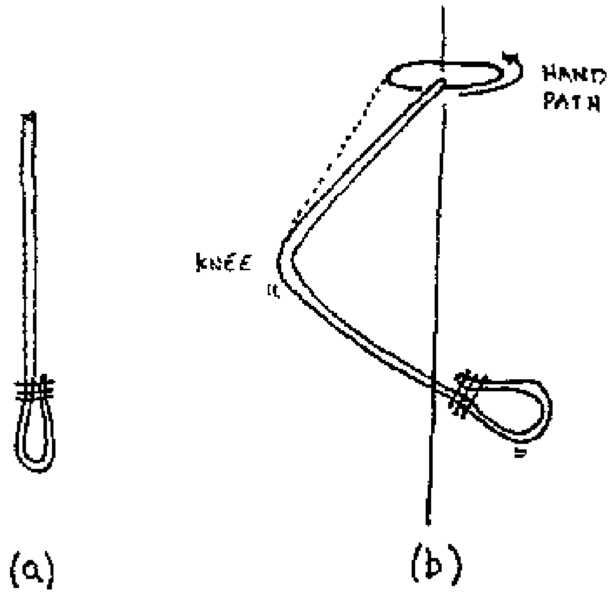


Figure 1.6: Phase Mastery Exercise

the hand in a small circle, try to make the rope obtain the shape in Figure 1.6(b). When the rope takes this shape, the hand is a quarter circle phase ahead of the knee in the lasso. A little practice with this exercise should give you an idea of the correct hand-honda phase.

The problem of hand phase is *very* important. The quarter circle phase advance principle holds true in almost every lasso trick. The most likely result of bad phase is that the diameter of the loop gets smaller and smaller until the circle completely vanishes. The two possibilities that give rise to bad phase are (1), the relative phase of the hand and the honda is constant but the hand is on the wrong half of the small circle thus diminishing the loop speed and (2), the hand-honda phase is continually changing in a way which, on average, diminishes the loop speed (see Figure 1.7). For both cases a decelerating loop speed means a diminishing loop diameter. If you're having problems with the loop becoming smaller and smaller the problem is almost certainly a poor mastery of phase!

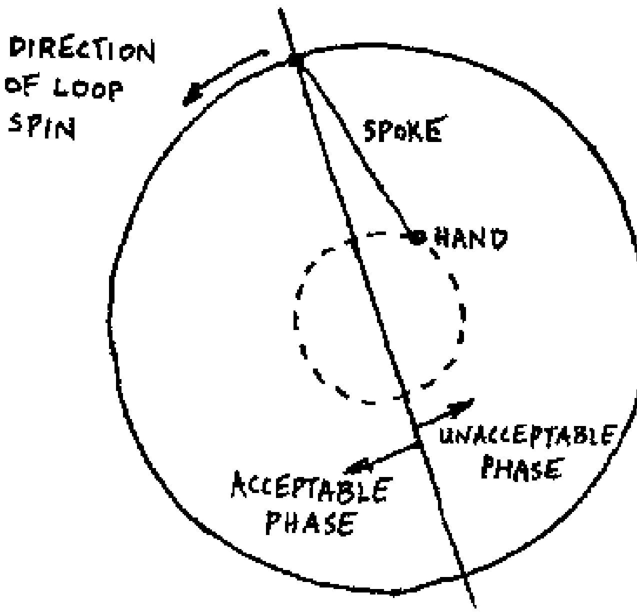


Figure 1.7: Problems with Phase

1.5 Untwisting the Spoke

If you've been trying to learn the Flat Loop by following my description up to here you've probably become aware of a problem. After a few tries the rope becomes kinked up and it is impossible to continue without removing the kinks. While you've been turning the loop in circles, the spoke has been held stationary which explains why the spoke (and even the loop) get unmanageably kinked after a while. To avoid the kinks it's necessary to make one turn of the spoke end for each turn of the loop.

Untwisting the spoke is a little tricky since you must do this with the right hand all the while being careful not to release the spoke. As shown in Figure 1.8 this is accomplished by alternately rolling the spoke end between the thumb and forefinger and then by gripping the spoke with the remaining fingers. Figure 1.8(a) shows the three lower fingers of the right hand gripping the spoke end. The thumb and forefinger are

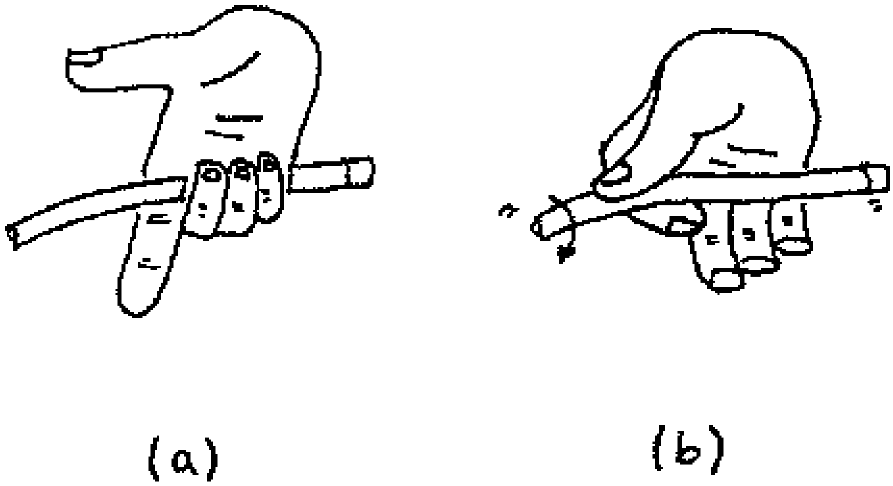


Figure 1.8: Untwisting the Spoke End

extended so that they grip the cord as in Figure 1.8(b). The cord is then rolled between the thumb and forefinger, untwisting the spoke end, and then regripped as in Figure 1.8(a). Learning to untwist the spoke is a pain in the beginning, however, it quickly becomes second nature and you will forget that you are even doing it.

1.6 Changing the Loop Diameter

As already discussed the diameter of the loop depends on the speed at which it is turning. The faster the loop turns, the larger its diameter and the slower the loop turns the smaller its diameter. The conclusion is that for each constant speed the loop has a constant diameter and so to increase or decrease the loop diameter the speed at which the loop is turning must be accelerated or decelerated.

Because of the importance of maintaining the quarter circle phase advance between the honda and the hand (as discussed in Section 1.4), you cannot change the speed of the loop by simply moving the hand faster along the small hand-circle path illustrated in both Figures 1.4

and 1.5. To increase the loop speed it is necessary to increase the tangential component of the spoke tension without altering the quarter circle phase advance of the hand. This can only be accomplished by increasing the diameter of the hand circle. Increasing the diameter of the hand circle increases the distance that it must travel to make a complete circle and so increasing the spoke tension also results in increasing the speed of the hand.

1.7 The Spin Acceleration Technique

Gravity is not the only force which acts to close the diameter of the loop. Most roping tricks require the roper to move the loop from the static position of the Flat Loop to another static position or perhaps through some continuous displacement of the loop. Moving the loop means pulling on the spoke and this results, as with the pull exerted by gravity, in diminishing the loop's diameter. If there were no way to counteract this effect the roper would be forced to stop after just a few tricks because the loop would be completely closed! Thus, the subject of this section is a method which is used to keep the diameter of the loop constant when it is necessary to pull on the spoke. I call this method the *Spin Acceleration Technique*.

The static relationship between the Flat Loop diameter and the rotational speed of the loop was described in the previous section: the greater the rotational speed of the loop the greater its diameter and vice versa. This is true, however, only when the position of the loop remains static. When the loop's position is changing an increase in the rotational speed of the loop may not increase the loop diameter if the two effects are properly balanced. This fact is of paramount importance for the successful mastery of many lasso tricks as will be seen in subsequent sections.

Thus, pulling on the spoke creates a loop closing force and accelerating the loop's rotational speed creates a loop opening force. The spin acceleration technique which seeks to maintain the equilibrium of these forces can be a little tricky to learn. Fundamentally you'll just have to get a feel for it. However, the following description should help you learn the method by describing some of the essential rational landmarks to be found along the way.

Figure 1.9 illustrates two top views of the loop. For the loop illustrated in Figure 1.9(a) the phase difference between the hand and the honda is a quarter circle and the hand circle diameter is normal. This

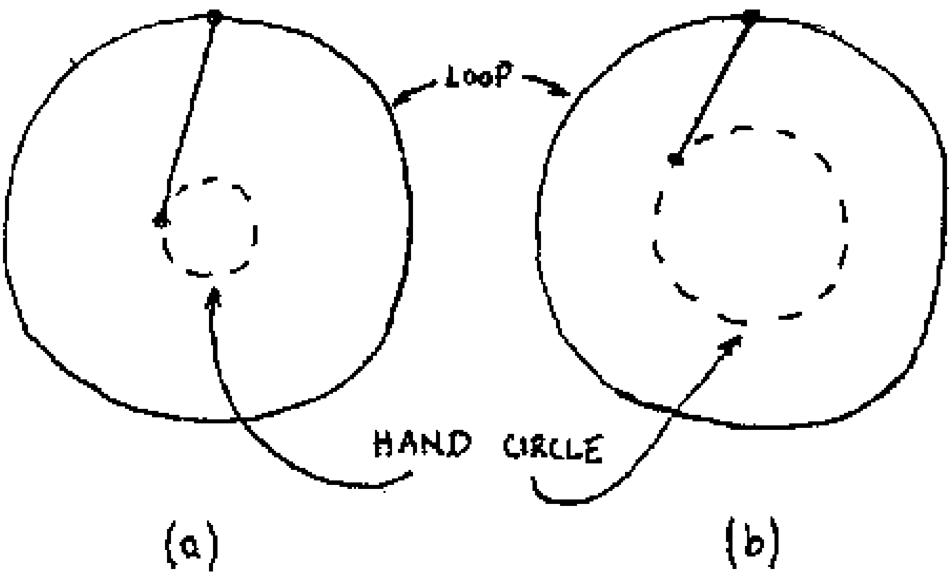


Figure 1.9: Spin Acceleration

figure illustrates the situation before spin acceleration begins. For the loop illustrated in Figure 1.9(b) the hand circle diameter is larger than that in Figure 1.9(a) and the phase difference between the hand and the honda is as close to a quarter circle as possible given the increased hand circle diameter. This figure illustrates the situation during the spin acceleration. Since the hand circle is larger the tangential component of the spoke tension is greater than that in Figure 1.9(a) and so the rotational speed of the loop increases. If the increase in rotational speed is balanced by the pull on the spoke the loop diameter does not change and, consequently, the spoke length does not change. After the maneuver is achieved the hand goes back to the hand circle represented in Figure 1.9(a).

If you apply the spin acceleration correctly then you will actually feel a sort of solidity of the diameter of the loop as you pull. It's a force balancing act and you should feel as if the loop seems to be pulling back against you a bit. While working on tricks which require the spin acceleration technique you will notice one of three things: 1) The loop is closing while you do the trick which means you have not sufficiently accelerated the loop (or you've lost the correct phase advance), 2) The loop is opening which means you are accelerating the loop too much, 3) The loop neither gets bigger or smaller which means you've succeeded!

It's good to experiment a bit to get a feel for how much the loop diameter grows for a given acceleration. Just try speeding up the rotation of the loop without pulling on it to see how much it grows. Then try speeding up at different rates and pulling at the same time to see what spin acceleration is required for a certain pull. The experience you get from these types of experiments will help you get a feel for the balance of forces needed when practicing many of the tricks described in this book.

The explanation of the spin acceleration technique may seem a bit abstract at the first reading. Nevertheless, I promise that its importance will become clearer in later sections. Many of the tricks to be described in later sections depend on spin acceleration and you will develop additional insight when you begin to work on them. In fact you may want to come back and reread this section at that time.

Chapter 2
Flat Loop Tricks

Many roping tricks and variations are based on the Flat Loop. The Flat Loop tricks presented in this section fall into four categories. The simplest Flat Loop tricks are those which consist of passing the loop around the body and those which depend on stepping or jumping in and out of the loop. Slightly more difficult but all the more gratifying are those tricks where the roper is standing inside the loop. Finally, the most difficult and the most impressive Flat Loop tricks are those which are based on lifts. If you learn all the tricks in this chapter you'll have plenty of tricks to make a little lasso routine!

2.1 The Merry-Go-Round

Merry-Go-Round tricks are those that consist of passing a Flat Loop around the body. The Merry-Go-Round is begun by spinning a Flat Loop in front of the body. The Flat Loop is then passed to the side, around the back, to the other side, and then back to the front of the body thus completing the sequence. To begin, the basic Two-Handed Merry-Go-Round is described. This is followed by a description of the One-Handed Merry-Go-Round and a variation of the One-Handed Merry-Go-Round called the Neck Wrap.

The Two-Handed Merry-Go-Round

For the Two-Handed Merry-Go-Round the roper starts by passing the

Flat Loop from the right hand to the left hand. The left hand then moves the loop around the left side of the body and behind the back where the loop is passed back to the right hand. The right hand then moves the loop around the right side and to the front of the body thus completing the trick.

Mastering the Two-Handed Merry-Go-Round depends on learning three new skills with the Flat Loop: transfer of the Flat Loop from hand to hand, spinning a Flat Loop with the left hand, and moving the Flat Loop around to different positions of the body with either of the two hands. Moving the Flat Loop around the body and doing a Flat Loop with the left hand are usually not very difficult once the Flat Loop itself has been mastered. The most difficult aspect of the Two-Handed Merry-Go-Round are the transfers between hands (especially the one behind the back).

Figure 2.1 illustrates the transfer of the Flat Loop in front of the body from the right to the left hand. Figure 2.1 is a top view at the

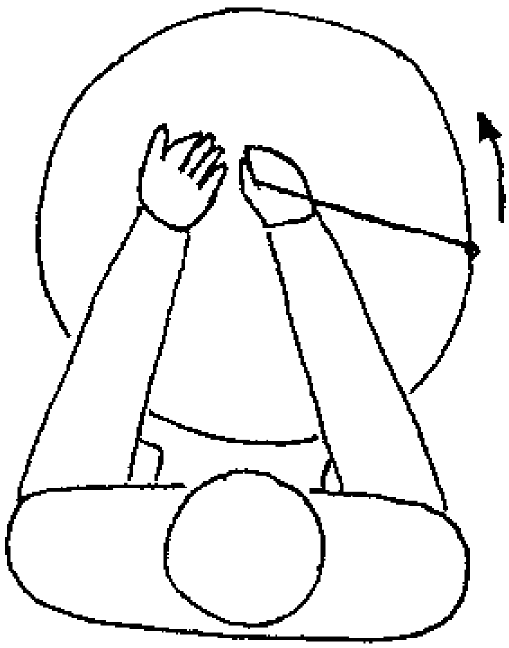


Figure 2.1: Front Transfer for Merry-Go-Round

moment that the transfer is made. Note that the loop is turning in the counter-clockwise direction and that the transfer occurs when the honda is at the 3 o'clock position. When the honda is at this position the hand, according to the phase technique described in Section 1.4, must be a quarter circle ahead of the honda or at 12 o'clock. The hand at 12 o'clock is moving directly to the left since this is the tangent to the little hand path circle at this point (refer to Figures 1.4 and 1.5). Since the loop is to be moved from right to left this is the perfect position to pass the spoke from the right to the left hand.

The pass of the loop behind the back from the left to right hand is analogous to the pass in front of the body just described. The exchange must be timed so that it takes place when the honda is at 9 o'clock and the left hand is at 6 o'clock. It is at this position that the left hand is moving directly to the right on the hand circle path. Even though the passing technique behind the back is identical to that in front of the body, it is a bit more difficult to master. This is no surprise since there is no visual feedback and also you are likely to have more range of movement and be more dextrous when the hands are in front of the body. Nevertheless, the Two-Handed Merry-Go-Round is not a very difficult trick and you should be able to master this one in about the same amount of time that you spent on mastering the Flat Loop.

A couple points should be made here. The first point is that, as with the Flat Loop, it is necessary to continually untwist the spoke as described in Section 1.5. This will probably be a little uncomfortable in the left hand but be persevering. The second point is that the movement of the Flat Loop should require some application of the spin acceleration technique as described in Section 1.7. The spin acceleration required for the Merry-Go-Round is so slight, however, that you probably won't even have to make any conscious effort to apply it.

There are many Flat Loop tricks which are variations of the Merry-Go-Round. Obvious variations are tricks such as passing the Merry-Go-Round under the leg or doing the Merry-Go-Round in the opposite (clockwise) direction around the body. These sorts of variations don't need any special description and I leave it to the reader to experiment and discover some of the things that can be done with it. There are two variations, however, which are less obvious. One is called the One-Handed Merry-Go-Round and the other is called the Neck Wrap.

The One-Handed Merry-Go-Round

The One-Handed Merry-Go-Round, as the name implies, is done with just one hand. For this trick the right hand never passes the lasso to the left hand. Rather, it guides the lasso to the left and then around the back of the body with the right hand passing the spoke over the head and finally bringing the loop back out to the right hand side of the body. Figure 2.2 shows the timing of the pass behind the back. Part (a) of the

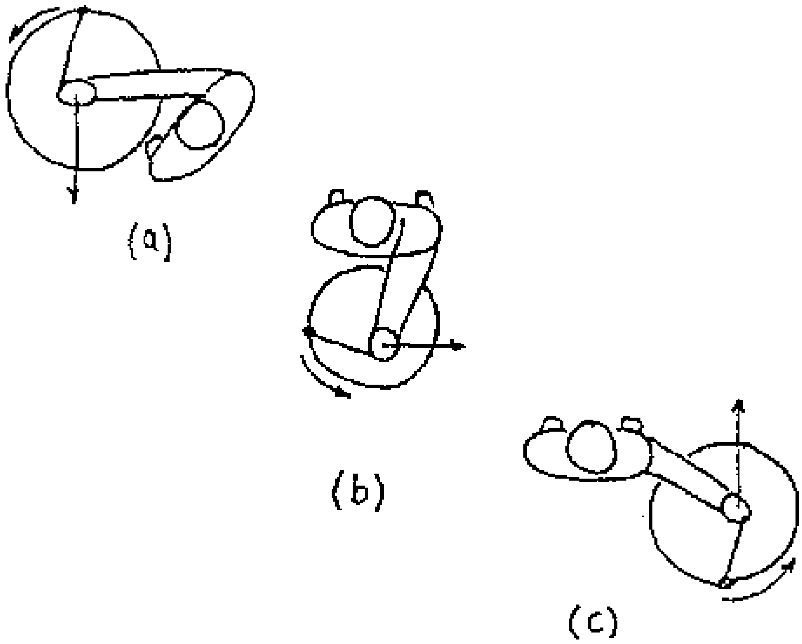


Figure 2.2: One-Handed Merry-Go-Round (Top View)

figure shows the hand and the loop just before the hand is going to pass the spoke over the head. Note that in this position the honda is at 12 o'clock, whereas the hand, which is a quarter circle ahead of the honda is at 9 o'clock. The hand is moving directly backwards at this position. The positions of the hand and the honda in Figures 2.2(b) and 2.2(c) are similar to those in Figure 2.2(a). In these figures the hand is always moving in the direction tangential to the little hand circle path.

The Neck-Wrap

The neck wrap is like the One-Handed Merry-Go-Round, however, instead of passing the hand and spoke over the head the spoke is passed low enough to wrap about the neck.

As the hand approaches the left side of the body, the spoke begins to wrap around the back of the neck. As illustrated in Figure 2.3(a) this happens while the loop is passing behind the back. At the point shown in Figure 2.3(b) the right hand releases its hold on the spoke and the spoke and loop move freely through space. Nevertheless, during this short moment the spoke continues to contact the neck. After releasing the spoke, the right hand travels immediately back to the right side of the neck where it recatches the it as shown in Figure 2.3(c). The catch can also be made with the left hand. A regular Flat Loop is continued at this point.

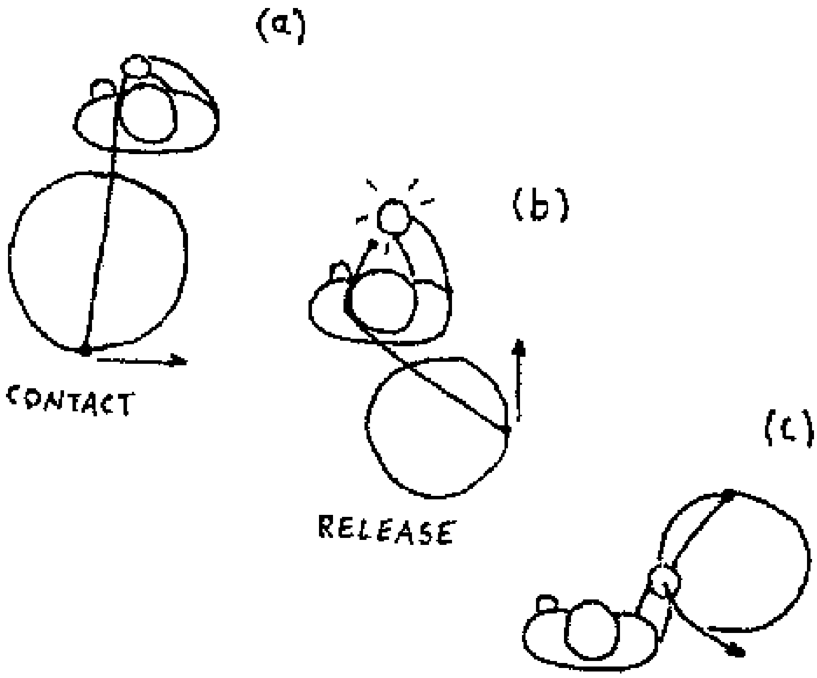


Figure 2.3: The Neck Wrap

2.2 Spoke Jumping

Spoke jumping tricks are those where the roper repeatedly steps in and out of the spinning Flat Loop with one or both feet. This must be timed so that the roper's foot will not hinder the passage of the spoke.

The spoke jump with the right foot is illustrated in Figure 2.4. As illustrated in part (a) of the figure the jump is begun when the honda

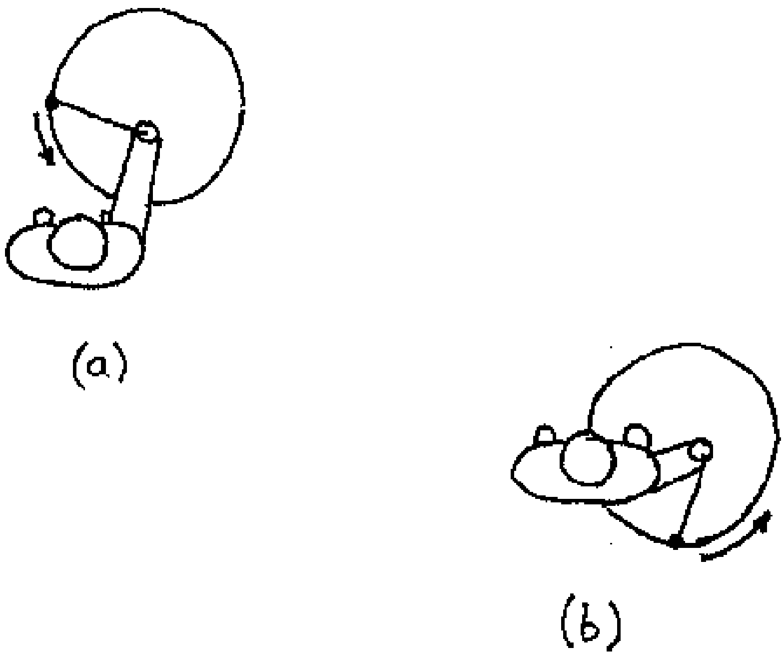


Figure 2.4: The Spoke Jump

is at 9 o'clock. The right foot is lifted up over the spoke and is inserted down into the center of the loop. Since the loop is spinning the foot actually touches the ground when the honda has come around a bit as illustrated in Figure 2.4(b). The foot must be lifted and must exit the loop before the honda comes around again to the 9 o'clock position.

The spoke jump is commonly called Crow Stepping . It can be performed continuously, repeatedly inserting and extracting the foot for each pass of the spoke. The foot exits the loop just long enough for the spoke to pass underneath. Repeated spoke jumping is a timing trick and the placement of the body weight is very important. The essential point is to shift the body weight back and forth between the left and right feet in rhythm with the passing of the spoke.

Many variations of the basic spoke jump are possible. Using the left foot instead of the right or interchanging the left and right feet one after the other are possibilities. Jumping in with both feet at once is a little more difficult.

When jumping into the Flat Loop with both feet there is no shifting of the body weight between a foot which is outside the loop and a foot which enters into the loop. Rather, each time the spoke comes around, the roper jumps straight up allowing the spoke to pass under both feet before they come back down into the loop. Here, it is important to always keep the end of the spoke close to the legs since any variation in the loop position will result in it touching the legs thus killing its spin.

Another variation of spoke jumping with both feet in the loop is to alternately lift one foot at a time. For this to work the spoke must be centered between the two legs so that the left foot is lifted when the spoke comes to 9 o'clock and the right foot is lifted when the spoke passes to 3 o'clock. This creates a trotting effect as the roper straddles the spoke back and forth on the left and right feet.

2.3 The Wedding Ring

A very rewarding flat loop trick is the Wedding Ring. The first time I successfully spun a dozen turns of a Wedding Ring I was thrilled. The Wedding Ring is a flat loop that the roper stands in. As shown in Figure 2.5 the loop spins around the body while the spoke passes over the head.

Once the Wedding Ring is started it is similar to a regular Flat Loop. The quarter circle phase advance technique described in Section 1.4 must be respected and the hand must be relatively stationary with respect to the body. If the hand wanders around the loop will touch the body which will kill the spin and the trick will die. In fact most of the spinning with the right hand is accomplished by wrist action.

The most difficult part of the Wedding Ring is starting it. The starting configuration for the Wedding Ring is identical to that for the

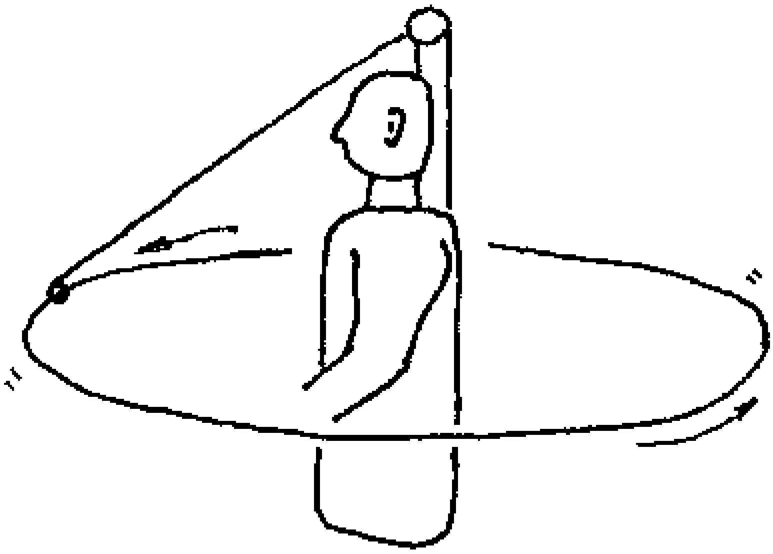


Figure 2.5: The Wedding Ring

Flat Loop (refer to Figure 1.3 on page 7). Going from the starting configuration to the Wedding Ring is accomplished as illustrated in Figure 2.6. First, note that while doing the Wedding Ring the body is in the interior of the rotating loop whereas for the starting configuration the body is exterior to the loop. Consequently, at a certain point an edge of the loop must be passed over the head and around the body. It is the right hand edge of the loop which is passed around the body.

As shown in the sequence (a)-(e) in Figure 2.6 this is done by moving the right hand from its starting configuration towards the left shoulder and then up over the head, around the back, and then towards the front of the body. During this entire motion both the left and right hands maintain their hold on the loop and spoke.

At the moment that the right hand reaches the front of the body both the left and right hands release the loop, the right hand maintains its hold on the spoke and spins the loop as in the Flat Loop only now with the hand just above the head. The turning motion that the hand

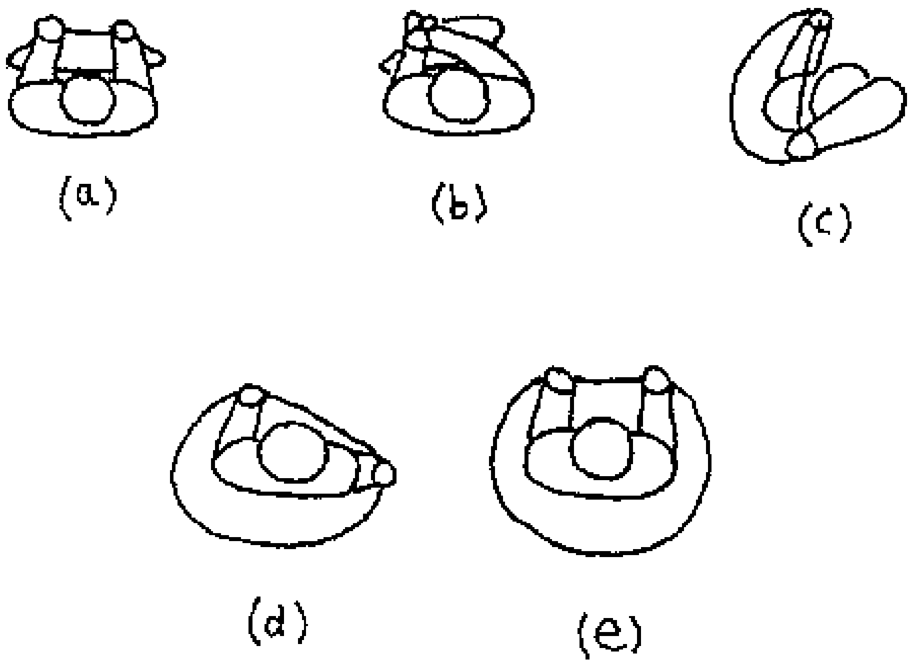


Figure 2.6: Starting the Wedding Ring

gives to the loop once the hand is over the head is obtained by little more than wrist action. The hand should move as little as possible to avoid the loop moving from side to side and possibly touching the body.

The path that the right hand traces while beginning the Wedding Ring in Figure 2.6 is that of the circular path that the loop itself is going to travel in after it is released by the two hands. After the release the right hand spirals from the loop path to a point just above the head and close to the center of the loop. During the whole process, the left hand hardly moves except to release the loop at the moment that the right hand returns to the front of the body.

The Wedding Ring is a bit more difficult than the other tricks discussed so far, but it is also a much more gratifying. I am sure that you will get a kick out of it the first several times you succeed with it and I can't recommend too strongly that you try to master this trick.

There are a couple of other ways of beginning a Wedding Ring other than using the starting configuration just described. In each method the Wedding Ring is obtained from a regular Flat Loop. In the first method begin with a Flat Loop and then jump into the loop with both feet as if you were going to do some spoke-jumping. Instead of skipping the spoke lift the right hand up over the head to its usual position for the Wedding Ring. Since the spoke must not touch the body, the hand holding the spoke must be lifted from the position it had for the Flat Loop to its final position for the Wedding Ring in less than one complete turn of the loop.

This is a great trick which is usually warmly received by spectators of all types, two-legged or four. If you start up your Flat Loop, follow with a little Crow Stepping, pass the loop around the body a couple of times with some Two-Handed and One-Handed Merry-Go-Rounds and finish by jumping into the loop for a Wedding Ring you'll have a nice little routine. The little dogies will probably be so impressed they'll just lay right over and let you brand 'em without you havin' to chase and catch 'em!

A nice little variation of the Wedding Ring is obtained by lowering the right hand to waist level and passing the spoke around the waist from right hand to left in front of the body and from left to right behind the body as the loop is spinning. This is known as a Hand Shake Wedding Ring and it can be done continuously. An additional variation that I like a lot is had by alternately passing the spoke under the left and right legs each time the spoke comes around to the front of the body. Continuously performing this trick makes for a good little aerobic exercise.

A second method for beginning a Wedding Ring is to lift a flat loop over the head, allowing it to fall down around the body into the Wedding Ring. This is quite a bit more difficult than any of the other tricks already described in this book and at this point we're starting to get into some advanced trick roping. The method for doing a Flat Loop Lift is explained in the next section.

2.4 The Flat Loop Lift

The Flat Loop Lift is a very dynamic flat loop trick. The method for lifting the loop is completely dependent on the spin acceleration technique described in Section 1.7 so you might want to go back and reread this section again while learning this trick.

The objective of the Flat Loop Lift (from now on simply called the Lift) is to lift the Flat Loop from its usual position to a new position which is over the head. In the process of doing the lift the spoke will pass from one side of the loop to the other and the entire upward motion of the loop will be accomplished in exactly one turn of the loop.

The spin acceleration technique described in Section 1.7 must be used for the lift since the strong upward pull on the Flat Loop will act to close the loop diminishing its diameter if nothing is done to counteract this. Also, the spin acceleration of the loop used to counteract the closing force of the upward pull on the spoke must be carefully coordinated so that the spoke is passed from above the loop to below it as the loop moves upward.

The exact sequence of actions needed to execute the lift are as follows. The lift is begun when the loop is at the right side of the body with the honda at 3 o'clock as shown in Figure 2.7(a). At this point the right hand starts to accelerate upwards pulling the spoke and loop up with it. At the same time the loop is spin accelerated to prevent the loop diameter from shrinking. The upward acceleration of the hand and the spin acceleration of the loop must be gauged so that the spoke has completely passed from above the loop to below it when the honda reaches 9 o'clock (see Figure 2.7(b)).

Thus, the loop goes from its usual Flat Loop position to about forehead height as the honda goes from 3 o'clock to 9 o'clock. The position in Figure 2.7(b) shows the spoke just after passing from above the loop to below. The hand is clearly shown outside of the perimeter of the loop, which, of course, is necessary to allow the loop to pass by the hand during its upward movement. The loop continues upwards until the spoke is fully extended and is directly overhead. At this point the honda should be at 3 o'clock as shown in Figure 2.7(c). Once the loop is overhead the most natural thing to do is to step under the loop and to allow it to fall down around the body into the Wedding Ring position.

A couple of observations are useful here. The first observation is that in order to lift the loop over the head in a single rotation of the honda requires a *powerful* pull on the spoke. This must be done, however, with an equally powerful acceleration of the loop's spin. If you look back for a

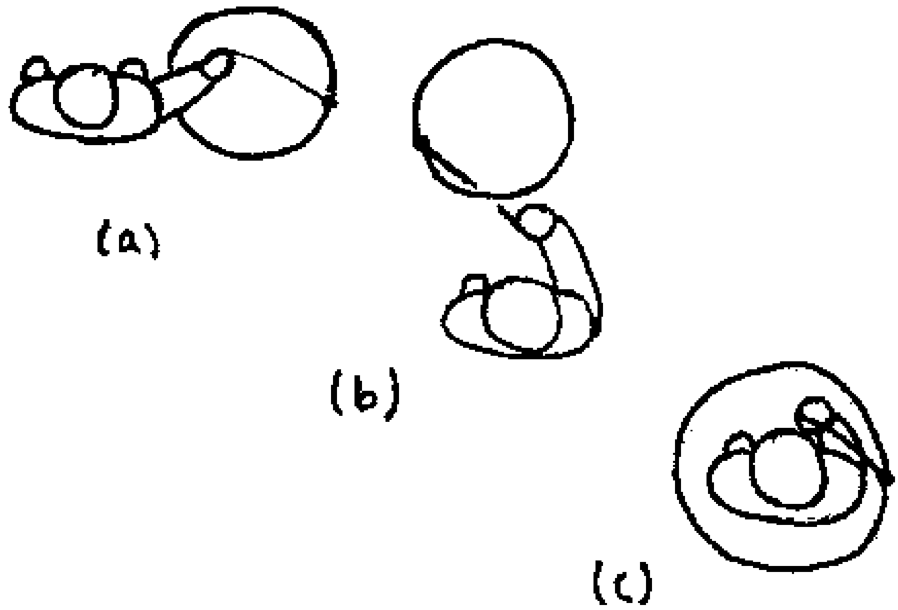
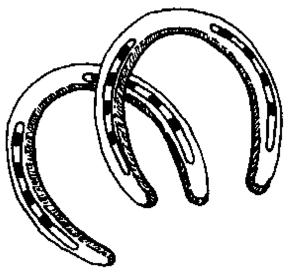


Figure 2.7: The Lift

moment at Figure 1.9(b) on page 15, the illustrated increased diameter of the hand circle is not nearly sufficient for the Flat Loop Lift. In fact, I would say that for the Lift the position of the spoke is practically tangential to the circumference of the loop as the honda goes from 3 o'clock to 9 o'clock. The spin acceleration ends, of course, as soon as the spoke is no longer above the loop. Probably the most difficult aspect of mastering the Lift is the problem of maintaining an appropriate hand-honda phase advance while powering up the spin acceleration.

Many combinations of the Lift and the Wedding Ring are possible. You can jump into a Flat Loop and then lift the loop through the Wedding Ring and off the body, allowing the loop to fall back to a Flat Loop position. Alternately, you can lift the Flat Loop and let the loop fall down over the body, through the Wedding Ring position, down towards the feet and then jump out leaving the loop again, in the Flat Loop position. A very dynamic combination is to lift the Flat Loop, allowing the loop to fall into a Wedding Ring and then immediately lifting it back off to the Flat Loop position. When the lift is repeatedly dropped into the Wedding Ring and re-lifted off this trick is called the Body Bounce. The body bounce is similar in many ways to a Butterfly trick called the Arm Bounce described in Section 5.3.



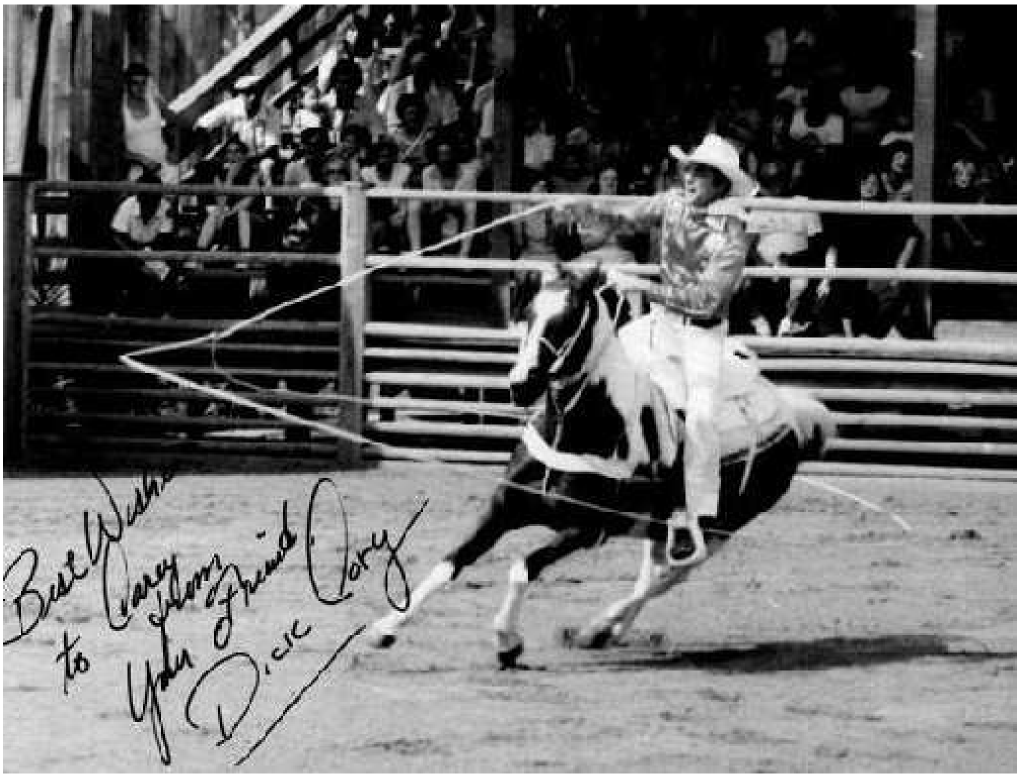


Figure 2.8: Dick Cory Does a Wedding Ring Big Enough to Encircle his Galloping Horse ...

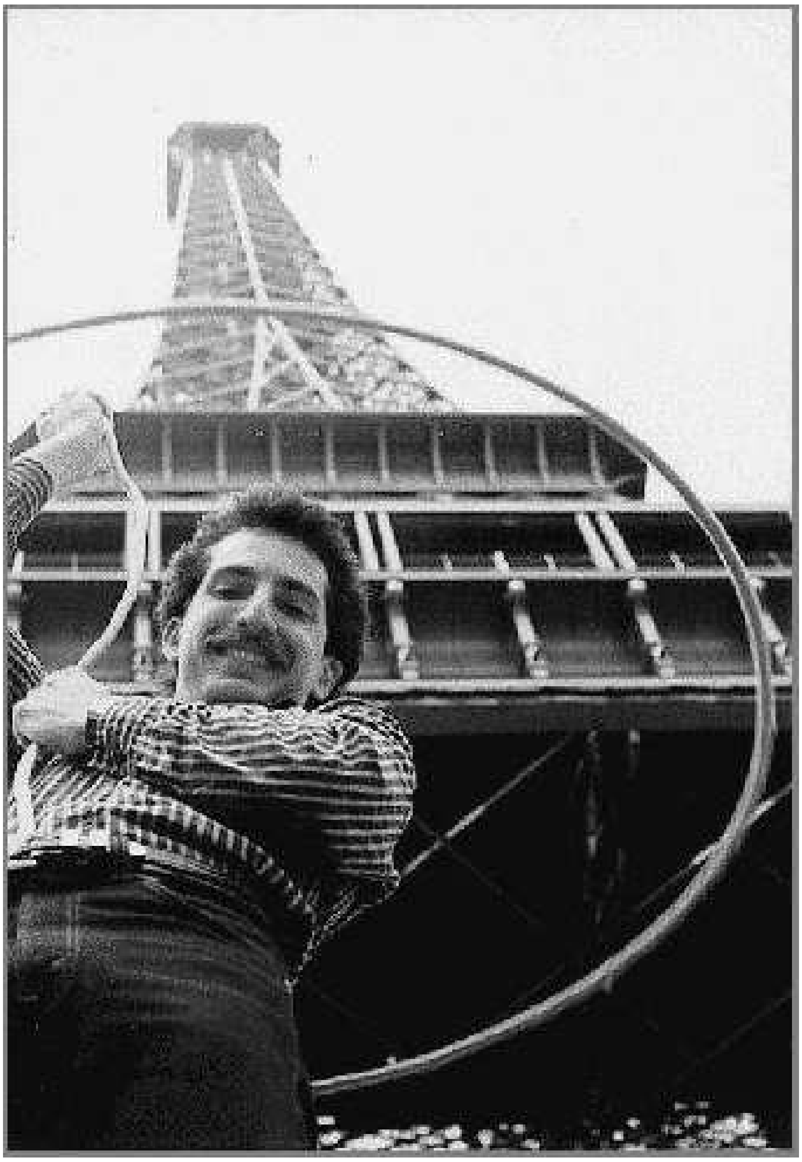


Figure 2.9: But Carey Bunks Does a Wedding Ring Big Enough to Encircle the Eiffel Tower!

Chapter 3

The Vertical Loop & the Texas Skip

Amongst the most impressive rope tricks for a general audience is the Texas Skip. If you tell your friends that you are working on trick roping they'll want to know if you can jump through a vertical loop. Well, the good news is that learning to make a Vertical Loop is perhaps easier than learning the Flat Loop. The Texas Skip, which is a Vertical Loop that you pull back and forth while jumping through the loop, takes a little work but is far from being a difficult trick. If you learned the Flat Loop, folks, you can learn this one and it will be one of the best tricks in your repertoire.

To do the Texas Skip you first have to master the Vertical Loop. As already stated the Vertical Loop is easy to learn, nevertheless, it is essential to have the right equipment. The following sections describe how to make a lasso for the Vertical Loop; how the Vertical Loop is done; how to do the Texas Skip; and, finally, for those of you who are scientifically inclined, a section on how to calculate the exact weight of the honda for the Vertical Loop. This last section is unnecessary for learning lasso tricks but is included in this book for "sentimental" reasons.

3.1 Making a Lasso for the Vertical Loop

The lasso used for the Vertical Loop and the Texas Skip is not the same lasso used for flat loop tricks. First, the Vertical Loop lasso is longer than a Flat Loop lasso. The length of a Vertical Loop lasso varies according to the height of the user, a nominal length is about 24 feet (7.4 meters). A rough calculation of the minimum length necessary for a Vertical Loop rope is made by calculating the perimeter of a circle of diameter equal to the height of the roper plus a spoke length of half the diameter. The formula for this calculation is length $= (\pi + \frac{1}{2}) \times$ height of person where $\pi \approx \frac{22}{7}$. For example, someone who is 6 feet tall would need a rope at least 22 feet long. I'm only 5 feet 8 inches tall, however, and I use a rope 24 feet long for the Vertical Loop. In any case a little extra cord is usually a good idea and can't hurt since the excess cord can be coiled up in the hand. Confucius says: "A rope that is too long can always be cut down but a rope that is too short can never be lengthened!"

An essential part of the Vertical Loop rope is the honda weight. For a Vertical Loop rope to work correctly, the honda must be weighted to balance the opening force of the spinning loop. If the honda is too light the loop diameter of the vertical loop will grow too large and if it is too heavy the loop diameter will become too small. There was a time when brass hondas were specially fabricated for Vertical Loop and Texas Skip lassos. These hondas essentially had the correct weight and this weight could be adjusted by filing the honda to make it lighter or by wrapping wire around the honda base to make it heavier. Unfortunately, these brass hondas are very difficult to come by but there are two potential sources. The first is with Mark Allen Productions [9] who is the biggest distributor of roping equipment that I know of (ropes, books, and videos) and the second is with the juggling manufacturer Brian Dube, Inc [1]. Both of these companies distribute brass hondas for the Vertical Loop.

In any case, a very serviceable metal honda can be improvised with a piece of marine hardware called a sailing thimble. Sailing thimbles are used for finishing cables and lines on boats and are available in a variety of sizes, weights, and materials from marine hardware stores. The stainless steel varieties are probably the most suitable for rope spinning. The big question is what weight thimble should be used for the Vertical Loop. The answer to this question depends both on the linear density of the rope and on the desired diameter of the Vertical Loop to be spun. The formula for calculating the correct honda weight is $m_h = \rho R$ where ρ is the linear density of the cord used, R is the desired radius of the Vertical Loop, and m_h is the resulting honda mass required for this rope (see Section 3.4 for the physical derivation of this formula).

To obtain the linear density of the rope used, weigh your Vertical Loop rope (without the honda, of course) and divide its weight by its length (for example, if the rope weighs 336 grams and the length of the cord is 24 feet then the linear density of this cord is $\rho = 336/24 = 14$ gr./ft.). If you don't have a scale, bring your rope to the post office and ask to have it weighed there. For nylon core #10 Samson spot cord [13] (which is what I use), the nominal honda weight for a 24 foot cord should be about 40 grams (1.41 oz.) and for #12 Samson spot cord it should be about 55 grams (1.94 oz.). In any case it will probably be necessary to obtain a number of sailing thimbles of varying weights and to experiment a bit. If a sailing thimble with the correct weight cannot be found choose a thimble which is lighter than the required weight and then wrap copper wire around the honda base to obtain the weight desired. Once you've sewn the end of your Vertical Loop rope around the sailing thimble (see description in Section 1.1) and adjusted the weight, if necessary, with additional copper wire you are ready to start learning the Vertical Loop.

3.2 The Vertical Loop

The Vertical Loop must be mastered before the Texas Skip. It's not a very difficult trick and, in fact, someone with no experience with rope spinning can often succeed in a few tries at sustaining a vertical loop when it is started and passed from the hands of an experienced rope spinner. It is a little tricky, however, to start the Vertical Loop. The starting configuration of the hands is identical to that used for the Flat Loop (depicted in Figure 1.3 on page 7) except that now the spoke length should be about half the length of the desired loop diameter . This is in contrast to the spoke length for the Flat Loop which must be between a quarter and a fifth of the loop circumference.

You'll have a much easier time of learning how to start the Vertical Loop if you keep in mind the following facts. First, you want to spin a loop in the vertical plane with a loop that has a diameter equal to the height of the roper. Consequently, you must remember to keep the hand which is holding the spoke sufficiently elevated to keep the loop from touching the ground. Second, as described in Section 1.4, it is important to remember that there must be a quarter circle phase difference between the hand and the honda. Third, the spoke of the vertical loop is in the plane of the loop itself which is an important difference between this trick and the Flat Loop. Finally, The force that the hand applies to the end of the spoke is not uniform as in the case of the Flat Loop.

To better understand the action of the force applied to the spoke imagine a small weight attached to the end of a piece of cord. To make the weight describe a circle in the vertical plane you need to accelerate the weight (i.e., apply force to the end of the cord) while the weight is in the lower half of its circle. If enough force is given in the lower half of the circle the weight will continue through the upper half of the circle without falling prematurely. In the upper half of the circle the hand continues to apply some force to the end of the cord to prevent the weight from flying away, however, the hand needn't accelerate the weight in the same way. Although the force applied by the hand to the end of the spoke is not identical to that for the weight at the end of a cord, it is very similar in feel and a useful image to keep in mind.

With the preceding description in mind, it is necessary to go from the starting configuration to successfully spinning the Vertical Loop. The position of the Vertical Loop can be in front of or on the right hand side of the body. The Vertical Loop turns in the clockwise direction from the point of view of the roper (see Figure 3.1(a)). Hold the rope as in Figure 1.3 on page 7 with the honda hanging down from the right hand on the right side of the loop. Treating the honda as the weight on the end of the cord in the preceding description swing the honda from 6 o'clock through 9 o'clock with enough force so that the honda and the rest of the rope in the loop will follow the honda up through 12 o'clock and around through 3 o'clock without falling prematurely.

To perform this start with the Vertical Loop the right hand pulls the spoke and the loop through a large arc traversing about half the circle of the Vertical Loop. Throughout the movement of this half circle the left hand maintains its grip on the loop and assists a bit in obtaining the circular form of the Vertical Loop. After the initial half turn both the left and right hands release the loop and the right hand, maintaining its grip on the spoke, spirals directly into the center of the spinning Vertical Loop. As the right hand spirals in to the center it is essential to keep the quarter circle phase advance principle in mind. Also, It is important to avoid flailing too much with the arm after the initial half turn of the loop. If the initial force given to the mass of the loop is insufficient to keep it going in the first turn the trick will fail regardless of what you do afterwards. Consequently, a large arm movement is necessary to start the Vertical Loop. After the first one half turn, however, the hand basically moves through a circle of about a half foot in diameter. A final reminder is that the Vertical Loop must not touch the ground. Keep your spinning hand up otherwise the loop will scrape against the ground making it impossible to continue.

As with the Flat Loop it is necessary to untwist the spoke for the Vertical Loop (see Section 1.5). Unfortunately, untwisting the spoke of the Vertical Loop is a bit more difficult than for the Flat Loop. Fortunately, with the Texas Skip the twists in the rope are worked out automatically as the Vertical Loop is done first on one side of the body then on the other.

3.3 The Texas Skip

The Texas Skip is a Vertical Loop which is repeatedly pulled from one side of the body to the other and where, for each pass, the roper jumps through the center of the loop. Timing is the key to the Texas Skip and in this respect it is similar to Spoke Jumping (see Section 2.2). For Spoke Jumping you put your foot inside the loop when it won't get in the way of the spoke. For the Texas Skip you pull the Vertical Loop from one side of the body to the other when your body won't get in the way of the spoke. Consequently, the jump is made while the spoke is in the front half of the Vertical Loop.

Figure 3.1 illustrates the correct timing for the jump. Referring to part (a) of the figure you'll see that the vertical loop is on the right side of the roper and spinning in the clockwise direction from the roper's point of view. Using spin acceleration to prevent the loop from closing, the roper begins pulling the spoke from the right to the left side of the body when the honda is at the 12 o'clock position. The pull must be timed so that the honda will have just passed the 6 o'clock position when the roper begins to jump. Part (a) of the figure illustrates the moment just before the jump begins. During the jump the roper continues to pull the spoke to the left as the honda passes through the point mid-way between 6 and 12 o'clock as illustrated in Figure 3.1(b). As the jump is completed the loop is now completely on the left side of the roper and the honda is at the 12 o'clock position. The roper then makes one complete circle on the left side of the body (i.e., the honda passes from 12 o'clock to 12 o'clock) with the honda now turning in the counter-clockwise direction.

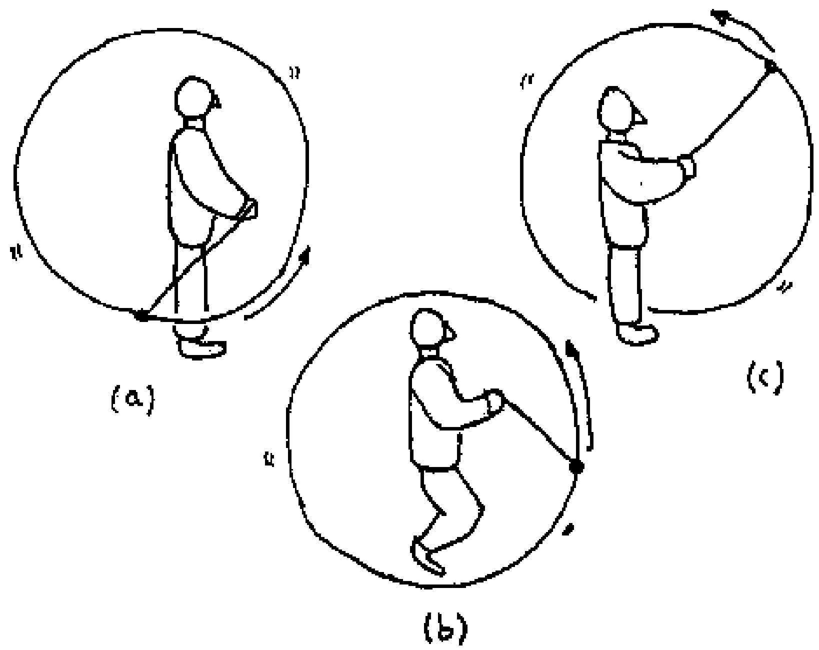


Figure 3.1: The Texas Skip

At this point the entire preceding procedure is repeated but in the reverse direction. Thus, the roper begins to pull the loop back to the right hand side, timing the jump for 6 o'clock. The honda passes the mid-way point between 6 and 12 o'clock at mid-jump and arrives at the

12 o'clock position at the end of the jump. The honda then makes a full circle on the right side of the body to complete the first full cycle of the Texas Skip. The Texas Skip is continued by continuously repeating the preceding description.

An important point to remember is that the roper *pulls* the spoke across the body, jumping at the appropriate time. This means that the roper remains on the same spot as the loop passes from side to side. Many beginners make the mistake of trying to jump through the loop without moving it (i.e., leaving the loop on the same spot and passing the roper from one side to the other). The essential element for success with the Texas Skip is to pull the Vertical Loop across the body with the appropriate timing.

A complete Texas Skip sequence consists of four turns of the Vertical Loop: a turn on the right side of the roper, a pass of the loop from right to left, a turn on the left side, and a pass back from the left to the right. A nice variation of the Texas Skip can be had by eliminating the turns on the right and left sides. The resulting trick consists of just two turns of the loop: one which passes the loop from right to left and the other which passes it back. This makes for a "fast" Texas Skip and it is particularly nice in a routine when it follows a regular Texas Skip.

Another variation on the Texas Skip which is often seen is called the Turn-Around Texas Skip. This is a simple variation where, as the Vertical Loop is being pulled from the right side to the left, the roper turns counter-clockwise from front to back. Now the Vertical Loop is on what was the left side of the roper but because of the counter-clockwise turn is now the right side. From the roper's perspective the rope is now turning in the counter-clockwise direction. The loop makes a full circle on this side of the roper and then is again pulled to the left as the roper once again turns counter-clockwise from front to back. For this pass of the Vertical Loop the honda is turning in the direction opposite that for the normal Texas Skip. As before the timing of the jump must be made to avoid impeding the passage of the spoke. After the jump the loop is once again on the right side of the roper where it is now turning in the clockwise direction. A full turn of the honda on this side completes the description of a full Turn-Around Texas Skip sequence.

3.4 The Honda Mass for the Vertical Loop

From my perspective this section is the most important of this entire book. I say this not because there is anything in it that will help you learn more about trick roping but because if I hadn't had problems discovering the correct weight of the honda for the Vertical Loop I probably never would have written this book.

Discovering the correct honda weight is easy when you already know how to do a Vertical Loop. All you need to do is to iteratively try the trick with different honda weights until it works correctly. At the beginning, however, I didn't know how to do the Vertical Loop. My problem was that I didn't know whether it wasn't working because I was doing it wrong or because I didn't have the correct weight! I felt that I needed to get an independent, theoretical value for the honda weight before I could work effectively on learning the Vertical Loop.

Once I had theoretically determined the correct honda weight and had verified this calculation by experimental tries in the laboratory I wanted to share this discovery with others. One thing leads to another and as I started to teach others different types of lasso tricks I began to develop the ideas that I'm describing to you now in this book.

The correct honda weight for the Vertical Loop is the weight which balances the tensions in the spoke against those in the loop while it is spinning. When the spoke tension plus the outward force of the honda are equal to the loop tension, the diameter of the loop does not change. What we want to determine is the honda weight which keeps the loop diameter constant. I will now derive this weight using some basic laws from mechanical physics.

Figure 3.2 illustrates a blow-up of all the forces and tensions in the loop at and around the honda. Referring to the figure the outward force on the honda is represented by F_h. Assuming that the honda is turning with constant angular velocity, ω, the outward honda force is

$$F_h = m_h R \omega^2 \tag{3.1}$$

where m_h is the unknown honda mass and R is the radius of the circle that the honda is moving in.

For a Vertical Loop, the angular velocity is not constant, however, as a first order approximation this is not too bad an assumption. Referring

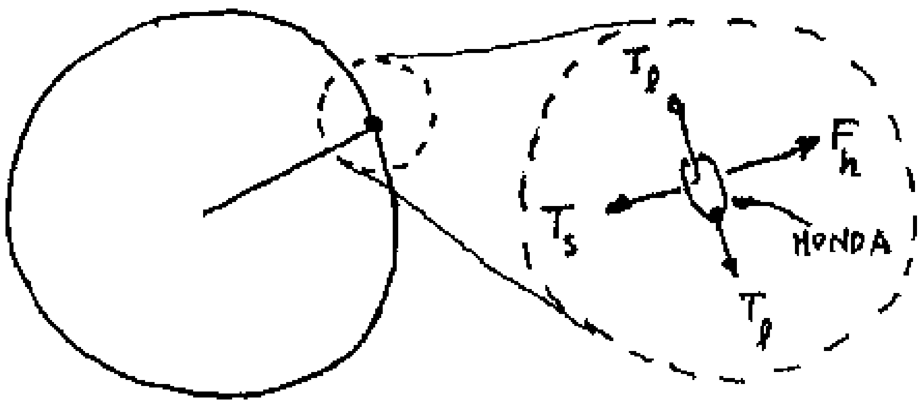


Figure 3.2: Equilibrium Forces for the Vertical Loop

again to Figure 3.2, T_s represents the spoke tension at the honda and T_l represents the loop tension. The spoke tension must be equal to the outward force on the honda if the honda is to continue in a circular path. Consequently, we have that

$$T_s = F_h. \tag{3.2}$$

Furthermore, if the loop is to maintain a constant diameter we must have

$$T_l = T_s. \tag{3.3}$$

Thus, if we knew the loop tension we could calculate the honda mass as a function of ω by substituting equations (3.2) and (3.3) into equation (3.1) and solving for m_h

$$m_h = \frac{T_l}{R\omega^2}. \tag{3.4}$$

From equation (3.4) it appears that the honda mass is dependent on the angular velocity, ω, of the loop. As you will see in what follows, after the derivation of the loop tension, the term in ω in equation (3.4) conveniently disappears!

I now derive the loop tension by approximating the loop as an equilateral geometric shape with N sides and then generalizing to a circle by using a limiting argument. Thus, taking the total mass of the loop to be m_l and distributing it over N equally spaced points along a mass-less cord we have, referring to the geometry in Figure 3.3, that the tension in the cord between any two adjacent masses is

$$2T_N \cos\phi = \frac{1}{N} m_l R\omega^2 \tag{3.5}$$

where $\phi = (\pi - \theta)/2$ and $\theta = 2\pi/N$. Solving for T_N yields

$$\begin{aligned} T_N &= (m_l R\omega^2)/(2N\cos(\pi/2 - \pi/N)) \\ &= (m_l R\omega^2)/(2N\sin(\pi/N)). \end{aligned} \tag{3.6}$$

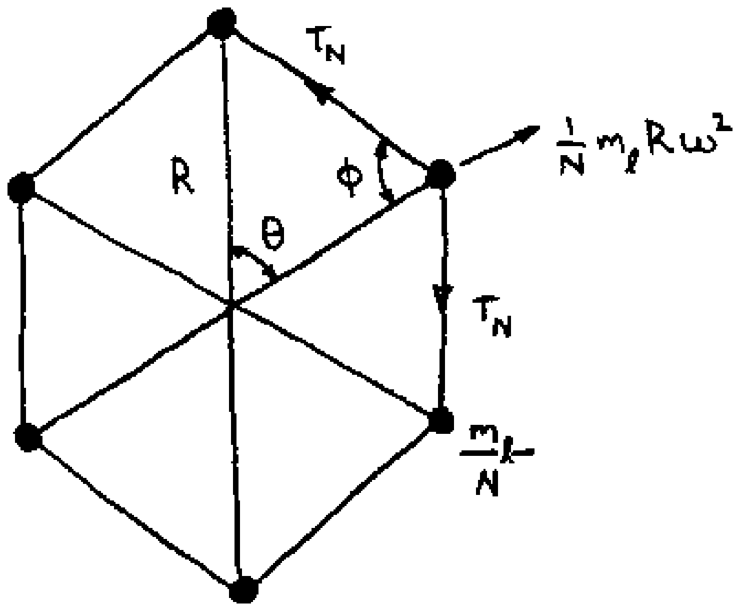


Figure 3.3: N-Mass Loop

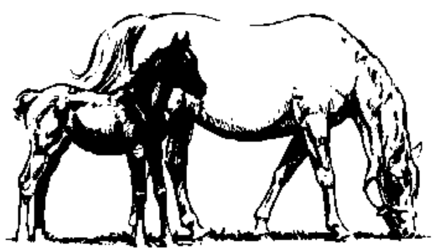
Now that an expression for T_N has been derived the loop tension, T_l, is obtained simply by calculating the limit of T_N as $N \to \infty$. Since the limit of $N\sin(\pi/N)$ is π we have

$$\begin{aligned} T_l &= \lim_{N\to\infty} T_N \\ &= (m_l R\omega^2)/(2\pi) \\ &= \rho R^2\omega^2 \end{aligned} \tag{3.7}$$

where the last equality comes from the fact that $m_l = 2\pi\rho R$ where ρ is the linear density of the cord. Plugging (3.7) into (3.4) yields the correct honda mass for the Vertical Loop:

$$m_h = (\rho R^2\omega^2)/(R\omega^2) = \rho R. \tag{3.8}$$

The result in (3.8) says that the honda mass which stabilizes the Vertical Loop is equal to the radius of the loop multiplied by the linear density of the cord. This a very simple and elegant result as well as a little surprising since we see that the required mass is independent of the speed at which the loop is turning!



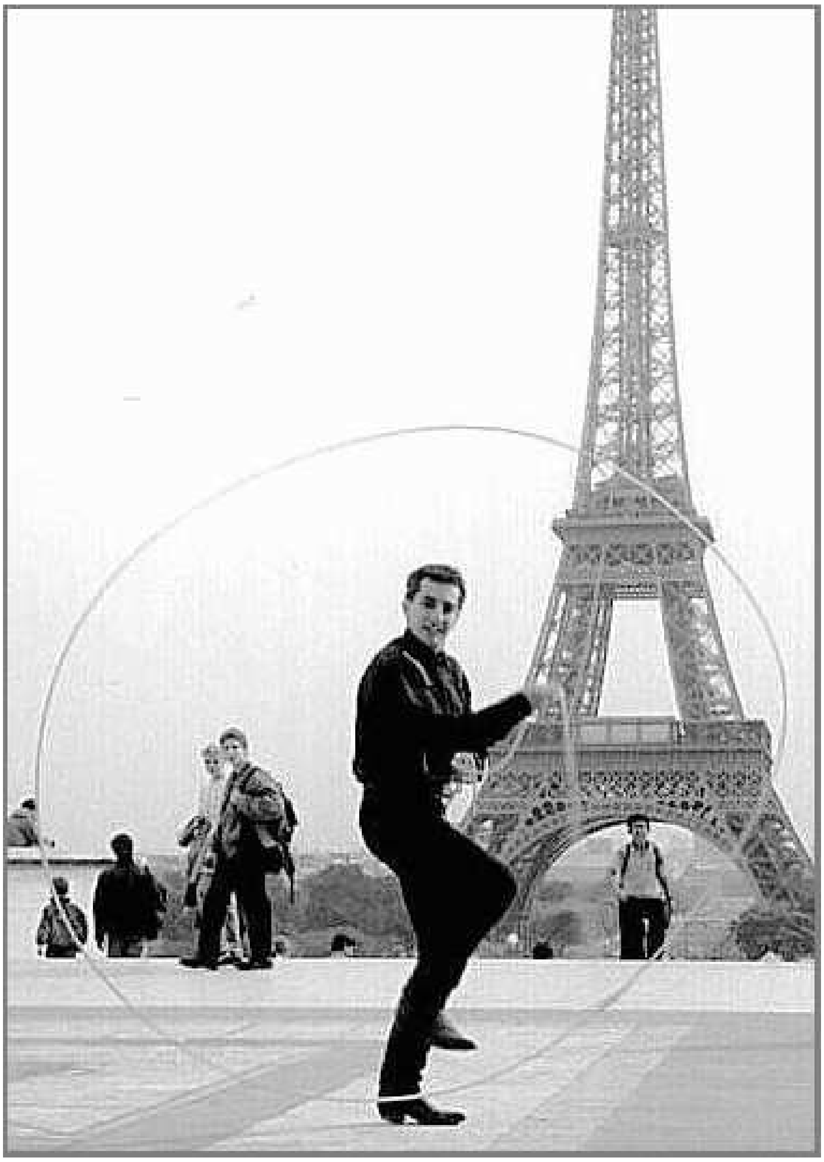


Figure 3.4: Carey Bunks does a Texas Skip in Front of the Eiffel Tower

Chapter 4

The Butterfly

There are three fundamental tricks to trick roping of which the Flat Loop and the Vertical Loop are the first two. The third fundamental trick is called the Butterfly.

I first tried to learn the Butterfly from Frank Dean's book. I read and reread the description, however, my efforts were rewarded with very little success. In the end I doubted that the trick was physically possible. I'm usually a little skeptical about what I read in books and it seemed to me that making a small loop spin vertically in the air with what seemed like no reasonable source of support made me suspicious.

Fortunately, and quite coincidentally, a small rodeo was passing through the Boston area at about the time that I was trying to learn the Butterfly. Let's face it, the rodeo is not a part of New England culture. In any case I had never heard of one passing through before. Excited, I headed off to the rodeo hoping to see how the lasso was used to catch livestock. After some time in the grandstands watching the calf and steer roping I left the stands to have a walk around and during this promenade I almost fell over with amazement when I saw a small boy behind one of the cattle pens doing a Butterfly just as nonchalantly as you please.

I spent the rest of the weekend and a good part of the ensuing week working on the Butterfly. Within five or six days I was able to keep it going back and forth 20 or 30 times ... but were my elbow and wrist sore!

The Butterfly is by far the most difficult of the three fundamental roping tricks, however, it is also the most important. You can't really consider yourself an accomplished trick roper until you master the Butterfly. You'll have a difficult time with it but in the end, after having mastered it, it will be one of the most appreciated and versatile tricks in your repertoire. Many beautiful lasso tricks such as bounces, rolls, and catches are based on the Butterfly and it has the agreeable feature that the spoke requires no untwisting as does the Flat Loop. The twists work themselves out automatically.

The Butterfly looks a little like a miniature vertical loop passed from one side of the body to the other, however, the resemblance ends there. The technique of spinning the Butterfly is completely different from that of the vertical loop. If the reader carefully follows the ensuing sequence of explanations (admittedly rather tedious), the task of learning the Butterfly should be facilitated.

The Butterfly is difficult to describe because it is a complex trick. Consequently, the following description is made in three parts. The first part of the description gives the path of the loop and the number turns required at each position in the path. This is followed by a detailed description of the honda, hand, and spoke positions for each position of the loop. These first two parts of the Butterfly description map out the geometry of the trick, however, the third and final part of the description explains how to make the Butterfly work from the point of view of the rational principles of the trick. This is probably the most important part of the description.

4.1 Flight Path of a Butterfly

The Butterfly is made with a small loop, 2 to 3 feet in diameter, which is spun in the vertical plane and which is repeatedly passed from the right side of the roper to the left, and then back again. It is the repeated back and forth passage of the Butterfly loop which makes the untwisting of the spoke unnecessary. Each twist that is put into the spoke on one side of the roper is untwisted when the loop is passed to the other side.

To get the starting configuration of the Butterfly coil up the rope into the left hand and then open up a small loop two to three feet in diameter with the right hand. The Butterfly loop is held by the right hand in a manner similar to that shown in Figure 1.3 on page 7. The length of the spoke between the honda and the right hand is a little less than a fourth of the circumference of the loop. There is a length of spoke between the right and left hands and the left hand does not grasp the loop since it is holding the excess coiled up spoke.

A single Butterfly sequence consists of four complete turns of the loop. Figure 4.1 shows the path of the honda for three of these turns. Referring to Figure 4.1 the first turn is made on the left side of the body

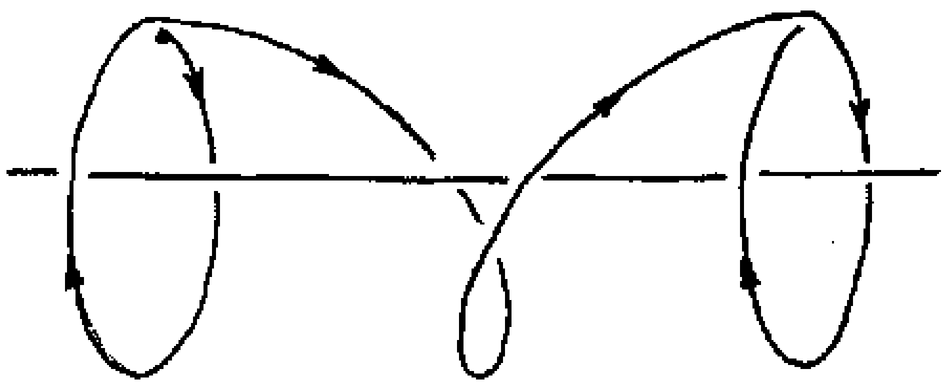


Figure 4.1: Flight(-Path) of a Butterfly

in the clockwise direction. At the end of the first turn the loop is pulled from the left to the right side of the body making exactly one turn in the process and thus constituting the second turn of the Butterfly. The third turn is made on the right side of the roper's body. The loop still turns in the same direction, however, from the roper's point of view the loop is now turning in the counter-clockwise direction. The fourth and final turn of the Butterfly sequence is made by pulling the loop back to the left side of the body (not shown in Figure 4.1). At this point the Butterfly sequence is completed and can be continued by repeating the preceding steps.

4.2 Morphology of a Butterfly

The preceding description is an outline of the Butterfly's path. The details of the positions of the honda, hand, and spoke are now given turn by turn. The first turn of the Butterfly, made on the left side of the roper, is begun with the honda at 12 o'clock and the hand at 3 o'clock. The loop turns through a complete circle on the left side of the roper all the while the hand and the honda obeying the quarter circle phase advance described in Section 1.4.

When the hand gets to 12 o'clock on the hand path circle it begins to pull the spoke, and thus the loop, towards the right side of the roper. Because of a slight delay between the time when the hand pulls and the time when the loop starts to move the loop begins moving to the right when the honda is at 12 o'clock. This is the start of the loop's second turn. As the loop is making its second turn the honda must go through 6 o'clock at the half way point between the left and right sides (see Figure 4.1). The hand and the spoke are still on the right side of the loop until the honda gets to 6 o'clock. As the honda spins up from 6 o'clock to 9 o'clock the hand and the spoke are passed just outside the loop so that the loop can pass from the left to right side which then positions the hand and the spoke on the left side of the loop. The loop arrives at the right side of the roper at the same time that the honda reaches 12 o'clock thus completing its second turn.

The loop now makes its third turn on the right side of the roper turning in the counter-clockwise sense from the roper's point of view. As before, the hand must always be a quarter circle ahead of the honda.

When the hand reaches 12 o'clock it begins to pull the spoke and thus the loop back to the left. The fourth and final turn of the loop is made while passing the loop from right to left. This pass is identical to the pass from left to right except that now the hand and the spoke are passed from the left to the right side of the loop while the honda is spinning up from 6 o'clock to 3 o'clock.

4.3 A Rational Basis for the Butterfly

Up to this point the geometrical aspects of the Butterfly have been described: the positions of the loop, honda, spoke, and hand have been given for the entire Butterfly trajectory. However, the most essential element for succeeding with the Butterfly depends on the correct application of the spin-acceleration technique described in Section 1.7 . As has already been explained, the Butterfly loop is pulled from side to side. Since pulling on the spoke acts to diminish the size of the loop a counter-acting force must be applied to prevent the loop from closing. This is done using the spin-acceleration technique: as the loop is pulled its rotational speed is accelerated which increases the tension in the loop. This increased tension counter-acts the loop closing force coming from the pull on the spoke.

Since the roper starts to pull the loop when the hand is at 12 o'clock the spin of the loop must be accelerated at the same time. The acceleration continues up to the point where the honda passes through 6 o'clock position which is the point at which the hand and the spoke pass to the other side of the loop. At this point the hand no longer accelerates the loop allowing the loop to finish its passage to the right side of the roper.

The loop then performs its third turn in the normal way before the hand pulls the loop from the right to left side of the roper. In this fourth turn the loop must again be spin accelerated as in the passage of the loop during the second turn from the left to right.

In the second and fourth turns the amount of spin acceleration necessary to counteract the force of the pull can only be determined by experimentation. You must learn how to feel the correct balance. However, you can observe the behavior of the loop to determine whether the spin acceleration is working correctly or not. If the loop diameter is shrinking it's because there is not enough spin acceleration or because the quarter circle phase advance is not being correctly applied. If the loop diameter grows it is because you are overpowering by using too much spin acceleration.

To summarize, a full Butterfly sequence is started as follows. The roper forms a loop of about 3 feet in diameter coiling up the excess spoke into the left hand. The first turn of the loop is made on the left side of the roper in the clockwise sense by giving the loop a good parting spin while releasing it. After the release of the rope the loop is not really spun. The loop kind of turns under the force of its initial rotation. Nevertheless the hand obeys the quarter circle phase advance technique.

At the end of the first turn the loop is pulled to the right while simultaneously applying spin acceleration. The pull and spin acceleration are discontinued when the loop gets half way across from left to right. At this point the hand and spoke pass to the left side of the loop while the loop continues its path to the right side of the roper. During this whole sequence the hand continues to maintain a quarter circle phase advance on the honda.

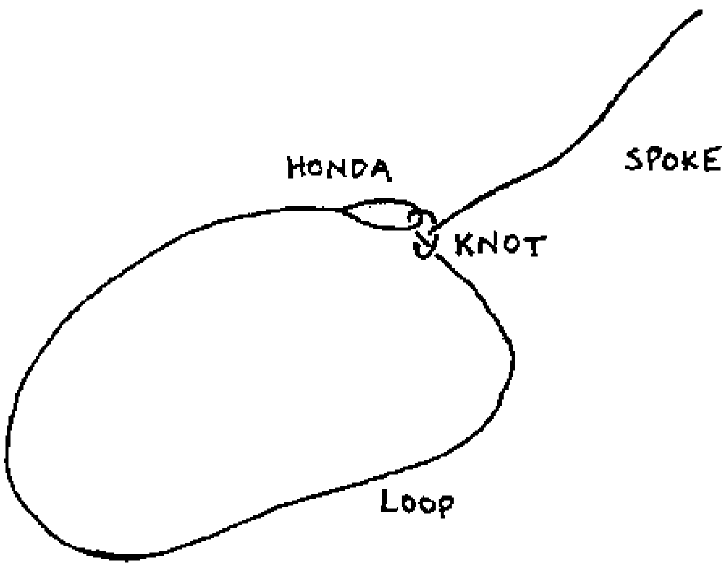


Figure 4.2: Training Wheels for Learning the Butterfly

For the third turn of the loop the hand allows the loop to turn under the force imparted to it during the spin acceleration from the left to right sides being careful, nevertheless, to maintain the correct hand-honda phase advance.

Finally, for the fourth turn the loop is pulled and accelerated from the right to the left executing all the elements of the second turn but in the reverse direction. Overall the Butterfly gives a cyclic sensation of tension and relaxation where the tension refers to the spin acceleration phase in the second and fourth turns and the relaxation to the first and third turns. If the loop diameter changes during the Butterfly the balance between pull, spin acceleration, and relaxation must be adjusted to counteract the change.

The beginning roper is bound to have problems mastering the Butterfly. Integrating together all the components is tougher than roundin' up a herd of cattle. It may be helpful to simplify things by practicing one aspect of the Butterfly at a time. This can be done by learning the path and hand positions separately from the spin acceleration part. One way of doing this is by fixing the position of the honda so that it can no longer slide freely. This will allow you to practice the hand path of the Butterfly without having to simultaneously apply the correct spin acceleration.

A quick method for fixing the honda is illustrated in Figure 4.2. Note that the spoke has been knotted with the non-honda side of the loop. This prevents the honda from moving and, consequently, keeps the loop diameter constant. The problem with this method is that the knot adds quite a bit of additional weight to the honda which changes the dynamics of the Butterfly. With a little more work you can fix the honda by sewing it to a single position with cooking string. In either case you'll have to practice with a normal lasso sooner or later. I don't recommend fiddling with a rigged lasso too long because you'll just feel dependent on it later.

Chapter 5

Butterfly Tricks

The Butterfly is an important trick roping tool because it is the starting point for so many other tricks. This chapter describes some of the most important Butterfly variations and others can be found in [4], [8], and [12]. The objective of this chapter is not to be a compendium of the many tricks based on the Butterfly but, rather, to give a sampling of the most popular tricks while carefully describing, where appropriate, their underlying rational basis.

5.1 The Zig-Zag

The first variation of the Butterfly that I'll discuss is the Zig-Zag. As described in Chapter 4 the Butterfly consists of four turns of the loop whereas, in contrast, the Zig-Zag is made up of just two. Another important difference is that the Zig-Zag is not pulled from side to side as is the Butterfly. The Zig-Zag remains stationary in front of the roper as the hand and the spoke flip-flop from one side of the loop to the other.

Figure 5.1 is a top view of the loop turning in the vertical plane. Also illustrated in this figure is the way that the hand and the spoke are used to impart spin to the Zig-Zag for each of the two turns. In Figure 5.1(a) the hand and the spoke are passing over the top of the loop from the right side to the left side. This passage occurs while the honda is between 3 o'clock and 9 o'clock in the upper half of the loop.

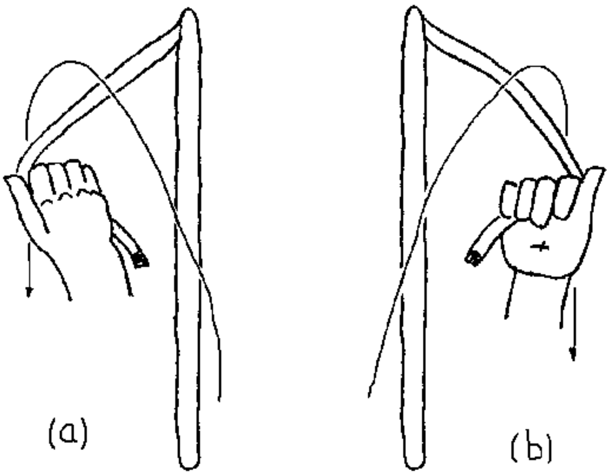


Figure 5.1: Hand Movement for Zig-Zag

During this passage the hand turns from palm up to palm down (look again carefully at both Figures 5.1(a) and (b)).

Figure 5.1(b) illustrates the passage of the hand from the left to the right side of the loop. As before, this happens by passing the hand and the spoke over the top of the loop while the honda is traveling in the upper half of the loop. During the passage from left to right the hand turns from palm down to palm up.

It is important to realize that the loop needs to be spin accelerated, not to counteract the force of a pull on the spoke, but rather to counteract the force of gravity. The novelty here is that the loop can only be accelerated while the honda is in the upper half of the loop since the hand does not have the time to follow the entire hand circle as for previously described tricks. Consequently, the hand must give a quick, snappy, spin acceleration to the loop during the passage of the hand and spoke from one side of the loop to the other. In between snaps of the wrist the hand remains stationary. That's to say that while the honda is in the lower half of the turn the tension on the spoke is relaxed. This is similar to the acceleration-relaxation cycle described for the Butterfly.

5.2 The Reverse Butterfly

The Reverse Butterfly is identical to the normal Butterfly except that the loop is spinning in the opposite direction. Thus, on the left side of the body the loop turns in the counter-clockwise direction and on the right side of the body the loop turns in the clockwise direction. The explanations given in Chapter 4 should be sufficient to work out what needs to be done in order to master the Reverse Butterfly.

The feel of the Reverse Butterfly is very different from that of the Butterfly and learning one trick does not necessarily make learning the other any easier. Nevertheless, I strongly encourage you to work on the Reverse Butterfly since it is important for catches (see Chapter 6) and for the Arrowhead which will be described in what follows.

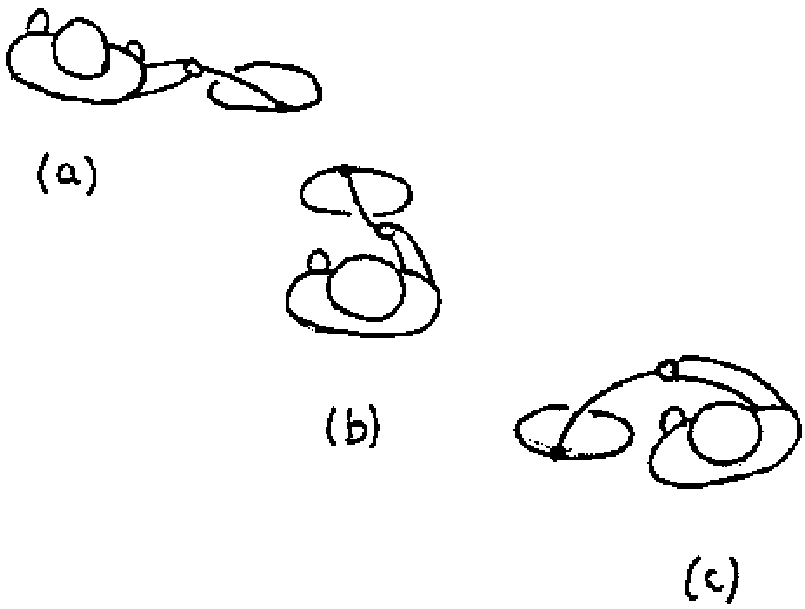


Figure 5.2: The Arrowhead

The Butterfly and the Reverse Butterfly can be used together to make many pretty combinations. One of these is called the Arrowhead. Figure 5.2 is a fake top view of the Arrowhead. It's a fake top view because the loop is turning in the vertical plane and, consequently, for a true top view the loop would not appear as an ellipse but as a line. In all three parts of the figure the loop is illustrated with the honda at the top of the loop.

The Arrowhead is the combination of a regular Butterfly passing from the front to the back of the roper on the right side with a Reverse Butterfly passing from the front to the back of the roper on the left side. Figure 5.2(a) and (b) illustrate the two positions of the loop corresponding to the regular Butterfly and Figures 5.2(b) and (c) illustrate those of the Reverse Butterfly. In all there are eight turns of the loop to make a complete Arrowhead sequence. The first turn is behind the roper on the right side followed by a turn to pass the loop to the front of the roper. The third turn is in front of the roper and then a turn is used to pass the loop behind the roper on the left side. The fifth turn is made behind the roper on the left side after which it is passed back to the front of the roper and where the seventh turn is made. The last turn is to pass the loop back behind the roper on the right side which completes the cycle.

The Arrowhead is a nice trick because it moves the loop around in a dynamic way. Once you've mastered the Arrowhead you can also try the Arrowhead in reverse. That's to say an Arrowhead which starts by doing a Reverse Butterfly on the right side of the roper followed by a regular Butterfly on the left side. Combinations of the Arrowhead with the reverse Arrowhead make for nice elements in a routine.

5.3 The Arm Bounce

The Arm Bounce is one of my favorite tricks and it's a great crowd pleaser. The Arm Bounce sequence is illustrated in Figure 5.3. As shown in the figure the Arm Bounce consists of pulling the Butterfly loop down the length of the arm and then "bouncing" it off. As you might imagine the Arm Bounce is so called because the loop really seems to bounce as if it were attached to a spring. In fact the Arm Bounce loop *is* attached to a spring but it's a spring which is cleverly hidden in the angular momentum of the loop.

What does this mean? The best way to understand is to try a

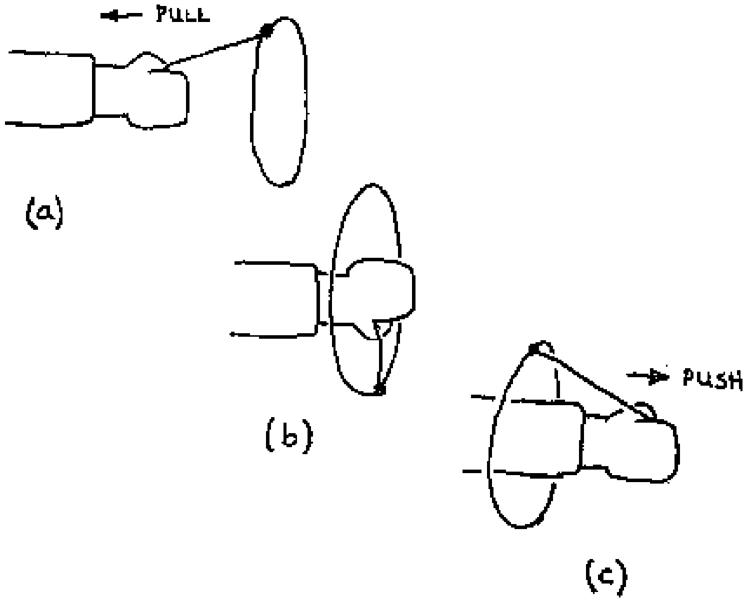


Figure 5.3: The Arm Bounce

little experiment. Try doing a regular Butterfly and at the moment that the loop is pulled from left to right give it the most powerful spin acceleration you can. At the same time throw the Butterfly loop to the right as hard as you can without pulling it back to the left. What should happen is that the loop will travel to the right and then stop and "bounce" back without having been pulled. The loop does this because the spin acceleration you gave it makes the loop want to grow in diameter. When the loop gets far enough to the right to be at the end of the spoke the loop diameter continues to grow and in so doing shortens the length of the spoke. The fact that the spoke shortens pulls the loop back to the left suddenly and this gives the impression that the loop "bounces" back. If you give a pull back to the left at the same time as the bounce this effect is heightened.

The arm bounce is begun from a Butterfly at the moment that the loop would normally be passed from one side of the body to the other (see Figure 5.3(a)). Instead of pulling the loop to the other side of the body, however, the loop is guided down the length of the right arm as shown in Figure 5.3(b). The loop is then bounced off the arm back to the position from which the Arm Bounce was started as shown in Figure 5.3(c).

Since the Arm Bounce is started at the moment when the Butterfly normally would be pulled from one side of the body to the other it follows that the action starts when the honda is at 12 o'clock. The loop travels down the length of the arm in one turn of the loop, and the loop is bounced off in one turn of the loop as well. The entire sequence thus requires exactly two turns of the loop.

From the previous discussion you have probably guessed that the secret to successfully performing the Arm Bounce is in the set-up and mastery of the spin acceleration. Let's assume that the Arm Bounce is to be performed on the right side of the body. To pull the loop down the length of the arm will require some spin acceleration to counteract the closing force exerted on the loop by the pull on the spoke. Unfortunately the position of the hand while the loop is traveling down the length of the arm makes it difficult to accelerate the spin of the loop. Thus, it is necessary to apply the spin acceleration before getting to the position illustrated in Figure 5.3(a).

The spin acceleration to be used during the Arm Bounce is applied before beginning the trick. Thus, as the Butterfly loop is being pulled from the left to the right side of the body a powerful spin acceleration is applied. At the same time the loop is pulled to the right more vigorously than usual. When the loop gets far enough to the right the extra spin acceleration makes it bounce back to the left which you accentuate by pulling the loop at the same moment. The loop is then guided down the length of the right arm. When the loop gets to the base of the arm push the loop back to the right. Since the loop still has a lot of spin acceleration the loop will seem to "bounce" back.

From the above description the loop actually bounces twice for a full Arm Bounce sequence: once from right to left as pictured in Figure 5.3(a) and once from left to right as pictured in Figure 5.3(b). Since the loop must travel down the extended right arm the Arm Bounce will be facilitated if you lift the Butterfly loop to shoulder height before beginning the pull down the arm.

The Arm Bounce can be performed on both the left and right sides of the body and this while performing either the regular or the Reverse Butterfly. For a right handed roper the right side of the body from a regular Butterfly is usually the easiest. The Arm Bounce can be repeatedly bounced on and off the arm, however, you'll have to learn how to renew the spin acceleration while doing the trick. Another point is that the Arm Bounce introduces twists in the spoke. These twists can be worked out by alternately performing Arm Bounces on one side of the body and then the other.

Up to this point all the tricks described in this book have required the spin acceleration to be applied at the same time as the pull on the spoke. This is so the loop closing force and the loop opening force balance each other. The Arm Bounce is the first trick where spin acceleration is developed in advance of the pull on the spoke and this in order to have a reserve of spin acceleration in order to make the loop "bounce".

The Arm Bounce is similar to the Body Bounce mentioned in Section 2.4. The only difference is that the Body Bounce is performed with the loop spinning in the horizontal plane and the Arm Bounce with the loop spinning in the vertical plane. The preceding comments concerning the spring effect of the Arm Bounce were not developed in the discussion of the Body Bounce but these ideas are equally valid for this trick.

5.4 Rolls

Like the Arm Bounce, Rolls are well received by the general public. They are also amongst the hardest tricks to learn in this book. I devoted more time to learning the continuous Arm Roll than for any other lasso trick and since the trick gave me so much trouble I tried to attack the problem from a scientific point of view. I first used the Will Roger's film *The Roping Fool* [12] to project the trick on to a piece of paper, frame by frame. In this way I was able to trace out the exact trajectory of the Arm Roll as Will Rogers performed it. I was surprised to see that the Arm Roll flagrantly violated the quarter circle phase advance principle (see Figure 5.4). Furthermore, having seen how the trick progressed frame by frame didn't seem to help me learn it any faster.

I then spent a good part of the first 6 months of 1989 working on a computer model for the lasso. It was my hope that this model would help me to numerically simulate the complex interactions of the loop and spoke forces during the Arm Roll which would allow me to determine the correct spin acceleration. During this time I didn't quite learn how to do the Arm Roll but I did learn a lot about numerical modeling of nonlinear mechanical systems as well as about the theory of optimal control.

In the end I never did obtain a complete computer solution to the Arm Roll problem.[1] However, what I learned about optimal control theory during this period became a very important part of my subsequent career since soon afterwards I began working on problems of seismic inversion and earth imaging and I was able to apply many of the notions that I learned from my previous "work" on the lasso. Who would have thought that having played with a shoelace at the age of four would have had such a distant and unpredictable effect on my professional career?

Figure 5.4 can be used to give a general description of the Roll. The effect of the trick is that the loop of the lasso physically rolls up the spoke and over a part of the body. The figure illustrates a roll over the back of the arm and clearly shows how the loop rolls up the spoke. What might seem surprising here is the position of the loop with respect to the spoke as illustrated in part (a) of this figure. Up to now all the tricks describe in this book maintain the spoke within the interior of the loop or at most allow the spoke to slip outside the circumference of the loop for an instant (see, for example, the Flat Loop Lift or the Butterfly). In this respect rolls are unique since, as Figure 5.4(a) illustrates, the spoke not only passes outside of the loop but passes through a position fully perpendicular to it. This clearly violates the quarter circle phase advance principle!

Rolls, like all other Butterfly tricks, depend on an appropriate application of the spin acceleration technique as described in Section 1.7. To achieve the position shown in Figure 5.4 the Roll requires a spin acceleration in advance of when it is actually used to balance the pull on the spoke. In this regard the Roll is similar to the Arm Bounce the difference being that with the Arm Bounce the spin acceleration is bal-

[1] This didn't stop me from learning the trick!

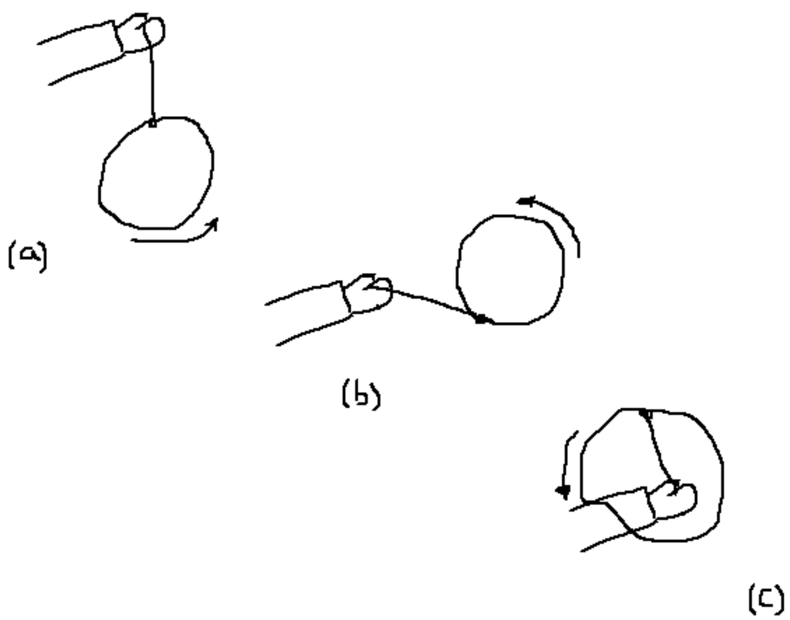


Figure 5.4: The Roll

anced by a pull on the spoke *perpendicular* to the loop plane (pulling the loop down and off the arm), whereas, for the Roll the spin acceleration is balanced by a pull on the spoke *in* the loop plane (pulling the loop up the spoke).

The Arm Roll

The Arm Roll will serve as a paradigm for explaining the principles of all rolls described in this section. The technical details of the Arm Roll are valid for all the other rolls except, of course, for the position of the body over which the roll rolls.

The Arm Roll is begun from a Butterfly just after the loop finishes its turn on the left side of the roper. Instead of pulling the loop from left to right, as normal for the Butterfly, the roper turns to the left to face the loop and the loop is pulled downwards and layed out as illustrated in the sequence shown in Figure 5.5(a)-(d). If the loop has been pulled downwards with enough force it will then roll up the spoke pretty much all by itself. The trick is in guiding the loop so that it rolls up over the arm.

An entire Arm Roll sequence consists of exactly two turns of the loop. Figure 5.5 parts (a)-(d) illustrate the loop, honda, and hand paths

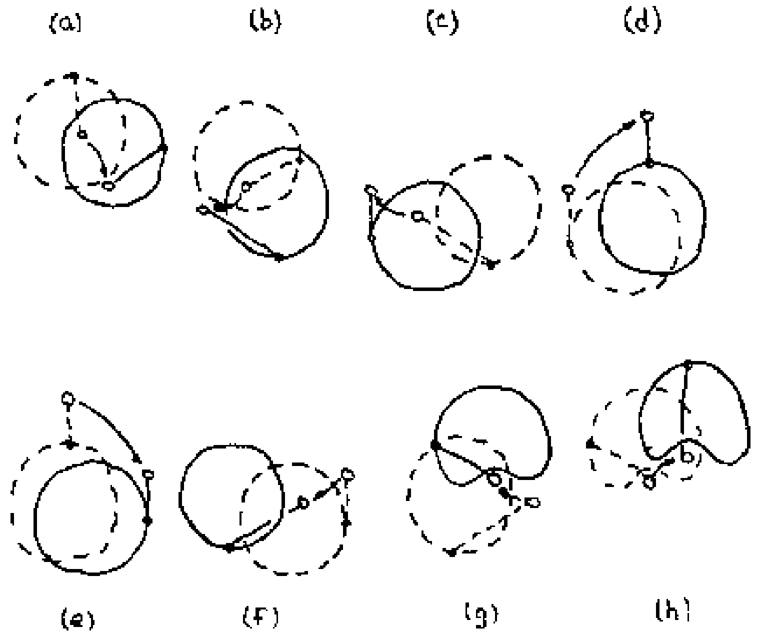


Figure 5.5: The Arm Roll

for the first turn of the loop. The dotted loop, spoke, hand, and honda in Figure 5.5(a) illustrate the moment that the Arm Roll is begun. That's to say the moment at the end of the left hand turn of the Butterfly when the loop is to be pulled downward. The solid loop in Figure 5.5(a) illustrates the loop a quarter turn later than the dotted loop. Note that the honda has gone from 12 o'clock to 3 o'clock and that the hand and the loop have both moved quite a bit in the downwards direction. At this point, the hand still obeys the quarter circle phase advance principle with respect to the honda.

In Figure 5.5(b) the dotted loop is identical to the solid loop in Figure 5.5(a), and the solid loop in Figure 5.5(b) is a quarter turn later in the trick. Here, the hand and the loop are both quite a bit lower than they were in the previous stage due to the downward pull on the spoke. The hand is still a quarter circle ahead of the honda and at this point the spin acceleration of the loop should be increasing.

Figure 5.5(c) illustrates the point of the sequence where the spin acceleration is maximum. Once again the solid loop is a quarter spin ahead of the dotted loop and the hand still obeys the quarter circle phase advance, however, now the hand circle is outside of the loop circle. The hand and loop are still traveling downwards at this stage.

The fourth stage of the first turn of the loop shows it completely layed out as is illustrated in part (d) of the figure. At this point the loop has made a single complete turn from the position illustrated in Figure 5.5(a). Note that the hand pulls up sharply on the spoke at this point and so the hand and the loop are illustrated as being higher than in the previous parts of the figure.

An important point in this first turn of the Arm Roll sequence is that the spoke is on the near side of the loop. That's to say the spoke is on the same side of the loop as the roper. For the second turn of the sequence, however, the spoke must be on the opposite side of the loop from the roper. This part of the sequence is illustrated in Figure 5.5(e)-(h).

Figure 5.5(e)-(h) illustrate the second half of the Arm Roll sequence. This part is where the loop rolls up and over the arm. This is a tricky part of the Arm Roll. During the entire second turn of the loop the hand must adjust its position and pull so that the loop will move up and over the arm. Note that for this part of the sequence that the hand does not obey the quarter circle phase advance principle. The hand is actually behind the phase of the honda in this turn of the loop. It is the powerful spin acceleration given to the loop in the first half of the sequence which makes up for this in the second half. Also note that the hand and arm are lowered somewhat to facilitate the loop rolling over the arm and that the loop may deform as it makes contact with the arm. Figure 5.6 illustrates the Arm Roll at the point where it is rolling up the spoke and over the arm. The arrow drawn on the figure shows the direction of motion of the loop. This photo corresponds to a position about midway between Figures 5.5(e) and (f).

Except for the fact that the spoke is on the far side of the loop and positioned on top of the arm the position in Figure 5.5(h) is similar to that in Figure 5.5(a). This means that the Arm Roll can be repeated

Figure 5.6: Carey Bunks demonstrates an Arm Roll

at this point. Alternatively, the loop can be allowed to roll off the arm and caught back into a regular Butterfly.

The arm roll can also be done on the right side of the body. To do a right side Arm Roll the instructions given in the preceding description are reversed. That is, the loop is now pulled downward after the turn of the Butterfly loop on the right side of the roper. The loop is then pulled down and up in the same way as before. The difference is that the loop must now roll over the back of the right arm (as is illustrated in Figure 5.4) which is due to the direction of turn of the loop on this side of the body.

The Shoulder Roll

In the Arm Roll the roper turns to face the loop so that the arm will be perpendicular to the plane of spin of the loop. This gives the loop a base to roll over. Shoulder Rolls are similar to Arm Rolls where instead of rolling over the arm, the loop rolls over the shoulder. Since the shoulders are already perpendicular to the plane of spin of the Butterfly it is not necessary to turn the body before beginning this roll. To begin the

Shoulder Roll the loop is pulled downward and backward so that the loop can then roll up over the shoulder from behind. The roll can be made over the left or right shoulder from either the left or right side. I personally find that Cross Shoulder Rolls are the more esthetic. These are the rolls which come over the shoulder on the opposite side from where the roll began.

A Head Roll is a variation of the Shoulder Roll where the loop comes up from behind and rolls over the top of the head. This creates a nice comical effect. The Head Roll requires some precision to make it roll in the right place and can be made somewhat easier if you wear a hat.

The Neck Roll

The Neck Roll is another one of my favorites. The Neck Roll is just like the Arm Roll except that the loop rolls across the shoulders and over the back of the neck instead of rolling over the arm. When first learning this trick you'll probably want to lean over slightly so that the loop will have a nice broad base to roll on. After you've mastered it, though, the loop can be guided across the shoulders from left to right without having to lean at all.

The Leg Roll

The Leg Roll is quite a novelty trick. The effect of the Leg Roll is that the roper throws a Butterfly loop under the leg only to have it pop back up and roll over it. To perform the Leg Roll you'll need to prepare the spoke so that it won't be wrapped around your leg at the end of the trick. Here's how it's done.

As the Butterfly loop is being passed from the left to right side of the body the left foot steps over the part of the spoke between the left and right hands. At this point the spoke should be running from the left hand (now behind the legs), through the legs, to the right hand, and finally to the loop.

After the left foot steps over the spoke the Butterfly loop does a normal turn on the right side of the body before being passed back to the left side. A turn is then made on the left side of the roper as in the preparation for an Arm Roll. At the same time the roper turns to the left (as for the Arm Roll). As the loop is pulled downwards the roper lifts up the left leg and the loop is directed under it so that when the loop begins to roll up the spoke it comes up from behind and over the left leg.

During the roll over the leg the right hand, which is now underneath and on the left side of the left leg, releases the spoke, comes out from under the leg, and recatches the spoke on the right side of the left leg. The release and recatch of the spoke is the trickiest part of the Leg Roll. It is this part of the trick which is essential for disentangling the spoke from between the two legs.

The Spoke Roll

The Spoke Roll, like the Leg Roll, needs a setup for the spoke before beginning the trick. The setup up for this roll requires that the spoke be wrapped once around the wrist as shown in Figure 5.7.

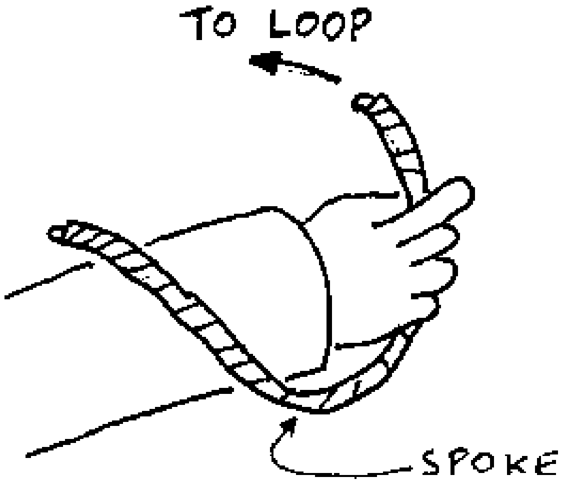


Figure 5.7: Wrapping the Spoke on the Wrist

The wrap on the wrist is accomplished while performing the Butterfly. As the loop is being pulled from the right to the left side the right hand releases and passes underneath the spoke recatching it with the spoke now wrapped once around the wrist. For the right hand to successfully release and recatch the spoke the hand will have to move to the left faster than the spoke. This may seem a little tricky at first but you shouldn't have too much trouble with it.

Once the wrap of the spoke around the wrist has been accomplished the Spoke Roll may be begun. This roll is started at the point where the Butterfly loop is normally passed from the right to the left side of the roper. During this turn of the loop the loop is directed in the downward direction as in the sequence illustrated in Figure 5.5(a)-(e). Just before

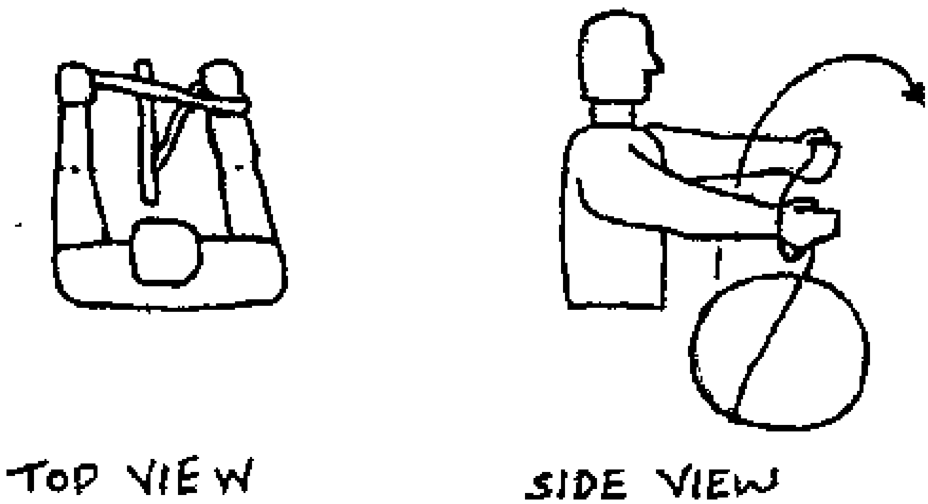


Figure 5.8: The Spoke Roll

the loop begins to roll up the spoke as is illustrated in Figure 5.5(f)-(h) the roper extends the two arms as shown in the top view in Figure 5.8. This allows the rising loop to come up from under the spoke and to roll over the part of it that's between the two hands as is illustrated in the side view of Figure 5.8. After the loop clears the spoke the wrap of the spoke around the wrist has been removed and the loop is returned to a normal Butterfly.

5.5 Lifts

The sequence illustrated in Figure 5.5(a)-(e) is the part of the roll which gives enough spin acceleration so that the loop can be pulled up and over a part of the body. However, you don't have to roll the loop over a part of the body. You can simple lift the loop high over the head which makes for a pretty lasso trick all by itself. By positioning the downward throw of the loop behind the body you can then lift the Butterfly loop so it floats over the top of the head or the shoulder. This trick can be begun from either the left or right sides of the body.

5.6 The Ocean Wave

The Ocean Wave is like the Butterfly except that one of the side-to-side passes of the loop is made behind the roper instead of in front. Between the normal and the Reverse Butterflys there are four possible Ocean Waves. For the normal Butterfly the pass of the loop behind the roper can be made from the left to the right side or from the right to the left side. This accounts for two of the Ocean Waves. The other two come from the Reverse Butterfly.

For right handed ropers the most important Ocean Wave is the one that is based on the Reverse Butterfly spin where the loop passes behind the roper from left to right. This is the most useful Ocean Wave for making catches (see Chapter 6). This is the Ocean Wave that I describe in the following. All the other Ocean Waves are easily worked out variations of what is discussed here.

Figure 5.9 illustrates the four turns of the Ocean Wave. As indicated by the small arrows the direction of turn of the loop is that for the Reverse Butterfly. The large arrows show how the loop moves in relation to the position of the roper. The turn labeled "A" in the figure indicates the position of the loop at the end of its turn on the right hand side of the roper. The turn labeled "B" is the position of the loop after the passage from the right to the left. The turn labeled "C" is the position after the turn of the loop on the left side and the turn labeled "D" is that after the passage of the loop, behind the roper, from the left to the right.

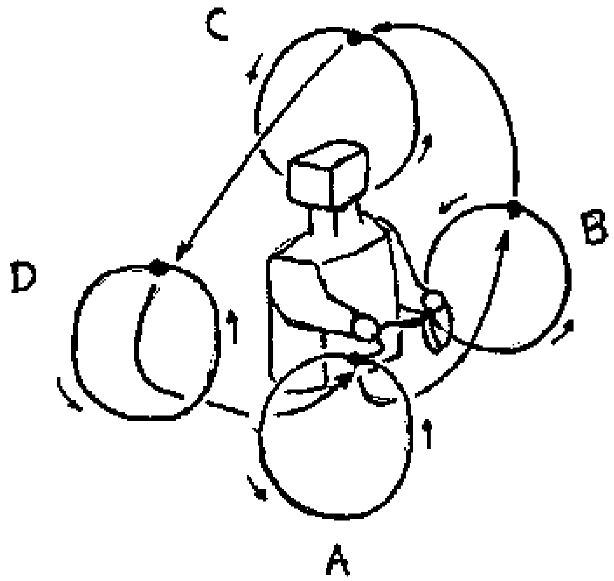


Figure 5.9: The Ocean Wave

From the preceding description it is clear that the Ocean Wave differs from the Reverse Butterfly by the passage of the loop behind the back. There is an important point, however, that needs to be further developed. Note that the position of the loop labeled "C" is behind the roper. This means that after the pull of the loop from the right to the left the loop must then be pulled from the front to the back. The loop labeled "C" in the figure is also elevated with respect to the loop labeled "B". Clearly the backward and upward pull on the spoke needed to move the loop from position "B" to position "C" requires spin acceleration. The movement of the loop between the positions labeled "D" and "A" also requires spin acceleration, however, not as much as that for the one just discussed.

Thus the Ocean Wave differs from the Reverse Butterfly in three points. First, the loop passes behind the roper for the pass of the loop from left to right. Second, for all four turns of the loop the roper must apply spin acceleration whereas spin acceleration is only required for two turns of the Reverse Butterfly. Third, there is an up and down movement of the loop for the Ocean Wave due to the lift of the loop over the left shoulder. This motion recalls the up and down swelling of waves at the ocean which is, apparently, the origin of this trick's name (see [2] and [4]).

A common problem with the Ocean Wave is that the loop tends to incline at a 45 degree angle while the loop is passing back and forth around the body. This problem can be diminished by making sure that the Ocean Wave loop is sufficiently lifted over the shoulder in the turn labeled "C" of Figure 5.9.

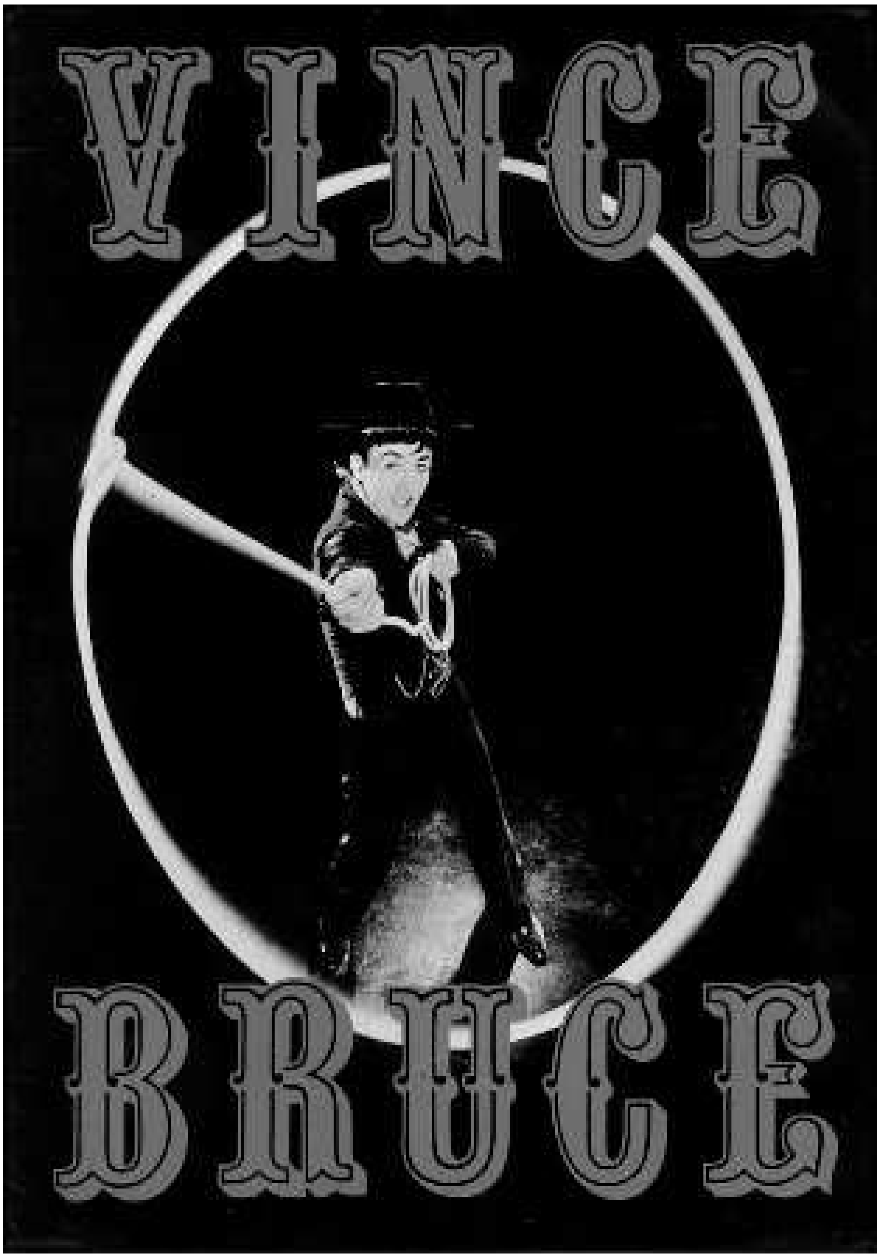


Figure 5.10: Vince Bruce Does a Dynamic Arm Bounce!

Chapter 6

Catches

If you show off some of your rope tricks in public someone will surely want to know if you can catch cattle with that thing. Then they'll want to see you do it! Well what could be more natural with a lasso? Catches have to be the most compelling archetypal images of the lasso and of the wild west.

This chapter describes a few catches with a trick rope. Although catching with a trick rope is similar to what most cowboys do to make a living there are some important differences. For one a trick rope is not nearly as stiff as a cowboy's catch rope and usually not nearly as long. Nevertheless, you can catch with a trick rope, but be careful! Remember that if you successfully catch an animal (like a dog, for example) you might not get your rope back without getting bitten. Normally it's best to start with inanimate objects ... fire hydrants, parking meters, and mail boxes are some ideas to start with. Moreover, after practicing awhile on these sorts of things you'll almost certainly attract the attention of some kids in the neighborhood who will probably want to know if you can catch them. This will give you a perfect opportunity to practice on moving targets and you'll probably get tired of it before the kids will.

In this chapter I describe three types of catches. The first type is made without spinning the rope and is simply called the Thrown Loop Catch. The second type is made from a Flat Loop. Finally, the most versatile and crowd pleasing catches are made from the Ocean Wave. In this book only a few catches of the many known are described. To explore this part of roping more thoroughly I refer you to [4], [5], [8], and [12] in the references.

6.1 Thrown Loop Catches

An unspun, thrown loop catch is the catch most often made by a working cowboy. It consists of making an appropriate size loop and then throwing it towards the target, allowing enough of the coiled spoke to play out so that the loop can reach it.

The starting configuration for the Thrown Loop Catch is the same as that for the Butterfly. The diameter of the loop is adjusted to the size of the target and the excess spoke is coiled up into the left hand.

To make a Thrown Loop Catch, the loop is swung around the head several times and then thrown at the target. Extra spoke is played out of the coil in the left hand to allow the loop to reach the target. The idea is to make the loop open up into a circle thus making it easier to make the catch.

Making the loop open is accomplished by giving the loop a slight spin. Figure 6.1 illustrates the Thrown Loop Catch and I'll refer to this figure while explaining the method for opening the loop. The figure illustrates the loop at three moments in time. The first moment, illustrated by the solid elliptical loop, is just before the right hand releases the loop for the throw. Here the right hand is gripping the loop and the spoke. At the moment of release the loop is given a very slight spin by a flick of the wrist. The second moment shows the (dotted) loop half way between the hand and the target. The loop is partially open and the honda is at about 9 o'clock. The third moment shows the (dotted) loop as a fully open circle falling down over the target. Note that the honda is at 6 o'clock. The loop goes through exactly one half of a turn from the moment of the release of the loop to the moment that the catch is made.

It is the turning motion of the loop caused by the flick of the wrist which makes the loop open up into a circle. Since the loop only turns through 180 degrees for the Thrown Loop Catch the amount of spin must be carefully gauged as a function of distance between the roper and the target. If the loop spins too much before arriving at the target

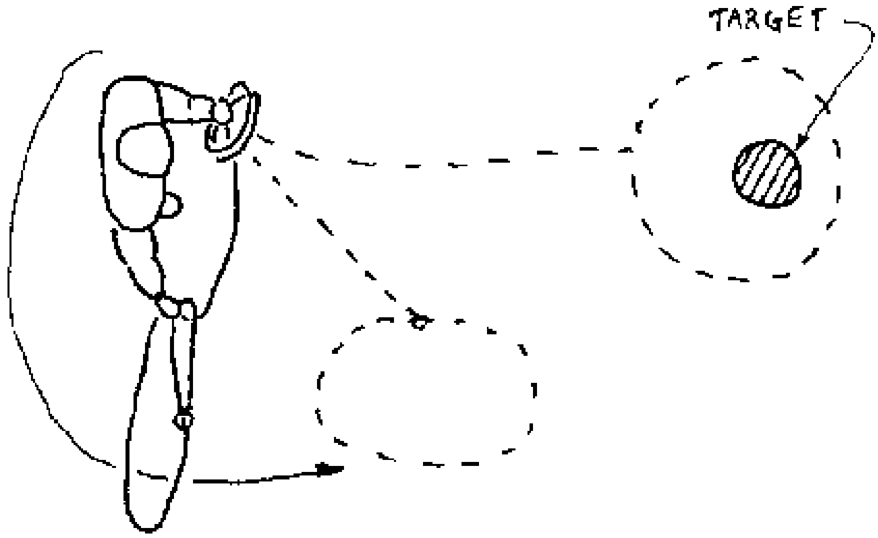


Figure 6.1: Thrown Loop Catch

the catch can be ruined by deformation of the circle and/or entanglement of the loop with the spoke.

An amusing and surprising variation of the Thrown Loop Catch is the Kicked Loop Catch. Here the loop is laid on the ground so that the spoke and the loop lay across the right foot (see Figure 6.2). The left hand holds the excess coiled up spoke. To make the catch the roper turns 180 degrees counter-clockwise on the left foot. While turning, the loop is lifted and carried around on the right foot. Near the end of the turn the loop is kicked up and towards the target and (hopefully) catching it.

6.2 Flat Loop Catches

The Flat Loop Catch described in this section is based on the One-Handed Merry-Go-Round described in Section 2.1. The idea of this

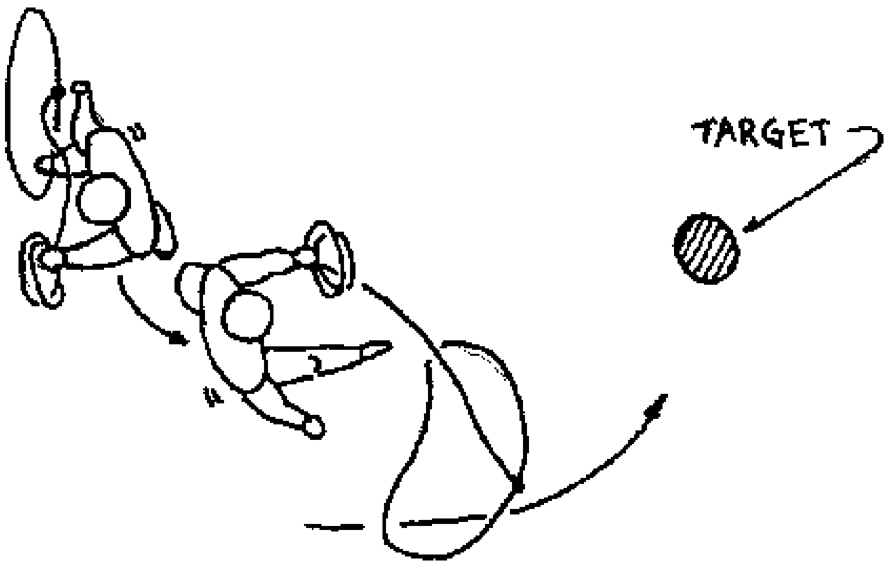


Figure 6.2: Kicked Loop Catch

catch is that the Merry-Go-Round loop is pulled sufficiently vigorously from behind the roper to send the loop forward, upward, and over a target.

Referring to Figure 6.3 the solid loop is in the same position as that for the One-Handed Merry-Go-Round loop illustrated in Figure 2.2(b) on page 20. The solid loop in Figure 6.3 shows the One-Handed Merry-Go-Round at a position about half way around the back. At this point the roper turns slightly towards the target pulling the loop in that direction and lifting it sufficiently to make the loop clear the top of the target as is illustrated by the two dotted loops in the figure.

From the moment that the loop is pulled towards the target this catch is very similar to the Thrown Loop Catch described in the previous section. The difference is that the loop is already open and spinning and, thus, no flick of the wrist is necessary. On the other hand since the loop is already spinning you will have to mitigate the spin so that the loop does not over-spin before arriving at the target. This is accomplished

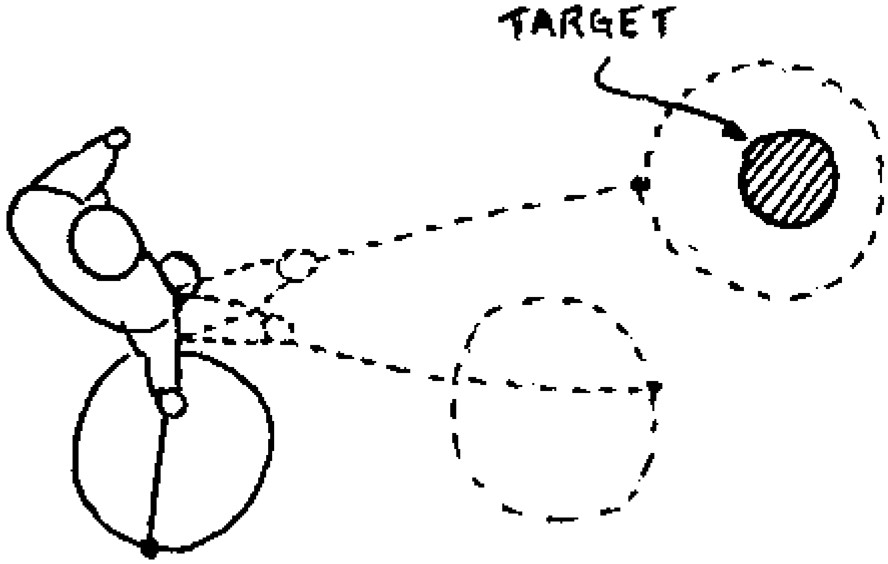


Figure 6.3: Merry-Go-Round Catch

by eliminating the quarter circle phase advance between the hand and the honda a little before the loop is pulled forward. At this point the loop is no longer spun by the roper (the loop, nevertheless, continues to spin) and the tension on the spoke is used strictly to pull the loop forward. The amount of pull applied to the spoke is a function of how rapidly the loop is spinning at the start of the pull and the distance of the target from the roper.

The rolled out position of the final loop in Figure 6.3 should be reminiscent of the position of the loop in Figure 5.4(a) (shown on page 59) used to describe the principles of the Arm Roll. From the point of view of spin acceleration these two tricks are similar. The vigorous forward pull of the Merry-Go-Round loop requires spin acceleration in advance of the pull since the hand and spoke are going to be unable to maintain the quarter circle phase advance between the hand and the honda as the loop rolls out for the catch. An important difference between these two tricks, however, is that for the Merry-Go-Round Catch it is undesirable for the loop to continue turning once it is completely rolled.

An nice variation of the One-Handed Merry-Go-Round Catch can be made by combining it with a Flat Loop Lift. The idea of the catch is to do a Flat Loop Lift when the Merry-Go-Round loop starts to pass from behind the roper to the front. The lifted loop is then guided forward and over the target.

Assuming that the target is in front of the roper the Merry-Go-Round is begun as usual. When the loop gets to the position illustrated in Figure 2.2(b) (shown on page 20) the Flat Loop Lift is begun and the loop is pulled to the front of the roper. This is to be compared with Figure 2.7(a) on page 28 where the Flat Loop Lift is pulled diagonally from the right to the left of the roper.

6.3 Ocean Wave Catches

The Ocean Wave catch is more difficult to master than any of the Flat Loop catches but it is also a very effective and satisfying catch. The idea of this catch is to sweep a Reverse Butterfly loop across the target so that the bottom part of the loop is stopped by the target while the top part of the loop passes over the top. In this way the top part of the loop passes over the target, falls down over the other side of it, and makes the catch.

Assume that the target is directly in front of the roper. The roper does an Ocean Wave based on a Reverse Butterfly spin passing the loop behind the body from left to right as described in Section 5.6. The usual spin acceleration used to carry the Ocean Wave around the back is not sufficient since it is necessary to apply a lot of extra pull on the loop to carry it forward for the catch. Practically all the roper is doing while the loop is behind the back is pulling on the loop, thus, extra spin acceleration must precede the pull. This is exactly the same idea as presented for the Flat Loop catches in the previous section.

To avoid tangling the spoke in the loop as it passes over the target the catch must be timed so that the honda is at 9 o'clock at the moment that the loop contacts the target. This is illustrated on the right side of Figure 6.4. The left side of Figure 6.4 is identical to the position of loop "D" illustrated in Figure 5.9 on page 67 used for the description of

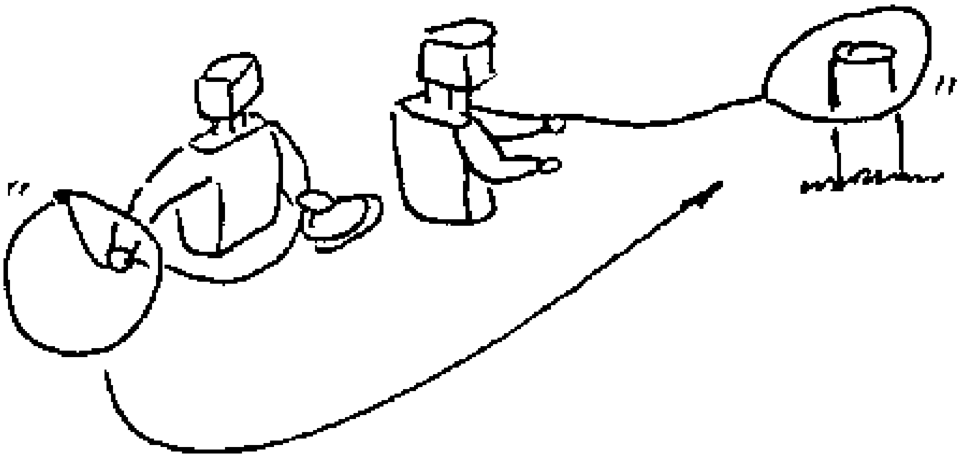
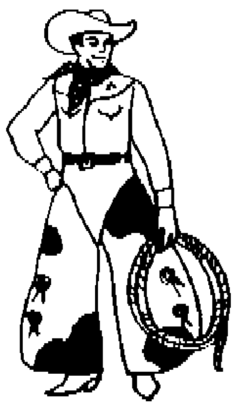


Figure 6.4: Ocean Wave Catch

the Ocean Wave. As shown in the left side of the figure the loop comes from behind the back at the end of the Ocean Wave with the honda positioned at 12 o'clock. It must go through another one and a quarter turns before the loop passes over the target. Mastering the timing of this turn is probably the most difficult part of the catch. As in the Merry-Go-Round Catch it is important to keep in mind that the loop is not spun but pulled towards the target. The loop should already have all the spin acceleration necessary to keep it from closing. The trick is to gauge the amount of spin and the distance to the target in order to apply the amount of pull necessary to properly make the catch.

The final phase of the Ocean Wave catch can be practiced by working on the Turn-Around Catch. To perform the Turn-Around Catch the roper begins with a regular Butterfly and with his or her back to the target. As the Butterfly loop is passed to the left side the loop is given extra spin-acceleration and the roper turns to the left (i.e., counter-clockwise) pulling the loop around and towards the target to make the catch.

The Turn-Around Catch is identical to the last part of the Ocean Wave catch except that the pull of the loop for the Ocean Wave Catch is made while the roper is facing the target. The advantage of the Turn-Around Catch is that it can be practiced without having to first master the Reverse Butterfly or the Ocean Wave.



Chapter 7

Two Rope Tricks

This chapter describes some of the two rope tricks I've seen over the years. The objective of this chapter is to sketch out the mechanics of each trick rather than to describe it in detail. However, since all the tricks described in this chapter are combinations of previously described tricks this should not be an obstacle to the learning process.

Most of the descriptions presented here are based on video tape of Vince Bruce currently one of the world's greatest ropers. Vince performs almost all of these tricks in his show.

7.1 Flat Loops

Just spinning two Flat Loops at once will take some getting used to and you will probably need to spend some time working with the hand that's been taking a siesta all this time. To work on two rope tricks you'll want to have two 15 foot ropes (or perhaps even shorter). The main concern is that you should be able to spin the two ropes, holding the end of each spoke in its respective hand, without the two loops touching.

There are several different variations of spinning two Flat Loops where the differences depend on the direction of spin of the two loops and the relative phase of the two hondas. Since each loop can spin in one of two directions and the hondas can be in or out of phase there are a total of eight variations. However, only four of these eight will be useful for the tricks to be described.

Alternate Double Crow Stepping

Alternate Double Crow Stepping, as the name implies, is alternately Crow Stepping in one Flat Loop then the other. This trick is performed by spinning the right loop in the counter-clockwise direction and the left loop in the clockwise direction with the two hondas spinning "out of phase". What I mean by this is that each hand seems to be 180 degrees out of sync with the other. To be specific this means that when the left hand honda is at 12 o'clock the right hand honda is at 6 o'clock and vice versa.

With this configuration for the two Flat Loops the roper alternately jumps from the right hand loop on the right foot to the left hand loop on the left foot and back again. This makes for a rapid two step dance number where each foot leaves its respective loop just the time necessary for the spoke to pass unimpeded underneath. This trick leaves you with the impression to be running in place.

Simultaneous Double Crow Stepping

As for Alternate Double Crow Stepping, Simultaneous Double Crow Stepping has the right hand loop turning in the counter-clockwise direction and the left hand loop in the clockwise direction. However, now the two hondas must be turning "in phase" with each other. This means that the two hands seem to be mirror images of each other each doing the same thing at the same time. More specifically this means that when the left hand honda is at 3 o'clock the right hand honda must be at 9 o'clock and vice versa.

With this configuration for the two Flat Loops the roper simultaneously jumps from the right hand and left hand loops at the same time where the two feet leave the two loops the time necessary for the spokes to pass unimpeded underneath. This trick leaves you with the impression to be hopping in place.

A variation of this trick is to jump with both feet together alternately from one loop to the other. That's to say that both the left and right feet jump together into the left hand loop and then into the right hand loop and back again.

Alternate One-Handed Merry-Go-Rounds

This trick consists of alternately passing the left and right hand Flat Loops around the back in a One-Handed Merry-Go-Round. To do this trick the right hand loop is turning counter-clockwise, the left hand loop is turning clockwise, and the hondas of the two loops are in phase (see the description of Simultaneous Double Crow Stepping).

There is an important difference between the One-Handed Merry-Go-Round described in Section 2.1 and the way it must be performed for this trick. To do the One-Handed Merry-Go-Round with the right hand it must be able to clear the Flat Loop being done by the left hand before it passes over the left shoulder and behind the back. The remark is equally valid for the Merry-Go-Round to be done by the left hand. Consequently, it will be necessary to lift the loop before bringing it to the position shown in Figure 2.2(a) shown on page 20.

An useful observation is that you will probably have an easier time learning this trick if your Flat Loop ropes are a little shorter than what you normally use. This will help avoid the possible collision of the loops while you are lifting and/or passing them behind the back.

Alternate Lift Overs

In this trick the two Flat Loops are alternately lifted over into the Wedding Ring position and then popped back off. This trick, like the Alternate One-Handed Merry-Go-Rounds is done with the right hand loop turning counter-clockwise, the left hand loop turning clockwise, and the hondas in phase.

Two-Handed Merry-Go-Rounds

A trick which seems like it would be impossible in a two-rope routine is a Two-Handed Merry-Go-Round. Nevertheless, it's not a very difficult trick, I can even do this one myself! Frank Dean attributes this trick to Will Rogers and in roping circles this trick has a mythic prestige associated with it.

The idea of this trick is that the two Merry-Go-Rounds are done simultaneously. Each loop exchanges hands at the same time, once in front of the roper and once behind. To start the trick the right hand loop is turning counter-clockwise, the left hand loop is turning clockwise, and the hondas are in phase (see the description of Simultaneous Double Crow Stepping).

The exchange of the two loops occurs when the two hondas are at 12 o'clock. To perform the exchange you will have to lift slightly one of the loops to avoid a collision. The feeling that you should have is that you are putting one loop onto the other. To make the exchange you must be able to take in each hand the spoke of the other loop. This task is made easier by leaving a small bit of spoke sticking out the back of the right hand. This allows you to grasp it with the left hand by bringing it behind the right hand while, at the same time, the right hand takes the front part of the left hand spoke.

You would think that disengaging the two loops at the moment of the exchange would be difficult but it really is not so tough. After a couple of tries I'm sure you'll get it. Once the two loops are exchanged the new right hand loop is spinning in the clockwise direction and the left hand loop is spinning in the counter-clockwise direction. If you've already mastered the Two-Handed Merry-Go-Round as described in Section 2.1 you've already confronted this change of spin direction, at least for a loop moving around the body in the counter-clockwise direction.

The trick is completed by passing the two loops behind the back where they are re-exchanged. This final exchange reverts the spin directions of the two loops to as they were at the beginning of the trick.

Of Wedding Rings and Flat Loops

Some beautiful two rope tricks can be done by combining a short Flat Loop rope and a long Flat Loop rope. These combinations consist mainly of doing a Wedding Ring with one hand while doing an assorted number of other Flat Loop tricks with the other hand. Normally these tricks are performed with the small loop in the right hand turning in the counter-clockwise direction and the large loop in the left hand also turning in the counter-clockwise direction. There is no technical reason that I can think of, though, that would prevent these tricks from being learned with the large loop turning in the clockwise direction.

The first trick to learn is a Wedding Ring with the large loop in the left hand while doing a Flat Loop inside the Wedding Ring with the right hand. This trick can be started in a number of ways. One possibility is to start the Wedding Ring and once having stabilized it to start up the Flat Loop. Another possibility is to start with a Flat Loop for both the small and large loops and then perform a Lift Over to a Wedding Ring with the large loop.

Once you can do the Wedding Ring and the Flat Loop at the same time you can try embellishing this by Crow Stepping in the Flat Loop. In fact you can try any of the variations of Crow Stepping described in Section 2.2.

If you are successful with the Wedding Ring and Crow Stepping you can pass to the next level of difficulty by exchanging the positions of the two loops. That's to say the large loop is lowered from the Wedding Ring while a Lift Over to Wedding Ring is performed with the small loop. Since the large loop was lowered and not lifted off the two loops are now encircling the body and so you'll be required to do one of the Crow Stepping variations where both feet are in the loop at the same time. The variation seen the most often is the one where the two feet trot over the spoke one at a time. Clearly the success of this trick depends on timing the lowering of the large loop and the lift of the small loop at a moment when the spoke of the large loop won't impede the upward traveling small loop.

7.2 Butterflys

If you spent some time getting used to spinning two Flat Loops you'll have fun working on spinning two Butterflies. Since you don't have a free hand to hold a coiled up spoke as you would with a normal 15 foot rope you'll probably want to work with shorter ropes around 10-11 feet in length.

As with the Flat Loop there are eight variations for spinning two Butterfly loops. Each loop can be spun as a regular or reverse Butterfly and the loops can be spun in phase or out of phase. I define two Butterfly loops as being in phase when both the right and left hand loops are passing from the right to the left at the same time and vice versa. They are out of phase when the right hand loop is passed to the left while the left hand loop is passed to the right. Obviously the loops must not travel past the middle of the roper in an out of phase sequence if the two loops are to avoid colliding with each other.

Alternate Butterflies Behind the Back

Passing the Butterfly behind the back was not described in Chapter 5, however, it is very esthetic as a two rope trick. To pass the Butterfly loop behind the back it's necessary to give the loop a good spin acceleration on the right side of the body so that the loop can pass to the left behind the roper, make a spin on the left side (still behind the back), and return to the right.

Vince Bruce performs this as a two rope trick by spinning two regular Butterfly loops out of phase with each other. The left hand loop first passes to the right side in front of the roper while the right hand loop passes to the left side behind the roper. This is followed by passing the right hand loop to the left in front of the roper while the left hand loop is passed to the right behind the roper. This alternating passage of the two loops in front and behind the roper makes for a very nice effect.

Alternate Cross Shoulder Rolls

A cross shoulder roll is performed by rolling a Butterfly loop spun by the right hand from behind the back and up and over the left shoulder. Similarly this can be done with a Butterfly loop spun by the left hand where now the loop rolls from behind the back up over the right shoulder. To perform alternate Cross Shoulder Rolls requires spinning the two Butterfly loops in phase (see the beginning of this section for a definition of spinning two Butterfly loops in phase).

Simultaneous Arm and Shoulder Rolls

Some pretty two rope combinations can be had by spinning one loop as a normal Butterfly while the other loop is spun as a Reverse Butterfly. For example, if you do a continuous Arm Roll with the right hand you can simultaneously do a Cross Shoulder Roll with the left hand. As described above the Cross Shoulder Roll is done with a normal Butterfly and after a little thought about the direction of spin of an Arm Roll which rolls up over the front of the arm you'll realize that this is based on a Reverse Butterfly.

An interesting aspect of this trick is that the two rolls are based on a different number of turns. The continuous Arm Roll is based on two turns of the loop. The first turn pulls the loop downward and the second turn rolls the loop up the spoke and over the arm. The Cross Shoulder Roll is based on four turns of the loop. Performed with the left hand the first turn is on the right side of the roper, the second turn passes the loop to the left, the third turn pulls the loop downward and behind the roper, and the fourth turn rolls the loop of the right shoulder.

The best presentation of this trick is obtained by turning the right side to the audience. From the audiences point of view there is one loop rolling over the arm in the counter-clockwise direction (the Arm Roll) and a second loop rolling behind the first (over the shoulder) in the clockwise direction (the Cross Shoulder Roll) but at a rhythm only half as often as the that of the Arm Roll.

Butterfly While Skipping the Spoke

Clare Johnson was the first person to show me this trick. Although this is not really a two rope trick I've put it in this chapter since it requires doing two things at once. To do this trick you'll need a lasso long enough to skip rope and do a Butterfly at the same time. A 15 ft rope is probably not sufficient.

The idea of this trick is that you skip rope while doing a regular Butterfly. To begin the trick start by pulling enough of the spoke between the left and right hands and behind the legs in preparation to begin skipping. Then pull the remaining spoke into a Butterfly loop that you start to spin. The Butterfly that you do for this trick does not travel from right to left as for a normal Butterfly. Rather you must limit the leftward passage of the loop so that it goes from the right side to just in front of you.

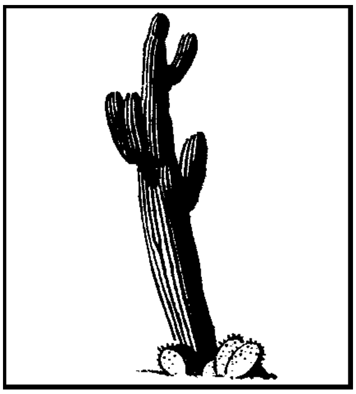
In the following description of the trick there are two important phases. There is the phase where the part of the spoke used for skipping is in front of you and there is the phase where it is behind. The success of the trick depends on timing the Butterfly loop to be in front of you at the same time as the skipping part of the spoke (that's to say that the Butterfly loop is inside the jump rope with you). The Butterfly must be to the right of you (or outside the jump rope) when the skipping part of the spoke is behind you.

Making this trick work depends on separating the work of the two actions. Skipping rope should be totally controlled by the left hand while the Butterfly is controlled by the right hand.

7.3 The Texas Skip

It is possible to do a Texas Skip and a Butterfly at the same time. To do this trick a Vertical Loop is begun with one hand and a Butterfly is begun with the other. I'll describe the trick assuming that the Texas Skip is being done with the right hand and the Butterfly with the left.

The trick begins with a turn of the Texas Skip loop on the right side of the roper (in the clockwise direction) and a turn of the Butterfly loop on the left side of the roper (also in the clockwise direction). This is followed by a pull on the Texas Skip loop to the left side while the Butterfly loop is pulled to the right. The left hand and arm must pass under the right allowing the entire Butterfly loop to pass under the upward traveling spoke of the Texas Skip (see Figure 3.1(b) on page 37). The Texas Skip loop then makes a turn on the left side of the roper and the Butterfly loop makes a turn on the right where now the two arms are crossed, the left under the right. To finish the sequence the two loops are pulled back to their respective starting sides with the Butterfly loop again passing under the upward traveling Texas Skip spoke thus uncrossing the arms.



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Carey Bunks

Carey Bunks was born in New York City in 1957 and grew up in Westport, Connecticut. At the age of twelve his grandmother gave him *The Golden Book of Magic* and he began to develop an interest in prestidigitation and legerdemain. Thirsty for knowledge it didn't take long for the entire collection of magic books from the local public library to pass through his hands.

Television can have a negative effect on children and as a case in point it was an episode of *The Dick Van Dyke Show* that inspired Carey to teach himself juggling. Juggling seemed to be a natural complement to magic since, after all, magic tricks are just juggling where the skillful part is hidden in order to create the illusion of magic. Being the pre-*Carlos*-inien epoch of juggling there weren't a lot of books on the subject at the time. Nevertheless, there was the then classic work of Ken Benge entitled *Three Ball Juggling*. The cover page picture of Ken juggling while idling on a unicycle soon led to skinned knees and ankles as the unicycle quickly became a new passion.

Admitted to Tufts University in 1975 Carey decided to study electrical engineering (hey, electricity is pretty magical). He took time off from Tufts in 1977 when he was accepted to the Ringling Brothers & Barnum and Bailey Clown College. After graduating from Clown College he returned to the Boston area where he started street performing during the clement months at Faneuil Hall and Harvard Square. His performance style was greatly influenced by contemporary street theater groups of the Boston area such as The Amazing Fantasy Jugglers, Locomotion Circus, Slaphappy, and The Shakespeare Brothers to name a few. In 1985 he won an open audition to represent the independent television station WQTV in Boston as their entertainment personality. Not including shows done for WQTV he entertained more than 1000 groups and organizations in the Boston area from 1978 to 1986.

From 1987 to 1995 Carey lived in Paris, France. During this time he learned to do his entire show in French. In Paris he performed for *l'Orchestre de Paris* and the Japanese Embassy amongst others. He also taught numerous lasso workshops ... notably at *l'Institut National de Recherche en Informatique et en Automatique* (INRIA), *l'Ecole Nationale Supérieure de Cirque*, and at many European juggling conventions.

Carey Bunks also has a Ph.D. in electrical engineering from the Massachusetts Institute of Technology. He is the author of numerous scientific papers on signal processing, optimal control, seismic inversion, and imaging. He currently lives in the Boston area and is a Senior Scientist at Bolt Beranek and Newman in Cambridge, Massachusetts.

For Carey, his whole life seems to be a consequence of his grandmother's gift, *The Golden Book of Magic*. If she had given him *The Golden Book of Dinosaurs* who knows what might have become of him...