How to Make a Rattan Bow

by Jorgen Danske, Kingdom of Drachenwald

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This is what I remember from our course. Anything that might be wrong is due to me, not our teacher Weiland. Feel free to copy it as much as you want.

General information:

In the Shire of Uma, where I come from, and Frostheim in the Principality of Nordmark (Sweden), Drachenwald, we have built about 10-15 rattan bows and we have found them to be working rather well. Few of us had been shooting with a bow before and none of us have built any.

A rattan bow could easily be made to 30-40 pounds. How strong you get the bow depends very much on the quality of the rattan and, of course, how thick the limbs are and how long the bow is. The strongest rattan bow made in Uma was over 70 pounds from peeled rattan. However, if you use a rattan stick with the skin still on you generally will get a stronger and more endurable bow.

The rattan bow will lose some pounds after you have been shooting for a while. A stronger bow will lose more than a weaker bow. A 60 pounds bow could lose 5-10 pounds, a 40 pounds somewhat less. This is depending entirely on the quality of the rattan and since you can't determine the quality in advance you have to guess.

What I've noticed in the performance of wooden and laminated bows compared with rattan bows is that rattan bows are a little bit slower when you release the string. If you want to speed up your bow you can make a slight recurve at the ends. Use steam to make the rattan soft, force it to bend the "wrong" way and let it dry. This gives extra speed but not very much extra power.

Why make a rattan bow if it's slower than a wooden bow?

For one thing it's a good start if you want to make bows. It took me about 8-9 hours to make a bow, a string and an arrow and it will probably take less time for the second bow. Weiland makes a rattan bow within an hour. Almost any rattan stick will do as long as there are no cracks in it, the material is cheap, rather easy to find and very soft to work with. If you want to make a wooden bow you have to find the right material, probably dry it and it's rather hard to work with. The fibres of rattan seldom break so it's ideal to have it with you while camping, canoeing and so on when you probably will be rather rough against your bow.

How about backing the bow with some harder material like hickory to get extra strength? Don't! The rattan don't withstand compression very well according to Weiland. You could use rattan for backing. It seems that rattan can take stretching far better then compression.

We have mostly used the bows for target shooting and to hit a target about 20 x 30 cm at a distance of 30 m is not impossible and is probably easier for a trained archer. We are amateurs.

We have tried a little clout shooting on a soccer-field. The distance was about 60-70 m (70-80 yards) and with a little training at least 50% of the arrows (birch wood with sharp point, not combat archery points) landed within 2-3 m (2-3 yards) from the target. This distance was a little too long for the weakest bows. My bow (about 20 pounds) could get the arrow about 15 m (15 yards) past the target but that's the upper limit for my bow. An archer with a wooden bow misjudged the first arrow a little and got the arrow well past 100 m (110 yards). That bow is much stronger than our rattan bows.

We have not been trying to hunt animals with our bows since it is forbidden by the law in Sweden and I can't recommend it since I have no experience in hunting at all. According to Weiland, the rattan bows are not good for hunting. This is due to its lower speed (if I understood him correctly). It seems to me that hunting should be better with some sort of a gun. Since my bow was rather weak I shortened it with about 20 cm and gave it to my girlfriend. The strength increased considerably (to about 40 pounds) but since it was to short for me I had to give it away.

Material and tools:

- A straight, about 4 cm (1.5 inch) thick rattan stick of your own length plus 40 cm (1.5 feet).
- Knife
- Spoke shave
- Single-graded file
- Saw
- Fine and very fine sandpaper
- Something to fasten the stick with so that it doesn't move while you are working.
- Bow-string
- Tillering board, see Fig. 1. If you haven't built a bow before, you probably won't know what it is (I didn't anyway).

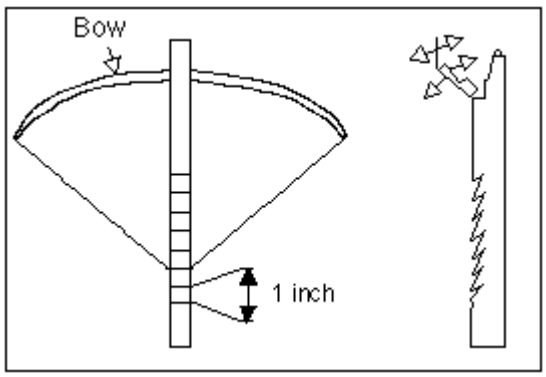

Fig. 1. A tillering board from the front and from the side.

How to do it:

Look at the stick and determine which "side" of the stick looks to be best, i.e. without any deformation. The best side will be the back of the bow, i.e. the side that is furthest away from you when you shoot. To this side you will do nothing, except use the very fine sandpaper to get a smooth surface. If the fibres of the back are broken the bow will probably break because this side stretches when you draw the bow. If there are any cracks in the last 20 cm of the ends it doesn't matter because you will saw them off. If there are cracks, e.g. in the middle of the stick, you shouldn't use it because it will probably break. If there are any dents on what you decided to be the back you could try to put a little water on it and hope that the dent rises. The fibres can break in the dents so it's a good thing to get rid of them. My own bow has two dents in the middle of the bow but after 300-400 shots I haven't noticed that it is about to break. It's better to be on the safe side. Why haven't I tried to get rid of them? I'm a lazy optimist!

Measure out the length of yourself on the stick. If there are cracks at the ends, make sure that you get rid off them. If that means that the stick becomes a few centimeters (1-2 inches) shorter than yourself it doesn't matter, but don't make it too short because if you don't get the strength in the bow that you wanted you can shorten it when you are almost finished and by that way get extra strength.

Saw off the extra part so that you have a stick of your own length, without cracks and, preferably, without dents.

The measurements I will give are from my own bow that worked. You could try to change some of them but I can't recommend it since I don't know what will happen.

Lay the stick down, on the floor or a carpenters bench if you've got one, with the back downwards. The side that now is upwards is called the belly. Mark the middle of the bow on the belly and decide which end you want to be up and which one you want to be down. Which side you choose doesn't matter. From the middle you make a mark at 5 cm (2 inches) at each side of the middle. The space between these two lines will be where you hold the bow while you are shooting.

Now it's time to make the bow thinner towards the ends. Turn the bow a quarter of a turn so that you have the side of the bow upwards. Draw a line that is vertical against the floor at each end and in the middle of the end of the stick. Imagine, or draw if you can (I couldn't), a straight line from the two 2 inches marks towards the mark at the top and the bottom. These two lines go from the surface of the stick on the belly-side through the stick and end halfway through the stick at the top and bottom. Now turn it back a quarter of a turn so that you have the belly upwards again.

Fasten the stick tightly but not too hard. If it's squeezed too hard you'll damage it and the bow may break. Use the spoke shave and remove everything above your imaginary line. So if you have a stick like mine, which is 4 cm (1.5 inch) in diameter, you take away almost nothing at the two 2 inches mark but 2 cm (0.75 inch) at the ends. See Fig. 2. If you want a heavier bow you could try to make the bow a little thicker towards the ends.

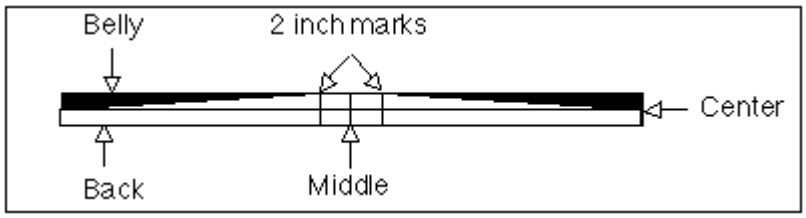

Fig. 2. Side view of the stick. Remove the black part.

The next step is to turn to the width. If you look at the stick from the belly or the back the bow should be widest at what will be the handle and slender at the top and bottom. To get that shape you put the stick on the floor again with the belly-side up. At the two ends you mark the centre of the belly horizontal to the ground, i.e. with a stick that is 4 cm thick (1.5 inch) you make a mark at 2 cm (0.75 inch).

1.2 cm (0.5 inch) from the centre you make a new mark on each side of the middle, horizontal to the ground. The space between those two marks is the final width of the top and bottom. Take a one meter ruler or something else that is long and straight (if your length is more than 2 meters you need something longer than one meter) and draw a line on the belly-side from the middle of the bow-length to one of the two marks 1.2 cm (0.5 inch) from the middle at the ends. Draw the line from the side of the middle of the bow-length so that when you have drawn the four lines they will form a V-shape on each side of the bow-length middle. See Fig. 3.

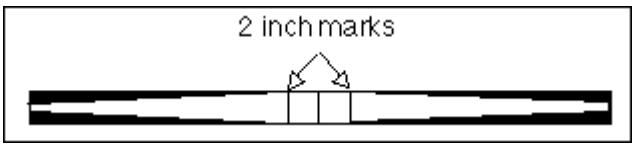

Fig. 3. View on the belly-side. Remove the black part.

Fasten the stick tightly but not too hard with the side up and use the spoke shave to remove everything above the lines you have drawn. Even if your lines don't end at the same place towards the middle, make sure that you use the spoke shave so that they do it anyway. The lines are only there to help, you'll have to relay on your eyes for the finish. The symmetry of the bow is very important. Now your stick looks very much like a bow.

What you have to do next is fix the ends, the nocks, so that you can string your bow. Make a mark at 1.2 cm (0.5 inch) from each end on both sides. Use the knife and, from the marks, you cut away the rattan towards the ends. See Fig. 4 how it could look like when you're finished. Make it about 0.4 cm (0.16 inch) deep. Now make the cut slope downwards towards the handle and a little towards the middle. The slope should be steeper towards the belly than towards the back. At the back it should almost be vertical against the length of the bow. Make sure that there are no sharp edges around the nock that can wear on the string.

Fig. 4. View of the nock in natural size. From the left: view from the back, view from the side (the back to the left), a view of the belly and from the end (the back is on the top).

Now you should be able to string your bow. If you don't know how long your draw length is you should measure it up now. This length is always measured in inches and you will probably end up with a measure somewhere between 20-35 inches. The draw length is the distance from the back of the bow to the point where you hold your hand when you have fully drawn the bow. Ask a friend to help you measure it up, it's nearly impossible to do it by yourself. You should use an arrow or stick to measure this distance. The draw length is how long your arrows must be (plus an extra 2 inches) and you tiller your bow to that length.

Don't ever try to draw your bow more than your draw length. This is a certain way to break your bow. The bow might not break right away but it will probably get damaged and break later. Don't push your luck! I have a draw length of 34 inches and I will never use someone else's bow that I'm not certain will be able to be drawn to 34 inches. Rattan is a rather forgiving material so this rule doesn't apply as hard for a rattan bow but it's unnecessary to take any risks of this kind.

Use the tillering-board to make sure that the bow bends exactly the same on both sides of the middle. Put the strung bow on the tillering board and draw the bow to about 10-15 inches at first. Take a few steps back and look at the bow. The 10 cm (4 inches) closest to the the nocks on each side should be rather straight when the bow is drawn. This part of the limb will not work as the rest of the limb. Which side (limb) is most bent? Use the file to remove material from the other limb. This will make the least bent limb "softer" so it will bend more. Since rattan is a very soft material to work with be sure that you don't file away to much because then you will have to file some on the other side and you could end up with a bow so weak that it won't even kill a fly. So use the tillering-board often! Take your time when you do this because if the bow doesn't bend in exactly the same way you get a bow that doesn't behave as it's supposed to. Put the bow back on the tillering-board and draw it a few inches more and repeat the procedure. Make sure also that the bow bends evenly all over so that it's not a small area that bends very much (what we call a knee in Swedish) and another that is almost straight. Repeat until you have a perfect bend when the bow is drawn to your draw length. It is a good help if you have a friend that could draw the bow in the tillering board so that you can see how the limbs are working.

If your bow is too weak you could now saw off an inch or so at each nock, make new nocks and string it. Don't shorten it to much though, there's a limit to how much you can bend rattan.

If your bow is too strong, use the file or spoke shave very gently to remove some wood from the belly to get it weaker. When you are done with that, use the sandpaper to get a smooth surface. Use only the very fine sandpaper on the back and not very much since you don't want to break any fibres on the back.

Now you could use you bow but I recommend that you do two things first:

1. Since the rattan bow will lose up to 10 pounds when it's damp weather you should varnish it with 2-component boat-varnish a number of times. This varnish will not crack as others will do and it protects the bow from dirt, moisture and scratches. You could also use linseed oil, tar or some sort of wax, although it's not as good. For a wooden bow I would use oil or wax but for a rattan bow it's better to use varnish.

2. At the handle you should make some sort of protection otherwise your bow will get a lot of scratches from the arrows while you are shooting. The protection could be leather, linen yarn that you wind around or whatever you've got. If you use yarn or something like that it could be a good idea to glue it to the bow. Otherwise it will probably unwind rather quickly. What I have used? Well, as I mentioned earlier I'm lazy so I haven't made any protection. I will do it now however, since I've seen how much damage the arrows have made.

If you have any questions please contact me and I will try to answer.