TAPERED BAMBOO FERRULE

di Davide Fiorani

I have always been fascinated by the concept of using bamboo ferrules in two or more piece rods and among those designed in the past by rodmakers like Calviello and Fries, I personally prefer the one built by Alberto Poratelli and I have often used it to make my rods… after all, with IBRA I had a home court advantage.

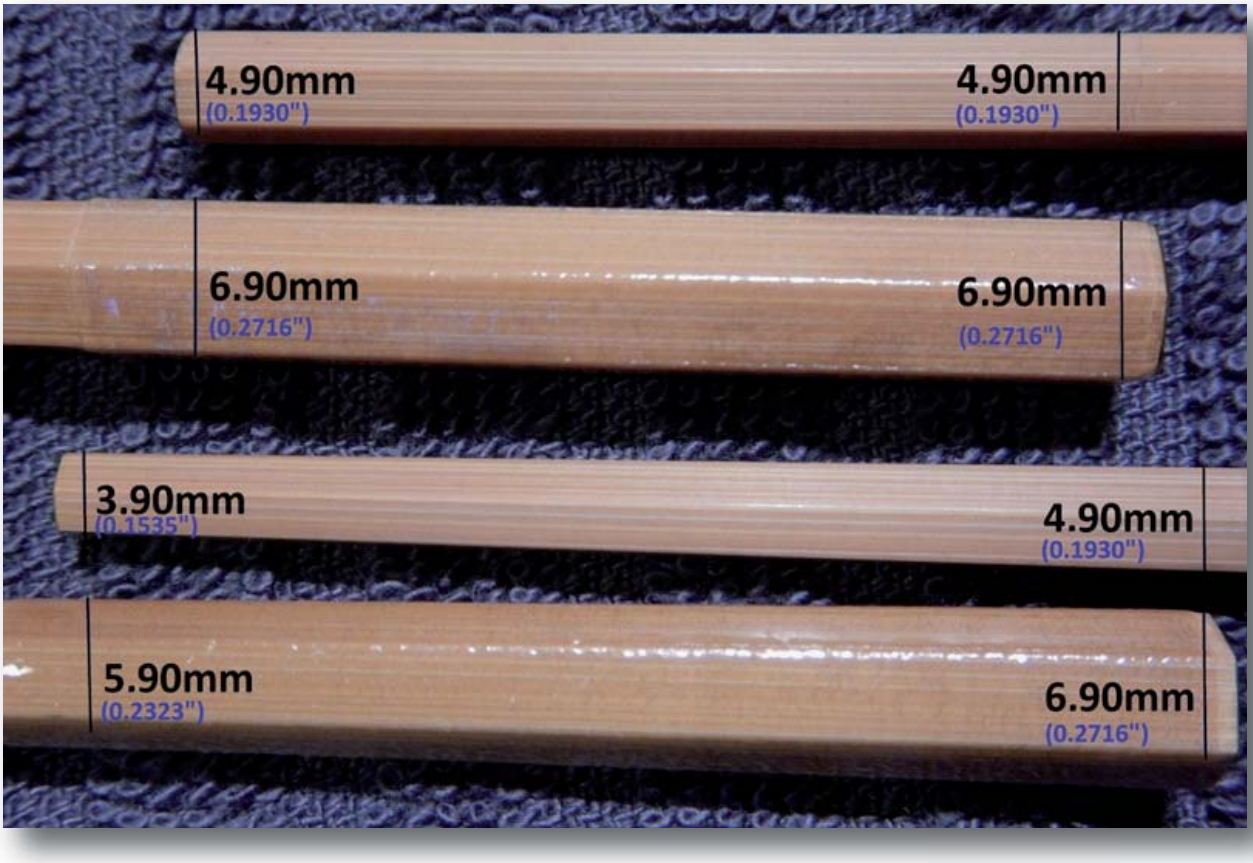
The concept is based in the design at the tip of a hexagonal cap without conicity, created by executing a swell at the top by “forcing” the last station of the planing form. This allows you to make an integrated ferrule of a certain length and an average thickness of 2.0 mm more than the male: the dimensions of the walls of this ferrule and its depth are proportioned to the taper of the rod that is to be made. The male is then made at the head of the butt and it has the same dimensions of the cavity inside the female.

Some time ago, while observing a rod with this type of bamboo ferrule, I was wondering how I could make one with a thinner swell for the female. I also wanted to avoid abrupt changes in the section of the ferrule that could have given rise to potential breakage points with the rod under stress. The objective was to obtain less stiffening in the whole area, to have better continuity in the curve of the rod as well as making it aesthetically more linear. I remembered the machine taper coupling used in mechanics for two cone-shaped pieces, male and female, like the cap insert “sleeve-over ferrule” used also for the carbon rods and I started analysing their characteristics.

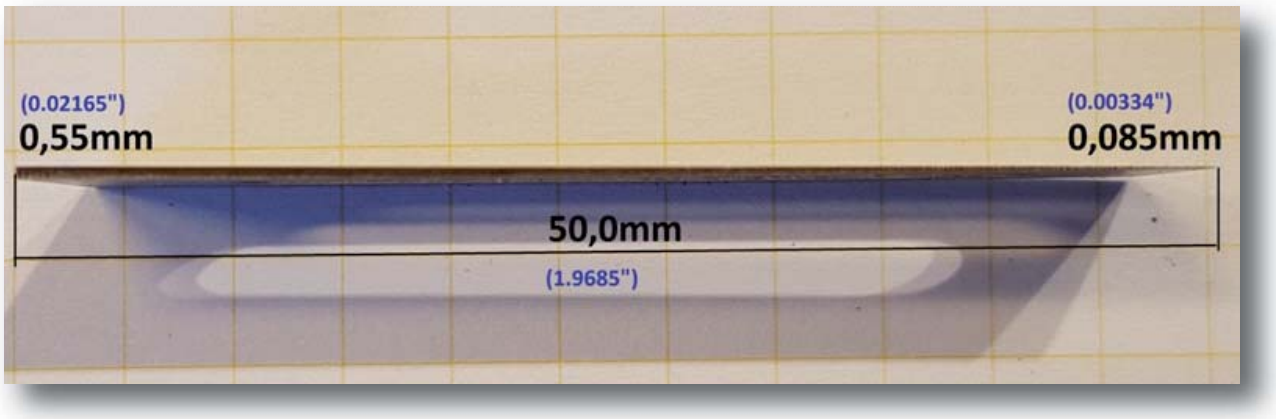
Subsequently, I decided to build a 7’0’’ hexagonal rod with the same taper of another rod that I had built with the Poratelli-type ferrule, so that I could compare them. My purpose was to decrease the final thickness of the swell that was 5” long by 1.0mm (0.03937”), to them build a tapered female 50.0mm (1.9685”) long, which would have the difference between the height of the initial hexagonal section and the final one equal to 1.0 mm (0.03937”). Practically making a double swell at the base of the tip: the first one 5” long and the second one 50.0mm (1.9685”). The ferrule had to have a hexagonal and conic hollowing and the thickness of the wall had to be 1.0mm (0.03937”). Consequently, at the head of the butt I needed to make a hexagonal male 50.0mm (1.9685”) long, with the same dimensions and conicity as the cavity of the ferrule. I called this type of insert Tapered Bamboo Ferrule or TBF.

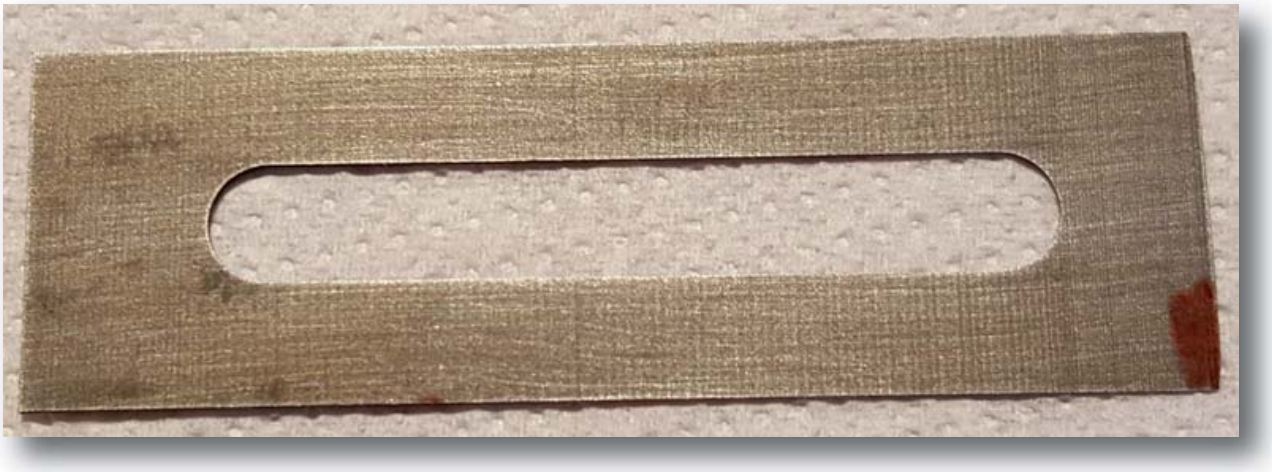
A practical example (see figure below), for the rod with a “linear” ferrule and a male with dimensions 4.90mm (0.1930”) and 50.0mm (1.9685”) length, the swell created at the top to make the female must be 6.90mm (0.2716”), to be able to obtain, once hollowed, a ferrule with a continuous hexagonal hole 4.90mm (0.1930”) high and walls 1.0mm (0.03937”) thick.

For the same rod with a TBF insert of the same length, the male will have an initial thickness of 3.90mm (0.1535”) and a final one of 4.90mm (0,1930”). This implies that the measurement of the swell in the last 5” of the tip necessary to make the female 1.0mm (0.03937”) thick, must be 5.90mm (0.2323”). The ferrule must then follow the conicity of the male for 50.0mm (1.9685”) to reach the end at 6.90mm (0.2716”). Once hollowed, the hexagonal hole in the female must have the same dimensions and conicity as the male.



Good, but how is it done? I found one way of making it by building an “accessory”, a tapered shim that allows you to create the conicity in the insert using the Morgan Hand Mill.





Fixing this spacer on the guide of the MHM between the adjusting bed and the anvil at the height of the positions of the male and the female and with the help of the regulating screws of the MHM, I obtained the conicity of the insert of about 1.15°, necessary for a taper of 1.0mm (0.03937”) between the top and the bottom of the ferrule 50.0mm (1.9685”) long.

To make the male of the butt, I inserted the tapered spacer with the thinner side between the first inch of the TBF, i.e. between 42’’ e 43’’, and the other ends beyond the end of the male between 41’’ and 40’’. I then inserted a series of 0.70mm (0.02756”) spacers until the end of the bed, which helped me to maintain the conicity beyond the end of the male.

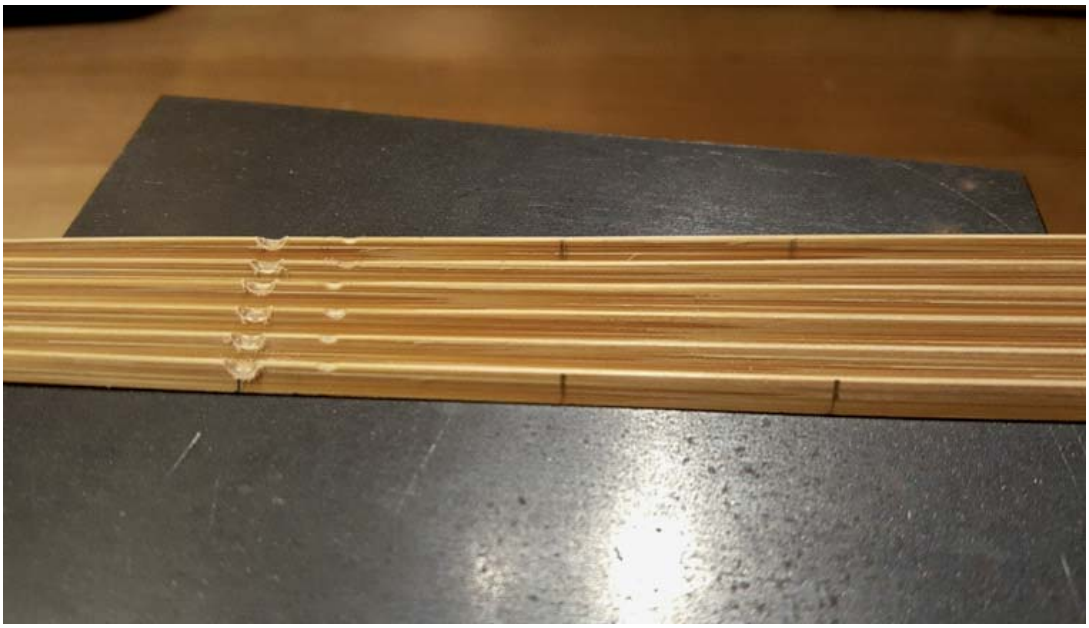
I then set the taper by regulating it an inch further, in this case up to 40” and I made the strips.

I glued them and cleaned the blank. I cut the butt 10.0mm (0.3937") longer on the head, close to 40 1/2", to be able to adapt the length of the male snug into the female, shortening it to get the final coupling and the right tightness. The superficial finishing was done with 800 grain sandpaper.

To make the ferrule on the tip I put the tapered spacer with the thin side (see photo below) in the middle of the first inch of the TBF, between 43'' and 42'', and the other side which ends beyond the head of the female between 41'' and 40''. I then inserted a series of shims of 0.55mm (0.02165") under the entire remaining length between the adjusting bed and the anvil to bring the latter on the same level.

I set the taper using the measurements MHM and made all the strips.

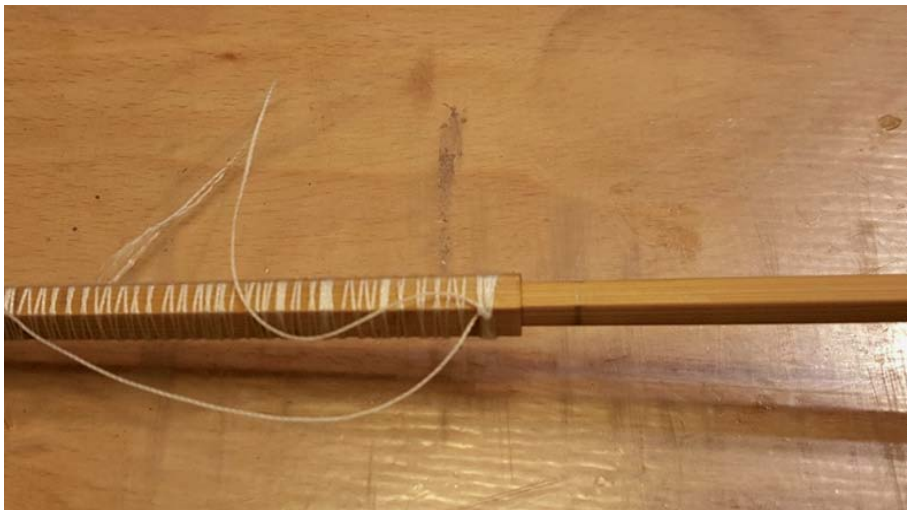
With a pencil I marked the end of the female and I engraved the strips using a small round file to then do the hollowing and carve out the slide of the male.



I then removed the spacers, reset the adjusting bed of the MHM to 0 and worked all the slides of the female on the strips, bringing them to 1.0mm (0.03937") thickness.

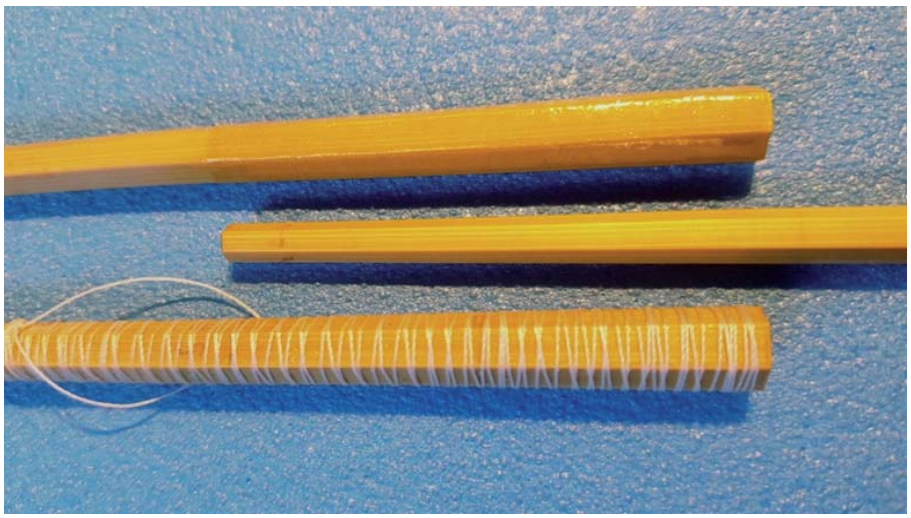
I cut the strips of the tip to measure, smoothed the edges with a fine sandpaper pad.

I tied the tip and tried the ferrule by gradually shortening the head of the male, almost reaching the length necessary to obtain the tightness. The last adjustment if done after the final tying of the ferrule.



I moved the male inside the female several times to clean the inside from glue, using thinner every time I extracted it: it needed to slide well without "sticking".

Once the epoxy glue had polymerised I untied and sanded the rough piece, found the spine and finally tied the female with 3/0 silk and varnished it with epoxy. The tying of the ferrule must be done taking care not to tighten the female too much to avoid deformities.



After 24 hours I inserted the male which turned out to be a little slack. I began to shorten it with a pad of sandpaper of 0.1 - 0.2mm (one or two thousandths of an inch) at a time, always trying the fitting to reach the exact coupling, keeping the condition that it would be snug against the head of the female ferrule. I then waterproofed the tip of the male with a drop of epoxy.

Here is the finished ferrule...

... and the video https://youtu.be/Bt_2XtUsi7E

Comparing it to the other rod with a bamboo ferrule, it has an aesthetically better line and harmony due to the thinner sell as well as when loaded, the curve has more continuity because it is less rigid in the area above the ferrule.

Another advantage I noticed was a greater ease in separating the pieces of the rod after fishing. Just hold the initial grip between the two sections to divide them easily like the carbon fibre rods that have this type of ferrule.

I think that if a constant use of the rod should cause a slack grip, shortening the male would probably allow it to penetrate a little further.

In conclusion, I do not have the presumption of having "invented" anything or done something better than my predecessors that tried their hand in making bamboo ferrules. All I wish to say is that thinking of the concept of a conic coupling could open another prospective and be a different system, already used in graphite rods, joining two or more sections of a bamboo rod: I felt it deserved a more detailed study which I think is starting.

So, all that is left for me to do is continue my sacrifice and go fishing with this rod to see if my hypothesis, my project and my creation will be proven in practice…a terrible life!