Reeds! Reeds! Reeds!
A Methodology for Reed-Making

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Reed-making is an essential part of being an oboist. A reed can "make or break" the tone of the oboe, the capability of the range, the effortlessness of articulation, and the scope of dynamics. Making your own reeds introduces an element of control that most other instrumentalists do not have with their mouthpieces. Need a light sound that articulates easily? – Adjust your reed! How about a dark, velvety tone? – Change your reed! Unfortunately, reed-making can be a challenge to learn, which is why I put together this methodology. It takes the reed-maker through each step of creating a reed, and even includes a "troubleshooting" section. I hope this guide will be a useful tool during your reed-making adventures. Are there other methods out there? Absolutely! But, this is what I do. With time and practice, I'm sure you will come up with a few tricks of your own. I know reed-making can be very frustrating at times, but I promise, with practice it gets easier! Now, go out there and make some reeds!

Basic Materials:
Pencil
Thread
Staples
Millimeter Ruler
Mandrel
Cane (gouged and shaped)
Knife
Sharpening Stone
Plaque
Cutting Block
Lamp
Razor Blades
Water (room-temperature)
Beeswax (optional)

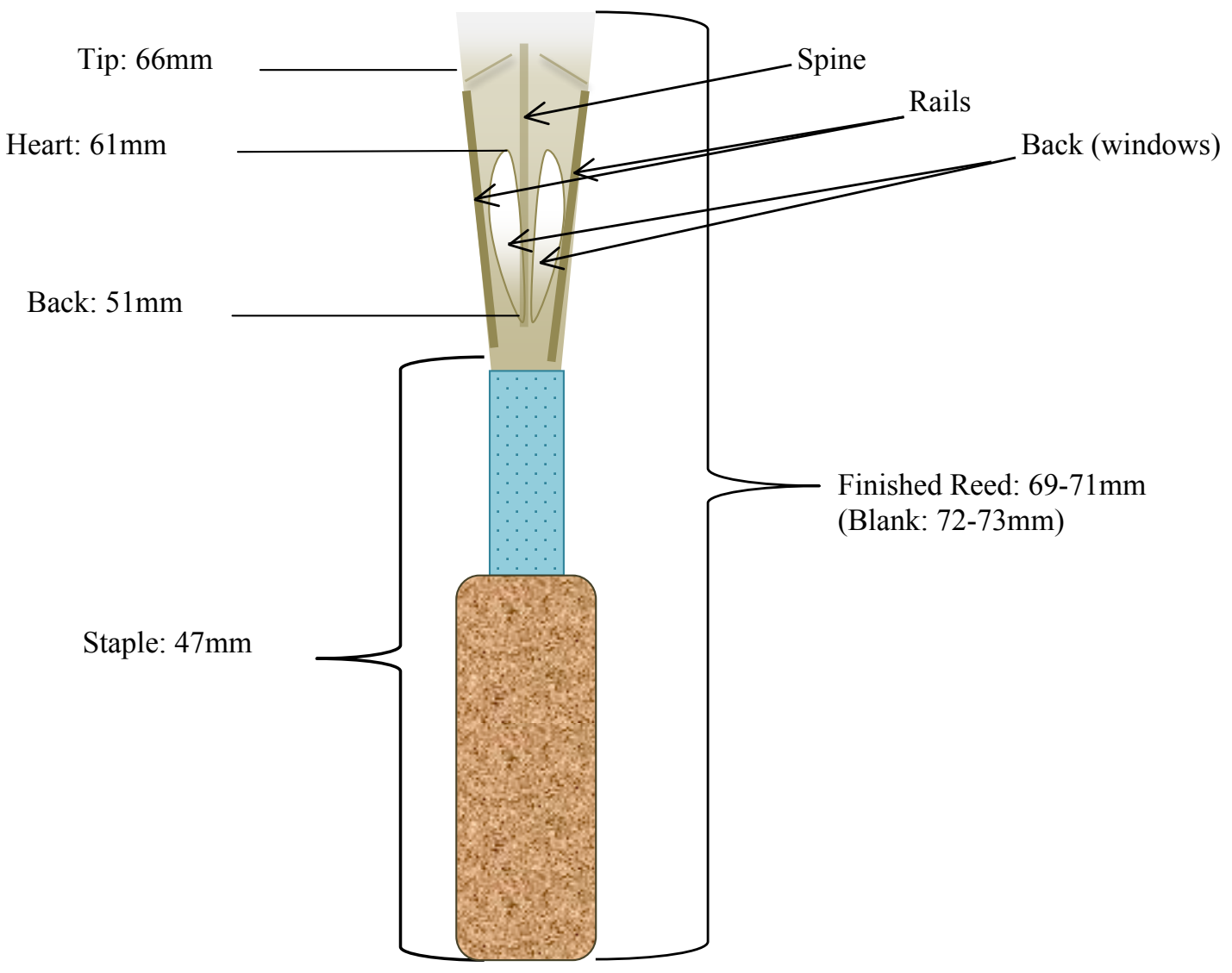
Advanced Materials:
Tube Cane
Caliper
Radius Gauge
Cane Splitter
Guillotine
Pre-Gouging Machine
Gouging Machine
Micrometer
Shaper Tip
Shaper Tip Handle
Easel (optional)

Quick Guide to Measurements: *

Staple: 47mm (there are also 45mm and 46mm staples – I prefer 47mm)
Blank: 72mm (no longer than 73mm)
Finished reed: 69-71mm
Tip starts at: 66mm
Heart starts at: 61mm
Back starts at: 51mm

**Measurements may vary. Each piece of cane is slightly different, which can end up altering the final dimensions. Because I have been making reeds for many years, I "eyeball" my measurements (except I always measure when I tie), so my reeds may be off by 1mm or so from the lengths I have listed above. I highly suggest beginners use the listed measurements. Also, if you are not a beginner, but find yourself in a "bad-reed rut," go back to measuring to ensure proper dimensions. I have done it and it helps get me back on track!*

Reed Diagram:



Tying

- Tie your thread onto a solid surface (a table or chair leg works), and coat with beeswax (optional).
- Measure your staple and make sure it is 47mm (optional if you already know the length). Place it on your mandrel.
- Fold a soaked piece of cane over the staple and measure 72mm. With a pencil, mark the cane where the staple ends so you don't over-tie.
- Loop the thread over the cane twice a few mm below your mark. Pull the thread so there is enough tension to keep the cane on the staple but not so much tension that it causes the cane to fly off the end.
- Roll the mandrel towards you so the thread moves closer to the end of the staple (your mark). Gently pull your thread tighter and check that the sides are closing evenly – adjust if necessary.
- Slip the top piece of cane to the right (if you're right handed – opposite for left-handed people) so that the sides of the cane overlap slightly. The bottom blade should barely be visible on the left side of the reed (right side for lefties). This will ensure a tight seal.
- When the sides are closing evenly, roll (or tie) up to one-thread-width away from your mark. Crossover and finish tying down the staple, towards the cork. Make sure that there is a lot of tension on the thread, both from where you tied it (the table or chair leg) and where you are holding it. This is especially important at the end of the staple (near your mark) to ensure a tight seal. As you tie closer to the cork, your tension can loosen a bit (but not too much!).
- Before you tie too far, look down the barrel of your mandrel to make sure the cane is on the staple straight. If it's not, loosen your thread and straighten out the cane. You should also check that the cane is not leaning to one side.
- When you get about 3mm from the cork, tie off the thread using a half hitch knot. Tie the knot 2 or 3 times, pulling the thread in each direction to produce a tight knot.
- Double check that your blank measures at 72 mm (or where the sides close – no longer than 73mm).
- Look into the bottom of the staple in front of a light source and check that the cane is straight on the staple. If it's not, cut the thread and tie again. YES: NO:
- Check that the sides are sealed by sucking on the edge of the reed near the staple. Cut the thread and re-tie if you feel air.
- Scrape the top 5-6mm of the reed into a taper, or pencil-point.
  YES: NO:
- Your blank is finished! You can put it away or continue working.

Scraping

- The reed is divided into three main parts (see diagram on page 2): the tip, the heart, and the back (windows). These are the sections to scrape. There are also parts of the reed that aren't scraped: the spine, and the rails. The spine runs up the center of the reed and will end up having some bark indirectly removed. The rails are on the sides of the reed and should have little to no bark removed.
- The tip of the reed should start at 66mm from the bottom of the staple. The heart should start at 61mm, and the back 51mm.
- Take a pencil and mark 66mm on the reed (always measure from the bottom of the cork). Use this mark as a guide to scrape the tip.
- Start with a soaked reed and scrape, following the taper shape you started on your blank. Always follow through with your scrape and go off the edge of the tip each time (this helps keep the taper and thins the tip enough to clip). When the tip is thin enough, clip it open, removing no more than a mm of cane.
- If you tied the blank with an overlap, slip the blades into place by sliding the top blade to the right (if you're right-handed – opposite for lefties). A reed with tight sides will sometimes make a slight "click" sound (don't worry if it doesn't make this sound – the sides may still be tight).

- Check that the sides seal by plugging the bottom of the staple with your finger and blowing into the reed. If the reed leaks, you will hear and feel air escaping from the sides. Don't waste your time on it – remove the cane and start over.
- If the reed seals, insert a plaque just far enough into the tip so you can work on one side of the tip at a time with ease. Do not insert the plaque too far into the reed – this could cause the sides to open up. I usually insert about 1/4 of the plaque into the opening of the reed. (While the plaque is in, you can do another test to check for tight sides. Remove the mandrel and hold the reed vertically by the plaque only. Give a few somewhat-forceful shakes downward; if the sides are tight, the reed will stay on the plaque.)
- When scraping the tip, always scrape towards the corners, avoiding the center (spine).
- Scrape the tip until it becomes thin enough to make a "peep" when blown into with a regular embouchure (it should take some effort). Remember to follow through with your scrape to keep the taper (or pencil tip) shape. This can be achieved by moving your starting point closer to the end of the tip on each stroke. So, your first scrape would start at 66mm, your second at 66.5mm, your third at 67mm and so on. (You wouldn't need to measure this, as it's just an approximation for a visual.) As the cane thins, it may be necessary to use smaller, shorter strokes so you don't rip a chunk of cane off of the tip.
- To achieve symmetry, count your scrapes. Do 8-10 scrapes on each section and each side. This will help to keep the reed balanced as you work on it. If one side becomes too thin too soon, the reed can crack.
- After you achieve a "peep" from your reed, move on to the heart.
- Mark the reed at 61mm and start the heart. Instead of scraping in a taper, like the tip, scrape in long, flat strokes, following through into the back of the tip. Like the tip, avoid scraping the spine (center). Unlike the tip, also avoid scraping the rails (sides).
- Do no more than 10 scrapes in each section of the heart and then try to "crow" the reed (this is done by placing the reed in your mouth, up to the string, and blowing.) Start with gentle air, gradually increasing the air speed. A well-balanced crow will sound 2 pitches: octave C's. Ideally, the higher C should speak with very little effort. As your air speed increases, the lower octave should enter. You should hear 2 C's no matter how hard you continue to blow. If the reed begins to rattle, the tip needs a clip. If the reed does not produce a low C (or just squawks), take a few more scrapes out of the heart and crow again.
- Keep scraping the tip and heart until a proper crow is produced. Remember to only scrape a little at a time – you can always take more cane off, you can't put it back on! Since you haven't put in the back yet, it's ok if it still takes a little more effort than you'd like to achieve a low crow.
- Once a 2-octave C crow sounds, mark the reed at 51mm and take 4-5 long, deep scrapes out of the back of the reed, avoiding the spine and rails. Scrape up to the back of the heart. You can either create a "catch" in the cane with your knife, so you stop the scrape at the same place each time, or blend seamlessly into the heart. Either technique is fine. Adding the windows in the back will help to stabilize the low crow and add some depth to the reed.
- Do this for each section and sides of the back and then crow again, listening for the 2-octave C's.

Refining the Reed

- The crow is an essential tool in helping to make a well-balanced, responsive, and nice-sounding reed. As previously mentioned, you want a 2-octave, C crow. To achieve this, place the reed in your mouth, up to the string, and blow with gentle air, gradually increasing the speed. The upper octave should come in with very little air pressure (this shows how responsive the reed will be) and the lower octave should come in with just a slight increase in air speed and hold a 2-octave C crow no matter how hard you blow.
- If the crow rattles too much or sounds like a "kazoo," it means the tip is producing too many vibrations and it needs to be clipped. Always cut off as little as you can. The tiniest clip can be very effective and too big of a clip can wreak havoc. After clipping, check the crow again. If it is still too raucous, make another tiny clip. Please note, however, if too much cane was originally taken out of the heart, the entire reed is probably too thin and may not be salvageable (if you find yourself clipping the tip shorter than 69mm, this is probably what happened). Sometimes taking a bit more out of the back can help balance out a too-thin reed, but if that doesn't work, save it for a practice-reed or trash it.
- If the upper octave C comes in but you just cannot get the lower octave to speak, the vibrations are probably getting stopped at the back of the tip or front of the heart. Try blending the area where the heart and tip meet and crow again. By scraping in that area, you are decreasing the slope, making it easier for the vibrations to travel down and through the reed. Scraping more out of the back can also help. The low crow is important because it not only adds a little darkness to the tone of the reed, but it will also help the low register to speak more easily.

Find troubleshooting tips on the final page!

Troubleshooting:

PROBLEM	SOLUTION
1. My reed won't crow at all.	a. The reed might be dry. Be sure to soak your reed for about a minute before crowing it. b. Check that the reed isn't leaking by plugging the bottom of the staple with your finger and blowing into it. If it leaks, the reed won't work. Remove the cane and start over. c. There is too much cane on the reed. Start by scraping the tip and crowing again. If a high crow speaks, but not the low crow, scrape out of the heart and back as well.
2. My reed crows properly, but it feels too hard.	You have made a balanced reed, but left too much cane on it. Take 2-3 scrapes out of each section (tip, heart, back) and crow again.
3. My reed only produces a high crow.	The vibrations aren't travelling through and down the reed. Try the following solutions; remembering to crow after each one to check that the issue has been resolved. a. The reed could be leaking. See problem 1, solution b. b. Scrape where the heart and tip meet. Use your knife to blend or "erase" the division between the two sections. There should be a slope there, not a step. c. Make sure the rails in the heart aren't too wide – scrape them narrower if they are. d. Scrape the heart. e. Scrape the back. f. Take 1-2 light scrapes along the spine.
4. The crow sounds raucous, like a "kazoo."	The reed vibrates too freely. a. Clip the tip until the rattle turns back into a 2-octave crow. b. Scrape the corners of the tip. c. Scrape out of the low back (closest to the staple). This can sometimes balance a too-vibrant tip.
5. The crow is not a C.	a. If it is lower than a C, clip the tip to bring it up to pitch, then adjust using the previous steps. You can also raise the pitch by scraping out of the low back, or by gently pinching the top and bottom blades together. b. If it is higher than a C, scrape a little more out of the heart (and possibly the tip). Please note – some people prefer reeds that crow a C# and this is perfectly fine. Above a C#, however, will produce a sharp, thin-sounding reed.
6. My reed crows properly and plays in tune, I just don't like the sound.	Congratulations – you made a balanced reed! a. If the sound is too "stuffy", scrape very lightly down the spine in the heart. If that doesn't work, next try a few light scrapes out of the heart, and finally the tip. b. If the sound is too bright, scrape the very corners of the tip as thin as you can without ripping the cane – thin corners help to produce a darker, rounder sound. Or scrape more out of the back – just below the heart.
7. The opening of my reed looks too big or too small (closed).	The opening of the reed is affected by a number of things including: the diameter of the cane, the gouge, the diameter of the staple, and the length of the tied blank. Also, if you tie past the end of the staple, the opening could be too large. If you tie under the length of your staple, the opening could be too closed. a. If the reed opening is too big, try gently pinching the top and bottom blades together and lightly massaging them between your thumb and forefinger. b. If the opening of your reed is too small, gently pinch the sides of the reed to enlarge it. Be careful not to pinch too hard or the reed could crack.