

Archery Focus

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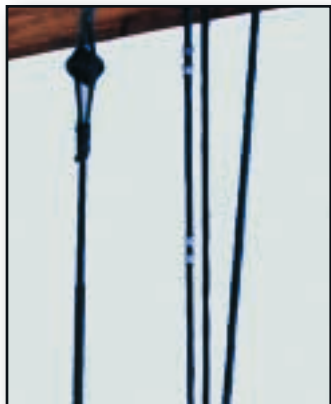


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COVER ART
BY
CLAUDIA STEVENSON
BASED ON "EROS" BY
JACQUES CLÉMENT WAGREZ
(1846-1908)

Archery Focus

m a g a z i n e

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EDITORIAL

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Another Year (and They're Back!)

Weren't we supposed to be in flying cars by 2007? With robotic servants? It seemed that was the promise in the 1950s. In the 1950s, though, we were still shooting aluminum arrows out of all-wood bows. No one forecast carbon fiber composite arrows and risers and all of the geegaws we have today, so I guess it all balances out.

I have to share with you the story behind the cover. Claudia has had the concept behind this cover for at least five or six years. Some of you "veterans" might remember the poster Bear Archery did with Native Americans armed with compound bows. Well, Claudia has had this fixation about Cupid (Eros in the Greek). Cupid is only a demigod, so he isn't perfect and could benefit from some of the modern refinements to his archery. So, I have been collecting Cupid art, along with photographs of Cupid statuary. And she is not done yet; keep an eye out next February.

Like many of you I am preparing for the big 'Vegas Shoot. This will be the first time I will actually compete there. Look for me with the Barebow crowd.

They're Back! This issue has some real treats in it. Imagine being able to sit down with Rick McKinney and talk arrows—FITA arrows, 3-D, hunting arrows, the whole gamut. Well, you are in for a treat: see "On Arrows" by the inestimable Mr. McKinney on p. 4. One person does not make the "They" in "They're Back!," though. The other surprise and delight is the return of Don Rabska to these pages (on p.8) writing about time. Please realize that these two gentlemen are two of the busiest people in all of archery and we are very pleased that they took the time out of their busy schedules to write for us and you.

And, don't tell anyone, but Vittorio and Michele Frangilli are working on a second book (*Heretic II?*) and promise to send in several articles this year that highlight some of the major points to be made in the book.

There is a great deal more packed into this issue—John Vetterli writing about balance (in your archery, in your life!), Van Webster writing about what you can really expect from young archers, Tom Dorigatti writing a shocking article on compound bow mythology, and more by Lorretta Sinclair, Lanny Bassham, Jason Butler, and Leighton Tyau.

Enjoy!



Rick McKinney

The Elite Archer

On Arrows

As more and more companies are attempting to build arrow shafts it gets more and more confusing as to what makes a good arrow. Since most companies do not actually build their own arrows and others who are building arrows are not archers of any length of experience, it becomes more and more critical to explain the mechanics of an arrow and why it is important to choose arrows that are truly the quality you should expect.

There are three specific areas that determine a good arrow: weight, spine, and straightness. These three aspects are discussed by many, but it appears that they are a little misunderstood. Let's dissect each one and determine what makes them critical to good performance. Obviously, we could go further in talking about other reasons for good arrows such as surface finish, durability, and ease of use (e.g. bonding adhesion and pulling out of targets), but we will stick with the areas that may be difficult to assess without proper equipment.

Weight

Since weight is the easiest measure for most consumers to determine accuracy of an arrow, companies focus their attention on it. Let's face it, anyone can purchase a simple grain scale and then check out the weight of each arrow. However, the weight of an arrow shaft only gives you a hazy picture, at best, when you have to add glues, vanes, nocks and points/broadheads. How many people

weigh their broadheads? When you switch broadheads, do you really think they are exactly the same weight? However, the weight of the arrow shaft is supposed to be critical? To a point, yes, but if you learn to weigh the broadhead or points and the complete arrow with vanes, nocks and inserts installed, you can get a dozen arrows close to two grains apart with no trouble at all.

But, I am getting ahead of myself. First let's determine how much weight deviation affects the impact point of arrows. About 15 years ago, I ran several tests to see how much can you be "off" in weight and still impact the same at 90 meters (approximately 99 yards). Since 25% of your performance was determined at 90 meters in the Olympics, it was a critical part of the game. It was determined that with a recurve bow, shooting fingers, and with an arrow speed of 200 feet per second, 1 grain of weight difference gave you an estimated 1 inch (2.5 cm) difference at 90 meters. Now this is with some extremely accurate people. Let's try to put that into today's equipment. With average compound bows giving you 250 feet per second (fps) arrow speeds, or more, the drop is less. Also, using a release aid gives you more consistency in speed as well. Thus, it is estimated that the drop is about 0.5 inches at 90 meters! The next step is to consider the average shot made for hunting. This is a bit under 20 yards for most! This would mean that a one grain difference would cause the arrow to deviate at most 0.1

inches. This does not include gravitational pull, air resistance nor aiming capabilities which when added all together are 10 times greater at 90 meters!

Working with scientists at the Olympic Training Center in Colorado Springs at that same time we determined that one millimeter of movement of your sight pin gave you a one inch deviation at 90 meters as well. How many people can hold a bow without moving it 1 millimeter? Only a machine can do that! And yet, some people are claiming that a one-grain weight difference of an arrow can cause many problems—only psychologically, if you believe them! Jay Barrs captured the silver medal at the first World Indoor Championships with total arrow weight deviations of 9 grains! He kept his arrows consistently within a one-inch diameter circle for over 120 arrows. Let's see, he was using a bow that was giving him a speed of less than 200 feet per second, a recurve, with fingers at near 18 meters (19.5 yards). Oh, by the way, the guy who beat him was the next Olympic Gold Medalist, Sebastian Flute.

“We determined that one millimeter of movement of your sight pin gave you a one inch deviation at 90 meters . . .”

A simple test to evaluate the effect of arrow weight is to take the heaviest and lightest arrow in a group of 12 arrows. Without knowing which is the heaviest and which is the lightest, mark them as 1 and 2. Then go to 20 yards or even 50 if you want to and shoot them. Plot their impacts and do this about 5 or more times. Then go weigh them to determine which one is the heaviest and which is the lightest. Usually, if the arrows are even 7 or 8 grains different, you will probably not notice much impact difference at 50 yards, unless you are one of the top 50 archers in the world. Thus, the gimmick of weight deviation is just that, a gimmick to scare you into believing weight has a huge difference on impact. You can't aim well enough to discern the weight differences!

Straightness

The second most highly talked about aspect of arrow shafts that many manufacturers push is straightness tolerances. It's funny that several years ago, when there were no carbon arrows, arrow straightness was constantly being drilled into our heads—how important it was to have very, very straight arrows. This may be true with

aluminum and aluminum and carbon mixed arrows, but when it comes to all-carbon arrows it is not as factual. In the late 1980s AFC and I ran tests to determine how straight an arrow needs to be in order to carry a 3 inch group at 50 meters (55 yards). We used a recurve bow, finger release, with an arrow speed of near 200 feet per second. We found that 0.010" T.I.R. (Total Indicator Reading) was the maximum in order to keep a three inch group at this distance. Although were you to hand spin a 0.010" T.I.R. arrow you would freak out, it proved to me that the impact point is the key, not just physical observation of the arrows. Thus, if you shoot an arrow of ± 0.005 ", you actually have a 0.010" T.I.R. and it will group exceptionally well. However, those 50 top archers of the world will argue on this point, and rightly so. They are the "eight hours per day training" athletes who demand accuracy of the highest nature. Yet, over 90% of the archery population will not even notice this deviation—I should say that they may use it as it really is, an excuse, and not a real reason for poor performance!

There are many ways to determine straightness and since there is no agreed-upon standard for testing this in the industry, it makes it very difficult for you to determine what companies are really saying in their advertis-

“. . . how many people can hold a bow without moving it one millimeter? Only a machine can do that!”

ing. Most give you a number but may not state that it is a T.I.R. If you see a plus or minus type statement, it means that it is half of the T.I.R. Thus a ± 0.003 " is actually a 0.006" T.I.R. Now, you really need to know at what distance they measure this reading. Some use a 14" gap when taking the reading while others use 28", and still others anything in between, thus again you need to find out just what they are really stating. Straightness has some effect on shooting performance but not as much as one would think.

The question still comes up about why straightness in a carbon shaft is not as critical as straightness in an aluminum shaft. Let's look and see why aluminum straightness is so important. Most of you are aware that arrows vibrate when they are launched. When you have a straight arrow, the frequency of that oscillation is fair-

Continued on the Next Page

ly consistent and the impact points are very good. However, when the arrow becomes bent, the frequency of the arrow changes, thus causing the oscillation to change as well. This causes bent arrows to not impact in the same place as straight arrows. Arrows that are bent and straightened are affected, too. Look at your knuckles. There is extra skin on top and creases on the bottom. This is because when your fingers are bent the skin has to stretch at the top and compress at the bottom. An aluminum arrow, when bent, is stretched at the top of the bend and is therefore thinner there.

“Spine is probably the most important part of the arrow shaft . . . and the most ignored.”

When the arrow is straightened, it is bent backward, stretching the other side. Thus the “repaired” bend is not quite the same thickness and does not oscillate the same as the rest of the shaft. Shafts repeatedly bent and straightened will be of less spine than the new shaft.

The all-carbon arrow cannot be bent. It can be bowed but not bent. A straight all-carbon arrow and a bowed all-carbon arrow have the same launch frequency. Thus, the frequency harmonics do not change and the impact of the arrow does not change. Now, can we say if an aluminum arrow is slightly bowed, it would have the same frequency as a straight one? Yes. However, bows very seldom occur in an aluminum arrow. You may have heard some people commenting that depending on where the arrow is bent it still may fly into the group. Generally this is a “bowed” aluminum arrow.

Does an aluminum/carbon arrow have the same characteristics as an all-carbon or a 100% aluminum arrow? It has more qualities in common with the aluminum arrow. Thus, keep an eye on those aluminums. You can straighten all-aluminum arrows, but it is almost impossible to straighten a carbon/aluminum arrow, at least by the average person.

Spine

Spine is probably the most important part of the arrow shaft . . . and the most ignored. I presume the main reason for this is because it is the hardest for a manufacturer to get right and keep consistent. Also, it is one aspect that

cannot be measured very easily by the average person. Let’s determine what spine is and not confuse it with spline! Spline is what the fishing industry uses in order to get sort of the “back bone” of the fishing rod. This is sort of an overlap of material in order to get a stiffer side to the rod. Keeping this stiff side on the upper side of the rod makes it easier to handle when reeling in that big one! In archery you do not want a spline! You want an even, consistent spine all the way around the shaft (circumferentially). Spine was established in modern times by Easton who uses a 29” test shaft. You place this shaft on two posts measured out 28” apart. You then place a 1.94 pound weight in the middle of the shaft and measure how far the arrow shaft drops down. This gives you a measure called a static (non-moving) spine. Typically at 0.400” deflection is a 400 spine, a 0.600” deflection is a 600 spine, and so forth.

When an arrow is launched from a bow, the arrow flexes and oscillates (controlled by what is called the dynamic spine). This flex needs to be a specific

“It is far better for the arrow to be too stiff than too weak.”

amount and stay consistent among all the arrows in order to carry a group. If the arrow flexes too much it becomes exceptionally critical. The smallest mistake made by the archer increases substantially if the arrow is too weak. If the arrow is too stiff it is not as critical, but does not give the best possible grouping. Thus it is far better for the arrow to be too stiff than too weak. This is why you may note that some companies fudge on the size arrow recommended towards the stiff side. This is far better than being on the weak side. Since the arrow flexes upon being launched, you would want it to flex the same. If the arrow is too stiff, it will favor the left side while if the arrow is a bit weak, it favors the right side. Thus you will get lots of rights and lefts if you have lots of inconsistent spines in your arrows. And that is exactly what you will get with many of the arrows on the market today. Since most archers do not know how to measure spine, they are unaware of why they are not grouping so well. Also, you may have noted that most arrows that are sold in groups of a dozen, only 6 to 8 arrows will group and the rest will not. Again, this is due to spine inconsistencies more than anything else. Sometimes you can get a few more arrows

to group by moving the nock around the shaft a little in order to find a spine to better match the rest of the group.

Many companies do not keep very tight tolerances on spine consistency. This causes all types of problems for archers and for dealers. Of course, since most archers are not very good or accurate, they do not realize that the arrow is making them look even worse than what they really are. According to tests that I have been involved with, the tighter the spine tolerances, the more accurate the arrows become. Keeping them 0.005" plus or minus range in deflection (if the spine for a set of arrows was, 400 for a deflection on the spine tester of 0.400", the range would be from 0.395" to 0.405") is what was set years ago with aluminum arrows, whose accuracy has been proven over the years. Yet, some companies have spine deviations of over 0.040" plus or minus! Thus, it would be like putting spines of 2113, 2116 and 2119 aluminum arrows all in one set and expecting them to group well. It will not happen, obviously.

Part of the reason for having so many spine inconsistencies is due to the materials used. Some companies look for the cheapest product they can find in order to keep costs down. This causes huge spine deviations. Also, how the arrow is manufactured will cause spine inconsistencies. Most companies put the spine determining material on the outside and then grind it down to get as close to the weight they can get. However, this causes spine inconsistencies and breaks down the fibers that actually determine the spine. Cutting the materials requires tremendous precision in order to get the exact spines and many companies use something like a paper cutting device to get their patterns. This creates a great deal of spine inconsistencies as well. It also gives them a "spline" as talked about above.

All Together Now

Now, if you consider the inconsistencies in spine, straightness, and weight, you can see why there is so many discrepancies between arrow shafts. The degree of importance of these three aspects is determined by what material is used to make the shaft. With aluminum arrows, the degree of importance is straightness, spine, and then weight. With all-carbon arrows it is spine, straightness, and then weight. The spine of an aluminum arrow is normally very good to start with. However, this spine breaks down over time (as described above). Depending

on the wall thickness, spines of an aluminum arrow can break down as fast as ten shots! This has been proven time and again by some of the best archers world wide. Although the only American manufacturer of aluminum shafts disputes this, the "proof is in the pudding." Top archers will replace these arrows very quickly without anyone knowing any different. Most all-carbon arrows start to lose their spine over several hundred shots due to wear. As the arrow penetrates the target, the friction microscopically wears down the outer layer of carbon and since most companies have their spine determining layer on the outside, the spine gets weaker and weaker over time. The aluminum arrow breaks down for different reasons. The flexing of the shaft upon impact of the target, pulling the arrow out of the target and the launching of the arrow from the bow continues to flex the aluminum tube constantly and we all know what happens to metals when continuously flexing them back and forth.

Now you can understand some of the simple physics of what happens to arrows and why it is important to examine them carefully in order to choose wisely when purchasing arrows.



Rick McKinney is one of the world's most decorated archers. He was born in Muncie, Indiana where his father was a professional archer and managed a pro shop. His mother and brothers were also archers. Rick won the 1977, 1983, and 1985 World Championships. He won the U.S. National Target Championships nine times, Field Championships six times, Indoor Championships three times and Collegiate National Championships seven times. He has two Olympic Silver medals, 1984 (Individual) and 1988 (Team). His best score is 1352. Rick is currently President of Carbon Tech, a manufacturer of arrows, in Sacramento, California.

Don Rabska



What Time Are You In?

Special Feature

You guessed it, this article is not about world time zones, it is about shooting archery. The “time” you are “in” is one of the most important, but least talked about, aspects of shooting. What this article might help you discover is the time you are most often shooting in.

Are you shooting in the past, the present (now), or the future?

The Future is Now

If your answer to the above question is now, you are absolutely right; give yourself a pat on the back. When shooting, the time you are in should be the present or now, not in the past, thinking about the good or rough arrows you have shot, or in the future anticipating an outcome. Your mind should be only in the present time. If you are thinking about the last arrow you shot, you are not working on the arrow in your bow. The same is true if you are anticipating future events.

If you are thinking that you have five 10s in the target and you only need one more to have a 60, and that is your thought while you are trying to shoot that last arrow for a perfect end, the likelihood of you actually shooting a 60 is pretty slim. The reason is, your mind is not in the same place that it was for the first five shots. You are now playing in the future and that is a dangerous place to be.

Let's examine why we want to shoot in present time. If you speak with any experienced sports psy-

chologist, they will tell you that all top performance is achieved subconsciously. This is also the state of being “in the Zone” as most of us fondly call it. If you have ever experienced being in the Zone, then you also know that it was pretty close to impossible to miss the center of the target. Your shooting was the best it ever was and shooting seemed effortless. So, if you have been fortunate enough to experience the Zone, how do you get back there? That is certainly a big question on the minds of many and of course the harder you try to get in the elusive “Zone,” the farther you are from it.

The Zone is not really a conscious state, but somewhere between conscious and subconscious. It is not actually so much of a thinking state as it is a total awareness state. If you are consciously thinking, then you are probably thinking in the past or future, not in the present.

Here is a little experiment to try (full participation, please). Pinch the skin under one arm at the triceps. Pinch hard enough that you feel a little discomfort (Okay, pain, but the doctor always says “discomfort,” as if it makes it hurt less?). While you are continuing to pinch yourself, ask yourself the following question, is this past, . . . present, . . . or future? I believe the unanimous answer is going to be “present.” You are experiencing this sensation in present time. Sensation is also known as “feeling.” Therefore, feeling has to be in present time. You do

“If you are working only in present time, then there is no reaction other than letting the bow shoot the arrow.”

not have physical feeling or sensation of things in the past or future, but only now in what is also known as "real time."

The "Now" or "Zone" goes by many names, others are "being in the moment" or "being in the present." The importance of being in the present is that your focus must be on what you are doing at the moment you are doing it. You can't be thinking about the cold beer or soda you are going to have after the competition or the big juicy steak you are going to eat. Well, your mind can be thinking about those things, but don't expect to shoot well. Your mind must be on what you are doing, or better, on what you are feeling at the very moment you are in the process of "doing." You should have total awareness of your feeling. If you can do that and block out everything else, then you are "in the Now" and heading into the Zone!

One of the most important lessons I have ever received took about 10 seconds and was from Dr. Dan Landers, world-renowned sports psychologist. One day after com-

pleting a seminar we were conducting for the U.S. Archery Team many years ago, he said to me, "Don, I am going to give you the most important secret in achieving top sports performance! As I eagerly anticipated the next words out of his mouth he said, "That secret is . . . stay in the present

when you are shooting." And as he turned to walk away he looked back and added, "By the way, I didn't say it was easy." He was so right! It is not easy; it takes lots of practice to learn to stay in present time when doing anything. The problem is, we are all trained throughout life to be a type of anticipation machine. We are

constantly thinking of the future or thinking about the past, but rarely are we totally involved in the now.

As I have said in past articles, your focus needs be on two things, while turning those two things into one thing. Since the conscious mind cannot think of two things at one time, you need to meld those two things into one experi-

Continued on the Next Page

"The sight and target will suck your mind away from you and your body awareness. That, my friends, is a major trap to be avoided at all costs."

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ence. That is, look at what you want to hit and, with your kinesthetic sense, feel the motion of the set-up, draw, loading, anchor, transfer and “holding” or control phase (B.E.S.T. system) until the shot goes off, while keeping that connection with the target. The shot does not stop the moment the clicker snaps; it is just the middle of the shot at that point. (One of the problems I see in many shooters is they seem to stop the shot at the clicker. It is like a door closes on the shot at that moment. The door to the target must remain open until the arrow hits the target. Another hindrance to good shooting is by trying to “help” the bow shoot the arrow. When anticipating the shot (playing in the future) and waiting for the clicker to snap, at the very moment it does click, the archer tries to help the bow get the arrow to the target. That instant reaction to the anticipation of the shot will rarely get the arrow in the center of the target.) If you are working only in present time, then there is no reaction other than letting the bow shoot the arrow. There is stillness except for the natural reaction of the body when the draw fingers relax to let the bowstring push them out of the way while the bow hand falls forward toward the target. No “extra” effort, only a natural reaction created by the event.

In the Korean system of shooting, much of the teaching is on feeling the “center of the body,” feeling the scapula positions, feeling the head over the center of the body and feeling the overall awareness of the body to perform the shot. They will also speak about the feeling of “expansion.” Therefore, if your focus is totally absorbed in the feeling or awareness of your sensation of the shot, then how can you be in any time but the present? There is no room for thinking of the past or future because you are totally involved in the now.

Eye focus plays a big part here, too. If you are intently focusing on the target, then you are not focusing on your feeling or awareness. The same is true for focusing on your sight. If you are “aiming” hard, you are hard at work on the wrong focus. The sight and target will suck your mind away from you and your body awareness. That, my friends, is a major trap to be avoided at all costs. The mind, the subconscious mind that is, has to be in control of aiming. It should be anyway, it is the professional at that game. The conscious mind is a complete rookie at the aiming process.

Try the following exercise the next time you are practicing (and in competition). Rather than looking intently at the target or sight, relax your face and your eyes, almost like you are letting your eyelids droop just a bit. Totally relax your focus so that you are looking about half way between you and the target. If you do this and practice it, the target will appear to come closer to you . . . yep, it looks bigger! While relaxing in this way, focus only on what you are feeling through the shot, no “thinking” allowed, just quiet the mind and concentrate on the actual sensation of shooting, not thinking about it.

Focus on what feels “right.” You know when it doesn’t feel right and those are the times you should let down and start again so it does feel right. If you are in the process of shooting an arrow and your mind says, “Hey, my bow hand feels off” or your fingers creep on the string or any other part of your shot does not feel right, then don’t shoot. If you do, you are gambling! If you ever wondered how the

gaming industry could afford to keep building big hotels and casinos in Las Vegas; it’s because they can afford it. Why? Because gamblers rarely win!

Getting Your Feeling Back

Often when we go to tournaments our feeling changes from how it felt in practice. This is because in practice we do not often have a big dose of adrenaline to deal with. One of the physical affects of an adrenaline boost is to heighten our awareness. However, which way do we handle this acute awareness? If we let it “out” then we notice many more things than we are usually aware of. We notice the birds singing, a baby crying, people talking behind us, people laughing, cars on the road, the sound of bow strings and just about any other stimulus that is around to perceive. If we are dealing with all these stimuli at once, then there is no room left in our head to focus on our shot. This is one of the reasons that many archers score less well in tournaments than they do in practice. There are other reasons as well, but this is certainly one of major causes. Now, when we are in this situation, it is very hard to focus on our shooting due to our minds jumping from one thing to another. This is where people laughing behind you might be a bother, or traffic on the street, or any other excuse the mind might look for as a reason for poor shooting.

“If your focus is totally absorbed in the feeling or awareness of your sensation of the shot, then how can you be in any time but the present? There is no room for thinking of the past or future because you are totally involved in the now.”

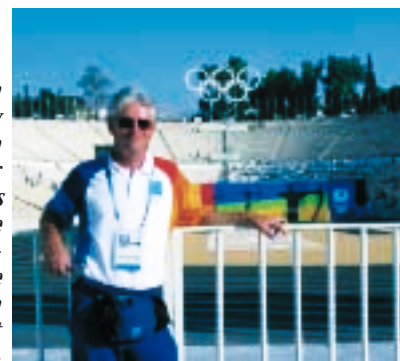
The next time you are in this situation, try getting in touch with your feelings, and I don't mean your emotions. Focus on your body and bring that heightened awareness to bear on you. Turn it into the inside so you are fully and totally aware of you. Bring your mind back inside you and not out in the trees with the birds. Here is the "how to" part. First, focus on your feet . . . how do they feel? Then progress to your legs then, very importantly, the stomach. Does it feel tense, raised a little rather than more relaxed? How do your shoulders feel? What about your hands and fingers? Start concentrating on you and how you feel and you will begin to be aware of you again and what you should feel like. Now work on focused breathing (diaphragmatic breathing). Doing this helps relax your mind and body while you are bringing your awareness back where it belongs. When you are in the Zone, you will notice that your self-awareness is very acute and nothing outside that world exists except you and the thing you are focusing on.

Along this same line of thought, have you ever wondered why people who are sick often shoot really well? One reason is, they don't care! They just want to lie down, get pampered by Mom or their spouse and go to sleep. The other reason, and what I believe is the biggest reason, is they have complete and full awareness of how they feel. They are

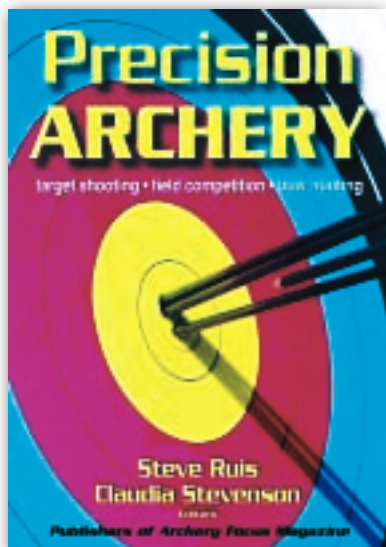
not focused on anything but how they are feeling at that very moment. Nothing else matters, they are simply thinking about themselves and the unpleasant feeling they are experiencing. Of course, not from an ego standpoint either, just perfectly clear awareness of the body with little thinking involved. It is too hard to think when we are sick, but we are sure aware of how we feel!

Sorry to be away so long . . . until next time—Good Shooting!

Don Rabska is an internationally renowned archery coach and a technical advisor for Easton Archery. He is the Chairman of the FITA Technical Committee and Executive Director of the Easton Sports Development Foundation. He is currently heading up a new Olympic Archery in Schools Program through the ESDF and developing B.E.S.T method teaching materials for that program including DVDs for both beginner and advanced archers and teaching guides.



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Lorretta Sinclair

The Art of Staying Focused When Things Go Terribly Wrong

Special Feature

A friend once remarked that watching archery was “as much fun as shopping for a baby stroller.” Okay, color me weird, but I liked shopping for baby strollers, and I like watching archery. I find it to be intense, exciting, and full of life lessons.

As an observer, not an archer, I have watched the grace and skill of archery as well as the anxiety, stress, and sometimes poor sportsmanship of competition. I have learned much as an archery mom, a coach, and an observer.

I have watched young archers come off the shooting line in tears from sheer frustration from things not going well in a competition. I have witnessed a highly ranked JOAD archer drop kick his quiver across the shooting line when he lost an Olympic Round match, and I have been surprised as a world renowned archer kicked a post and uttered words we won't repeat here, when he shot through the clicker and scored a 6.

I have also seen grace under fire. I have observed an archer with jet lag shoot the wrong target and calmly remark, “Well at least they were all 10s.” And observed hard fought Olympic Rounds and knew that the ‘loser’ was disappointed but impressed by the handshakes at the end of the matches. In Las Vegas at the World Archery Festival, I watched a young

recurve archer as he maintained the art of staying focused when things went terribly wrong and learned yet another lesson from archery.

On day one, by end seven, this young recurve archer had shot 21 out of 21 yellows. On end eight, he seemed to struggle having to let down two times. On his third let down, the arrow slipped from his hand and landed in another competitor's target. As I watched the young man, I knew that this could be disaster or triumph, and only he would tell the tale. There was a brief look of ‘what was that’ that crossed his face, and then he finished the end with two nines. As he walked back to the sitting area and approached his coach, he asked, “Where'd the first one go?” and when the answer was, “It's a miss. It's in the other kid's target,” the reply of “Oh well, the next two were good shots” was the answer I hope to hear from my young archers.

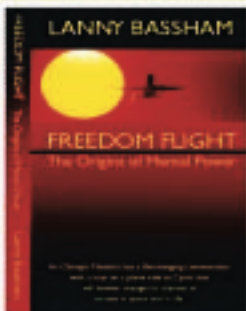
It was an attitude we should all strive for when things go wrong and we can't undo them. As the archers went down to score their arrows, I again watched, thinking that this young man could still lose his focus after the zero settled into his thoughts. I was impressed as he returned to the shooting line, giving no hint that he had just given up his chance to finish in first place that day. His posture, his smile, gave no clue to what had just happened. With six remaining arrows,

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he stood up to the pressure of his mistake and shot, two 9s, and four 10s. Grace under fire from a kid.

There have been many books and articles written on how to handle competition pressure, how to focus, how to deal with problems that could throw you off your game. Many seasoned competitors find it difficult to put into practice the wise words that they read. Many never master an important part of competition. Watching archery may be boring to some, and it may be difficult and stressful if you are an archery parent. It can also be full of lessons in life as well as archery, sometimes learned at the hands of a kid who shows that the art of staying focused can be achieved.

Lorretta Sinclair is the mother of *Dakota, Clarke, and Barrett Sinclair*; *President of Clarke Sinclair Memorial Archery Scholarship* (www.clarkesinclair.org) and *collegiate division publicist* (www.collegiatearchery.org).



Tom Dorigatti

The Triple-Tape System for Improving Anchor Draw Length Consistency

Do You Think Your ‘Hard Stops’ Are Really ‘Hard Stops’?

Many of the cams being utilized on today's bows have gone away from the soft, smooth, long “valleyed” systems of yesteryear in favor of higher let-offs and thus higher speeds. Few manufacturers even offer let off percentages below 65% anymore, and those that do have it only as a special order option. The term “hard cam” is more common, along with others such as “hard wall,” “solid stops,” or “short valley.” Along with this, we shooters of today are thinking that since our bows have “solid stops” and a “hard wall,” then we don't have to concern ourselves much with watching or working for tighter consistency as to how far we draw back our bows into our anchor point. We figure that since we have the hard wall, then that means if we pull the bow back to the stops, we are consistent and don't have to worry about it.

This article is not going to deal with the fact that most shooters of today have their draw lengths set from ½ inch to 2 inches or more too long. It assumes that you already have your draw length very close to where it is supposed to be and that the bow is already tuned. It will deal with, however, the fact that hard cams are not as easy to be consistent with as we think. It will also offer an explanation of how to set up a visual reference to make yourself more consistent with your draw back to anchor draw length. I call it the “Triple Tape System for Improving Draw Length Consistency.”

Four Questions

There are four important questions I will pose at this point:

1. Do you know how close you are to being at the same point in the draw cycle of your bow when you hit your anchor point or full draw each time?
2. Do you know how much “room” you have in your cam system to ‘wander’ from the short side to the long side to the absolute limits of how far that cam can be drawn back to?
3. Do you know if you are at your “sweet spot” or if you are really coming in too short or perhaps too hard into those stops?
4. Do you know that this can be set up to be more controllable than simply by feel alone for little or no cost and with little or no adjustment to the bow (unless one is really needed).

Since most of today's bows are no longer of the round wheel/soft cam variety, we think most bows and cam systems have very little room for error in how far we pull back the bow to get to our anchor. Few things could be further from the truth! We think we have our draw lengths set correctly and that everything is peachy keen. We tend to put that part of the matrix out of our minds. However, upon further investigation I've discovered that even with a hard cam and a “hard stop” bow, a person can and will vary their draw length control by as much as ¾” . . . and some shooters, even more than that. What I mean by this is simple: we all can come *into the stops*, or we can come *INTO the stops*, or we can come *HARD INTO the stops*, or we can pull until we cannot draw the bow any farther. In addition, we can do anything in between any of these at any time or

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on any shot and not even realize we are doing it. What I discovered in this recent research is that average shooters vary the most, and better shooters vary the least. This isn't rocket science and should be entirely obvious. According to the video *Secrets of the Pros*, (I paraphrase) "Draw length is probably the most critical aspect for accuracy control." The not so obvious is how much this variance really is among the bow brands, cam types, and among different levels of shooters; even when time is taken to try to get it right!

I won't bore you with the data and tables, since that really isn't the focus of this article. However, there are some key elements that I need to stress with regards to the cam type, the cam size, and how aggressive the cam is. What I discovered isn't rocket science, and it makes complete sense.

1. **How Much Variance Can you Get out of the Cam Itself?** What I have found from extensive checking on my own equipment arsenal and from several cooperative fellow shooters, clearly shows that even the hardest cams can be pulled from softly into the stops back to where you cannot pull it any further. This can and does vary a lot more than one would think. One can easily ascertain this on their own bow in a matter of minutes by simple use of a measuring arrow and an assistant to mark that arrow from any common point of reference. I would

recommend the True Draw reference point transfer I recommended in an earlier article. If you haven't done this with your bow, I highly recommend that you do. What you are going to find will shock you!

Continued on the Next Page



Photo 1 A typical draw variance for a 29" draw.



Photo 2 A typical draw variance for a 27" draw.

- *Conclusions on the Variance*

- i. The larger the cam (the longer the draw length) and the less aggressive the cam, the more the shooter can vary the distance pulled “into the stops.” Of course, this was anticipated, but I didn’t expect the numbers I got. This number ranged from just over 1¼” on the larger, less aggressive cams to just under ¾” on a 27” cam (which is the shortest draw length that I measured). The ¾” variance also is pretty close on a very aggressive cam with a very short valley.

- ii. I also found that the norm for the shooters I checked, including myself (on four different bows and three different cam types), the initial anchor point draw length variance was from ¼” to ¾”!

- 2. ***How Much Do You Vary Your Anchoring Draw Length?*** Most of the archers that I have approached with this question haven’t a clue. Some didn’t seem to even care. Most that cared told me that since their bows were hard stop cams and that they set their draw lengths up to the stops, they figured they probably weren’t varying very much at all. When asked how far into the stops they drew, most couldn’t tell me, they just said “Where it feels good.” Those that I measured were appalled at how far they could vary from short to long, and even more by how much they were changing either from shot to shot for from the beginning of an end or round to the conclusion of the end or round! It was a real eye opener for them to see that they were running anywhere from ¼” to ¾” or more variance when all the time they thought that they were coming to the same point in the draw cycle every time by “hitting their anchor point and going by feel alone.”

- *Conclusions Concerning the Shooters’ Thoughts on Their Variances*

- i. First off, most thought they had draw length under control to a very small amount. They had been misleading themselves!

- ii. Most good shooters’ anchor point “draw lengths” varied within a reasonably consistent range no matter which bow or cam style was involved. But on the average it is nearly ¼” difference for a good shooter and ½” or slightly over for the average shooter.

- iii. This difference doesn’t vary on every single shot, but it does vary depending upon the following (and probably other variables as well):

- 1. How soon into the round you are. Early in the round, people tend to overdraw.
 - 2. Which arrow in the “end” you are shooting. The first arrow is normally drawn farther than the last arrow of the end.

- 3. Indoors, whether they are shooting the high target or the low target and how high those targets are from the floor!

- 4. The time of day you are shooting. Oh, yes, if you’ve worked or done a lot of activity that day, you tend to come in “short”. If you are fresh, such as in the morning, then you tend to come in long for a longer period of time during the “round.”

- 5. The shooters never had a “sense” that they are really varying, since most are going by feel alone along with the anchor point and a few other potentially variable parameters. The bow feels the same regardless. But if you would take the time to actually mark the arrows, a different story will emerge all together.

So, now that I’ve prepared you and hopefully raised the questions in your minds as to just how consistent you are with your anchor point draw length, let’s go into setting up a Proactive system to help control this issue and to minimize your variance with a visual cross-check. In addition, this system will help teach you the muscle memory quickly and still give you a visual cue to use at a quick glance as a double check on those tough uphill, downhill, side hill, and other shots with poor footing or body positioning outdoors.

The Tape System for Improving Draw Length Consistency

This is not new nor did I invent it. It has been around since the mid-1970s, in the days of the wheelie bows, or round wheeled “soft cams.” There are many variants of this system that were used in the past. It was pretty much abandoned by most shooters with the advent of harder-cammed bows, solo-cam bows, and the development of hybrid cams. Again, as mentioned before, people don’t see the need for watching their anchoring draw length, since things feel like they are in the stops so it is “good enough.” Most set themselves up to where they figure they are right on, and practice from there, never thinking about a potential source of variance which can be a potential point or X-robber for them.

Most people who use a “tape system” use two tapes, one on each cable and either they set them to draw even with each other (less precise) or they set them to draw the top of one tape to the bottom of the other tape (more precise). There was even a set of “cable stops” back in the early 1980s that one could place on the cables as a “draw stop” to help control the anchor point draw length. You simply set the stops to come together when you were either in the center of the valley or at just the back of the

valley and pulled to that point. However, most of the time, we found ourselves coming off those stops, or that they would come loose or slide down the cables with use. Those didn't last long. Once people started setting themselves up to the wall or back of the valley, then creep tuning came in and it became apparent that absolute draw length control, especially indoors wasn't as critical . . . if the bow was properly creep or tiller tuned. Outdoors, however is an entirely different story. Nonetheless, people still shoot mostly by "feel" and pulling to somewhere into the stops.

The Triple-Tape System What I have done, however, is what I feel is an improvement on the tape system and one that is much more accurate to apply and use. It costs only the use of three or six pieces of $\frac{1}{8}$ " wide masking tape about 4" long, a little time, and some super glue or "Fletch-Tite"TM. Instead of only two pieces of tape to align, I recommend the use of three tapes, two on one cable, and one on the opposing cable. The idea is to space the two pieces of tape apart just a little wider than the single piece of tape on the opposing cable. Then, when you are at the "sweet spot" on your draw length anchor, the single tape is aligned between the two pieces of tape on the opposing cable. To learn the muscle memory, one simply draws back the bow to anchor, visually checks to make sure those tapes are aligned correctly, sets their shot sequence (back tension), and finishes the shot. The telltale signal that you are "losing it" is a tightening of the release hand or forearm. A quick glance at those tapes at this time will show, more than likely that the single tape is now aligned with the top tape, which is an indication you have "crept" at least $\frac{1}{4}$ ". Some people set up to draw with the single and bottom tape aligned halfway and come into the "in between position." This is fine, but remember that any loss of tension must be regained.

How to Set up the Tapes

1. Cut two pieces of masking tape (it works the best in most cases) $\frac{1}{8}$ " wide and about 4 inches long. The wider you make these tapes, the less accurate your consistency will be. You will be cutting all three tapes from the same 4" long piece of masking tape so that the widths are identical.
2. If the cable guard is above the bow handle, then it is best to mount the single tape on the down cable about $\frac{1}{2}$ " to $\frac{3}{4}$ " below the cable guard. This insures that this tape isn't disturbed or moved by the cable glide or roller guides. It also insures you get the matched tapes

Continued on Next Page



Photo 3

Photo 3 View of triple tapes on single cam bow.

as close to the rest level as possible. To mount the tape, simply wrap it tightly about five or six layers thick around the cable, pressing it firmly with your fingers. Do not glue it into place just yet.

a. For “shoot through systems” or bows with the cable guard below the handle, strive to have it set so that the down cable aligns as close as possible to the height of the peep at full draw. This will give you a view of the tape alignment in your peripheral vision as you come into your scope, which is a big help.

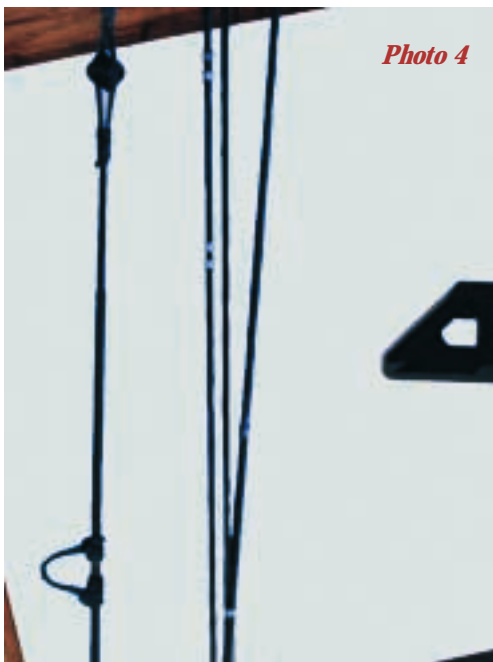


Photo 4 View of triple tape on a shoot through bow.

3. Draw back the bow to what you feel is the correct point and have someone mark the opposing cable (up moving cable) or in the case of a single cam, the back side of the bowstring, right where the single cable aligns. Since you have all three pieces you will use the same width, mark the opposing cable for the full width of the single piece of tape.
4. Place the two tapes on the “up cable” or back side of the bow string where you have it marked. Again, do not glue them down just yet. Five or six layers is plenty, just be sure to firmly roll them tightly onto the cable.
5. Draw back the bow to your “normal” anchor draw length and check for proper tape alignment. It is your choice as to which of the tapes to move to get the single tape into the center of the gap.
6. Repeat drawing the bow several times to verify align-

ment and that it is indeed “comfortable.”

7. If the tapes are properly aligned and you are happy, then take either super glue or Fletch-Tite™ glue and coat the tapes and the cable with the glue and let it dry a few minutes. This will hold the tapes in place unless you choose to move them.



Photo 5 View of triple tapes at full draw below cable guard.

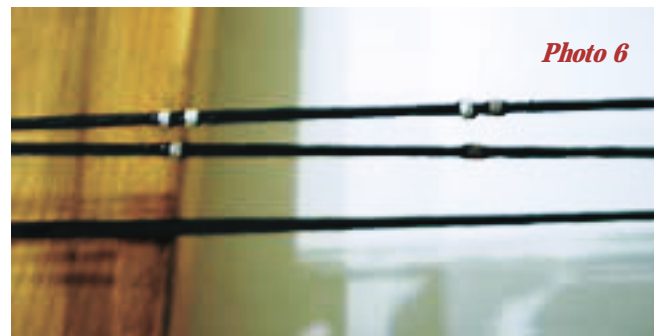


Photo 6 View at Full Draw Shoot Through system.

- a. You want the tapes on a single cam or a bow with the cable guard above the arrow rest to align as close to the rest as possible.
- b. You want the tapes to align on a shoot thru system as close to peep height level at full draw as possible.
- c. If you so choose, use a two sets of tapes This gives you a backup just in case one set moves or you move a set only to find you don't like the new alignment. You can then return the moved set more quickly by simply measuring the other set's distance apart.
8. Shoot this setup for several days, paying very strict attention to drawing those tapes into alignment every single time, time and again, and accept nothing less.

Normally, in a few hundred shots you are already getting used to it. Over the course of a week or two, you will find yourself pulling to those tapes pretty much



Photo 7

Photo 7 View of Draw Variance without use of Tape System.



Photo 8

Photo 8 View of Draw Variance using Triple Tape System.

automatically and only giving them a glance for assurance you are “there.”

9. When outdoors, religiously draw to those tapes! You will find that your consistency and control outdoors on those uphill, downhill, side hill, and poor footing shots will improve dramatically. You will have significantly improved draw length and anchor control no matter what the situation.

Conclusion

What I have explained is not something that takes a doctoral degree to figure out. It isn't new. However, it is a quick and easy way for you, the up and coming shooter, to improve upon your anchor draw length consistency and gain better control of your cam system. This method will also help get you to find that real sweet spot in the draw cycle (your personal draw length sweet spot) much quicker and easier than just shooting groups and shooting by feel alone. You will achieve a better sense of muscle memory and will have the additional benefit of a visual reference for a cross check.

This might not necessarily turn a 555 shooter into a 560 shooter. A professional archer who is already shooting at that level may not benefit either. However, take a close look at Photos 7 and 8 again. Which would you prefer to

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have happening during your draw and shot sequence? What do you have to lose by trying this “triple tape system?”

Tom Dorigatti has been shooting archery since he was 12 years old. He has been bowhunting and in competitive archery for nearly 40 years. During his archery career, Tom has competed or shot archery in no fewer than 38 of the contiguous United States plus Alaska, Hawaii, the Azores, and Guam. He has won numerous local and state tournament titles and has placed as high as second overall in three different sections of the



NFAA. Tom prefers to shoot in the Unlimited Division, but has recently been learning to shoot a recurve bow FITA style. He is also the mastermind behind the archery puzzles currently adorning these pages.

Kids and Archery Classes

Coaching Archery

A big part of teaching archery is working with kids. Teaching sports skills to children is a different process from teaching the same skills to adults. Adults can learn by transferring information from their left brains to their right. Adults will listen to explanations, read instructional materials, and follow instructions (left brain activities) to learn a skill. Over time, the practice of a skill becomes a sub-conscious (right brain) process. Young children learn by demonstration, imitation, and practice. There is less intellectualization in their learning activities. As they grow, their learning abilities change and become more complex. By adapting the teaching style to match the learner's stage of development, the teaching process improves and the participants are more successful.

Learning Patterns by Age Group

The abilities of kids to learn and implement a physical activity changes with age. Kids under ten years old have limited body awareness. In most cases, they will only understand instructions directed at the positions of their head, hands, and feet. When working with very young children, demonstrate what you want them to do and give them instructions in "head, hands, and feet" language. For example if you want them to line up with the target to their bow hand side, direct them to place their feet on either side of the shooting line and draw a line to the target on which they can place their toes. Even better is to have "foot prints" drawn on the floor for the students to step on to.

Teach bow handling, drawing and releasing to young kids by demonstrating where you want

their head, hands and feet to be at each step. With very young children, a few will "get it" and the majority will not. You can maximize the experience for very young children by keeping them safe and rewarding success. Use long arm guards to protect the young shooters and always shoot at very short distances that insure that the arrow will land in the target backstop. The use of balloons and novelty targets improves the experience for young shooters. There's something about popping a balloon that puts a smile on a kid's face.

Ten to twelve-year olds have increased cognitive ability but will still need more time to master their skills than older kids. Children in this age group will not be very responsive to detailed, wordy explanations. Use demonstrations and modeling to help pre-teen kids gain control of their physical abilities. Don't insist on young students perfecting more complex archery skills at this level, as long as they are not building bad habits that will have to be un-learned later.

Twelve to fourteen-year olds will have much higher abilities to learn more sophisticated body movements. They will be more open to short descriptions and will benefit from plenty of practice. Use archery games to help keep the learning process fun. You can also use some written support materials with this age group. This is an age where self-awareness is coming to the front. Video taping can be introduced at this age as long as the review of the tapes is kept in a positive light. In a class situation, you can ask the class members to describe what things they see that the archer is doing right. Showing videos of top international archers can help young students

model competitive shooting form.

Photos and videos can also be used to demonstrate progress. Keep a photo log of each student. As they progress and improve their shooting form, take the time to show “before and after” photos to the archers. They will soon learn to recognize the achievements they have made as they learn new skills.

Kids fourteen and above have very high potentials for learning physical skills. They also can be easily distracted and bore quickly. Expect a lot from kids of this age. Keep them busy with practice and competition. Use drills and repetitive exercises to build muscle memory. Give assignments that include reading and web searches. Hold competitions often and reward archers both for achievement and improvement. Track their progress with achievement records and reward progress.

To help kids mark their progress, use a student record of achievement card. This card is a pre-printed form with places for the archer’s name and group. Each class session is signed off on the card by the instructor. Stickers can be used to substitute for a signature. When all the class sessions are completed by the student and signed off by the instructor, give each student a certi-



cate of completion.

It is also important to make rewards meaningful. A major goal of youth sports is to build self esteem. The best way to build confidence is to help the kids make real advancement in their accomplishments. There is great

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pride in a skill well done. Find something that each student has done well at each session and praise them for it publicly.

Staffing Requirements

Staffing requirements are also governed by the age of the students. With archers under eight years old, you may need one instructor per active archer; 8-10 year olds may require one instructor for every 2-3 archers; 11-13 year olds can be managed with a 4:1 student-teacher ratio, and 14-year olds and up can be managed with 6-10:1 ratio. When working with any size group, having at least two teachers available allows one instructor to run the group while the other focuses on the needs of individual archers. It is too easy for a single instructor to become focused on one archer's issues and lose track of the activities of the rest of the group. It is also important for the safety of both students and teachers that two adults be present with the children at all times.

Communicating with Kids

Communicating with children can be helped by using a few simple guidelines. Dawn Barnes is the founder of Karate Kids, a youth martial arts school chain in Southern California that serves about 1200 kids per month in four locations. Ms. Barnes created the SAMM approach to communications with the children in her schools. SAMM stands for Speak in the affirmative, Ask questions, Motivate with praise, and Make agreements.

The first step in the SAMM approach is to *Speak* to children in the affirmative. Use positive statements for all instructions. Find ways to communicate without using the word no. When a child is doing something wrong, direct them to the correct activity rather than telling them to stop. There should always be a guided activity going on in the class. Use positive reinforcement to direct the students to participate with the others.

The second step is to *Ask* questions to engage the students in the class. Kids are always being told what to do. In time they learn to tune out adults who are directing them. The process of asking questions helps kids become part of the learning process. Asking questions of each student moves the energy around in the class and keeps the focus on the activity at hand. Ask questions that require a complete answer and not a simple yes or no. For instance, it is better to ask a student, "What are you working on today?" than "Are you having a good time today?" Using questions can also help with discipline as it can change the focus from a class disrupter to kids who are paying attention.

The third step is to *Motivate* with praise. This is a variation of the principle of speaking in the affirmative. Recognize each child every day for some achievement. Have the other kids in the class acknowledge the accomplishments of each archer at least once per class session. Use "points" to praise success. It's not important the points mean anything. Just giving points will be its own motivator. When a child does something right say, "That was great, Johnny, you get a point."

The fourth step is to *Make an Agreement* when disciplining kids. When a child misbehaves, ask them to make an agreement with you that further misbehavior will result in a consequence. By involving the child in the discipline process they learn that the choices they make have consequences. The goal is to discipline, not in a negative way, but in an informative way. Use positive consequences such as "meditation time" rather than time outs. After a few rounds of consequences, the kids will not want to make agreements with you and will start to get with the program.

Set reasonable goals for achievement with each class. Only a very small percentage of the students will have the motor and mental skills needed to achieve a high level of success as a top competitive archer. Do your best to nurture the talented students that you do identify. For the others, archery can be a lifelong recreational activity. Help the kids to have fun and remember that improved self esteem comes from success. When the kids achieve success, they will achieve more.



Van Webster is a NAA Level 3 coach and is Vice President of Pasadena Roving Archers. He is the co-author of the Basic Archery Instruction Program (BAIP), a six week course in archery shooting form, taught as part of the PRA Saturday morning archery classes. PRA serves up to 90 community members a week with free and low cost archery instruction. Van is also coordinator for the Woodley Park Archers grant-funded archery outreach program.

Bow Shooting From a Treestand Requires Its Own Set of Rules

Shots from Above

Most whitetail hunters and even plenty of elk and mule deer hunters wait for game in a treestand. And why not? These days treestands have set comfort and safety levels higher than ever. Without question it's a highly effective hunting technique, especially on predictable animals like those mentioned above. This technique can, however, cause a variety of problems to the ill-prepared bowhunter looking to ambush a none-the-wiser buck or bull.

Clearly taking an animal from 15 to 25 feet above the ground requires a little attention to detail on your part. To start with, you need a roomy platform that allows you to get shoulder width distance between your feet for target-like accuracy. But this can be accomplished easily today with the wide platform stands on the market (at least for hunters who don't mind spending a buck or two). After that, the rest of the challenge is left solely up to you.

To the untrained eye, animals appear somewhat smaller when seen from above causing archers to overestimate distance. Animals are also particularly good at string jumping arrows shot from treestands, as the bow noise travels almost straight down at them causing them to crouch and whirl. This increases chances for high hits and even higher misses. Many times you can't see this with the naked eye. But it's clearly visible on slow motion video when taped. Accurate range estimation and a lower hold of the sight pin on the bottom third of the animal makes this less likely.

When you find your-

self elevated up a nice tree on a deer trail or elk wallow you need to make sure tree limbs jutting around your platform cannot bump your bow and impede aiming. Carry a pair of ratchet sheers and a small fold-up saw in your daypack. Make sure also that you don't use a climbing treestand (mostly whitetail hunters) with an aluminum bar wrapping around the front that gun hunters use to rest their barrels on when aiming. This will cause a plethora of problems when trying to draw and aim and leave you with a great chance of not getting a shot at all. (Commonly as you aim your bottom bow limb will be obstructed by this.)

The next and probably worse blow to the gut of treestand hunting is shooting posture. You must bend your torso at the waist as if your hips are on a pivot and resist the idea to lean forward. Shooting from a treestand in your back yard can show you how to get good at this. Distorted form from an elevated position, just like from the ground, can definitely limit pinpoint accuracy afield.

The altered upper body posture typically increases your draw length on downward shots as you adjust muscle tension unevenly. This can cause you to pull the bowstring closer to your chest closing the angle between your aiming line of sight and where the arrow is pointing which throws hunting arrows left or right. This is not good when shooting at live animals. Just remember to bend at the waist and keep a tight frame up top without

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Keeping your legs firm and bending at the waist as to not stray from target-like form, bowhunters strive to make accurate shots.

Lanny Bassham



Decisiveness!

Decisiveness is the noun form of the adjective decisive and it is a powerful quality to have on your side when competing. One definition of the word is "having the power to determine an outcome beyond doubt." Wow! Decisiveness is power. How does that sound?

Decisiveness is also a quality that, once acquired, alters the very fabric of your self image on the shooting line. It empowers you to perform at the very top of your technical skill. You can see the dramatic effect of this decision in the best of shooters when they enter the range. Without conscious effort their posture seems to change. Their shoulders seem to set a little straighter and their chin lifts just a bit. Their eyes seem to have a quiet focus down-range and you can almost hear them thinking "This is going to be a great day!" You can sense the energy begin to radiate through their movements. There is a feeling that they have been here before and all will go well. There is trust that they can execute proper form and duplicate the execution. This confidence is beyond conscious thought and cannot be faked. It is available only to the prepared performer. It is a weapon against failure that knows few equals.

It is the advantage of the resolved and the edge of the determined. Yet, you are not born with it. No one can give it to you. No one can do it for you. It is priceless and you cannot buy it. No matter how hard you work, you cannot earn it. It is invisible yet everyone can see it in those who have it. It comes easiest to the skilled and evades those that seek the easy path to success. It is available to everyone, yet few have it and it is one characteristic that you cannot afford to do without. If you want it there is only one way to get it. You make a decision and it is there.

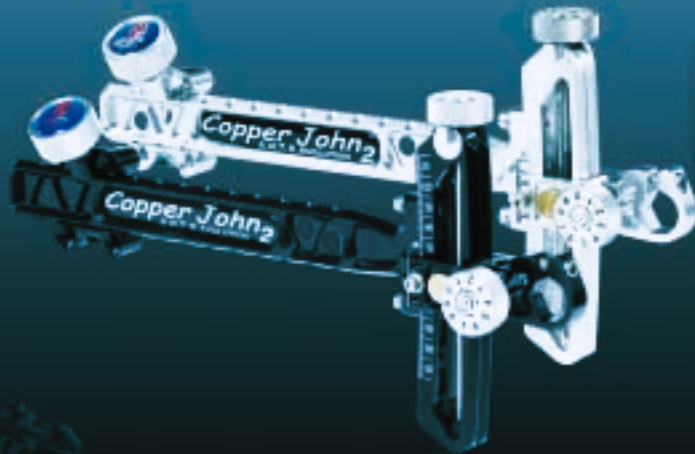
So, would you ever wish to be indecisive; to give up this huge advantage and risk failure? You would think not, but it happens way too often in competitions. Although there may be dozens of reasons that this can occur, I believe that there are three primary reasons for lack of decisiveness: we might become indecisive because we are new to the sport, ill-prepared for the event, or overly-cautious in our planning. Let's take a look at these one at a time.

"We find that new shooters focus too much on what they are doing wrong and do not give themselves enough credit in the areas that they are doing well."

Are you new to the sport? Everyone is a novice in the beginning and it is perhaps impossible for us to be very decisive when we

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start anything new. I have a few suggestions though. View your first few competitions only as learning experiences. Evaluate what you are doing well and be decisive about what you know you can do correctly. As your skill and execution improves you will have more to become decisive about and you may find that you will gain confidence in all areas of your performance. We find that new shooters focus too much on what they are doing wrong and do not give themselves enough credit in the areas that they are doing well. Trying not to make a mistake is a sure way of making one. Every shot is a teaching moment, if we are open to be taught. Do not forget to reinforce what you are doing well. Too often the focus is only about correcting errors. Next, and this is applicable to veterans as well as newcomers, discipline yourself to only think and talk about what you need to do, not about what you did when referring to your performance. Talking about what you need to do builds self

“We learn best when we fail while attempting. You cannot learn much if you have not the courage to make an attempt at all.”

image, but talking about error tends to tear it down. A statement like ‘I need to be more decisive’ is an aid to your self image growth but ‘I’m just not decisive’ reinforces error.

Also, remember the best time to ask for help is in the beginning. Some archers seem afraid to ask questions for fear that they will sound foolish. We all remember when we were beginners and we will not make you feel nearly as uncomfortable as continuing to make a mistake will seem. Most of the more experienced competitors are quick to help you but you need to let them know that you need their help. Remember, we are happy you are here and we want to encourage you.

Ill-prepared? For the ill-prepared, we have all been there. We hoped we were not too ill-prepared when we left home for the competition, but it just seemed to turn out to be that way. You will have times when you

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“This confidence is beyond conscious thought and cannot be faked. It is available only to the prepared performer. It is a weapon against failure that knows few equals. It is the advantage of the resolved and the edge of the determined.”

seem to struggle and wonder if you can get through this. It is really difficult to be decisive at this point. Human nature is telling you to worry about this upcoming challenge and a bit of trepidation sets in. My suggestion is to work the problem. All you can do is to perform with what you have brought with you. You are not going to manufacture anything new at this point and you must be careful not to let the concern over a frustration cause your performance to deteriorate on the things you can do well. Stay strong in your attitude about what you can do.

Sometimes beginning shooters think that they should not attempt competitions until they are fully prepared. The only problem is that you will never be fully prepared. Some things cannot be prepared for in training and you must learn them in competitions. You are going to have challenges and that is okay. We learn best when we fail while attempting. You cannot learn much if you have not the courage to make an attempt at all.

Are you overly cautious? When the weather is bad while driving your car, you exercise caution. When you have to move around in the dark you are cautious. If you have to make a big decision you are taught by your mentors to use caution. Normally caution is a good thing, but too much of it can paralyze an archer in a match. There is a fine line between indecision and caution. A slight hesitation on your part in reading the wind and your shot is spoiled. Remember the chance that you will execute your shot well is directly related to the quality of your attitude just prior to the arrow being released. If you are cautious, instead of decisive, while aiming you may over-hold causing you to move as you shoot. A decisive shooter has fewer aborts and a greater number of tens.

To avoid excess caution you might find that rehearsing your shot several times in your mind prior to shooting should help. Oh, you do that already! Good for you. So, if that is a good idea then why not include in your rehearsal that you are decisive when you step up to the line, that you stay decisive, and you are sure of yourself while shooting. It will aid you greatly in avoiding the pitfall of being too cautious.

Champions evaluate, decide, then act. There is not much room for caution there. I would rather see a shooter act decisively and make a mistake with conviction than fail to act at all hoping that the problem will just disappear. One of the best things about shooting is that there will be no points gained unless we put arrows in the scoring rings. No one else can shoot for you, there is no one else to blame, and there is a time limit to foil the procrastinator.

Sooner or later you must learn to become decisive. When you do all of your skills will sharpen. Why wait? It is but a decision away.

Lanny Bassham is an Olympic Coach and an Olympic Gold Medalist. He is a member of the Olympic Shooting Hall of Fame, ranks third among all shooters in total international medal count for the USA and is one of the most respected mental trainers in the world. His book **With Winning in Mind** and his *Mental Management*® concepts are used and endorsed by Olympian and World Champion shooters. You can reach him at 1.800.879.5079 or at www.mentalmanagement.com.



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String & Serving

Without a string, the bow is just a stick. The string is obviously a key element of any bow and arrow setup, from compound bows to longbows, but the string often plays an overlooked role. A good string helps an archer keep all his/her shots in the yellow, while a bad string will cause his/her groups to open up. With so many different string materials out there, it is very hard to choose one without a guide to help you along in the process. I am going to share my personal preferences with you in this article.

String Materials

In the beginning, there was animal sinew, plant fibers, and other natural string materials. Fast forward thousands of years and we have the first modern string material, Dacron (polyester), then came Kevlar. But Kevlar, as advanced as it was, was brittle and many broken strings later, Kevlar was replaced by the HMPE revolution. HMPE stands for high modulus polyethylene. The first of these HMPEs was Fast Flite made from Spectra, then came Dynafite 97, D75, 8125, D75 thin, Angel Dyneema, Dyneema 02, 8125 thin, 452X, 450, the list goes on. In addition to the major suppliers of HMPE string materials, there are other smaller companies that offer similar products. But the real question is—what are the differences between all these

different bowstring types?

Modern string materials can be grouped into three different categories, Dacron, HMPE and blended materials. In the Dacron category there is B50 and B500. Dacron strings are characterized by relatively large amounts of creep and stretch. They are also quite heavy and subsequently slow. So why is Dacron still around? First, Dacron is inexpensive and very popular with novice and traditional archers. Secondly, older recurve bows with non-reinforced limb tips require Dacron else the limb tips might break off or the bow crack if less elastic material is used.

Significant improvements really came with Fast Flite strings. They are much faster than Dacron and unlike Kevlar, Fast Flite strings are more elastic than Kevlar and won't break after a thousand shots. Before the War in Iraq, Fast Flite was made with Spectra, but since the military has claimed most Spectra production, Fast Flite is now made with Dyneema while remaining more or less unchanged.

Next are the Dyneema materials, Brownell makes D75, D75 thin and TS1 Plus. BCY makes Dynafite 97, Formula 8125, Dyneema 02 and 8125 thin. Angel manufactures Dyneema and Majesty string materials. D75

Continued on the Next Page

and Dynaflite are essentially the same string material marketed by different companies as are D75 thin and 8125, which are thinner versions of D75 and Dynaflite 97. 8125 thin is just a thinner version of 8125. In theory a thinner string helps to create a rounder string bundle. TS1 Plus is the new version of TS1, made from Dyneema instead of Spectra now.

Blended materials are two materials blended together to create an ultra strong string material. Usually Vectran is blended with an HMPE to create such a string. The benefits are virtually no creep and very little stretch. Meaning the archer need not worry about checking brace height or peep rotation frequently. Unfortunately, blended materials are significantly heavier than HMPE strings and consequently are slower. Blended materials are very popular with compound shooters, who typically have greater speeds. Recurve archers usually prefer the extra speed afforded by HMPE strings.

With modern bows, any string material can be used. There are two measures of what makes a good string: how much the string creeps/stretches and how fast the string is. As it is, Dacron is the worst in both categories, being fairly weak and quite heavy. Blended materials being very strong have little to no creep, but are slower than HMPE strings. HMPE strings are normally characterized by low creep and high speeds. They are the fastest material available on the market today. What follows is a breakdown of the differences between HMPE materials. Blended materials perform pretty much on par with each other, so a comparison is not necessary.

Fast Flite (FF) is on the lower end of HMPE materials. FF is characterized by higher amounts of creep and it is heavier than other HMPE strings. It is also cheaper. 8125, D97, D75 & D75 are characterized by very low creep and are lightweight which translates into greater arrow speeds. These materials are the standard against which all other materials are judged. TS1 Plus has significantly more creep than 8125, but it is faster. Whether the tradeoff is worth it, you must decide.

Then there is Angel and their no-wax materials. Because Angel Dyneema has no wax or, in actuality, very little wax, it is incredibly light and very strong.



Angel Dyneema is faster than any other string material out there, but it comes at a price. The lack of wax shortens Dyneema's lifespan and it tends to snag on rough surfaces. Dyneema 02 is BCY's answer to Angel Dyneema.

In 2005, Angel released their new Majesty material. This is another non-waxed

string material, but unlike Dyneema, it is coated with a proprietary formula which helps to protect the string and increase longevity. However, Majesty is slower than Dyneema, but is still faster than 8125 and is on par with TS1 plus.

In the end, it is up to you to decide which material better suits you. I personally use Angel Majesty even though Dyneema is faster. Prior to Majesty, I used 8125 to good effect while my experiments with TS1+ proved to be ill advised. I don't like the blended materials because they rob my bow of too much speed. So there you have it, all the information you need to make a decision on which string material to use.

Servings

Strings need servings to prolong their lives, both in the center of the string, the center serving, and at the end loops, the end loop servings. In the beginning there was no such thing as an end loop serving. In fact, the idea of an endless loop string had not even been thought up yet. String loops were made by "braiding" an end loop, most typically in what is called a Flemish string, and these are still quite popular with traditional archers. Then came the endless loop string and end servings were born. End serving material is very similar to center serving material, typically it is just thinner.

The most basic end loop serving thread is made from nylon such as #4 by Brownell or BCY's 350 serving. Nylon is very inexpensive, but has a low breaking point which means it will break if served too tightly. Nylon is also significantly thicker and heavier than HMPE based servings. Consequently, it will make your string slower (by adding weight to the middle of the string).

Other popular loop materials are Brownell's diamondback and BCY's No. 62 center serving. While these are normally used for center servings, they also make excellent end servings. Being of braided construc-

tion, the servings hold up well and do not fuzz up like nylon.

As with string material, HMPE servings are of much greater quality than older materials. Brownell's #1D and BCY's #3D are the two examples of this type of serving. Not only are these servings extremely strong, they are significantly lighter than other materials and are probably the best material available. They also come in very thin diameters which is important for compound strings. Some people like to use BCY's Halo or Angel's Majesty as an end loop material, but I see no advantage over #3D.

While end loop servings such as #3D work fine as a center serving, there are materials that are much better suited for center serving use. Monofilament (similar to fishing line) is the basic center serving material and is inexpensive and slick. It is also quite hard and has a low breaking point. Braided servings such as diamond-back are popular especially among traditional archers and release shooters. Braided servings are very durable and give the archer a good grip on the bowstring. While having a good grip is not a problem for release shooters, friction tends to hinder finger shooters. The slicker the serving, the cleaner a release can be. BCY's Halo is very popular for good reason, it is very slick, priced fairly and comes in a plethora of colors. Brownell's response to Halo is Crown, which is actually smoother, but lays down a lot flatter, which means more surface area. Angel also makes a center serving under their own name. Angel is even slicker than Halo, but is more expensive. In 2005, along with the release of Majesty string material, Angel released their new Majesty center serving thread. This serving holds true to its name and can justifiably call itself the king of serving materials. Not only is Majesty incredibly smooth, it manages to provide for a good grip on the string up until the release. It is able to do this because it lays down round and consequently has less surface area.

As you can see, certain materials are more suited to certain disciplines than others are. However, certain materials are also inherently superior in many respects. Clearly, HMPE servings are better than nylon end servings. In addition, for archers wanting the best durability and performance, Halo, Crown, or Angel servings are the way to go. But don't discount monofilament, it may be old and break easily, but it is very slick and is the favorite of Michele Frangilli, one of the top FITA recurve archers in the world. If one is after the fastest smoothest string with a long lifespan, BCY #3D with

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Leighton Tyau is a Level 2 coach and president of HNL Archery Strings. He began archery 13 years ago and hopes to make it to the USAT as well as to pursue his coaching career.



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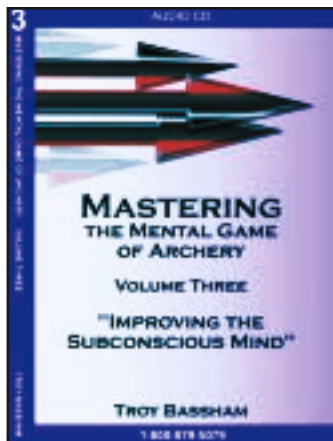
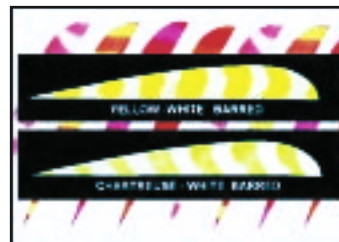


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John Vetterli

Lessons from the Martial Arts

Japanese Tea Ceremony and The Art of Archery

In ninth century Japan, the art of Chado or the Way Of Tea began to formulate into a purely Japanese cultural art. In the mid sixteenth century Sen No Rikyu came along and refined Chado into what it is today some 500 years later. Tea Ceremony is steeped in cultural traditions and the ceremonies are designed to provide a neutral territory where all participants are equal regardless of status or rank in society. The total focus of the tea master is to create a perfect environment and cup of tea for his guests.

ters is the arrow on the string. Not the one you just shot or the shot following. You just have to put all your energy and focus into the shot at the moment.

Recurve Tech 200

I began the study of this art about two years ago and I have to tell you that this is the most difficult course of instruction I have ever pursued. When people ask me what it is like to study Chado, I can only relate it to the martial arts because that is my background. It is the most difficult martial art I have learned. I classify it as a martial art because it embodies all of the best qualities of martial arts training: discipline, duty, honor, respect, humility, focus, and awareness.

Just recently during a Chado lesson I began to draw parallels with archery.

Tea Ceremony is a very mental art. It is about existing in the moment. Not dwelling on the past (like the baggage of everything that has followed you into the tea hut). You cannot have anxiety about things that have not happened yet. You just have to let go of the burdens of your life and just focus on the preparation of the tea.

It is just like shooting the bow. All that mat-



a r c h e r y f o c u s

Every movement of the body and the tools used for preparing and serving the tea are strictly controlled and these proscribed movements regulate the rhythm of the ceremony. In archery, you develop your shot routine and it sets the pace and rhythm of your shot sequence. The shot routine is what provides consistency from shot to shot and helps to maximize your effectiveness. In tea ceremony the following of the form and structure insure that nothing is forgotten or done incorrectly. The goal is the same for both arts—consistency of performance.

So Grasshopper, are you telling me that if I find a Chado teacher and pursue the art of the Tea Ceremony I will become a better archer?

All I can say to you is this; it is up to you to decide if Chado will make you a better archer. It seems to be a natural progression of martial artists since the dawn of the Samurai to modern day artists like myself to following the Way of Tea. It is a study based on peace. Peace in society, peace in the soul, peace in action. It provides balance in one's life. If all you do is prepare for war, you have no peace in your soul. You have to have balance to be a complete person. If you train for competition and all of your focus is on victory it can create the same trap as the warrior preparing for war. Eventually that competitive drive will bring you out of balance and you will someday become a very unhappy, unfulfilled person with a huge collection of medals and titles on the outside and completely hollow on the inside. No depth, just empty, completely out of balance.

So whether you study Tea Ceremony, violin, or painting, some type of activity that stimulates the soul into self development and fulfillment that is just yours, something that you can have just for yourself that provides you with internal reward then, yes, you will become a better archer and the side effect of becoming a better person in general.

Tea Ceremony is essentially about harmony, peace, beauty, and balance.

“I began the study of this art about two years ago and I have to tell you that this is the most difficult course of instruction I have ever pursued.”



It is about Yin and Yang, hard and soft, light and dark, strong and supple, and peace and war.

Does your competitive drive which is Yang, have its counterpart?

Is your life in balance? Balance in family, balance in work, balance in play, balance in the soul? This precious balance in all things is very hard to attain and maintain. It is as Rikyu said: “Life in every breath, life in every bowl of tea; it is all precious and perilous.”

John Vetterli says, “I live in Salt Lake City, Utah. I have been a professional Firefighter since 1987. I am married and have a daughter and son. My martial arts history began in 1984 with Osaka Sensei in the Karate form of Wado Ryu (the way of peace or harmony). Osaka Sensei instilled in me the desire to always know why we do things not how. I began the study of Eishin Ryu Iaido (the art of the Japanese sword) in 1998 with Harris Sensei. A Zen Buddhist Priest who finally taught me how to focus. This has been a profoundly life changing experience. I am a partner in the Zen Bu Kan Dojo with my two friends Dick and Jason. We teach Iaido and Kendo.”



Continued from Page 23

drawing into the bow too hard. An arrow shot from above also hits higher than normal since gravity has less affect on its trajectory. You must aim a tad lower than the ring on a 3-D target to compensate for this. Aim for the lower third like I mentioned earlier. This can be amplified more or less depending on how high you are above your target and how far your target is from the base of your tree. Only practice with your own particular bow-and-arrow setup can help you =figure this out. Practice always pays.

I know some bowhunters who treestand hunt almost exclusively will adjust their sight pins before season from a treestand sitting around 20 feet up. In this case there's no guess work and truthfully it's not a bad idea. Some hunters also use pendulum type sights that automatically adjust for various ranges when shooting from a treestand, typically out to 30-yards. These sights are dead-on and require no compensation. I see a lot of bowhunters who buy a new bow sight almost every year. I'm not sure I understand why they do that. Once you become familiar with something and it works, why switch just because something else comes down the pike. I've always felt it takes several years to get really use to any-



Roomy platform stands help you by giving you room to move and spread your feet apart for overall shooting comfort. Buy the biggest platform you can when choosing treestands.

thing like a bow, release aid, aiming sight, etc.

Some hunters in treestands also shoot from a sitting position when possible. But I've never tried it. I like to stand as soon as I spot an animal since it makes me feel more mobile should I need to adjust to get a shot. However, I do practice shooting from my treestand seat sitting (and shoot rather well that way) just in case an animal happens to pop up and I'm not able to stand. It hasn't happened yet, but never say never, right? If you haven't tried shooting from a sitting position, you can really hold the bow dead still as the center of gravity feels solid on your rear and keeps your upright form consistent without any complication.

All in all, shooting from a treestand is a process that can be semi-mastered if practiced and understood

enough. I say semi- because in bowhunting I'm not sure anyone can master anything. There are always new things to learn, ways to tweak certain elements. Taking animals from a treestand with archery gear is fun and exciting. I look forward to it every year. For bowhunters with good shooting it definitely works! Finally, here are some tried-and-true tips on shooting animals from a treestand.

- First, always be aware of clear shooting lanes and distances around your treestand, particularly landmarks beyond 20-yards.
- Next, remember a deer is practically the same size no matter what the angle, so don't let it play with your psyche.
- Third, practice shots to at least 40 yards. Even if your maximum effective shooting range is 20 yards after practicing 40-yard shots from a treestand, 20-yard shots will feel like gimmes.
- And last but not least, wear an armguard or chest protector (or both). Bulky hunting clothing can cause and interference when you shoot downward. Be aware of this fact and take care of it with a ten dollar arm or chest guard.



Jason Butler is a freelance outdoor writer and photographer who lives in Richmond, VA. As much as Jason likes writing about the outdoors, he'd rather be there.

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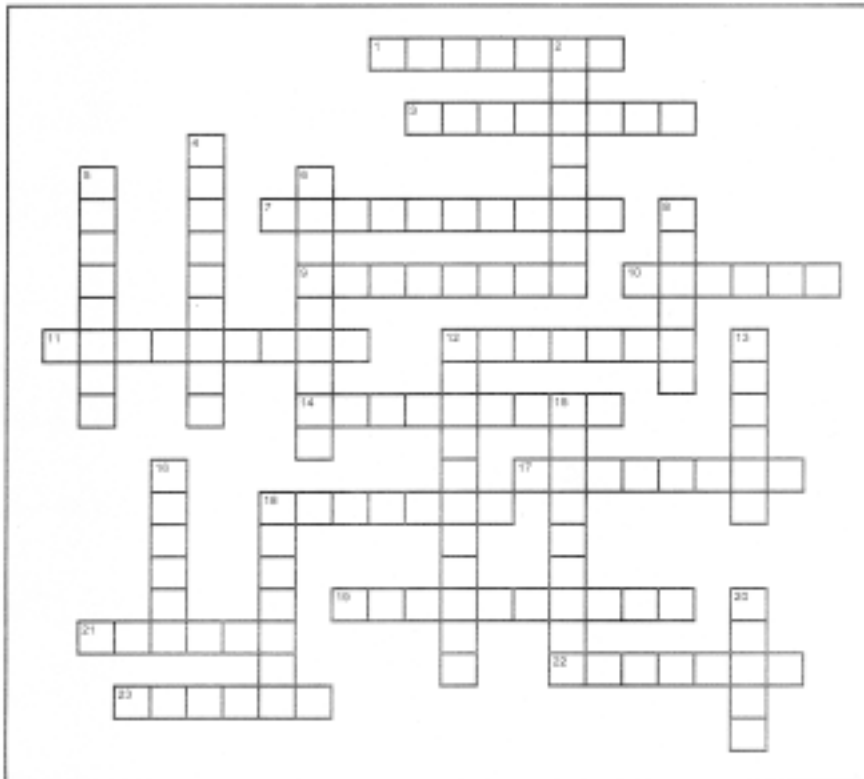
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WHO MAUNFACTURES OR WROTE WHAT? CROSSWORD

by Tom Dorigatti, ©2006

There are some really neat archery products and literature out there these days. Many of the items are similar in function buy have many "variants" and manufacturers. Many of the items in the puzzle below are commonly advertised in magazines. Your only task is to get the answers (either the manufacturer, writer, or product name) into the right place in the puzzle.

See Page 36 for the Key!



TOXONICS
HENDERSON
TRUEFLIGHT
LUECK
BROWNELL
WHAMMY
RINEHART
EVOLUTION
BIGHORN
IGNITION
BASSHAM
MARTIN
ZENITH
BLAZER
DAKOTA
BARNSDALE
COREARCHERY
SAMICK
MAPLELEAF
GOLDTIP
NOCREEP
CASCADE
VAPORTRAIL
ACCURISER
LONGHORN

Across

1. Ultralite Pro arrow model manufacturer.
3. Maker of Ultra Cam string material.
7. Maker of the "Limbdriver" arrow rest.
9. Back tension release manufactured by Scott Archery.
10. Pre-Stretched strings made by Stone Mountain Bowstrings.
11. Manufactures the "Classic X".
12. Release made by Spot-Hogg.
14. Bowman Archery makes this.
17. Nail Driver
18. Cater back tension release designed to shoot directly off a d-loop.
19. Feather maker making "Bright Stripes" feathers.
21. First to offer release handles made from solid brass.
22. 452X material by BCY stresses this favorable attribute.
23. New arrow rest made by Spot-Hogg.

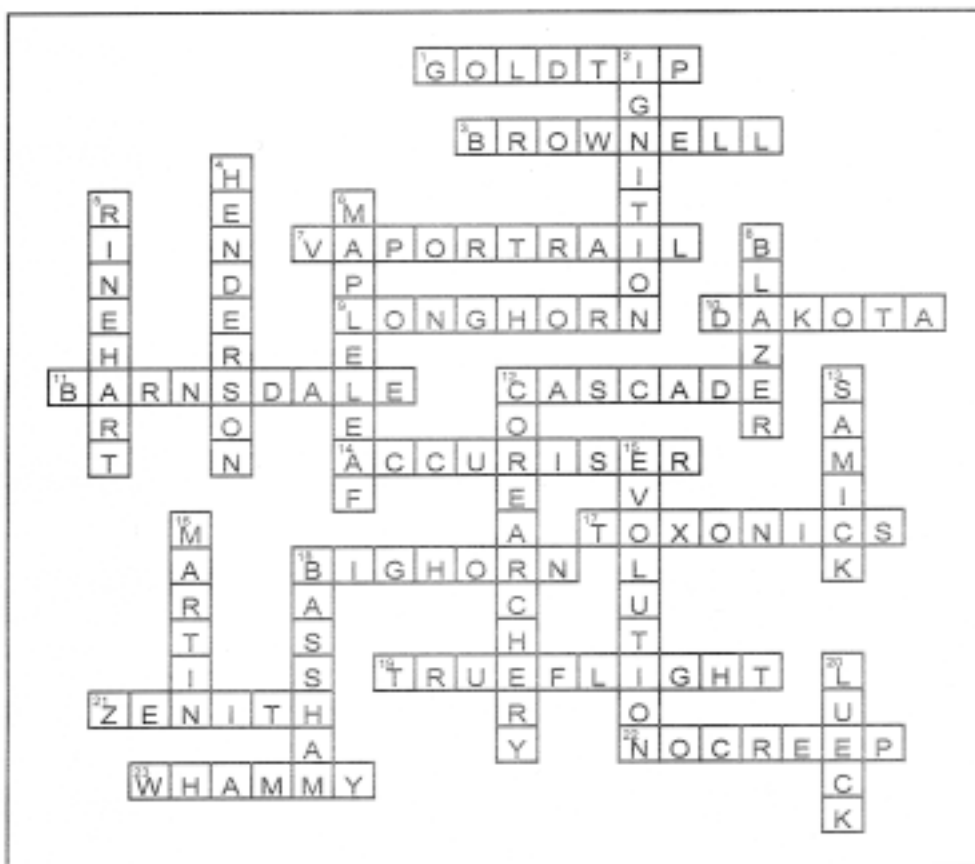
Down

2. New bow model offered by Mathews for 2007
4. Wrote, "Understanding Winning Archery."
5. Maker of the "Treestand Buck" that doubles as a target and a field decoy.
6. Official printer of targets for NFAA, IFAA, FITA, & WAF.
8. Vanes made by Bohning Archery
12. Written by Larry Wise
13. Used by all 4 archery gold medal winners in the 2004 Athens Olympics.
15. Carter release designed to fire from a pre-set poundage pressure on the release mechanism.
16. Maker of the "Pantera" compound bow model.
18. "Mental Management Systems."
20. Maker of the Titanium Pin nock system and the 4th axis sight leveling devices.

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WHO MAUFACTURES OR WROTE WHAT? CROSSWORD & KEY

See Page 35 for the Puzzle!



TOXONICS
HENDERSON
TRUEFLIGHT
LUECK
BROWNELL
WHAMMY
RINEHART
EVOLUTION
BIGHORN
IGNITION
BASSHAM
MARTIN
ZENITH
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There are limited numbers of issues available from AFm's first four years.

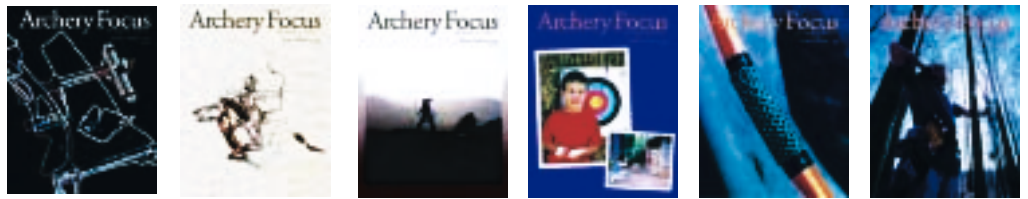
1997 Volume 1, No. 1, 2, 3

1998 Volume 2, No. 3, 4, 5, 6

1999 Volume 3, No. 2, 3, 5, 6

2000 Volume 4, No. 1, 2, 3, 4, 5, 6

2001 Volume 5, No. 1,2,3,4,5,6



2002 Volume 6, No. 1,2,3,4,5,6



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