Son of a Hitch: A Genealogy of Arborists' Climbing Hitches

By Mark Adams

This is an expanded version of an article that appeared in the October 2004 issue of SCA Today, *the newsletter of the Society of Commercial Arboriculture. It is also a companion article to "An Overview of Climbing Hitches," which appeared as the Climbers' Corner feature in the October 2004 issue of* Arborist News. *The latter article presented—and encouraged the use of—standard terminology for seven common climbing hitches that arborists use in their climbing systems. The focus of that article, however, was on the technical aspects of the use of those knots, and it included photographs and instructions on how to tie the knots.*

This article discusses the names of those seven climbing hitches and how the names and the knots themselves have changed, developed, and been reinvented over time and through various applications. Two other knots have been included in this discussion of knot names, along with pictures and instructions on how to tie them.

The climbing hitches are discussed in the order in which they were introduced to the tree care industry in the United States. At least one reference is given for each of the knots, and, for many of them, two or more references are given. References are cited from various high-angle rope disciplines, in several languages, and from several countries. Arborists will find that many of the climbing hitches that we consider new and modern have actually been used for many years in other types of climbing or rope work.

It seems that, historically, the specific name that was given to a knot was sometimes based on its form, sometimes on its function. Yet it is frequently difficult to see when one knot becomes a different knot and deserves a new name. Making an additional turn around an object; tying the knot with a loop, with the end of a line, or in a bight; terminating the tail in a different manner; or tying the knot onto the rope's own tail, a different rope, or another object—all of these may or may not be reason to give a knot a new name. There is no universally recognized taxonomy to help understand and define knot terminology.

The practice of bestowing a person's name on a knot seems to be a relatively recent convention. Although many of the knots presented here are known today by the name or initials of an individual, Ashley (1944) reported that it was said that a man named Mathew Walker was "the only man to have a knot named for him" (p. 118, #678; p. 265, #1465).

Tautline Hitch

For most of the past century, the majority of tree climbers in the United States used some version of the tautline hitch as the climbing hitch for their work-positioning system. Two of the most common versions of this knot are (1) two turns below the bridge, then two turns above the bridge, and (2) two turns below the bridge, then one turn above the bridge. Toss calls the two-under, one-over variation the simple rolling hitch and says that it "is still sometimes called the tent-line or taut-line hitch" (1990, p. 30).

Ashley (1944, p. 265, #1465; p. 298, #1734) also says that the two under, one over is called the rolling hitch and shows the two under, two over as a variation of the rolling hitch. Ashley's taxonomy regarding this particular knot, however, is confusing and sometimes contradictory. For example, he also calls this knot the adjustable hitch and says it "is closely related to the midshipman's knot, the difference being in the arrangement of the second turn" (1944, p. 304, #1800). But, in a preceding section, he says that the adjustable hitch "is the same as a midshipman's hitch" (1944, p. 71, #431). He adds that it formerly may have been called the Magnus hitch and Magner's hitch, and, if the latter is correct, it was (at that time) the only other knot (besides the Mathew Walker knot) to have been named after an individual (1944, p. 265, #1465).

Prusik

Another friction hitch that was used by some early tree climbers, particularly in Europe, is the Prusik. Described in 1931 by Austrian Karl Prusik for use in mountaineering, the Prusik hitch has been utilized in many vertical rope disciplines. When used as an arborist's climbing hitch, it has many of the same functional characteristics as the tautline.

One interesting note is that when Dr. Prusik presented this hitch, he showed it tied with a loop. Present-day arborists use the term "Prusik" to refer to this configuration whether it is tied with a loop (a closed knot) or tied with the end of a line with no termination of the tail (an open knot). Some writers consider these to be two different knots entirely (like the tautline and Distel, and Blake's hitch and the Martin), but I have not found any other name that has been given to distinguish them. Ashley shows it tied with the end as a two-under, one-over version and says that it is a Magnus hitch with the final hitch "reversed" (1944, p. 298, #1736). It is shown tied with a loop of rope with three wraps/six coils and is described simply as "a double strap or sling for hoisting a spar at [mid]length" (1944, p. 300, #1763).

The tautline and the Prusik were, in various forms and with various colloquial names, the primary climbing hitches used by arborists for most of the past century. Ashley illustrated both of these, in their two-under, two-over versions, as "tree surgeon's variations of the Magnus hitch" (1944, p. 77, #480, #481), and they were still the primary tree climbing hitches into the 1990s. At that time, however, climbing hitches began a dramatic change.

Blake's Hitch

In 1994, in a letter to the editor of *Arbor Age* magazine, Jason Blake described what he called "the slip—or knot." Although Blake certainly is to be credited for introducing and popularizing this knot for tree climbing, he was not the first to publish it. Ashley shows a two-coil version of this knot (1944, p. 266, #1470) but does not name it. The exact knot was shown in *Nylon Highway* by Heinz Prohaska (1990)

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and was published by Prohaska for the first time in 1981. Prohaska has referred to it as *Gesteckter Wickelknoten,* or simply *Wickelknoten,* in German and as tucked coil hitch in English. Bavaresco (2000) mentioned this hitch and called it Blake's or Polish, but I have found only one other source that uses the term "Polish." A reviewer of this article called it ProhGrip in recognition of Heinz Prohaska.

Because Jason Blake was the first to describe this knot for arborists, the knot was shown as Blake's hitch at various tree industry trade shows. It was described again in *Arbor Age* magazine by Smith in 1996, but the accompanying photograph showed the knot tied incorrectly. Oddly enough, Blake's original letter to the editor had cautioned against using the pictured version of the knot, which he dubbed a "sui-slide" knot. Blake's hitch appeared simultaneously in *Arborist News* magazine (Palmer and Lilly 1996), where it was first pictured and described correctly for the tree care industry.

In the mid- and late 1990s, Blake's hitch was the favorite climbing hitch for some, but not all, advanced climbers. Two-time ITCC world champion Mark Chisholm recalls that, at the ITCC competition in Halifax in 1994, François Dussenne introduced some climbers to a new hitch called the *Machard tresse*. Dussenne had been using and showing the hitch for years, but it was not accepted for use in the ITCC until 1997, after which it was introduced to a much wider audience through a magazine article (Palmer et al. 1998).

French Prusik

In the April 1998 issue of *Arborist News*, the Climbers' Corner feature made its first appearance and introduced a new climbing hitch to American climbers, the *Machard tresse* (Palmer et al. 1998). That Climbers' Corner actually consisted of six short articles, each of which included the various authors' opinions of this climbing hitch. Although the information about the knot's performance was consistent and informative, there were discrepancies about the name of the knot. It was variously called French Prusik, *Machard*, and *Machard tresse*. Donzelli and Longstaff (1999) added the name *Valdôtain tresse*, which they abbreviated as *Vt*, but which was (wrongly) shortened in vernacular use to *Valdôtain*.

When tied with a loop of rope or webbing, a French Prusik is called a *Machard* or a *Machard tress*, depending on how it is formed. When tied with a single length of rope or webbing, a French Prusik is called a *Valdôtain* or a *Valdôtain tresse*, again depending on how it is formed. It is important to realize that there are distinct differences in the way that each of these knots—*Machard, Machard tresse, Valdôtain,* and *Valdôtain tresse*—is tied and how each one performs. The term "French Prusik" includes all of these knots and is not specific to any particular one.

Although the *Arborist News* article from April 1998 was the first formal mention of French Prusik in the tree industry in the United States, these knots had been used for many years in the tree industry in Europe and in various other high-angle rope disciplines in numerous countries. Several of the authors who contributed to that first Climbers' Corner said that they had either seen or used a French Prusik years before the article appeared. Geoffrey Budworth shows an "extended" French Prusik (1999, p. 136; 2000, p. 134) and credits Robert Chisnall for devising it circa 1981, yet the same knot that Budworth shows is illustrated (but not named) in Ashley's 1944 book (p. 299, #1758).

Thrun says, "The French Prusik knot is apparently one of the older climbing knots, although I have never seen its use described in print" (1973, p. 6). The knot that he shows and describes is similar to the knot shown by Budworth and Ashley, but it has fewer wraps and is terminated in a different manner. Thrun adds that "as a method of hitching to a post, it is old and well known" (1973, p. 6).

The *Army Field Manual* (1995) calls it a telegraph hitch and shows it inverted—presumably because it was used for raising and lowering telegraph poles.

The word "autoblock" has been used in some English-language knot books to refer to a French Prusik. "Autoblock," however, is a corruption of the French "*autobloquant*," which means "self-jamming." It is used to refer to a group of slide-and-grip knots and is probably better translated into the English term "friction hitch."

Wraps, braids, and twists can be added or subtracted to form many variations of the French Prusik to suit different styles of climbing. Names have been given to some of these variations—for example, the XT and the Turner twist. But many times the same variation is fabricated by more than one climber, so these names may not be consistent and are not widely recognized.

Schwabisch

The Climbers' Corner article in the April 1998 issue of *Arborist News* also included a passing reference to another new knot. This knot was referred to as a Schwabisch Prusik, and Bernd Strasser was credited with devising the knot. According to that article, the name "comes from the area where Bernd lives in Germany: the Schwabisch land near Stuttgart" (Palmer et al. 1998, p. 45).

But Strasser was not the first to use this configuration. The Schwabisch essentially is an asymmetrical Prusik with the two legs exiting the hitch at the bottom rather than at the middle of the knot. Thrun illustrated a

"Prusik knot with an odd number of coils" (1973, p. 5), and his description of how to tie, use, and adjust this knot agrees perfectly with the Schwabisch.

In *On Rope*, Smith and Padgett show a Prusik tied with three, four, and five coils, all of which are asymmetrical, but the legs exit from the top of the hitch rather than from the bottom (1996, p. 53). Oddly, Smith and Padgett acknowledge Thrun as their source, but Thrun says, "More coils in the top of the knot make it hold better in a downward pull" (1973, p. 5).

In one paragraph, Smith and Padgett state, "This variation provides gripping power in the top of the knot" but, in the next paragraph, they say there should be more coils "on the [bottom] of the knot. The primary gripping takes place with the friction in these coils" (1996, p. 53). A reviewer of this article noted that the text in the first edition of *On Rope* was different from what I have quoted here from the second edition. This seems to be an editorial mistake.

Smith and Padgett, as well as Thrun, say that the ends of the sling must be tied together after the hitch is formed, implying that asymmetry can be achieved only with a length of cord and not with a loop. Ashley, however, shows a three-coil "Prusik" formed with a loop, although the loop has to be threaded onto the object first (1944, p. 311, #1864). He seems to consider it a variation of a ring hitch (what today's arborists would call a girth hitch).

Distel

Arbor lore has it that a climber named Uli Distel attempted to tie the Schwabisch but neglected to change the direction of the split-tail when he made the turns above the bridge. It turned out that this configuration worked well for climbing, and the knot was given the name Distel.

Bavaresco shows a two-under, two-over Distel and incorrectly calls it a tautline (2000, p. 23). Although the turns above and below the bridge are the same as those of the tautline, the distinguishing factor is that both legs of the Distel are terminated on the carabiner, thus forming a closed climbing hitch. The tautline, with various numbers of turns above and/or below the bridge, is an open climbing hitch.

Knut

Another eponymous arborist is Knut Foppe, who introduced tree climbers to the Knut hitch (not to be confused with the Knute hitch, which attaches a lanyard or halyard to anything with a small eye).

I first learned the Knut in summer 2001, promptly forgot how to tie it, then learned it from Knut himself in November 2001. Since then, I have seen at least three different people teach the Knut, each of whom showed a knot that was different from what the others showed and that was different from what Knut had shown to me. The Knut has recently been shown in four different publications, however, so the original version is now more readily available for those who wish to use it (Adams 2004a, 2004b; Fresco 2004; TCIA 2004).

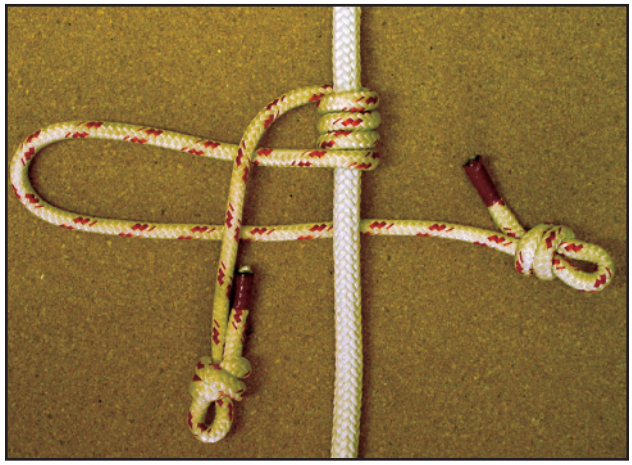

Figure 1. Tying the TK: The split-tail makes four counterclockwise turns up the climbing line. The top leg is dropped in front of the bottom leg, and a bight of the bottom leg is held in place while the end of the leg is passed behind the climbing line and the top leg. . . .

Figure 2. . . . The bight is twisted from bottom to top, away from the climbing line, . . .

Figure 3. . . . and the end of the bottom leg is then passed through the bight.

TK

Throughout 2002 and 2003, Todd Kramer, with Kramer Tree Specialists in Chicago, had been tinkering with knots to devise a friction hitch for a particular climbing system that he was working on. In November 2003, he showed me a knot he had fashioned for that application. His friends had named the knot the TK, but, with the exception of a half twist, it was exactly what Knut had shown two years earlier.

The TK is formed by making four counterclockwise turns up the climbing line. The top leg is dropped in front of the bottom leg. A bight of the bottom leg is held in place while the end of the leg is passed behind the climbing line and the (now pendent) top leg (Figure 1). The bight is twisted from bottom to top, away from the climbing line (Figure 2), and the end of the bottom leg is passed through the bight (Figure 3).

The only difference between the Knut and the TK is that, in the last step of tying these hitches, the bight is not twisted when the Knut is formed, but it is twisted when the TK is formed (Figures 1 and 2). The bottom leg of the Knut essentially forms a half hitch around the climbing line and the (pendent) top leg, while the TK forms an overhand knot around the climbing line and the (pendent) top leg.

In use, the TK holds the climber firmly in place for working. It releases readily and grips reliably when the climber wishes to descend. The overhand of the TK tends to

be harder to break than the half hitch of the Knut, so the TK is not always as easy to advance as the Knut when the climber pushes it with a hand or slack tender. They grip equally well after being advanced and then tensioned when the climber pulls down on the hitch.

It should be noted that the configuration of the Knut and the TK are both new and were developed independently of each other. I have not found reference to any other knot that is similar in form and function to each of these. The adjustable bend (Budworth 1999, p. 52) has some resemblance, but it has fewer turns, does not incorporate the tail, and is shown for use only as a bend.

The TK was devised and introduced after the Knut, but Kramer had no knowledge of the existence of the Knut nor how it was tied. The question, then, is "Are these two separate knots or is one a variation of the other?" They are used for exactly the same purpose, and the difference between them is the difference between an overhand knot and a half hitch.

Martin

As this article was being written, Ken Palmer, president of ArborMaster® Training, Inc., related that one of their instructors had started using yet another climbing hitch. It is a close variation of Blake's hitch, but it is tied as a closed climbing hitch (that is, it uses a split-tail with two eyes, and both eyes are attached to the carabiner). It is tied by taking four wraps around the climbing line, then passing the tail down and over the bottom leg (bridge) of the split-tail and behind the climbing line. The tail is then tucked under only one of the wraps instead of two (Figure 4).

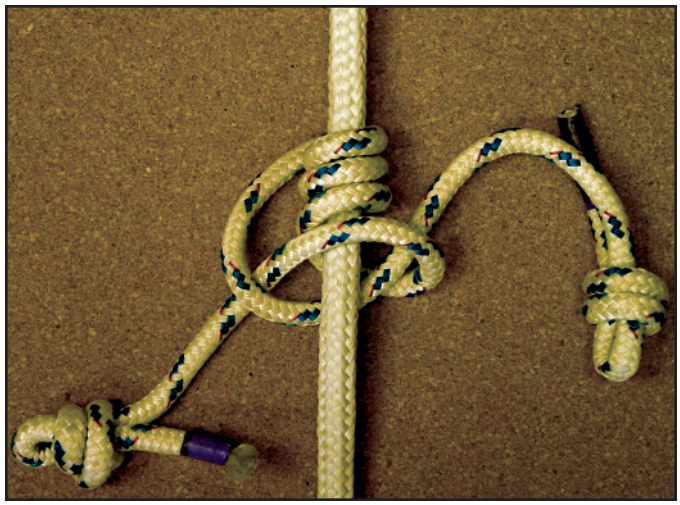

Figure 4. Tying the Martin: The split-tail makes four counterclockwise turns up the climbing line. The top leg is dropped in front of the bottom leg, behind the climbing line and up through the bottom turn.

Although I have used the Martin only a few times, its performance has been promising. The most notable drawback has been that, like Blake's hitch, the part of the split-tail that is tucked under the bottom coil experiences more friction and heat than the rest of the hitch and therefore may be prone to burn prematurely. As with any climbing hitch, one needs to consider the many other variables that may affect the knot's performance. The name Martin (accent on the second syllable) comes from the instructor who has been using it. Ironically, he thought that he had been using a Knut.

Arborists tend to think of climbing hitches as either "new" or "old." In reality, these knots are either "old" or "older" and have been used for years in different fields and different applications.

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