



*A GRCS (Good Rigging Control System) paired with double-whip tackle is utilized to remove a large storm-damaged section of a red oak in 2009. Unless otherwise noted, all images courtesy of the author.*

*By Mark Chisholm, CTSP*

**T**ree-removal rigging may be the least-understood discipline in all of tree care, yet it is one of the most called upon in our daily tasks. Some of the first jobs ever completed in the history of arboriculture involved removing dangerous trees before they failed. I would also argue that it is the most dangerous part of our profession and, therefore, deserves plenty of time and attention spent perfecting our methods during our training and throughout our careers. The alternative is, at best, less-effective work practices and, at worst, could have fatal consequences.

#### **Blending old and new**

When I entered the industry at the young age of 12, I can assure you things were different. Truth is, the majority of the ma-

chines and tools we now employ on every removal site had yet to be invented. Tree rigging blocks, rigging rings, dead-eye slings and even a GRCS (Good Rigging Control System, a tool I credit so much of my creative growth to) were not available when I started as a tree worker. Even so, somehow the work got done! This should tell us all that there are plenty of solid, time-tested techniques that could help us become better at what we do today should we be open to learning them.

What has suited me best in my many years of dealing with challenging removals is the ability to freely draw on many techniques and skills I've acquired from both early years of my being mentored by great riggers and using that knowledge to create my own new solutions. I am not only talking about becoming faster or making more money; this ability has

helped me remain safe in situations I can almost certainly say could not have been accomplished without this level of creativity. Many jobs have been handed to me and my team with other companies having passed on the job due to their inability to find a plausible solution, at least one that did not involve property damage or personal injury.

#### **Building the framework**

Decision-making is at the core of proper rigging. Without the ability to make sound and practical choices, there will undoubtedly be plenty of opportunity for mistakes and damage. To avoid making poor decisions, we must first have a vast amount of knowledge we can draw upon when the situation is less than cliché. This framework involves understanding the science behind what we do and having strategies



that are practical to work with.

One of the most important concepts I learned (and wrote about – see “Engineering a Tree Removal” in the archives of Treebuzz.com) is being able to direct force in the best possible way for stability by using rope angles (see Figure 1). When we utilize more than one rigging point in a tree, we can create an angle that will push the force into the length of a stem rather than bend the stem, taking advantage of the wood’s natural columnar strength. When we do this, we can have less movement in the canopy, back up our primary anchor point through load sharing and reduce the possibility of anchor failure. This is not to imply that we need to do this in every rigging scenario, but to show that it’s good to have that knowledge to pull on when the situation calls for it.

### Choosing methods

Success day in and day out is dependent on many things, including what methods we choose to remove the tree in question. When I first learned about speedlines, I couldn’t wait to use one on a job! I had a tree that was not very close to the processing area, and decided to impress my foreman by zipping the brush right to the chipper and taking the hardest part of the



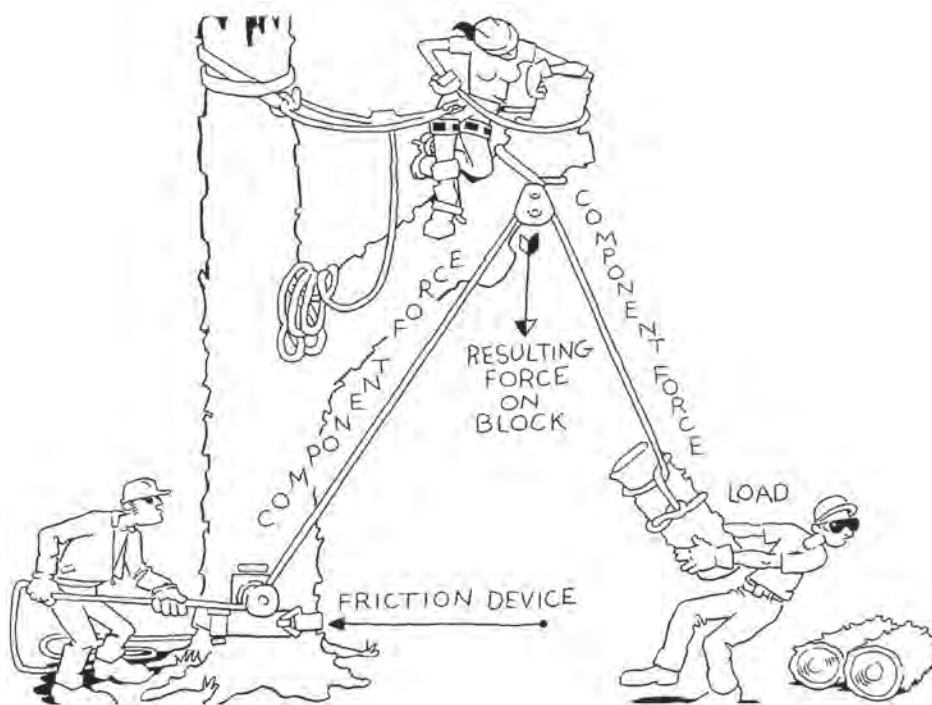
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job away – brush dragging. The problem was, this was the wrong technique for this site. Not only did it take more time, since not one of the team had ever tried to run a speedline from either end, but I also had

five people on the ground ready to work. This was a very powerful lesson for me personally, which pointed out the need for a phrase I later created – “Right tree, right technique!” I did not give up on speedlines and later used them in some extremely necessary ways, which reinforces the need to choose wisely.

### The day I thought I created a new system

I was sent to remove an uprooting locust tree one sunny day in the early 1990s, one that changed my whole approach to rigging trees, especially during storm clean-up. The tree was nothing special in size or situation. The way I was taught to complete these trees was to first stabilize the tree (like using a neighboring tree to guy it) and then piece it out in small sections. We did not have mini loaders, a GRCS or many of the other tools I now bring to this type of party, and so I devised a new plan. With two ground workers and one Port-A-Wrap (thanks for inventing that, Scott Prophett and Norm Hall!), I was limited to their collective power to pull this tree back upright into a larger locust tree. In my plan-development stage, I thought I could gain twice their power if I did things a little differently and anchored a pulley



**Figure 1.** Using rope angles to disperse forces in rigging. This sketch by Bryan Kotwica originally ran in an April 2000 TCI Magazine article, “Engineering a Tree Removal,” also by Mark J. Chisholm.





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to the falling tree, tying the end of the line back into the host tree.

The concept here was to use mechanical advantage by incorporating a pulley and thus creating a second moving part of the line anchored to the load. My team was able to lift the tree back up and then lower the whole tree in a vertical manner, processing the wood as it came down. It was indeed a very effective and efficient way to remove the tree. I relished the fact that I had come up with a brand-new way to attack trees, only to later find out that sailors had been using this method on ships for centuries and even had a name for it – double-whip tackle (DWT). Though I was disappointed when, once again, I found out my technique was not really new, just new to me, this one day of experimentation advanced my capabilities to tackle the really tough situations later on.

Learning and creating new strategies for attacking difficult scenarios becomes even more powerful when you learn to manipulate or adapt your methods. For example, I “created” this DWT concept to allow us to lift heavier objects with less power, and soon learned to adapt it to allow for lowering larger weights that

would otherwise strain the rigging gear and anchor points beyond their working load limit (WLL). The benefits of using DWT in reverse reduces anchor stress and adds a second leg of rigging line to support the weight, thus doubling your WLL for the rigging line. And when adapting this method one step further to block out large sections of a tree, we can even create a gentler ride by adding more rope into the system to allow for better lowering adjustments and more elasticity. Adaptation can be incredibly effective in compounding your list of options, which will certainly pay dividends.

### **Drop it ASAP**

On every single tree-removal site I work on, one simple philosophy remains consistent – drop it *as soon as possible*! That means do only what is necessary to make the tree fit in the space allotted. I don’t care if it is a crane job, a rigging job or a felling job – they all get dropped ASAP. This not only increases productivity, it increases safety in that you are not making unnecessary moves, which at the very least reduces fatigue.

Tree removal is possibly the one part of tree care I thrive in the most. I say this

because experience has taught me ways to deal with jobs so many other arborists feel are too risky to complete. Learning techniques and creating my own throughout my career has helped me address some of the most hazardous situations in a manner that does not raise the risk beyond an acceptable level. And, if there is only one message in everything I’ve written here that you take with you for the rest of your career, it should be this – never cross below the appropriate level of safety in order to complete a job. Your life and those of your crew are too valuable.

*Mark Chisholm, CTSP, is director of operations with Aspen Tree Expert Co., Inc., a dual-accredited, 33-year TCIA member company based in Jackson, New Jersey. He is also a spokesperson for Stihl Inc., and an ambassador for Teufelberger and Kask.*

*This article was based on his presentation on “Up-to-Date Rigging” at TCI EXPO 2019 in Pittsburgh, Pennsylvania. To listen to an audio recording of that presentation, go to this page in the digital version of this issue of TCI Magazine online, under the Publications tab, and click here.* 