

Conversations with Manny Alves

about his fighter kite innovations & ideas

By Bruce Lambert

It took lots of talking to get Manny to agree to this article. Manny is a quiet modest person who doesn't like being in a spotlight. But because of the possible benefit to other fighter kites through sharing his fighter kite ideas, Manny agreed to teaming up together to write this article and posting it on the web.

Whenever I've talked or emailed Manny about his many fighter kite ideas, he always gives some credit for the idea to others. He does this because one idea often sparks another, so he believes all his ideas come from 'sparks' caused by other fighter kite makers' previous ideas. He believes this connection makes many of his ideas more of a 'community' effort than a Manny Alves original idea. I'm not so sure I personally buy that.....but that is pure Manny.

Manny is relatively new to fighter kiting. He's been involved for about 2-3 years. And in that short time he has invented, created and/or developed a host of ideas for improving the North American style fighter kites' performance.

I don't think I've met a more serious student of North American style of fighter kites than Manny! As a serious student, he has learned much of the language of fighter kites by paying VERY close attention to the most subtle flight characteristics....what that actually means is Manny has exceptional observation skills. And equally important, he is completely open to whatever the kite's performance tells him; he isn't locked into the notion that because he thought of a new 'twist' in a fighter kite's design that it must make an improvement in the kite's performance. Like any inventor, several of his ideas have not proved beneficial.

Manny's observation skills allow him to detect the slightest differences in a kite's performance resulting from a minor change he made in the kite. In fact, he can detect whether the change in a kite's performance is the result of a specific area or panel within the kite.

When making a kite, Manny is what I call a perfectionist. Every aspect of each kite he makes has to meet his ultra-high 'perfection' standards. His ultra-high 'perfection' standard may come from the fact that he is highly skilled master machinist.

One important aspect of inventing or thinking of ideas is having the ability to objectively observe the results of the ideas in the flight of a kite. This takes tons of time and requires making many kites. Manny does experimenting all the time to test his many new ideas; he seems to have an endless stream of them!

Here's a brief description about several of Manny's ideas and a few photos to help explain. The photos are from Manny. If you have questions about any of the following, email Manny at M.alves@cox.net.

SUPERSPINE

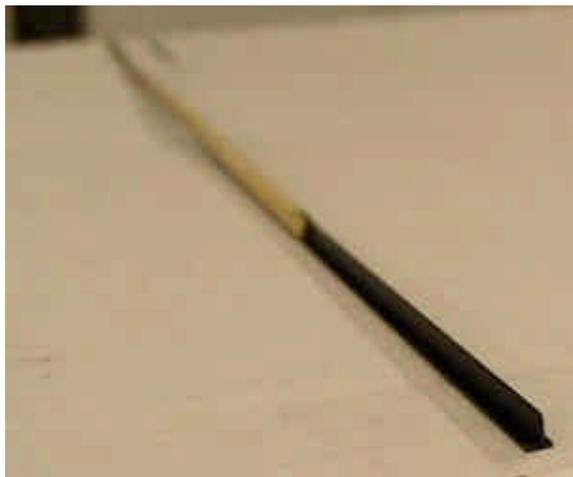
Manny's 'Superspine' is just that.....a super spine! To make it he combines bamboo and carbon fiber. When he did this, he was the first person I was aware of who even thought of this idea of combining bamboo and carbon fiber for a spine.

He makes several versions of his Superspine. In most of them he puts a carefully shaped piece of bamboo in the center of the spine that is glued to a full spine length piece of flat carbon. At the nose and tail, he glues separate pieces of flat carbon on their thin edge, perpendicular to the full spine length of flat carbon and inserted into the end of the bamboo center portion of the spine.

The carbon pieces at the nose and tail are made very similar to each other. Each is made using an



additional short piece of carbon. The shorter pieces are glued on their thin edge along the centerline and perpendicular to full spine length piece of flat carbon. This adds an incredible amount of stiffness without much weight.



The center portion of bamboo is bonded to the full spine length flat carbon fiber, and then the vertical end pieces are glued to the full length carbon and inserted into the cuts made in the bamboo. Having bamboo in the center allows Manny to bend the spine without the use of tensioning devices to give his kite the various 'rocker' shaped bends desired for specific flying conditions.



Of course Manny created special 'jigs' or tools to assist him in getting the parts to the Superspines perfectly aligned.



After he aligns them, Manny glues the two flat carbon fiber pieces together, one perpendicular to the other. He first 'tacks' them in place with a couple of drops of CA glue. Then he holds the spine almost vertically and applies one drop of the very runny type of CA glue at one end of where the 2 flat carbon fiber pieces are joined and allows the CA glue to run and 'wick' along the entire length of the carbon fiber joint.



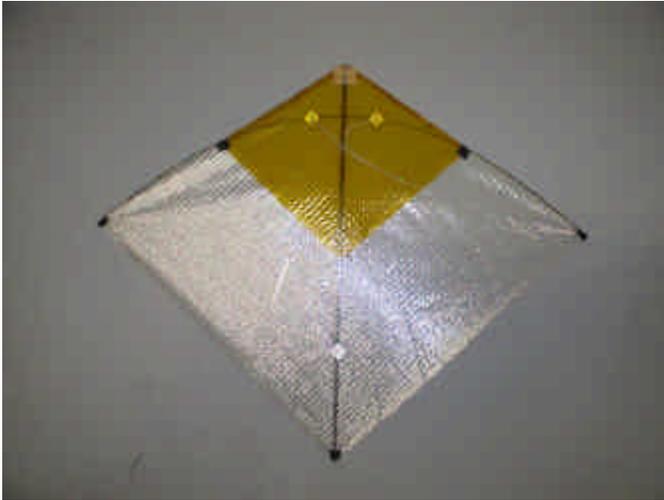
STIFF NOSE AREA



It isn't unusual for a fighter kite maker to stiffen the leading edges of the nose 'triangle' of a fighter kite. I use tape, stiff thick Mylar and other similar materials for stiffening the nose leading edge of my kites. So does Manny, but he takes it another step. He makes the entire nose 'triangle' part of the skin a different and stiffer material.....and then stiffens the leading edges even more by folding over a hem of the nose material and gluing it to itself.

MULTIPLE STIFFNESS SKIN

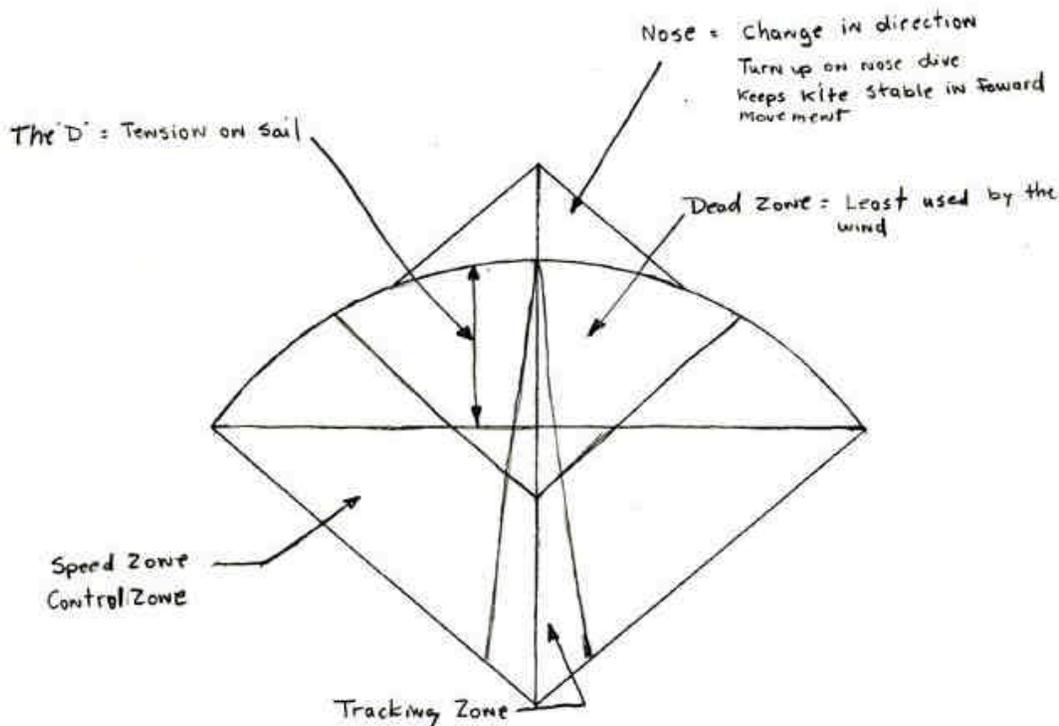
This is an idea that came from using stiffer skin material for the nose 'triangle'. From Manny's careful observation of how a kite skin deforms during flight, he concluded that using various skin materials, each with a different degree of stiffness in specific areas of the kite's skin, would provide a smoother and more efficient transfer of energy from the wind to the kite.



Manny divided a fighter kite skin into 'panels'. To maximize wind flow across the skin, each panel should be a specific relative stiffness compared with the other panels. Generally there are 3 or 4 separate panels in Manny's kite skins. So Manny uses 3 or 4 different stiffness' of skin materials and bonds them together making a complete skin.

Although the concept is not a new one, Manny's ability to carefully observe has given him the ability to precisely place each of the materials in the most advantageous location on the skin. This has resulted in more efficiency. You can hear the difference; Manny's kites are almost silent.

He drew this diagram, below; showing what portion of the kite skin affects what flight characteristics.



VENTING



Venting a fighter kite is an extension of using multiple stiffness skins. The trick is determining the best shape and location of vents for a fighter kite that will actually enhance its performance. This is not easy to do.

Of course you can poke a few holes here and there and the kite will have less pull and will be easier to handle in very strong winds, but won't necessarily fly well. Manny decided to carefully analyze the venting effects to find the best location, size and shape of vents that not only allow the kite to fly well in high winds, but actually improves the kite's performance in

almost any wind. You can see in the photos the results.



The blue kite is one of his earlier experiments and the vent locations he improved as shown in the black kite.

During the experiments regarding venting Manny discovered, by accident, an interesting material for use as a screen in a vent hole. It is very lightweight nylon netting used in wedding dresses that he bought at a fabric store. This material has some stretch and has provided improved kite performance because of its stretching quality.

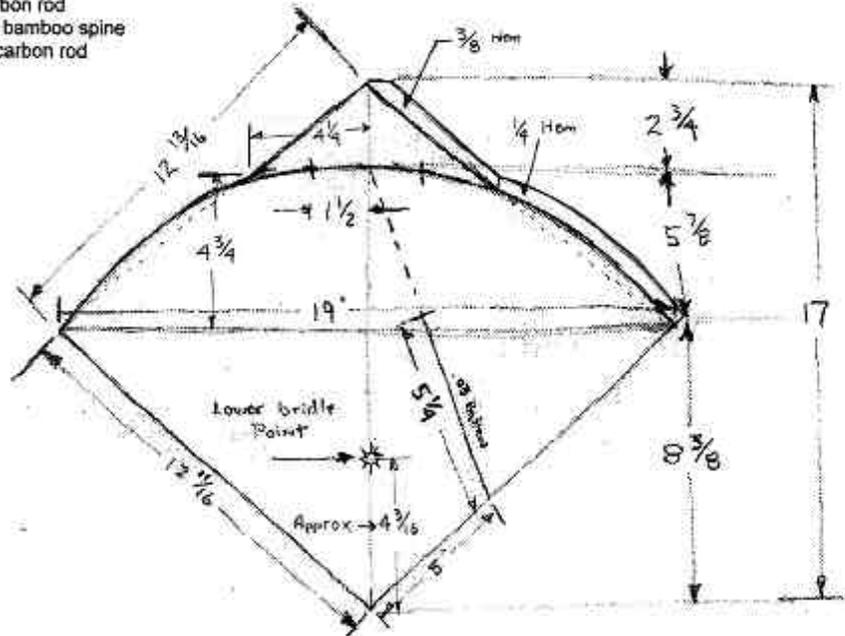
As a side note, I have had the opportunity to fly some of Manny's vented kites. It is really surprising how they fly even in winds that are 'normal' for the kite if it had no vents. The location, shape and size of the vents Manny developed in my opinion actually allow the kite to fly very well in a very wide range of wind speeds, including high winds. It's quite amazing!

WINGTIP POSITIONS

The location of a fighter kite's wingtips can make quite a difference in the way the kite performs. Manny has done extensive experimenting with this issue and discovered that having the wingtips too low produces some undesirable flight characteristics as does having them too high. From his experimenting, he discovered a position for wingtips that he feels provides the best overall performance. You can see this in the two plans shown on the following 2 pages.

John 3:16
Fighter Kite D2
By Manny Alves

BOW = .060 X 23 3/8 carbon rod
SPINE = 1/8 X 3/16 X 17 bamboo spine
BATTENS = .030 X 5 1/4 carbon rod



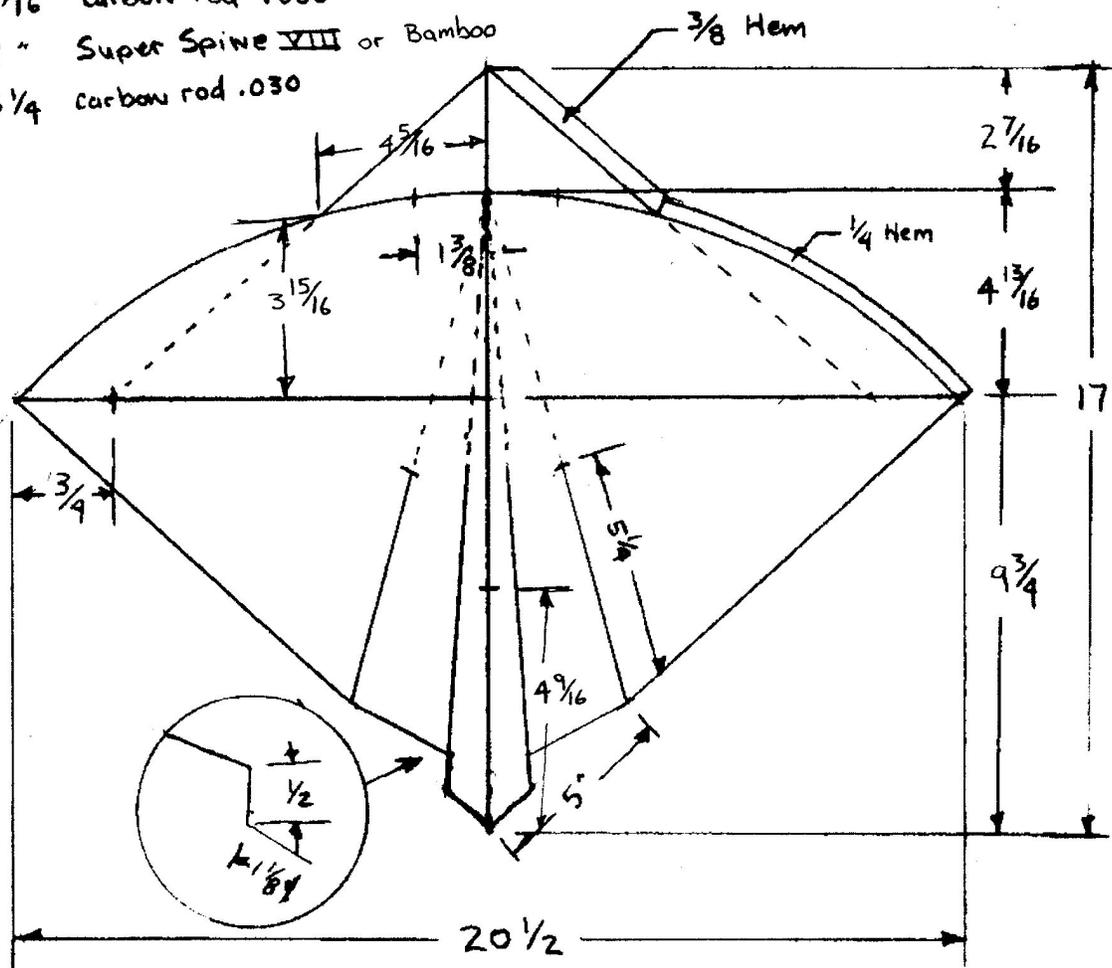
 The lower bridle point on all kites I build comes from Bruce Lambert's formula found in his *North American Fighter Kite* CD on page 258. I find that this point moves depending on the material used in making the kite. I have also found it very important for the kite to be bridled this way for its balance in flight. That is why I have left out the lower bridle dimension.

Manny made a kite from this plan for Woody to fly at WSIKF 2004.....Woody was one of the winners of the 2004 Line-Touch World Cup Championship using this kite!

You'll notice on Manny's kite plan diagrams, patterns or templates for his kite skins that they are actually made as 2 separate 1/2 patterns joined along the spine line. One half, the right side of the spine, showing the hem and the left side without the hem. The reason is explained later in the article.

Titus 3:5-7 Fighter kite Dz By Manny Alves.

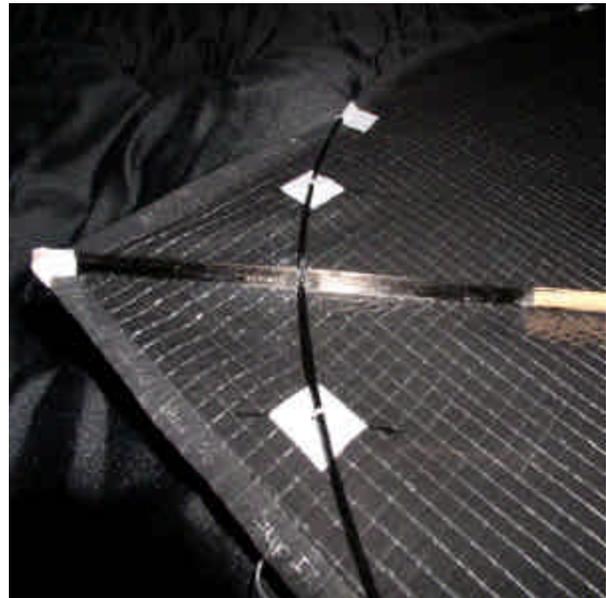
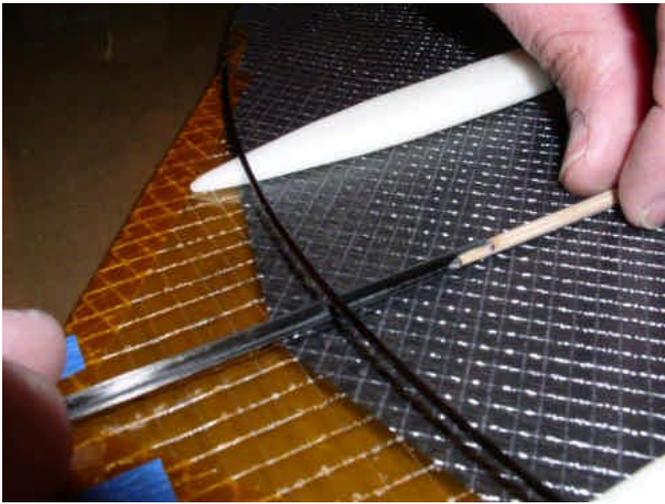
Bow = $23 \frac{3}{16}$ Carbon rod .060
 Spine = 17" Super Spine VIII or Bamboo
 Battens = $5 \frac{1}{4}$ carbon rod .030



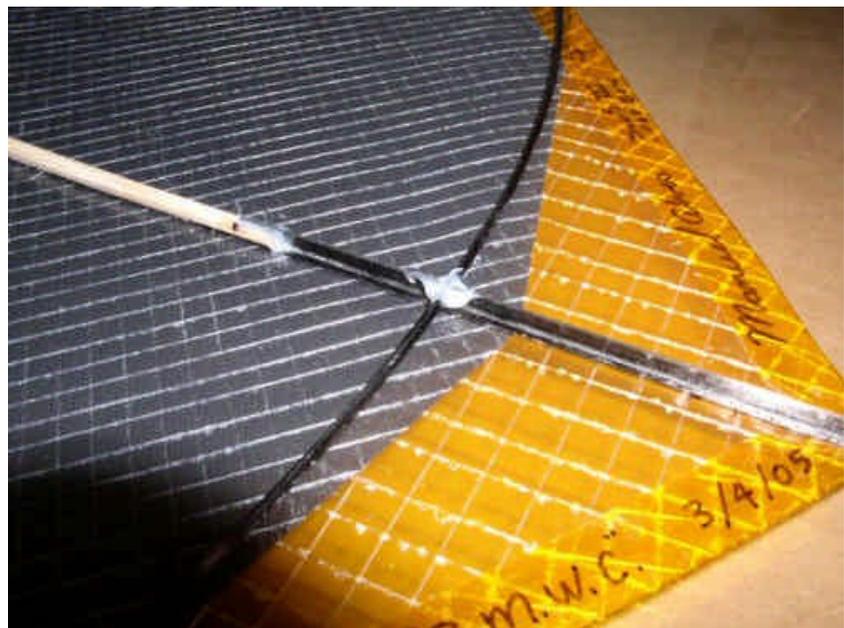
Notice the way Manny created the tail shape of the kite. The trailing edge has 2 distinct angles before it reaches the 'tail' part of the skin. Manny cut out an additional portion of the skin material to create the 'tail' shape using straight lines to make the trailing edge shape. I have made Manny's trailing edge tail shape using curved lines. That also works. You may find a combination of shapes that produces even better performance; if so, please email Manny and share your discoveries!

BOW/SPINE BONDING ARRANGEMENTS

The issue of whether or not to tie the spine to the bow is always a heavily discussed issue among fighter kite makers and flyers; some like to leave the two parts loose others prefer to tie them together at the crossing point. Manny doesn't do either; he glues them together.



In the Superspines Manny makes, he cuts a notch in the vertical piece of flat carbon and glues the bow into that notch. This prevents the bow from rotating

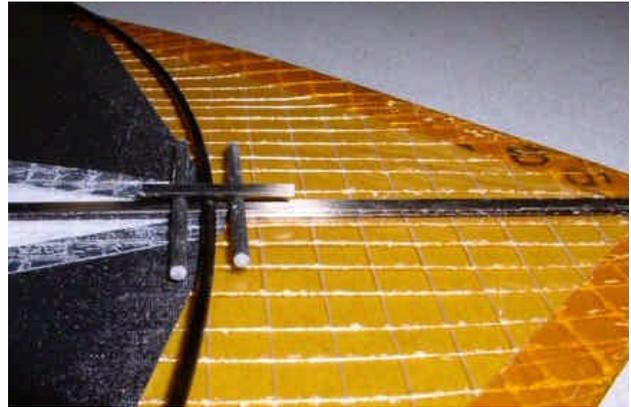
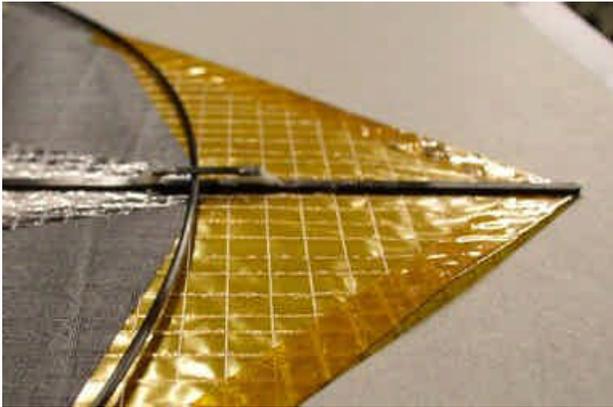


around its axis or from moving in any way. This bow/spine bonding arrangement contributes significantly towards producing a very high kite speeds. His kites are fast!

This is the 2-part epoxy Manny uses. It is very strong, but doesn't get brittle, it stays slightly flexible.

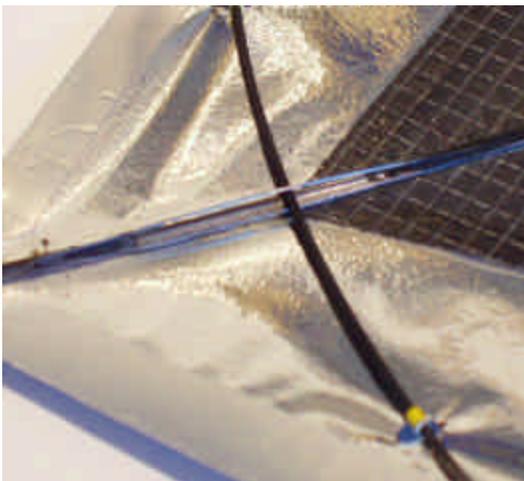
Manny finds by bonding the bow to the spine in this way the kite flies as fast as if the kite had a larger diameter bow than it actually has. The kites also has all the characteristics of a 'stiffer' kite than the size of the kite might indicate; very fast, instant direction change and you need to put out extra effort to push the kite beyond the edge of the wind window.

Sometimes Manny finds that a particular kite is too 'stiff' when the bow and spine are glued together so he developed what he calls a 'Bow-Slide' spine/bow connection arrangement. This arrangement secures the bow to the spine but allows the bow to rotate around its axis and also to move toward the nose when the kite has strong wind in its sail. Neither of these movements of the bow exists when the bow is glued to the spine. This 'Bow-Slide' method of bonding the spine and bow allows the kite to perform much better at the edges of the wind and beyond, the kite is easier to control and the kite is slightly slower.



If the kite Manny is making uses a 0.06" diameter bow, he uses small pieces of 0.07" diameter carbon rod on either end of the 'Slide' to elevate the flat carbon 'Slide' above the bow enough to allow the bow to move. Then he glues the 'Slide' piece and allows the glue to cure. It is the glue that secures and creates the elevation of the top part of his BowSlide.

Also, when Manny uses a 'BowSlide', he doesn't use a vertical piece of carbon for the nose portion of the spine.



As an example of how one idea sparks another....These are my versions of Manny's 'BowSlide'. For the kite on the left, I simply glued a piece of 0.02" diameter carbon rod on the spine at either side of the bow; this kite has a carbon spine. The photo below is a kite with a bamboo spine and a small split piece of bamboo for the BowSlide.



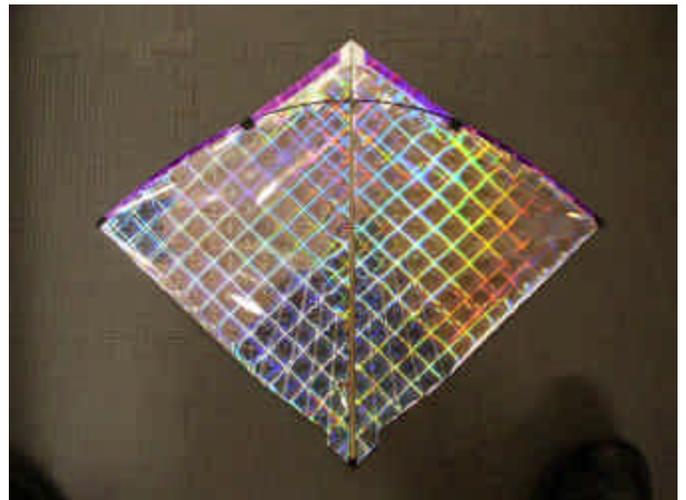
BATTENS

Battens are not new; fighter kite makers use them in various ways. Most kite makers use 0.03" or 0.40" diameter carbon fiber rods for battens. Manny often uses many battens, as many as 8 or more, and they are made of a very stiff Mylar-like plastic film that he glues to the back of the kite's skin. The benefit Manny likes about using plastic film for battens is the batten itself does not project itself into the front face of the kite's skin as do carbon fiber rods. Manny noticed that using carbon fiber rods as battens caused the front face of the kite skin to 'show' the battens. This projection Manny figured is enough to reduce the kite's rate of spin and the smoothness of the kite's spin.

The location, length and angle of each batten are things Manny has experimented with extensively and prefers the way the kites fly when he places them as shown in the photos.



Both of these photos show not only the batten arrangement Manny feels works best, but also you can also see Manny's trailing edge shape near the tail. The battens are aimed at the bow/spine cross point of the kite.



TRAILING EDGE SHAPE/KITE TAIL

From my observations the most popular trailing edge shapes of North American style fighter kites are straight and slightly scalloped inward. Both shapes are continuous from the wingtip of the kite to the tail of the spine.

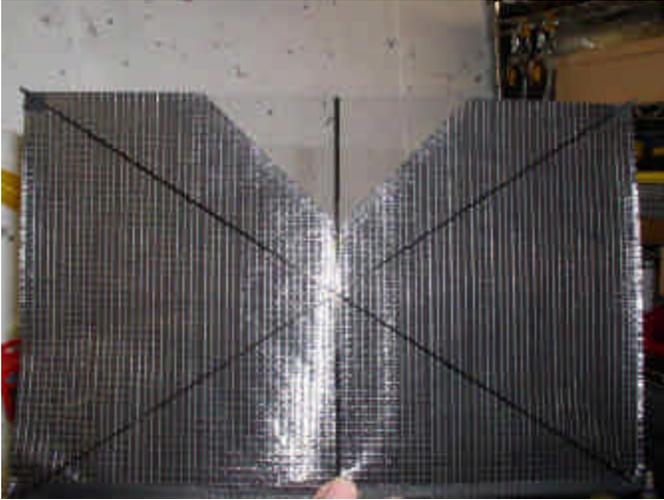
Manny discovered that if you make the trailing edge have 2 distinct shapes the kite will actually perform better. From the wingtip to the first batten, or only batten if you only have 2 battens, is one shape, for example, straight. From where the batten touches the trailing edge to the tail of the kite's spine, is a different shape. This change produces what looks like a 'tail' that is an extension of the kite's spine. However, it isn't an extension. The kite's spine is the same length as without the separate shape from the batten to the tail. Manny has found that kites with this trailing edge shape seem to fly really well at the edges of the wind and near the ground. From my experience with them I agree.



You can see the exact dimensions of how he changes the shape of the trailing edge in his 'Titus' kite plan shown on a previous page.

The photo on the left is my exaggerated version of the Manny's tail idea. This is 'NoDog', I actually extended the length of the spine to make a more obvious 'tail' on the kite using curves to create the final trailing edge and tail shape.

BUKA WITH A VENT



Not only has Manny been busy experimenting with changes in diamond shaped fighter kites, but also with rectangular shaped bukas.

He decided to find out how a vent might affect the flight of a buka and was really surprised. He hasn't yet found any solid answers but is continuing to experiment. Check out the photos. Try some experiments of your own and see what happens!



BUKA WITH A TAIL



He has also developed a buka with a 'V' tail using 2 battens. It really changes the way the buka flies. Manny says it especially changes the way the buka penetrates the wind and the way it spins.

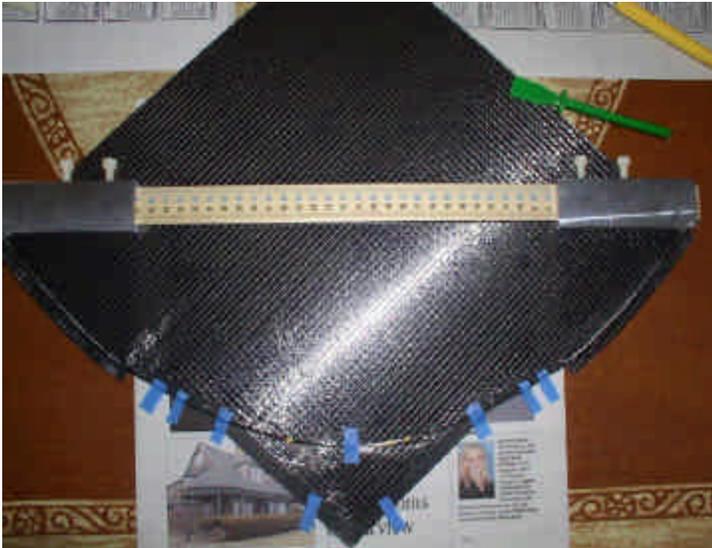
As you can see in the photos, Manny has a second tensioning line near the tail connecting the 2 battens. This allows for more control in the shape of the buka. It provides an independent control of the shape of the tail and the trailing edge.

The battens are 2" either side of the spine at the trailing edge and are angled from those points to the nose end of the spine. The tail is actually formed by the battens. The spine is the same length as the original buka's spine. Manny is still experimenting with the battens in the buka and you can too! The angle of the photos may make you think the spine is extended beyond the trailing edge to make the tail of the buka, but it is not. The shape of the tail is created only by tensioning the line between the battens; when there is no tension, the trailing edge is straight.



TOOLS, JIGS AND GADGETS MANNY USES

I suppose if I were an accomplished master machinist I may be able to make some of the really cool gizmos Manny makes. However, I doubt if I would even think of the ideas for these gizmos; Manny does!



For example, he made a sophisticated and extremely functional fully adjustable bow setter. See photo at left where he is using the adjustable bow setter to hold his 'ComboBow' described later.

One day I was talking with Manny about variable strength bows and thought it would be cool to find a way to make a carbon fiber bow that was more flexible at the wingtips than in the center without having to use a 'doubler' piece in the center.

Manny went to work on that idea. He designed and made a tool to do just that; it allows the kite maker to make what Manny calls a 'ComboBow'. And the tiny tool allows you to do it easily and quickly. He sent me one to test and I couldn't believe how easily it worked and how well it worked! Truly amazing!



Here's what this tiny tool does. The tool is the small piece of round metal in the photo on the left. It has a 0.06" diameter hole in one end and a 0.04" diameter hole in the other end. To use it, you put the 0.06" diameter rod into the hole in one end of the tool and into the other end your 0.04" diameter drill bit fits and is guided so it drills a hole in the center of the 0.06" diameter carbon fiber rod you have in the other end of the tool.



It allows you to accurately drill a 0.04" diameter HOLE into the END of a 0.06" diameter carbon rod! I would never have even thought this idea to be a viable possibility. But with Manny's tool, I drilled holes in the end of carbon rods using my battery powered portable Dremel!

Once the holes are drilled, you can CA glue any length of 0.04" diameter carbon fiber rod into the ends of the 0.06" diameter carbon fiber bow and have a very cool variable strength ComboBow.



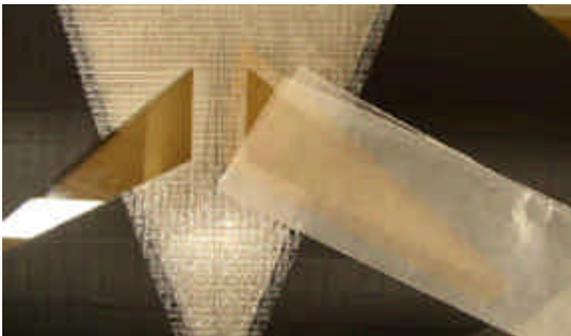
This is what Manny uses to test the balance of his kites.



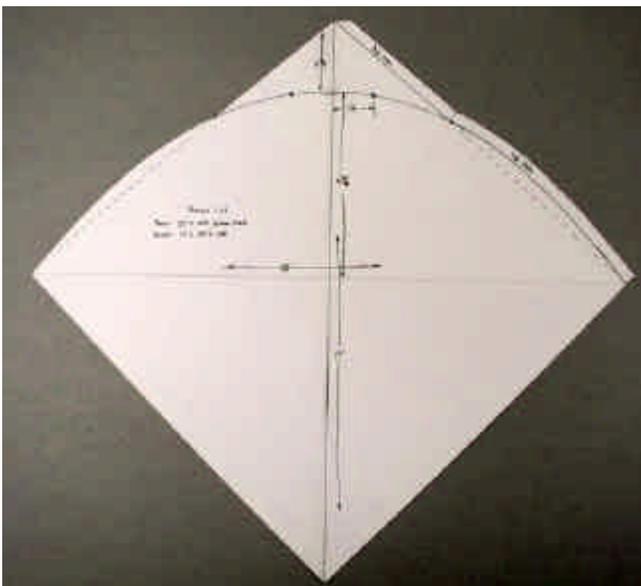
The plane clamped in a vise is what he uses for shaping his bamboo parts. He draws the bamboo across it as many times as necessary to shape the bamboo the way he wants it.



The tool on the left Manny uses to burnish tape, glued battens and glued seams.



Manny uses waxed paper often to assist in aligning pre-glued pieces of the skin such as the vents in the photo on the left. After the pre-glued pieces are aligned, a small portion of the glued pieces are allowed to touch and bond. As he pulls out the waxed paper separating the pieces, he presses on the glued seam area to bond it. It is quick, accurate and easy.



Manny's templates or patterns for kite skins he makes from matte board or similar stiff hard cardboard. His templates are full sized. Actually they are like 2 separate 1/2 templates joined using a common spine line.

On the pattern shown to the left, the outer perimeter of the right side of the spine line includes the hem allowance and is the half used to cut out the skin material. The other half, in the photo the left side of the spine line, is the exact size and shape of the finished kite perimeter. After making a kite, Manny matches the finished shape of the kite to the left side of the pattern. This allows him to monitor the accuracy of the finished kite compared with his pattern.

KITE DESIGN CONTRIBUTORS IDENTIFICATION

Many of Manny's experiments result in creating a new kite plan. Manny has developed many new kite plans which he is eager to share. Two are shown on previous pages.

Manny uses an interesting way to identify each kite he makes. Since he readily admits that he is not the only contributor of ideas to any of his kite designs, he thinks of each person who contributed an idea, or a base plan for that particular kite and includes those people's initials on that kite for his reference and identification of each new kite he makes.

VIDEO OF FIGHTER KITE LINE-TOUCH COMPETITION

The best video of a fighter kite battle was filmed by Manny and his son Jake. Then Jake spent hours and hours editing it to create a reference quality masterpiece of real world fighter kite line-touch battles. The videos are posted on www.biggrins.org and will also be posted on the new NAFKA site when it is launched early in April, 2005.

There you have it; a summary of my conversations with **Mr. 'FighterKitesOnTheBrain', Manny Alves.**

BigFighterKiteGrins, Bruce