

## Understanding the Gouge

### A Very Brief History of Gouging

Up until the mid 19<sup>th</sup> C. oboists were gouging cane by hand with chisels and sandpaper. As one can imagine, this produced very inconsistent results and took an extraordinary amount of time. In 1839, Henri Brod presented the first gouging machine at the Paris Exhibition. He died later that year, so the Triébert family took up his ideas and produced a machine around 1847. Barret's oboe method of 1862 contains a very crude illustration of what this machine might have looked like. More than 100 years later, we are using machines designed with the same basic principles. When Marcel Tabuteau moved to the United States, he was introduced to machinist Ernst Graf. Together they designed the Graf gouging machine which laid the foundation for modern day machines.

### Two Types of Gougers

**Double Radius:** The axis of the blade is slightly offset or displaced, providing an asymmetrical gouge which removes cane from one side of the piece of the cane. By reversing the cane while gouging, you get an identical cut on each side of the piece of cane. (Graf, Jeanne, Ferillo)

**Symmetrical Gouger:** The blade is perfectly centered in the machine so that it removes cane evenly without the need to reverse the cane while gouging. These machines are typically designed to require little to no adjusting by the owner and are easy to use as long as the blade doesn't wear unevenly. (Ross, Gilbert, Innoledy)

### Testing your Gouge

While everyone may not feel inclined to adjust their own gouging machine, or even own one until later in their career, it is essential to be able to test the gouge you are using to know you are making reeds on a consistent and even gouge. There are 3 easy ways to test this:

- 1) Fold a piece of dry, gouged cane over your finger so that it breaks lengthwise. If the piece of cane breaks directly down the center, you know your gouge is centered and for the most part, evenly balanced. If a gouge consistently produces cane that breaks off to one side, the gouge isn't producing a centered contour and should be adjusted.
- 2) Reed tests: using a soaked reed, slowly use your fingers to close the tip of the reed while watching how it closes. If the gouge is good, it should close evenly from the sides with the slightest resistance to closing in the very center.
- 3) Measurements: Always measure your gouged and shaped pieces of cane! The measurements should be approximately .58-.60 in the center, .47-.50 on the sides just below the ears, and about .54-.55 at the point where the top of the staple will be.

## Philosophy of Oboe Reeds:

A good oboe reed will serve the oboist in his/her expressive pursuit while a bad reed will force the oboist to accommodate for its flaws, often at the expense of the music. The reed should be stable yet vibrant, allowing the oboist to play in tune and with good tone without excessive embouchure manipulation, while also providing innumerable possibilities for dynamic and color changes. Good tone (clear, round, warm, ringing, singing) must be built into the reed, but not at the expense of function (pitch and response); a good philosophy of tone production is essential for good reed making. A healthy resistance built into the reed will allow for true legato, on-the-wind phrasing without the fear of losing tone quality on unfriendly notes. Efficiency is key – aim for a lot of tone for little effort. Having an efficient, stable, and vibrant reed means the embouchure doesn't have to work hard. However, good wind is essential to fine oboe playing and this only comes from proper support; the very best reeds will flourish with the correct use of wind. While this all seems like a lot to ask for, with a proper approach to tone production, an eye for detail, an attentive ear, and a sharp knife, good reeds can be possible for every oboist!

A finished reed should:

- respond reliably in all registers (soft attack and diminuendo)
- hold up pitch without having to bite or squeeze with your embouchure
- have sufficient depth in the low register (tone and response)
- have some resistance for the wind to blow against
- have a good tone that remains even in all registers

A few general observations:

- the tip, for the most part, controls response (the very tip = high notes; inception = low notes)
- the back of the reed effects pitch, balance, and stability; when scraping, take cane *out* of the windows, but *off* the plateau (no digs or bumps in the plateau)

When finishing your reed, work towards achieving the following 5 criteria in the following order:

- 1) Vibration - a vibrant reed is good, and you can always take away vibration later by scraping certain areas. Playing on a reed that is not vibrant enough leads to bad embouchure formation.
- 2) Balance - once your reed vibrates work to balance the tip with the back. Usually, an 8va crow is a sign that your reed is well balanced. A dull sounding reed or a noisy/tippy reed is often a sign of poor balance
- 3) Response - thin the tip and reduce the amount of cane on the entire reed until it responds quickly. There are tests for both high and low note response and corresponding places to scrape
- 4) Pitch - while this is one of the most crucial aspects of the reed, it is best to fine tune it at this stage once the reed is vibrating, balanced, and responding. A reed that is a bit saggy in the first stages can be brought up at this point with a clip or by adding more definition, and a reed that is too sharp can be brought down by scraping in the back. Do not accept reeds that are flat.
- 5) Stability - this is often a result of a good kind of resistance. A little fancy tip work, adding definition, and scraping in negative vibration areas can add stability. Just be careful not to make the reed sound dull.

5

\*Making adjustments in categories 2-5 may require you to start over with category 1. This is usually a constant cycle until the reed is finished.

## Reed Tests:

The first (and easiest) test is to simply check the appearance of the reed. Though the appearance doesn't always determine how the reed will play, a beautifully symmetrical and well-proportioned reed will have a fighting chance. Check the following:

- 1) front view in and out of light - are there bumps, are the parts of the reed in the right place?
- 2) side view - does the inception of tip happen at the same place on all four corners, how does the taper of reed look, etc.
- 3) down the opening - is it open enough? is the gouge centered (check by slowly closing the reed in the center with your fingers). It should close evenly from side to side with slight resistance to closing in the center. If this is off, check your gouge! You can fix this slightly in your scraping).

Once you've checked appearance, this is a good time to assess the physical prerequisites for taking the time to finish a reed. If any of the following are problems with the reed, you are better off moving on to the next reed before wasting time finishing a flawed reed.

- a) too closed - if the reed is too closed, it will usually only get worse as you continue to scrape.
- b) missing corners and/or loose sides - missing corners cause loose sides. Loose sides can also come from poor cane selection. Loose sides = uncorrectable flatness, especially in the high register and encourages improper embouchure formation.
- c) missing spine, rails, or too much cane out of the plateau is another sign this reed will likely never be worth the time spent to finish it.

Finally we test the reed alone and on the oboe to determine the adjustments needed for a beautiful finished reed. You can often perform the "reed alone" tests before ever putting the reed in the oboe. A good reed maker can get an idea of how the reed will sound just by testing the reed alone. Once these requirements are met, they can be refined further to meet the need of you and your instrument.

## Reed Alone Tests:

|                  |  |   |
|------------------|--|---|
| Aspirated Attack | With a normal playing embouchure, blow lightly into the reed to see how quickly it responds to your air. It should respond easily with only the slightest delay (showing good resistance which gives something to blow against).                             | If the reed doesn't respond as quickly as needed: a) check for symmetry in the tip and correct. If this isn't the problem, thin the tip. Once the tip is thin enough, scrape the rest of the reed if needed to allow vibrations to travel from the tip. |
| Peep             | Peep the reed in normal playing position at the pitch it naturally wants to play (no squeezing!). Find the bottom and determine if it is flat. Also listen for good tone in the peep – it should be round and have depth just as you would want in the oboe. | The reed should be at a "C." Try making it peep a "B." If this feels more natural, it is likely flat. Solution: more definition between tip and plateau. If this is defined enough, a clip may be needed.   |
| Glissando        | Start in normal playing position and move the reed out of the mouth to produce a glissando. It shouldn't drop more than a minor third.   | If the glissando goes too low you may have: a) loose sides = trash it. b) leftover ears on the tip. c) too long of a tip = clip and rebalance the tip with the rest of the reed   |

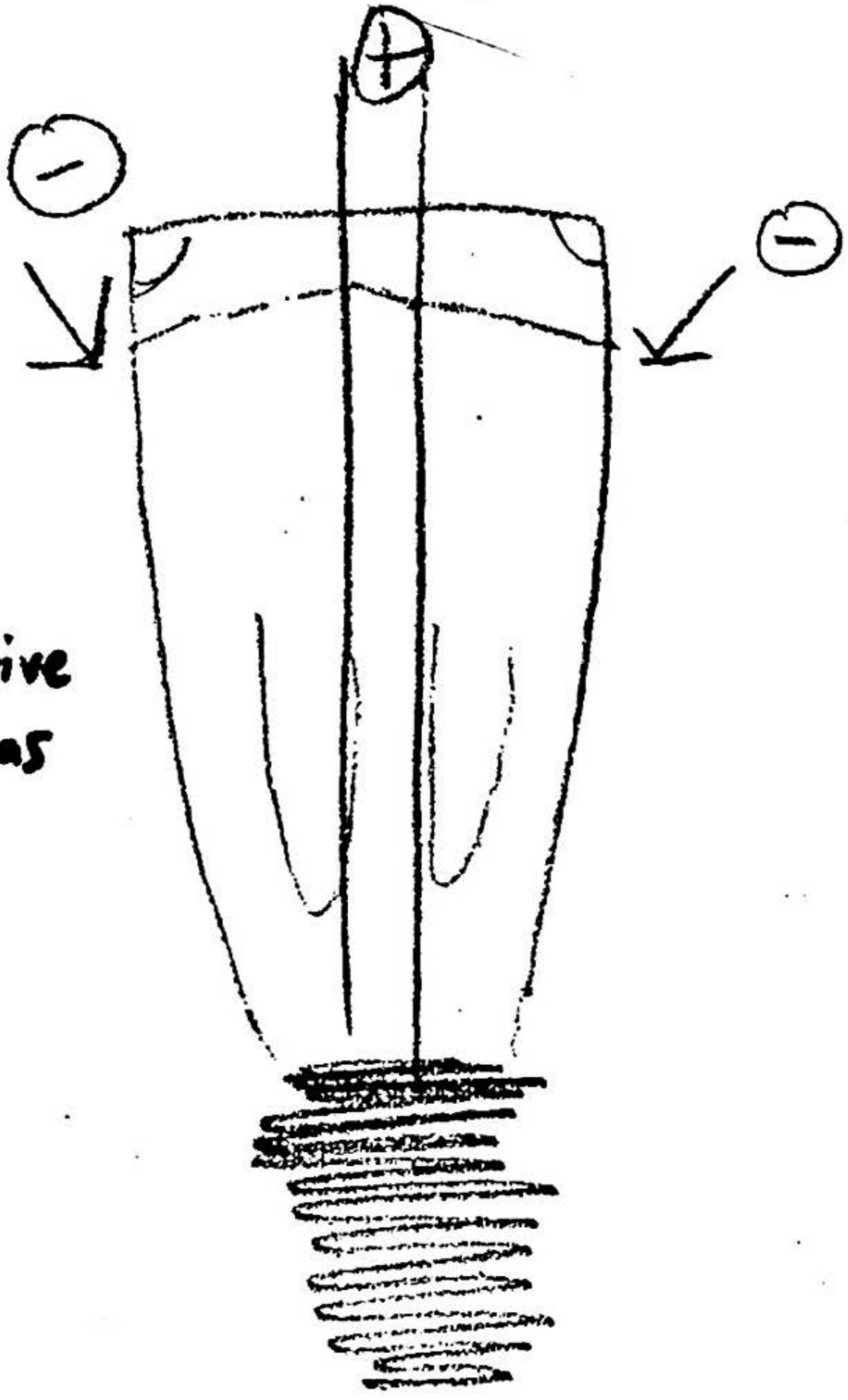
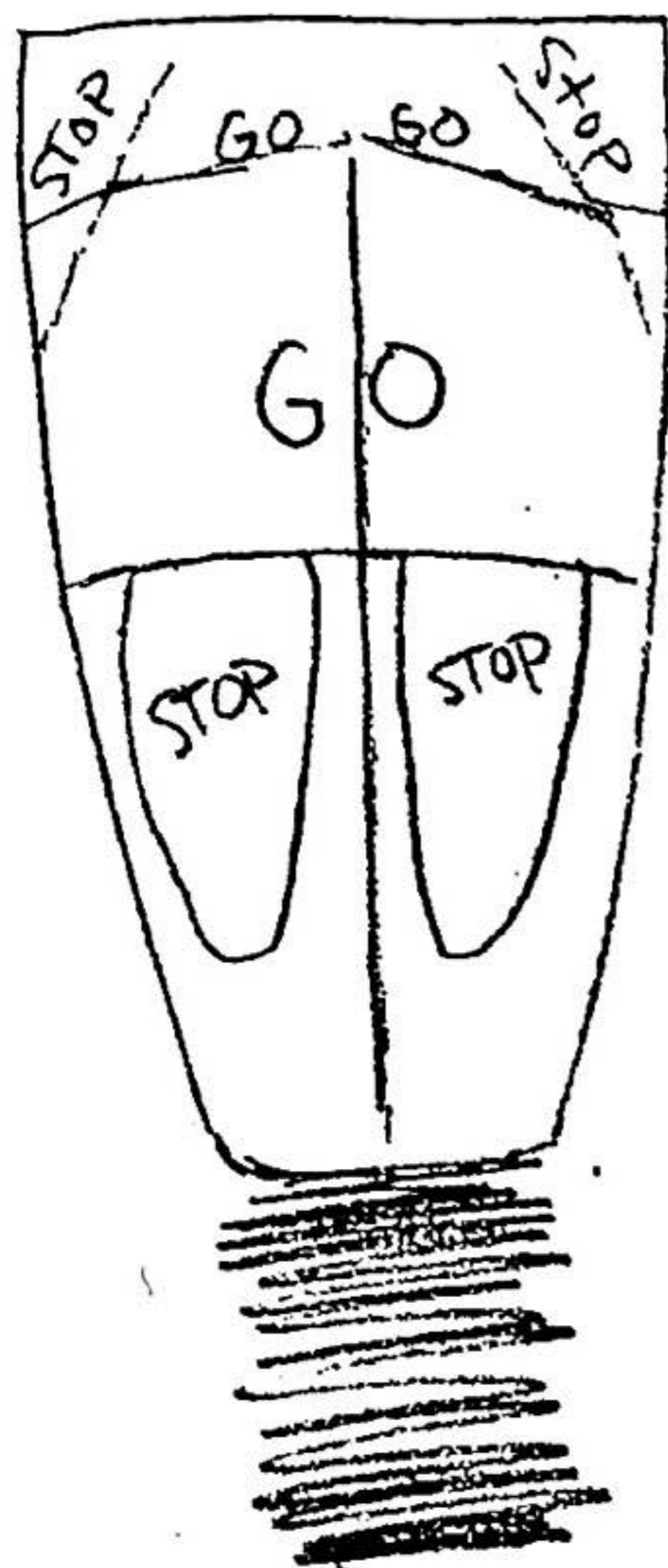
## Crow the Reed, Read the Crow

| Crow                              | Diagnosis   | Adjustment   |
|-----------------------------------|---|--|
| Crow is sharp                     | a) Tip is too thick<br>b) too much cane is in the back  | a) thin the tip (especially sides)<br>b) take cane out of the windows  |
| Crow is flat                      | a) tip is too long<br>b) not enough definition between tip and plateau<br>c) too much cane scraped all over<br>d) loose sides | b) clip tip for pitch then scrape for response<br>b) scrape at the shoulders (corners where the tip and plateau meet) to add definition<br>c and d) no solution  |
| No low crow present or is shallow | a) reed is too closed<br>b) reed is still too hard/thick<br>c) tip is especially thick  | a) squeeze open (temporary fix) or displace overlap (permanent)<br>b) take more cane off the entire reed, constantly testing to be sure you don't go too far<br>c) thin the tip                                    |
| Rattling crow                     | a) imperfections in tip<br>b) too much plateau to tip blend, especially if pitch also sags<br>c) too much cane scraped        | a) refine the tip, get bumps out – sharp knife with long strokes to plaque<br>b) add definition between tip and plateau, especially at corners<br>c) no solution<br>*may also need a tiny clip after doing a or b. |

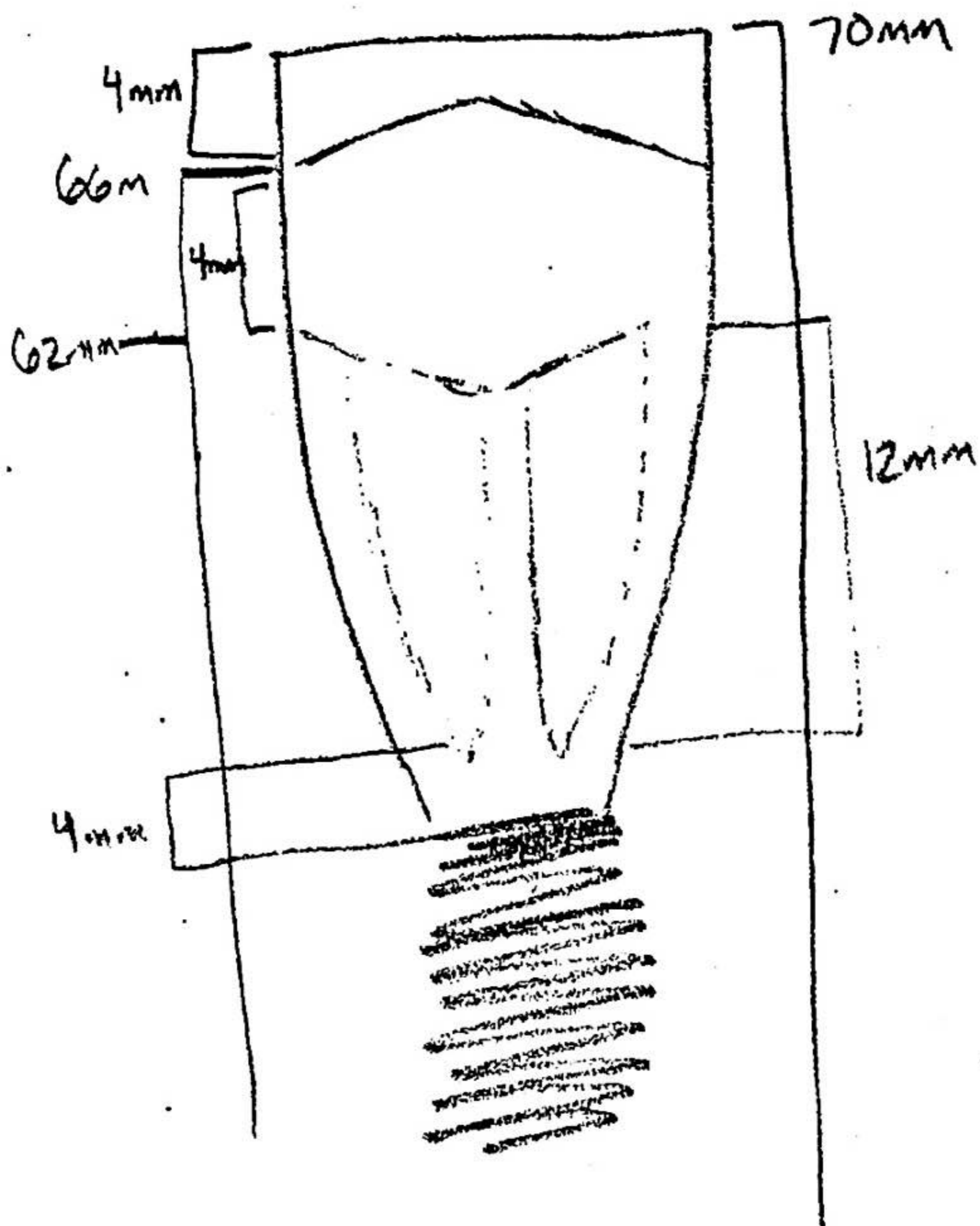
**Oboe Tests:**

|                    |  |   |
|--------------------|--|---|
| High C, Low D      | How quickly and easily do these notes respond aspirated and tongued?   | Scrape the tip: if high note response is slow, scrape the corners of the tip; if low note response is slow, scrape the bottom portion of the tip  |
| High A, Bb, B, C   | With a non-squeezing embouchure: listen for pitch, tone, and stability/resistance  | If there is flatness and/or a spreading tone, add more definition between the tip and the plateau. This will also add a bit of good resistance  |
| Octave slurs       | With good air and a non-squeezing embouchure, listen for pitch and stability   | Flat octaves often mean the tip is too long – clip and rebalance. This typically solves the problem as long as reed isn't simply flat in general.   |
| Octave E, F, F#, G | Listen for depth of tone (especially in G which can spread easily). Also listen for pitch. These notes all have different pitch tendencies. If the reed is unstable or flat, these tendencies will show themselves more than usual | To add depth of tone, scrap the bottom corners of the tip. You might also try taking a little out of the windows as long as pitch isn't already low. Adding more definition at the tip will give these notes stability.   |
| Low notes          | Test low note response and tone. Test notes both slurred and tongued with soft attacks. Listen for depth and ease of response  | If low notes are lacking depth and/or response, first check to see if it is amount of opening issue. Otherwise, scrape corners of the tip and smooth out the transition between to the tip and plateau (try to get a nice 8va crow). Scraping the windows will add depth. |

The art of oboe reed making is one that is passed down from master to student. I would have none of this information were it not for my teachers – Petrea Warneck, Rebecca Nagel, Joel Timm, Allan Vogel, and Ariana Ghez. I've also participated in reed classes with Cheryl Wefler, Mark Ostoich, Linda Strommen, and Elaine Douvas. A good reed maker is constantly evaluating his/her process and objectively assessing reeds. Never stop asking questions and experimenting, but most of all, make more reeds!



positive + negative  
vibration areas



reed proportions

## Fundamentals of Oboe Playing

### III. Reed Making

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**R**eed making preoccupies oboe players more than players of any other reed instrument. The complex construction and short life of oboe reeds combine to require daily attention to the craft of reed making, and the steep learning curve frustrates oboists of all levels. The following thoughts and comments, while in no way comprehensive, should help to reduce confusion and open some new doors.

A complete guide to reed construction and scraping is not possible here, and probably not even productive. If you have never made a reed, you really need a teacher. This article is intended for those who find reed making occasionally or frequently perplexing. My intention is to present the basic concepts of the process, along with some general guidelines to use when the going gets tough.

Before we begin, it is most important to understand that reed making is a craft governed by fairly consistent principles. It is not a black art; it is not swayed by astrological forecasts; it does not require even the smaller, less severe, ritual sacrifices. It is a complex craft and, like anything else that you would like to master, it will require years of careful work and study. But it will eventually yield and become something that functions almost completely under your control.

This notion of craft is important when the going gets tough. Don't give up in frustration – instead, use what you know. You may not know everything; you may not be able to make swift decisions. But, even after only a year of reed making, you do know quite a bit. Ask the right questions, and the right answers will usually come. The various scraping operations usually give a similar and predictable result. Think before you scrape, and anticipate the likely result.

Indeed, reed making is the oboist's advantage. We can construct a reed to match our instrument, our embouchure, and our physical capacity. We can even tailor it to the music we're about to play, and to the acoustical situation that surrounds us. Few other instruments have this degree of control.

making will remain a few years behind the oboe playing for some time. Until this disparity is caught up, reed making will be rather trying for the student. I think it is this uncomfortable time, which can last for five years or longer, that leads to the lifelong obsession with reeds – “if only I had a good reed, I could play well...” This attitude can persist until long after it is no longer necessary.

A better reed does not make you a better player. In the sound-producing chain of player/reed/instrument, you, the player, are by far the most important link. Without doubt, a better reed will allow you to play better, just as a Porsche lets you drive faster than a Toyota. But the Porsche does not make you a better driver. To be a better oboe player, you must become a better oboe player. There is no shortcut in this process. Do not neglect the basic concerns of practicing all aspects of oboe playing: tone production, finger technique, articulation, etc. Without real skill in all these areas, a better reed will not help you enough. The legendary quote attributed to Marcel Tabuteau – “any damn fool can play on a good reed” – is usually interpreted to mean that we must learn to make do with inferior reeds. But this quote could also mean that you must learn how to play, how to really play well. Having a “perfect” reed could temporarily lull you into thinking that some of your playing problems are solved. Really learn how to play. Then, all your reeds will work better.

Remember that it will take thousands of hours and many years to become really proficient at reed making (or anything else, for that matter). Along the way, there will be many days where you spend hours working on reeds only to have nothing useful to show for it. This time is not wasted. It is another step along the way. You have to spend the time. You have to do the work. Worry as much about process as you do about product.

As your playing improves, so will your reeds. You will demand more function, more resonance, more control. These musical demands are the beginning of improvement. If all you demand is

functional reed, but the soul will be missing. Reed making is only interesting because music-making demands that you have a reed.

## THE TWO GOLDEN RULES OF OBOE REED MAKING

OK, here goes. The two golden rules of oboe reed making.

1. Sharpen your knife.
2. Don't make any mistakes.

While still a student, I remember reading a statement by (I think) Ray Still asserting that it takes twenty years to learn how to make reeds. Of course, I devoutly hoped he was wrong – that there was some shortcut that would apply to me which he had overlooked – but it turned out that he was right. After twenty years, I started to feel like I could make a reed whenever I needed one. So...I reflected...what had I learned? Apart from experience, which counts for a lot, the only things I'd really learned, taken to heart, and become slightly obsessive about (unusual for me), were the two listed above.

Sharpen your knife. And I mean really sharp. A dullish knife will still remove cane, just like a pair of vise grips will still get your bicycle apart, but it won't do what you want and it will cause more harm than good. If you can't sharpen your knife, let your teacher sharpen it. If your teacher can't sharpen it, get a new one. In this regard, I'm a firm believer in spending money rather than wasting time. Reed making doesn't have to be a matter of luck - get a good knife.

Don't make any mistakes. I don't just mean don't rip off bits of the tip. I mean don't do slightly foolish things and hope they won't matter. Choose your cane carefully, gouge it carefully, shape it carefully. Tie it on with care. Use good materials. Use good tools in proper repair. Get the overlap right. A well-made blank from decent cane will make a decent reed almost every time. Of course, scrape carefully (with your sharp knife).

That leaves out the experience factor. But experience is just the result of thought and observation. So, when you're making reeds, think and observe, and file everything away in your brain (or your notes) for future reference. Observe everything – from the appearance of the cane to the result of a certain scraping operation. Don't just make twenty reeds hoping that one will work. Remember that reed making is not a black art – removing wood from a certain area

will usually give a certain result. Think about what you're doing, and be able to defend it if questioned. Experience allows you to find an answer much more quickly, but most students already know much of what they need to make reeds successfully if they are disciplined, analytical, and methodical in their approach.

The ultimate goal is: after you finish a reed and it still doesn't work, poor cane quality should be the only reason it didn't turn out. With enough observation of cane characteristics – choosing what works best for you – even that problem can be minimized.

My insistence on this idea of "neatness counts" sometimes paralyzes students who, for fear of making mistakes, scrape off almost nothing at all. That isn't my intent. You should still experiment, work quickly, think fast, try things, just to see what happens. Just make sure you learn something from the experience.

Most reeds will survive one mistake; some will survive two; very few will survive three. Neatness counts. Be scrupulously careful about every detail at every stage.

## REED ADJUSTMENT GUIDE

The following section is meant to show that careful, logical thought can be brought to bear on the process of adjusting reeds. Your terminology and results may differ from mine, which is unimportant; the important idea is that you can have relatively consistent results if you apply enough analysis and method. You should never have to make ten reeds to get one that plays.

The performance of a reed can be described using four basic criteria: response, resistance, tone quality, and stability.

- **Response:** This refers to the reed's ability to speak freely at all dynamic levels. It should speak easily at the softest possible dynamic while maintaining a true sound, and it should speak cleanly at a loud dynamic without splattering or spreading. These characteristics should be consistent in all registers.
- **Resistance:** Resistance refers to the amount of air pressure required to make the reed vibrate with a full tone. It should be possible to play your full dynamic range with very little embouchure intervention except at the softest dynamics. No-one can maintain good control and endurance on a reed that requires constant embouchure action. Having a reed that matches your physical capacity is essential to efficient playing. A reed that is



too easy (resistance too low) is as tiring as a reed that is too stiff (resistance too high). Although the embouchure is very free on a too-easy reed, the natural tendency to search for more tone causes overblowing and fatigue.

Here's a good test to determine the reed's overall resistance level: with the reed in the oboe, blow gently through it with a relaxed embouchure – without trying to influence the tone color or the dynamic at all. Then, gradually increase the air pressure until the reed speaks by itself. The resulting dynamic should be mezzo-piano or very close to it. If it is too loud, the reed will require too much embouchure intervention to play quietly; if it is too soft, the reed will feel limited.

In addition, we can describe another aspect of resistance – hardness – that refers to the amount of embouchure tension (preferably minimal) needed to keep the reed behaving. Before making a judgment about the reed's hardness (and possibly ruining it), confirm that the opening is not too large. Before scraping, squeeze the opening to the proper size and try the reed again.

- **Tone Quality:** The actual timbre of the sound is a personal matter, and not important here. It is important to get a good balance between low and high partials, allowing the sound to be as complex and rich as possible. A reed that has only the lower partials will sound dull, lack brilliance, and will not project. Do not confuse this with making a "dark" sound. A reed that has only the higher partials will sound shrill and thin.

It is very important that tone quality not be the paramount consideration in reed adjustment. It is much more important to make a reed that works. If the reed's function is inferior, even if the sound is beautiful, you will miss attacks, you will play out of tune, and you will tire quickly – all aspects of playing that any listener can hear. Response and pitch security are the most important considerations – a defect in either of these will make you sound incompetent.

- **Stability:** Refers both to the reed's overall pitch level as well as its ability to maintain that pitch. Reeds can manifest a confusing variety of combinations: flat and stable, flat

should cause you to reject the reed. A good reed will play in tune and hold its pitch at any dynamic, any level of air pressure, and any reasonable variation of embouchure tension or reed placement in the mouth.

Remember that anything you do to a reed affects all four of the above considerations. You will seldom cure one problem without creating another. Success in the diagnostic process consists of finding the solution that removes the most problems and creates the fewest new ones. Think before you scrape! Keep notes if necessary.

Of course, the best reed-making is purely intuitive – you just know what to do. This knowledge is the result of experience, so don't be afraid to occasionally experiment – even recklessly – to see what happens. Just remember everything.

### COMMON ACTIONS AND THEIR EFFECTS

This section is partly informational, and partly meant to illustrate that there are not as many complicated options as beginning reed makers imagine. There are really only about half a dozen operations that can sensibly be performed on a reed in progress. The suggestions presume that the reed is already mostly finished. If it is still in the primitive stages, scrape until it vibrates.

Scraping the whole surface of the tip thinner:

- Easier, quicker response.
- Lower resistance (if the tip is too thin, the reed may feel stuffy).
- Lighter, somewhat shallower, sound.
- Marginally flatter pitch and decreased stability.

If the reed is nearly finished, scraping the whole tip is seldom a good idea. It tends to make the reed chirpy and shrill because it emphasizes the tip vibrations too much by isolating them from the rest of the reed. In the case of an un-vibrant reed, it is usually better to try to get more vibrations some other way – scraping the heart a bit, for instance – and then finishing just the sides and corners of the tip. Remember that scraping the tip makes the tip vibrate better; it doesn't necessarily make the reed vibrate better.

Scraping just the extremities (sides and corners) of the tip:

- Negligible effect on stability
- More focused, refined sound

If done carefully, this should improve stability and tone focus without dropping the pitch. Often, finishing the tip will unify all the elements of the reed after everything else looks all right. It should be among the last things you do to a reed and always with a very sharp knife. Work with the lightest possible knife pressure – twenty or more scrapes might be necessary to remove almost nothing.

#### Clipping the tip:

- More sluggish response
- Higher resistance
- Duller, shallower, less vibrant sound
- Sharper pitch and improved stability

Before clipping the tip, be sure it really needs clipping. A good candidate for clipping will be slightly (or noticeably) flat and noisy. Don't clip just to improve the tone! Clipping a bright, sharp reed that doesn't vibrate well to make it "darker" won't help it a bit. Always clip off the tiniest possible amount; it's better to clip a reed three times to get what you want than to clip it too much once.

#### Scraping the heart (avoid the center!):

- Somewhat improved response
- Lower resistance
- Noisier, more raucous and vibrant, sound
- Flatter pitch and decreased stability

This is the cure for a stodgy, wooden reed that refuses to vibrate. Try to stay away from the center of the heart unless the reed just doesn't vibrate at all. Think of the heart as a sort of control valve that regulates the passage of the tip vibrations to the rest of the reed. If the heart is too thick, it has the effect of isolating the tip and preventing the rest of the reed from vibrating enough. The reed will seem shallow, stuffy, and resistant. If the heart is too thin, it has the effect of making the tip longer. There will be plenty of vibrations, but the reed will be wild and noisy. Of all the scraping operations, scraping from the heart has the most damaging effect on the reed's stability, so test frequently.

#### Scraping the back (top half)

- Slightly more sluggish response
- Lower resistance (usually)
- Warmer, less brilliant sound
- Flatter pitch and decreased stability

The outcome of this operation depends very much on the balance of the reed before scraping, but will usually give the results listed above. After the first roughing-out stages, wood should mostly be removed from the top of the back, blending into the bark as you get closer to the string. For me, making the whole back thin weakens the reed too much. Avoid having too much of a hump between the top of the back and the heart – blend it in.

#### POSSIBLE CURES FOR COMMON PROBLEMS

Note that all of these conditions can occur at some stage during the normal reed making process. If you are observant about your reed, and sensitive to early manifestations of these problems, they should never become troublesome.

#### Reed too flat

There are several things that can cause this problem: the opening is too big, the reed is well made but needs clipping, the overlap is too slight, or too much wood has been removed from the reed. It can also be a combination of these factors. Flatness in the early stages of reed making is not unusual and can usually be corrected by clipping. The only fatal combination is a reed that is still too hard and already flat.

If the opening seems too large, take care of that first. Soak the reed well and, with the plaque inserted, squeeze gently just behind the tip, holding the reed between your thumb and index finger. Once you're pretty sure it won't crack, squeeze hard. Then gradually squeeze a little closer to the string. Finally, squeeze as hard as you can as close to the string as you dare. Twist the tube back and forth a little to weaken the reed further. If it cracks now, don't worry too much; it would have cracked eventually anyway. Better now than during a concert. This is the only effective way to make the opening smaller. Weakening the reed by scraping is not effective. The next time you soak the reed, the opening will probably be too large again. Repeat the squeezing procedure, and after a few days it should settle down. It is very rare to have a reed that won't eventually settle down to a comfortable opening. Do not attempt this procedure until the reed is nearly playable. In the early stages, it will almost certainly crack.

If the reed seems to play well but just a bit flat, it probably needs to have the tip clipped. Be careful to clip only the tiniest amount at a time and try the reed after each clip.

You can raise the pitch slightly by increasing

the amount of overlap. Gently slip the blades a little further apart. Note that this will also make the tone shallower and less vibrant.

If the reed is flat because too much wood has been removed, it may be difficult to re-make. Usually, this happens if the back or the heart (or both) have been scraped too thin. Try clipping it a little. Chances are the pitch will improve but the sound will not. Be prepared to give up and make a new reed without making the same mistakes.

Don't overlook the possibility that you have chosen the wrong tie length or too wide a shape. If the reed is tied on too short, it will be too wide at the throat (where the cane meets the tube) causing the pitch to be flat. This will usually be accompanied by a saturated, slightly spread, slightly wild tone. Tie length or shaper width problems should not occur if you are careful to work consistently. Only make a change if you have a consistent problem.

The general order of operation in the case of a flat, but otherwise well made, reed is to clip it until it crows "C," then loosen it up if necessary, clip again if necessary, etc. The closer you get to an acceptable result the smaller the adjustments should be. Try the reed after every (tiny) clip and after every (tiny) scraping procedure.

### **Reed too sharp**

Sharpness can be due to the opening being too small, the reed being too short, too great an overlap, or too much wood being left on the reed. Again, the tie length can be a factor if the throat is too narrow. Try tying on a little shorter, or choose a wider shape. Sharpness will usually be accompanied by a shallow, somewhat shrill tone. In the earlier stages of reed making, sharpness is not necessarily a bad thing since removing wood (which you have to do anyway) will usually cure it.

If the opening is too small, there is usually no remedy. Try soaking the reed for a really long time (15-20 minutes) and see if it improves. Squeezing it gently open with your fingers is a temporary solution. Some players recommend changing the shape of the tube with pliers to adjust the opening. While this can be effective, it damages the tube, and the results are imprecise. If you get consistently small openings, try using cane with a smaller diameter, and/or a wider shaper tip, and/or tying the reeds on a little longer (but keeping the same finished length).

If the reed is clipped too short, it's probably

clipping, scraping, etc. Be more careful.

The overlap can be reduced by slipping the blades, creating a larger resonance chamber. This will also make the tone more resonant. The result is seldom permanent, but it can be helpful if you're desperate.

If the reed is sharp because it's still too thick, scrape more off. Usually, the heart is too heavy preventing the tip vibrations from reaching the whole reed. This is normal in the early stages of reed making.

### **Reed won't vibrate**

This condition is also normal in the early stages of scraping the reed. The difficulty comes in determining where to remove wood. The tone quality of the reed, while it will be quite unrefined at this stage, can help you to decide where to scrape.

Determine whether the sound of the reed tends more to be dull and wooden or whether it's thin and shrill. An un-vibrant reed will almost always need wood removed from all areas, but this test will determine your scraping priority.

If it's dull and wooden, removing wood from the heart usually fixes the problem. In extreme cases, you can even take wood from the center of the heart. Note that this will make the reed flatter. If the reed is dull and wooden and flat, it probably won't ever work.

If it's shrill, take more wood from the back. Continue scraping until the sound gets a little better, then balance the rest of the reed to what you've done. This will also make it flatter, but most shrill reeds are sharp so you're OK. Note that shrieky reeds that tend towards extreme shrillness rarely turn out well. Observe the qualities of that particular piece of cane, and avoid any others with the same characteristics.

If the sound is basically good (though tough), and the reed crows a C, or close to it, that is a sign that the reed is well balanced but just too thick. Take a layer off the entire reed and try it again.

### **Reed vibrates too much (raucous)**

This is often a good thing in the early stages, particularly with English horn reeds. Usually, the reed is well-balanced but just not finished. If this is the case, scrape equally from the tip, the heart, and the top of the back and try it again. Sometimes, raucousness in a nearly finished reed is the result of the opening being too large. If that's the case, squeeze it down before

By "raucous," I mean a reed that vibrates with some firmness in the crow and in the tone. Really trashy, noisy sounding reeds are usually unstable as well, and difficult to refine.

## GENERAL OBSERVATIONS

What follows are some general thoughts for healthy reed making, in no particular order of importance. The suggestions presume that the reed is made with the standard American long scrape as illustrated in the accompanying diagram. The suggestions also make the convenient assumption that the gouging equipment is working well, and that the shape is well matched to the gouge dimensions. Players who do not gouge or shape their own cane are starting from a significant disadvantage.

- Select your cane carefully. Don't just blindly make a reed from every piece of cane you own. Good cane is evenly grained; the bark has a rich golden color marked with brown mottling; it is resilient and elastic, and it feels hard and structured under the knife. Poor cane is soft and shreddy, has a pale white color, twists easily, and comes off in pulpy mushy bits under the knife. Avoid completely cane that shows any tinge of a green color on the inside, though this fades with time, so that cane might be useful later. A brownish/orange color suggests that it might be too old. Almost every batch of cane has at least a few useful pieces. Try to find those and set the rest aside. Ultimately, the best test of cane quality is to make a reed out of it. But studying and remembering the physical characteristics of the cane can help immeasurably.
- Tie carefully. This includes tying at the correct length, with the correct overlap, and straight. The correct tie length will cause the sides to seal tightly with one wind remaining before crossing over. If the reed closes sooner than that, try it again a little longer; if it won't close at all, try it again a little shorter. The resulting reed length will be correct for your shape. Use it consistently from then on. The reed must be straight when viewed from the front, from the side, and from the top (in other words, the cane must be straight in relation to the oval of the staple). Set the overlap so that the front blade is slightly to the right of the rear blade. If you're left-handed and tie with the string in your left hand, set it the other way. This way, the tension of the string will pull the two blades tightly together. Remember: a carefully made

blank from decent cane should almost always give a decent reed.

- Balance the reed. Every place on the reed has three corresponding spots. All four should be exactly the same thickness. Do whatever you have to: count scrapes, use a good backlight, measure with a micrometer, etc.
- Don't use inferior tubes. If they don't fit a good mandrel, don't use them. Keep the length consistent (47 mm is recommended). Cheapo tubes from discarded music store reeds are usually hopeless.
- Gouge and shape your own cane. Even if you know nothing about the effects of the gouging process on reed quality, and must depend entirely on professionals to maintain your machine, the resulting consistency in reed quality is well worth it.
- When testing the reed, always confirm that the opening is the proper size. An opening that is too large will give very misleading information.
- The reed should "crow" a C. How much rattle the crow contains is a matter of personal preference – I prefer only two of the usual three octaves. It is essential for the pitch of the crow not to drop with increased air pressure. Some players are comfortable with a crow lower than C; reeds with a crow higher than C hardly ever play well.
- Don't make scraping mistakes. Many students make reeds with chunks of the tip missing, or, to avoid this mistake, with tips that are entirely too heavy. Sharpen your knife!
- Don't be misled by the occasional professional reed you might see that looks dreadful but plays well. It would have played better if it had been carefully made.
- Strive for consistency. The more variables you can eliminate, the greater your chance of success. It is tempting to search for a reed solution in a new shaper tip, or a different brand of staple, but the solution must usually be found in your own skill and craftsmanship. If you must change something, change only one thing at a time and allow at least a dozen reeds before jumping to a conclusion.
- Make a reed a day. Every day.
- Sharpen your knife. Make sure it's really sharp before going anywhere near a reed. Spend ten minutes sharpening if necessary. Sharpen it five or ten times per reed. This cannot be emphasized enough! If you cannot get your knife sharp, you might need a new one, or you might need to restore the edge using a coarse stone. A knife more than a year old is seldom

much use unless it was extremely high quality to begin with and has been very carefully sharpened. Consider having one knife that you use only for the most delicate work. (This is not to say that the rough work should be done with a lousy knife! You need a good edge always.)

- Because the American style reed has wood removed from most of the reed, it is essential to maintain a "skeleton" of bark to give structure to the reed. Make sure that the spine is strong and that the rails on either side of the reed are not removed. They should be visible all the way up to the tip – they don't have to be very wide, just present. Reeds without spine and rails collapse quickly, making it very difficult to maintain pitch and tone focus.
- Do not deliberately remove wood from the center of the reed. Enough comes off anyway.
- Make it your goal to adjust function, not tone. The tone can guide you towards where to scrape. But in finishing the reed, make it respond, make it play in tune. Do not give up function for improved tone, which is largely controlled by cane characteristics anyway.
- Try to analyze the tone characteristics of the reed without using the words "bright" and "dark." I think these words are largely meaningless – people use "dark" to describe a tone they like, and "bright" to describe a tone they don't like. Being more specific ("dull," "shrill," "rough," "stuffy," "glassy," etc.) will improve your ear and your reed making skill.
- Make the extreme tip (corners and sides) as thin as you can. Measurements show that many reeds have tips that are .01 mm thick (that's .00039 in. – 4/10,000). Sharpen your knife.
- Think. Everything you do to a reed is a compromise. Unless you're completely sure of what you're doing, consider all the effects of what you're doing on the four basic criteria of reed performance: response, resistance, tone quality and stability. Try to find the solution that solves the most problems and creates the fewest new ones.
- Learn to anticipate the unintended effects of what you are about to do. Most scraping operations will give you the intended effect, along with two or three others you may not have thought about. Think before you scrape.
- Try the reed after each operation. Don't decide you need to scrape the back, finish the tip and then clip it. Results are sometimes

- If you have an idea, persist with it until you note some change. Many times, students will scrape a little, find no difference, and conclude that they had the wrong idea. Scrape until something changes. Test the reed often.
- Almost every scraping operation will cause the pitch to drop, sometimes significantly. Scraping the tip causes the least disturbance; scraping the heart can drop it dramatically; scraping the back usually drops the pitch moderately.
- The sides of the reed must hold tightly together all the way to the tip. If the sides are "loose" at all, the reed will never work well. This problem is usually caused by warped cane, careless tying (usually too short, or not straight with the oval of the tube), or careless shaping. There is no scraping operation that can correct this defect.
- Observe everything. Successful reed making is nothing more than an accumulation of experience and the elimination of error. Learn which types of cane work best for you. Which shapes, which tubes, which knives, etc. If you find something that works, stick to it. Consistency is more important than the possibility of a marginal improvement at the expense of confusion. Most of all, think while you make reeds. Observe everything. You may ruin the reed you're working on, but make sure you learn something from the experience.
- I prefer to make a reed over the course of several days. The first day, I apply the rough scrape and open the hinge. The second day, I scrape enough to make the reed crow. The third day, enough to make it play. The fourth day, I finish it. Reeds made in this fashion seem to last longer than reeds made all in one sitting. If you are disciplined in maintaining an assembly line approach, you should always have a reed or two in your case that's just a few scrapes away from being finished. Whether you make reeds in one sitting or in several, you will still have to make reeds every day.

### ENGLISH HORN REEDS

English horn reeds differ from oboe reeds in two important respects: they are not as "finished" as oboe reeds, and they generally carry a wire.

Many oboe reeds have extremely thin tips and a rather thin back, especially just below the heart. If you make an English horn reed this way, it will sound small, dull, and may well be flat. Instead, make a reed that works well, is

tip, thinner heart, thicker back. In addition, the difference in thickness between the top of the back and the lower portions is not as pronounced. If viewed from the side, the "waistline" of the reed that appears just below the heart is lower down. If you want to think in terms of oboe reeds, make a reed that plays well but is not "refined."

The wire is not used to control the opening of the reed. If the opening is wrong, the reed will have the same problems with or without the wire. Rather, the wire stabilizes and focuses the tone of the notes above the staff. Often, this allows you to remove more wood from a reed that was sagging slightly before the wire.

Many reed makers put the wire (#24 gauge brass wire from the hardware store, wound round the reed twice with pliers) on the blank before scraping at all. I prefer to add the wire later so it doesn't interfere with scraping the lower part of the back. Don't wind it on so tightly that it grips all the way around the reed; stop as soon as you feel it gripping the sides. Don't put it up too high on the reed - 5-6 mm from the string (in other words, just into the beginning of the scraped area) is high enough. The wire will usually slide around when the reed is dry, but return to its proper position when the reed is soaked. Some players prefer English horn reeds with no wire;

this will give more resonance, but requires very careful balancing to avoid losing stability.

English horn reeds should crow a "C." Even C-sharp is acceptable. English horn reeds are the opposite of oboe reeds in this regard: oboe reeds with a crow higher than "C" almost never work, while English horn reeds with a crow lower than "C" rarely play.

#### SUMMARY

1. Sharpen your knife.
2. Make no mistakes.
3. Think through what you intend to do.
4. Adjust function first, not tone.

#### *About the Author ...*

*Martin Schuring played oboe and English horn in orchestras around the world before joining the faculty of Arizona State University, where he co-hosted the 1998 IDRS conference. A regular performer at the Grand Teton Music Festival, at IDRS conferences, and at other national and international venues, he can also be heard on recordings for Koch International, Philips, and Summit Records. He studied with John de Lancie at the Curtis Institute of Music.*

## Letter to the Editor

By Lisa Silver  
Teacher's College, Columbia University

I wanted to let *Double Reed* readers know about a couple of errors in the "Alternate Oboe Fingerings" article from the Winter 2001 issue. The fingering for #17 under "Fingering Examples" uses the FIRST octave key, NOT the second octave key. Also, English oboists "tend to use" the Eb fingering for #14. I also wanted to give credit to Eileen Cohen for Dr. Fossner's 1999 photograph.

# DBOE REED CLASS #1

BY ELAINE DOUVAS AND LINDA STROMMEN

Learn to make reeds fast

## GUIDING PHILOSOPHY

1. Make the reed do as much as possible on its own, making less work for the player — less pitch adjustment, less concern over attacks, less gathering and outlining of the tone. Do not help the reeds sound good while testing them.
2. Play on the easiest reed that will do the job — there are "different reeds for different needs." If the job involves power, the reed will have to do some of this — you can't just blow harder on a limited reed. Remember that "loud" is not the same as "big" — a "big" tone is also "broad".
7. Pitch stability and flexibility are both needed — too much of one may result in not enough of the other.
8. The reed must have a "pitch floor" and a "pitch ceiling." With a normal embouchure and no lips on the actual tips of the reed, there is a point below which the reed cannot drop; similarly, it cannot be blown sharp. The high notes must hold themselves up.
9. The sides of the reed must press very tightly against each other all the way to the end of the tip. When you tie the reed, clip it open, and set the overlap, you should have to "try to work the plaque in." None of the reed tests will work on a loose reed because you will be holding it together with your embouchure.

## MAJOR CAUSES OF LOOSENESS

- A. Sway-backed or twisted cane. Slightly bowed cane is okay, unless the ends of the gouged cane are therefore too thin.
- B. A mismatch of shaper tip, tie length, and size of staple (smaller tubes need to be tied longer). As you tie, the sides of the reed should come together at the thread one or two turns before the top of the tube. If the reed is tied too short, there will be too much cane tied onto the tube at the throat, the reed will therefore be held open at the top.
- C. A dull knife. The knife should lift, rather than compress, the cane. Also, try to spend as little time as possible with the plaque in the reed. Scrape the back without the plaque.
- D. The cane is twisted on the tube, or the overlap is not established properly.

**WHY TO OVERLAP THE BLADES** You will get a tighter seal between the blades by tying a line into a plane, rather than by trying to align two lines

## HOW TO SET THE OVERLAP

1. Make sure that the handle and the tip of the mandrel line up, and avoid round-handled mandrels.
2. Tie "right-handed", i.e. overhand with the thread in your right hand or underhand with the thread in your left hand.
3. Tie at "16-of" and "14-after", if you are looking from the reed down to the handle. (14 of + 16 after)
4. Do not slide the blades over each other while tying — the rotation of the cane on the tube will accomplish the overlap.
5. Clip the tip open and click the overlap into place, with the back blade protruding on the left.

- C. Keep oiled cotton under the blade when not in use.
  - D. Cover <sup>steel</sup> all parts with oil after every use and keep clean of shavings.
2. Selecting and setting up your gouging machine
    - A. Your gouger should be a "Double-radius" gouger (one that gouges more on the side closer to the rod than it does on the other side). Without this, your gouge will not be truly symmetrical.
    - B. A movable bed is essential for adjustments (avoid the Ross, Bhsys, and Gilbert machines).
    - C. The bed should have an 11mm diameter. The guide should have a 12mm diameter.
    - D. Make sure it's impossible for the blade to hit the cane clips. Add bumper cork if necessary.
    - E. Enough blade should be showing so that the shreds of cane are .07mm thick (and never thicker than .10mm).
  3. Test soaked, gouged cane for hardness. When folded over your finger, it should resist folding and should crease slightly at the edges directly across from each other. *in the middle*
  4. Check the gouged cane with a micrometer before folding and shaping for consistency of gouge and to make sure the gouge is centered on the trimmed cane.

### FOLDING AND SHAPING

1. Before scoring and folding your gouged cane, remove the bark from the center of the cane on your easel. This prevents hard cane from cracking.
2. Your shaper tip should have close-to-parallel sides.
  - A. Parallel sides hold up high notes and provide depth of tone.
  - B. However, sides need some flare in order for the reed to grab the plaque. The amount of flare greatly influences whether the sides of the reed hold themselves together all the way to the tip.
3. Do not shape at an angle. We want bark all the way to the edge.
4. Check the shaped cane with a micrometer to verify that the gouge is centered. Check the thickness of the very edges (all four sides), just under the ears.
5. Test the profile of the folded, shaped cane for potential looseness in the tied reed.

### TYING

1. Staples can affect tone, stability, and pitch placement. The tubes should be big enough (try 6F Jeané French Professional). Also look for oval openings without irregularities in the metal. *Stevens #2 Football*
2. If the cane cracks under the string on one blade while tying, crack the other blade with a razor blade. This encourages a symmetrical opening.

### CLIPPING

1. Your chopping block should be filed regularly with a mill bastard file (and then sanded) to eliminate grooves.
2. Clip your reeds at an angle and play with the long blade on top. This keeps your upper lip out of the opening.

### KNIFE SHARPENING



## REED-MAKING TECHNIQUES AND EQUIPMENT

### SELECTING CANE

1. By the time you have a shaped piece of cane, the reed is 70% finished
2. Use hard cane. Soft cane doesn't last long, and lacks efficiency (the ability to produce a lot of tone with minimal effort).

### SIGNS OF SOFTNESS WHEN LOOKING AT CANE

- A. The bark is pale, white, or dull.
- B. The bark has grooves or conulations.
- C. The bark has purple markings.
- D. The cane has little white flecks that look like air pockets.
- E. The inside of the gouge is stringy and holey (moth-eaten)

*twisting test*

3. Use thick-walled cane (the planed cane should have little or no groove in it). This cane tends to be denser, and will have closer grains in the tip of the reed
4. The diameter of the cane must be small enough, and must be consistent for the entire three inches. Try 10mm (although it depends on your gouge) If you put cane with too small a diameter in your gouger, the sides of the gouged cane will be too thin. Remember that you cannot measure the diameter of cane after it has been gouged.
5. Your diameter gauge should have rounded slots (rather than square or V-shaped). If necessary, file down your diameter gauge on a mill bastard file to make the slots shallower — only the portion of the tube that you are going to use should fit in the slot.

*check it's a circle*

*or with a grinding wheel*

### PREPARING THE CANE FOR GOUGING

1. Do not use a cane splitter. Cane is usually oval-shaped or triangular, rather than round. Use a single-edge razor blade and choose the section of the tube that has the correct diameter for a full three inches.
2. Your guillotine should not split or crack the cane. The Gilbert machine is the best available.
3. Do not use a pre-gouger to plane your cane (pre gougers compress the cane). Use a planing board (which is currently available only from Graf) Planed cane should measure 7.5mm across. To widen the cane, place shirt-board under the rails of the planing board. To narrow the cane, place tape in the bed.
4. Use a 1 inch planer to narrow the cane ends symmetrically before gouging.

### SOAKING CANE

1. Soaking time depends on the hardness of the cane.
2. Hard cane (already gouged) should soak 25 minutes in bath temperature water before folding.
3. Planed cane should soak 45 minutes before gouging.

### GOUGING

1. Proper care of your gouging machine:
  - A. Avoid unnecessary travel.
  - B. Always pack it in bubble wrap and immobilize the carriage when transporting it.

- E. The ears were not trimmed away properly before tying. A small piece of cane can stick out into the overlap and hold the blades apart.
- F. The reed is tied over the tube, even a half a turn.
- C. The ends of the shaped cane were beveled before tying (doing this hurts the leverage of the blades aiming toward each other).
- H. The blank was allowed to dry before being clipped open.
- I. The shaped cane was allowed to dry before being tied.
- J. The reed has been manually pinched open to increase the size of the opening.
- K. A contoured plaque.
- L. The reed was scraped when it was dry. ~~scraped~~? Soak your reeds
- M. The shaped tip is poorly designed or worn at the sides, and tapers in at the top.
- N. It could be the gouge, but don't blame the gouge unless you're sure it's nothing else.

**POSSIBLE SIDE EFFECTS OF PLAYING ON LOOSE OR FLAT REEDS**

- A. A scale that is not true to itself, or has false colors.
- B. Lumpy lines that are difficult to sustain.
- C. You play sharp from biting, especially in the high notes and at the ends of diminuendi.
- D. Choppy, wobbly, or absent vibrato.
- E. Fatigue and a lack of embouchure control.
- F. You are unable to play at the bottom of the tone, therefore limiting depth.
- G. You are forced to jam the air, which produces too much pressure in the tone (results in a glaring, metallic, pointed, or edgy tone).
- H. It is impossible to slur downward. *because biting & ... with reeds*
- I. You lighten your hands and body, or tighten your tongue (which hurts articulation quality and speed).

- quidine*
- 3. Aim for "efficiency" — a lot of tone for little effort.
  - 4. Neatness and an eye for symmetry are prerequisites for good reed-making.
  - 5. Make reeds for what they do, not for what they look like.
  - 6. Learn to make reeds quickly. ~~as you ruin your life~~

**THE 15-MINUTE REED**

1. Learn to make reeds quickly, 1) so that you don't ruin your life, 2) because there is a freshness and vibrancy that only comes from a new reed, and 3) so that you can eliminate bad cane without wasting too much time.
2. Never work for more than a half an hour on a reed. The cane will oversoak, and the plaque will loosen the sides of the reed.
3. Practice making a 15-minute reed every day, separately from your "real" reed-making time. Use your worst cane and consider it scraping practice. Aim for response. Take five minutes to shape and tie, five minutes to get it going, and five minutes to tone it down.

*with a lot of vibration*

*no oil, needs to be grinded up*

A. You should have two sharpening tools: one rough honer for grinding away metal behind the edge (e.g. diamond honer or Norton Crystalon) and one fine honer for polishing the edge (e.g. ceramic crock sticks or fine India stone — FB35 or FB6 Norton stones only)

B. For double-hollow knives:

*no oil, needs to be grinded up*

*(but they wear away fast and are expensive)*

1. On your rough honer, place the blade flat on its non-cutting side and move it in a circular motion until the entire edge has been touched
2. Repeat on the cutting side.
3. Polish both sides of the edge on your fine honer or crock sticks at a slight angle, finishing with a couple extra strokes on the cutting side.

C. For beveled knives:

1. With 4-0 Emery paper laid on the honer, remove the burr on the flat side in a circular motion
2. Directly on the honer, sharpen the beveled edge, using a jig to maintain a constant angle.

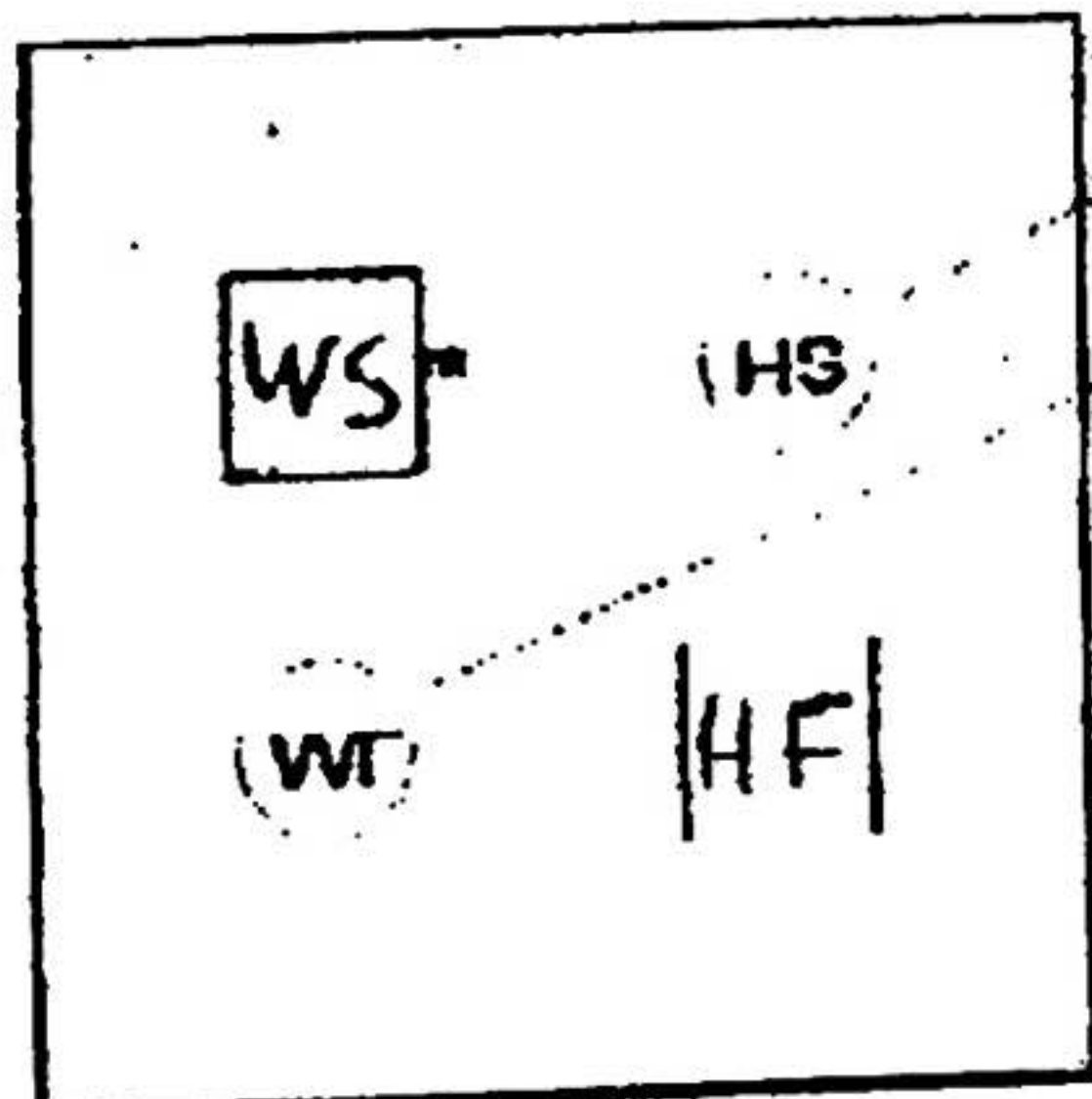
**SCRAPING TIPS**

1. Start the scraping process by taking off all of the bark evenly, without an overall architecture
2. Thin the very comers of the tip to help middle C and to deepen the tone.
3. It is possible to have a tip be too thin. The reed will be weak and the crow will droop.
4. Do not feather or bevel the entire width of the tip onto the plaque. This drops the pitch of the high notes and makes the tone sound frayed. The middle of the tip should be thicker than the sides

**DRYING YOUR REEDS**

1. Your reeds should dry with real openings
2. If the reed dries too quickly (if you leave it out on your reed desk), it could develop a warped, irregular opening.
3. If the reed dries too slowly (in an air-tight reed case), it can crack. Reed is at their most fragile point while drying.

**THE REED IN PROGRESS — 4 POSSIBLE CONDITIONS**



Scrape to correct a Hard and Sharp reed

Clip to correct a Weak and Flat reed.

THE OTHER TWO CONDITIONS ARE HOPELESS.

\*Unless the Hard and Flat reed is oversoaked and therefore too open. It may close as a result of scraping and come up.

\*\*There are several reasons for a Weak and Sharp reed. 1) the reed is old; 2) it is tied over the tube; 3) the blades have too much overlap; 4) the gouge is too thin; 5) the cane is too soft.

W = Weak    H = Hard  
F = Flat    S = Sharp

**REED TESTS**

*can't get the mechanical side to work*



*the*  
The tip of transition

4. The magic spot (the base of the tip between the center and the sides) does four good things:
  - A. Increases action and efficiency.
  - B. Adds lows to the sound, increases depth
  - C. Improves response, especially in the low notes.
  - D. Provides something to blow against to hold up the high notes.
5. Try scraping a brief (.5 to 1 mm) introduction to the plateau at the bottom of the tip.

### **ASPIRATED ATTACKS**

1. With an aspirated attack, play High C, Octave G, Low G, and Low D.
2. Listen for a delay in speaking. Aspirated attacks demonstrate response, resistance, and the balance of highs and lows in the reed

### **OCTAVE TEST**

1. Play low A while pressing and releasing the side octave key. Test Bb, B, and C similarly.
2. Do not change your embouchure. Let the high notes sound as flat as they will go. The reed should have a stable pitch floor.

## Reed making timeline

Lara Wickes

While you can make a reed in one sitting if necessary, I find that reeds turn out better and last longer if made over a four or five day period (or longer if you have time). Reeds sometimes get waterlogged and tired if we work on them too long in one sitting, so if you work for a while and find you're getting nowhere, put it down and work on it the next day (often it will be better!). This also helps maintain relative sanity. It's helpful to try to fit in a little reed-making each day so the physical motions remain familiar and your thought remain fresh. I try to have a few reeds in each stage at any given time.

### Day 1 goals:

Tie the reed, scrape the tip a bit, let it dry for 24 hours while it settles into a new shape.

### Day 2 goals:

Rough scrape or "pre-scrape" the reed. Take the bark off a section at a time. Leave a nice thick spine and rails, creating 2 "channels" all the way up the reed, which your knife will naturally settle into when you're scraping. Once the tip is somewhat thinned, clip it open. Scrape each section until the reed barely vibrates, preferably with a 2 octave crow (when you blow REALLY hard). Each section (tip, heart, back) should be present but not very defined. Make sure the reed is symmetrical/balanced. Dip it in water, then let it dry for 24 hours.

### Day 3 goals:

Start by defining and thinning the tip (I like to mark the beginning of the tip with a pencil, but this is not absolutely necessary). Once it's well-defined, clip the reed down to 71mm, so you still have some clipping room, but you won't finish the reed while it's way too long. Scrape the other areas in proportion to the tip, erring on the side of leaving too much in them, but also trying to get each section to vibrate a bit. You are done when the reed has a reasonable healthy crow and feels like a reed (a very hard and unresponsive reed) when you play it on the oboe.

### Day 4 goals:

Day 4 is usually a combination of scraping and practicing. Keep your tuner handy. Get the tip to vibrate like a finished reed, and scrape the other areas until they are also vibrating. It's good if the reed is a bit flat and honky at this point. Once you get to this stage, it usually becomes a matter of alternating subtle scraping and subtle clipping while you bring the reed up to pitch. When you get close, make sure you scrape very gently, as the reed is very sensitive and also fragile at this point. I usually finish a reed with a few gentle strokes to the corners of the tip. As you work, try playing actually music on the reed, since just noodling on the oboe won't tell you everything you need to know about how the reed works. I usually try to do at least part of my practicing on a day 4 reed,

### Day 5 goals:

Ideally the reed is working fine at this point, but very often it changes a bit overnight, and needs a small amount of finishing/adjusting to get it to feel perfect. Do this for as many days as necessary.

## Scraping

Nielson ceramic stone, fine diamond stone

Caswell knife book

Scrape over a period of days

4-day reed: additional day if gouge wet

Day 2: soak 1/2 hour, take off bark, clip open, dip, let dry

Day 3: line on side at 66, clip one mm at a time to 71 or shorter

First day of playing on reed

The reed will be hard to play, but it will play

Day 4: finish it, play on it, play music

If a reed can play La Scala and Don Juan, it can do anything

Finish tip

Scrape back until it gives a little

When tip is buzzing and back gives, lightly scrape heart until reed works

Good tip has spine in it, very thin corners

3-part crow: tip, heart, and back

Lips on tip: buzz and response for better attacks

Lips on back: 2-octave crow

Dependent on corners and overlap

Priorities: pitch, response, resistance

If heart is too light, reeds are hard to play

If everything else is working, sound is good

Very extreme corners of tip: more definition gives darker sound

Tip is a three-dimensional area

Spine through the tip gives the reed a core

Consider comfort level, opening, and projection

Buzz tip, both sides, to figure out what you like

Look closely at favorite reed, buzz tip

Scrape with NO PRESSURE at the tip of the tip

Thinning the tip of the tip produces life

Thinning the sides of the tip produces death

The last thing is lightly scraping the corners

Very thin areas are essential to a nice sounding reed

The reed should sing

Very thin areas produce more brightness and life

Dark sounds do not project as well

Reed should have life, singing tone, flexibility

## Knife sharpening

400/600 grid diamond stone

Tip knife: one stroke for the burr

Pressure: less is more

Try sharpening with stone held in one hand

## Scraping technique

Cheryl's reed book

Straight scrape, not U-shaped, pinky up, lifting cane

More noise from light scrape

Knife hand should be extremely relaxed

Angle of scrape, angle of tip, angle of reed

Work no more than 15 or 20 minutes per reed

How do I make a good tip?

What do I do next?

Close reed from behind the heart

Check tip symmetry against plaque

Blade symmetry: dampen one blade with lower lip

Scrape blade that does not vibrate

Reeds need to play 440+

Open reed: take scrape to thread

Rails and spine keep reed open

How much are you biting?

Get tip buzzing

Diagonal scraping creates a darker reed

Good tip: has a spine, is sloped

Day-4: when tip is responsive, scrape lightly on the heart

You can learn a lot from your good reeds

## Reed Notes

From two classes taught by Lara Wicks, CalArts, December 2007

### Cane selection

Problems: grainy, dull, warped

Color: golden brown, shiny, purple

B = bowed

L = curled

T = twisted

G = gray spots

V = veers

C = conical

W = weird

E = just on end

Gr = green

Place cane on flat surface to evaluate

Number tubes and use color of thread to identify cane source

Give the reed a score: 10 is perfect, 0 is awful

### Splitting and pre-gouging

When splitting cane, aim the splitter for the best piece

Buzzing and extra noise can be caused by warped cane

The second best piece from the tube will be opposite the best piece

A splitter is faster and safer than razor blades

Pre-gouging does not stress out the cane too much

Don't pre-gouge too much

Split and pre-gouge dry

### Gouging

Lara uses Innolody Gouger, which she considers to be ergonomic

She splits the cane dry, and does not need to pre-gouge with the Innolody Gouger

She soaks the cane in warm water for 2 hours before gouging

She uses 10-10.5 diameter and gouges to 59

### Shaping

One of the most important steps

Place cane on easel, score with old knife, fold over old knife

Lara uses Jeanne medium shape

Wide shape: bigger, darker sound, often flat

Narrow shape: higher pitch, tighter sound

Parallel sides: stability

Triangular: intonation trouble across the board



The most important step in shaping is centering the cane on the shaper tip  
Take time and use a light to center  
GEM coated razor blades: use for clipping, NOT for shaping  
Shaping needs a duller blade  
Stanley blades are stronger than GEM, can be dulled by rubbing on stone  
Stabilize tip of shaper against table or desk surface  
Keep blade as straight as possible  
Use long strokes  
Take time to look carefully at the sides before taking cane off shaper tip  
Cut off ears BEFORE tying, so not dealing with overlap  
Use a thin, sharp knife (Albion, tip knife)  
Lay the knife against the cane  
To sand the sides, line up the two blades exactly  
Do not sand the surface of the cane

## Tying

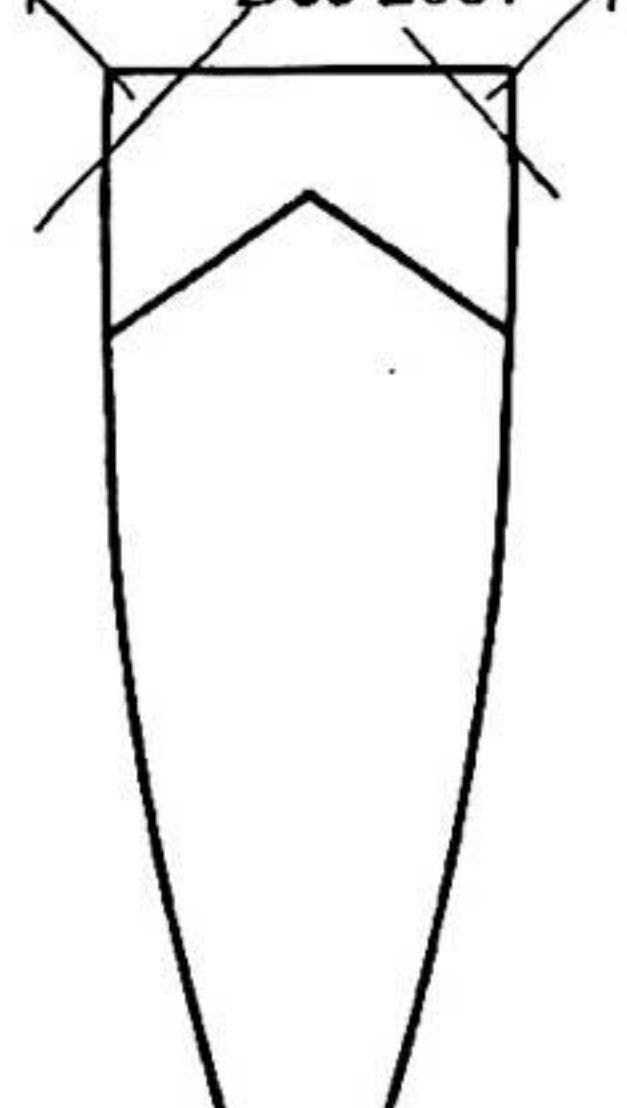
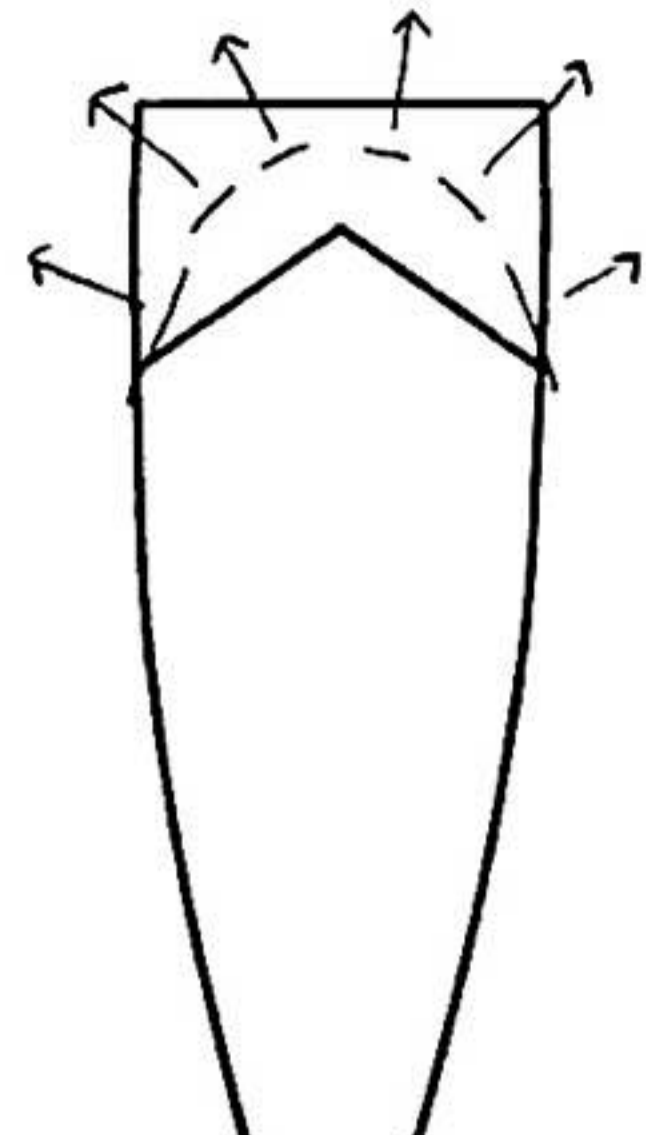
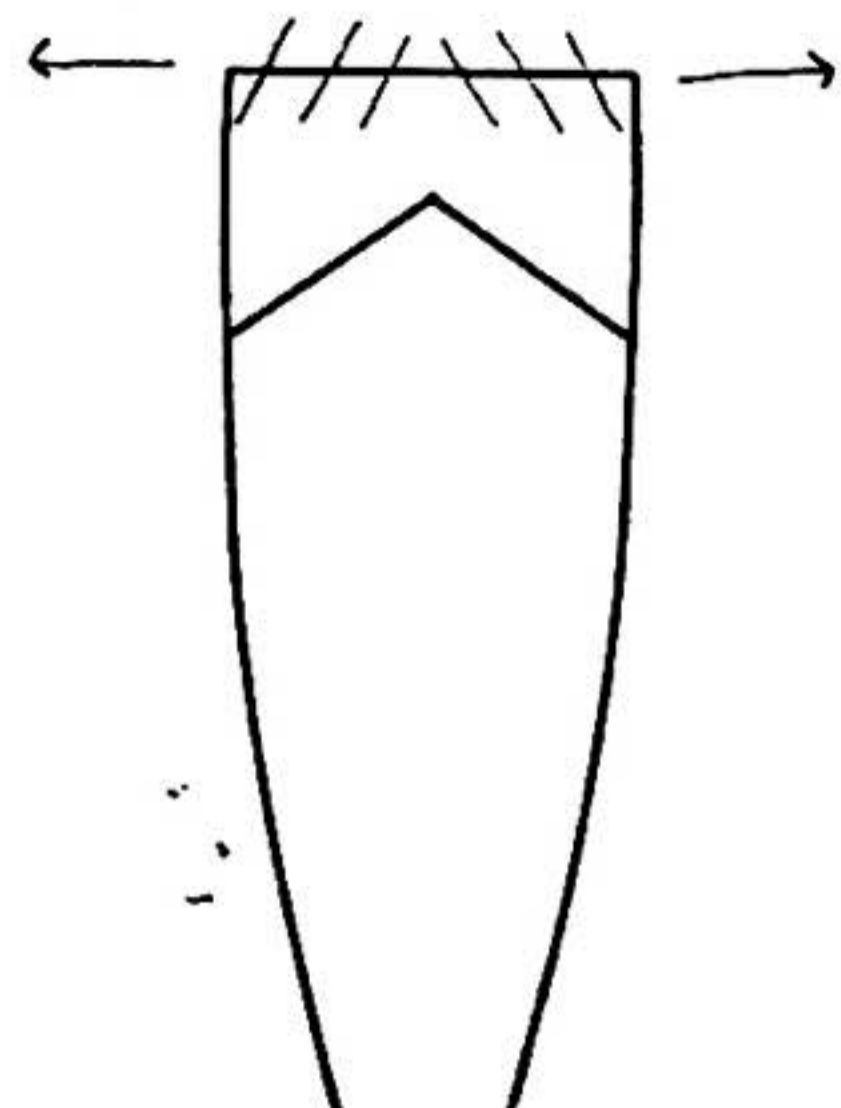
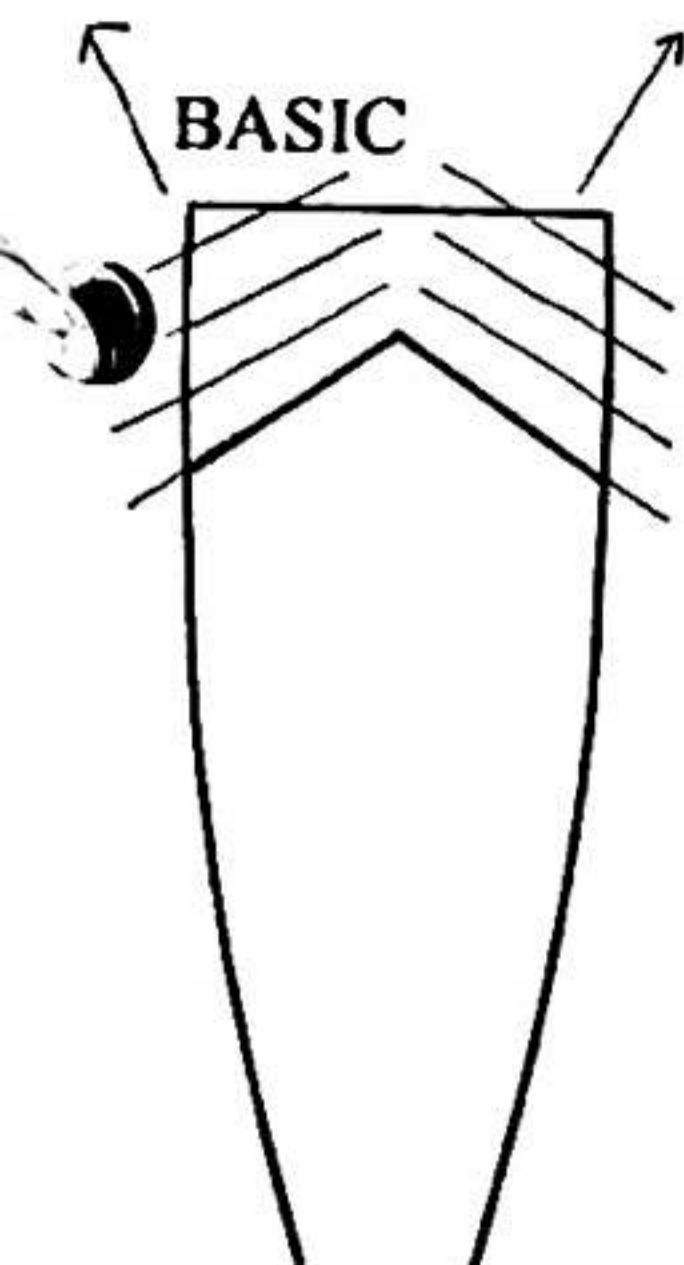
Important elements: positioning cane, thread tension, sides  
You can choke a reed by tying too tightly  
If you break the thread when tying, you are tying too tightly  
Loosen thread for open sides  
Pay attention to how the reed grabs the thread  
Guitar picks, used as plaques, will not dull knives  
Overlap top blade to right, bottom blade to left  
Set overlap from the beginning  
Close evenly on both sides, straight  
Sight from end of handle  
If one side cracks, crack the other side with a knife  
Think about overlap at top instead of bottom  
Overlap at top less than at bottom  
Twist clockwise (mandrel to nose) to lessen overlap  
Put fingers on thread, loosen, and then retighten  
Cross behind  
The seam of the reed is important  
Wrap over the end of the cane  
Cut anchor thread  
Lara does not use beeswax with this knot  
She uses a toenail clipper to cut the thread from the middle  
Good cane cracks  
Cane sources: RDG, Ghys, RDGO, RDGH  
Stevens Tubes: #1 brass, \$120 for 100 staples  
Scrape bark off tip  
Rest tied reed for 24 hours, closed

9

Some of my favorite tip "moves"

Lara Wickes  
Dec 2007

BASIC



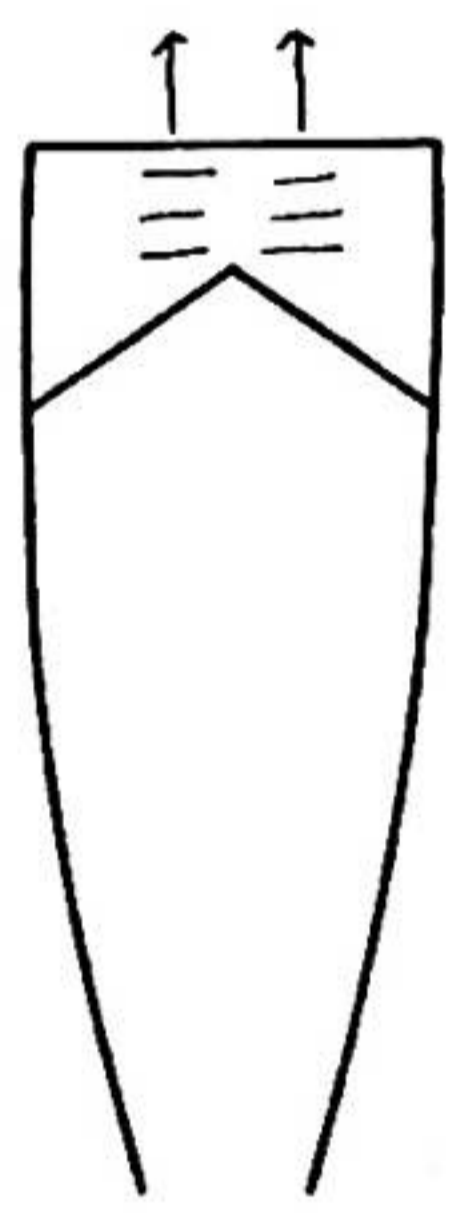
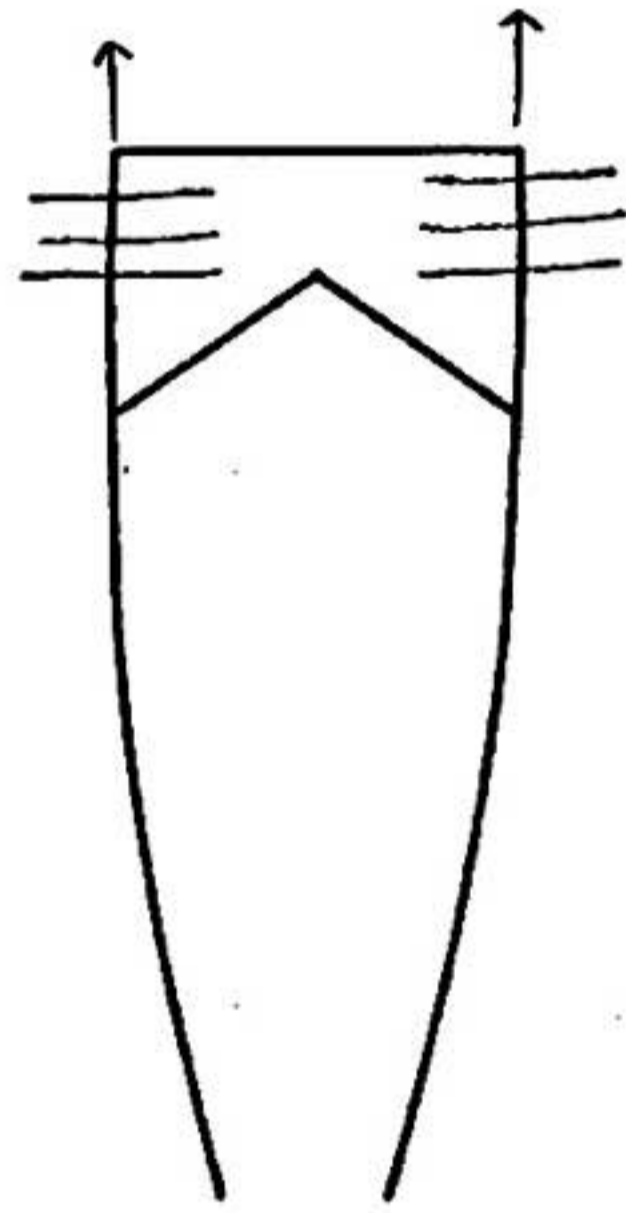
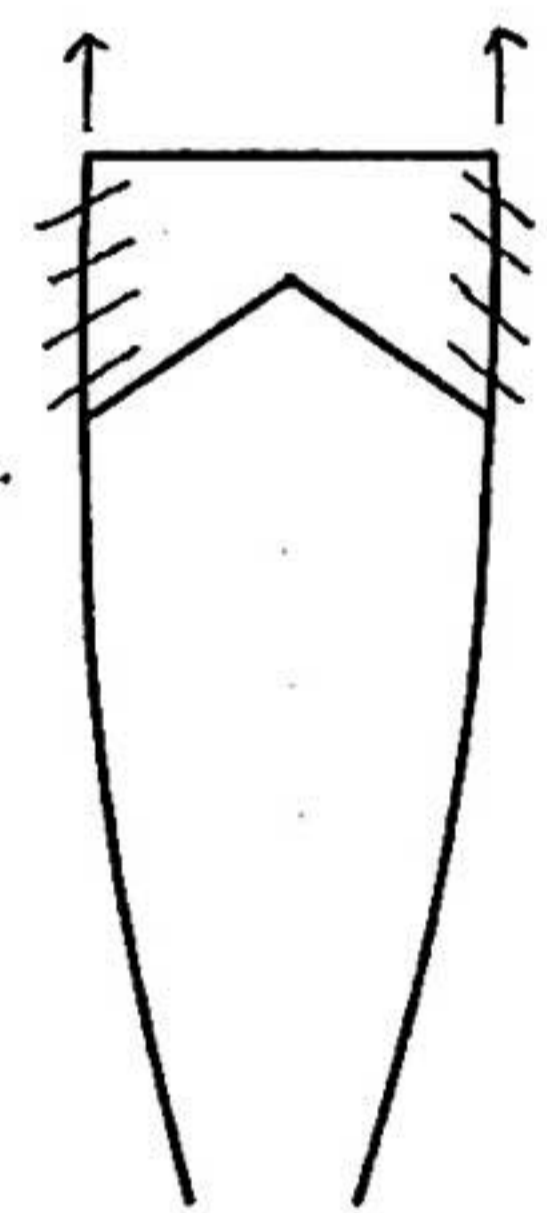
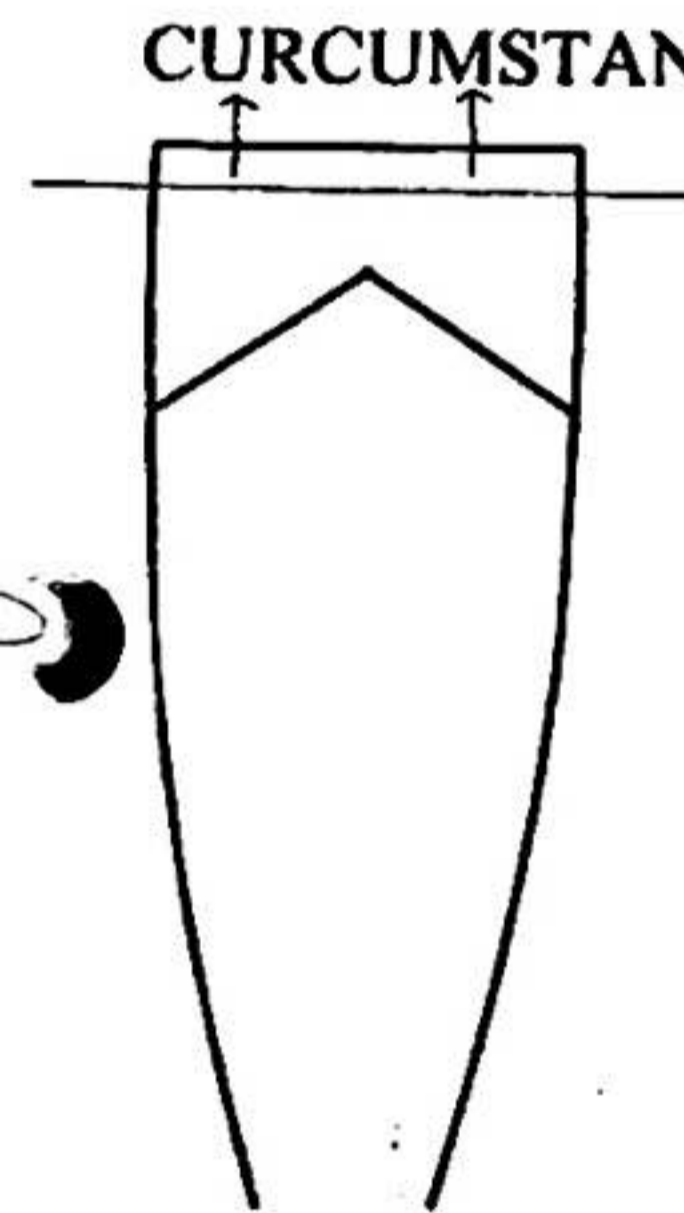
Defining tip/  
lightening tip/  
adding definition

Eliminating extra thickness/  
adding response

Refining tip

Darkening tone/  
adding refinement  
(knife tipped forward)

CIRCUMSTANTIAL

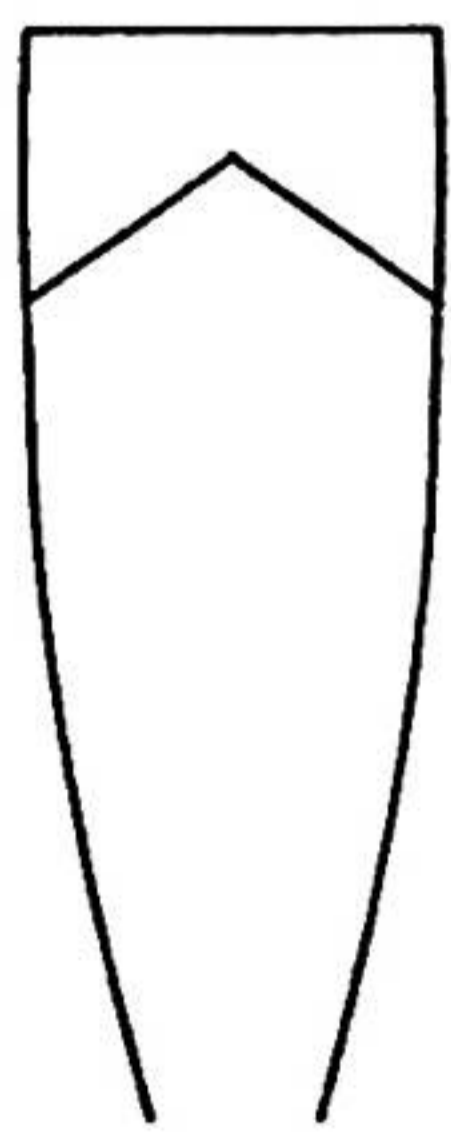
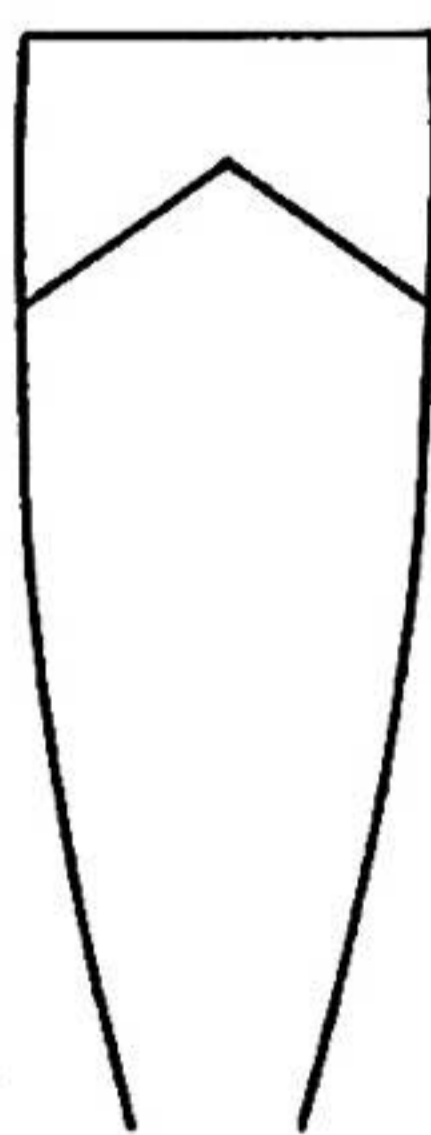
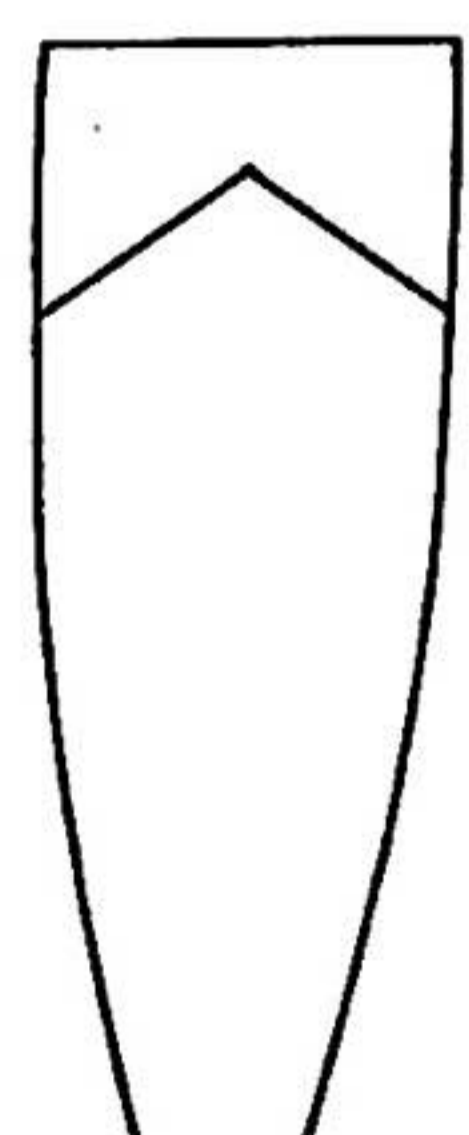
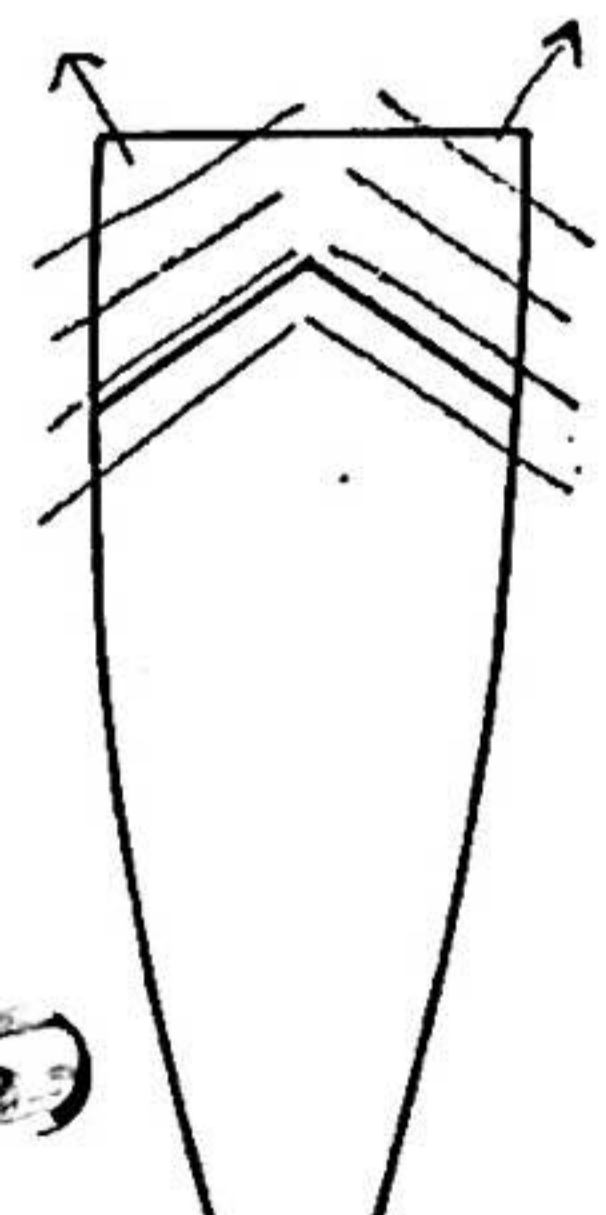


Adding extra response

"Calming" a vibrant reed

Integrating/smoothing tip

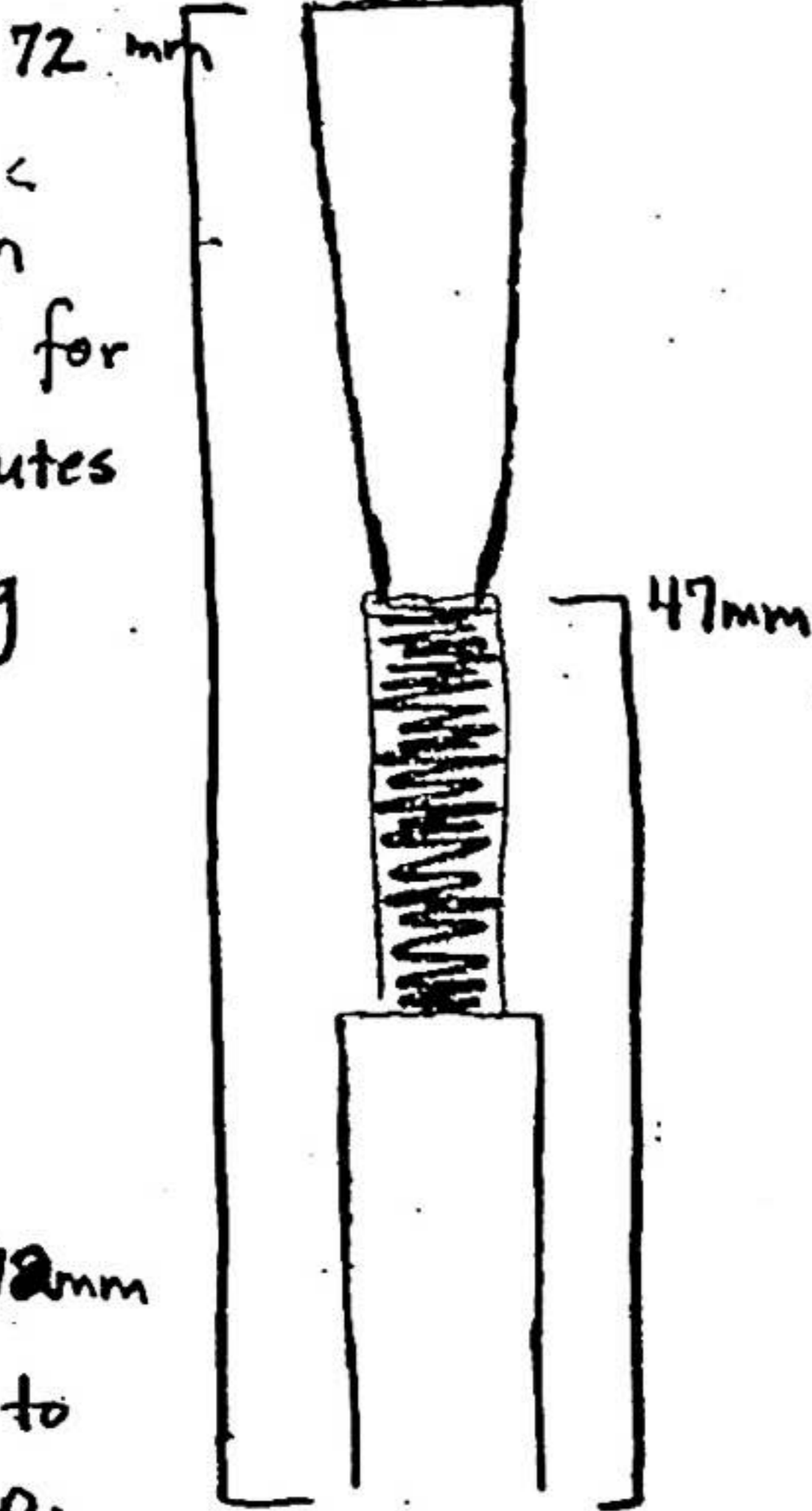
Narrowing tip spine  
(brightens reed)



Subtracting definition

# The Reed: Measurements and Scraping Patterns

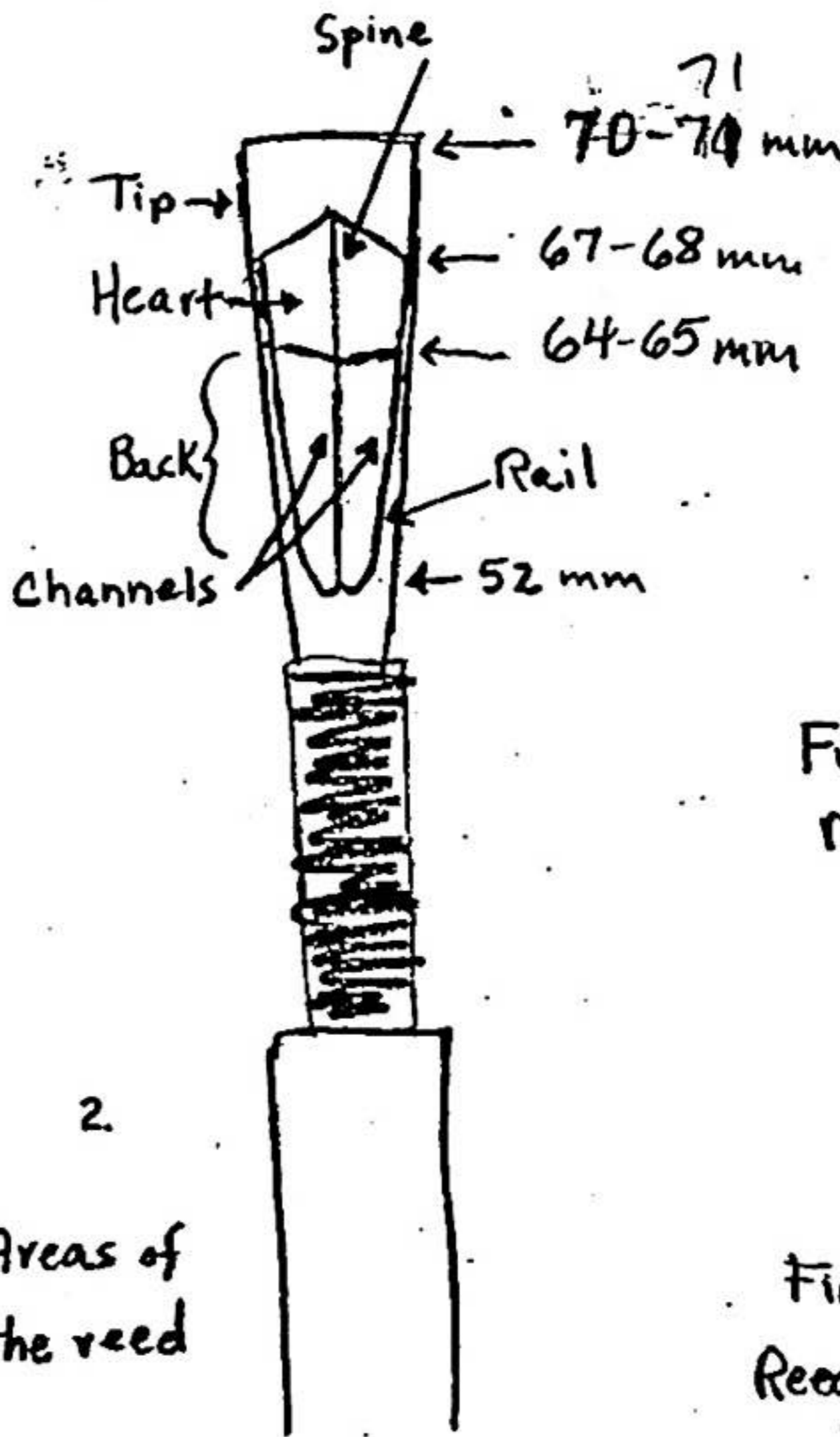
Soak cane in warm water for 20-30 minutes before tying



1.

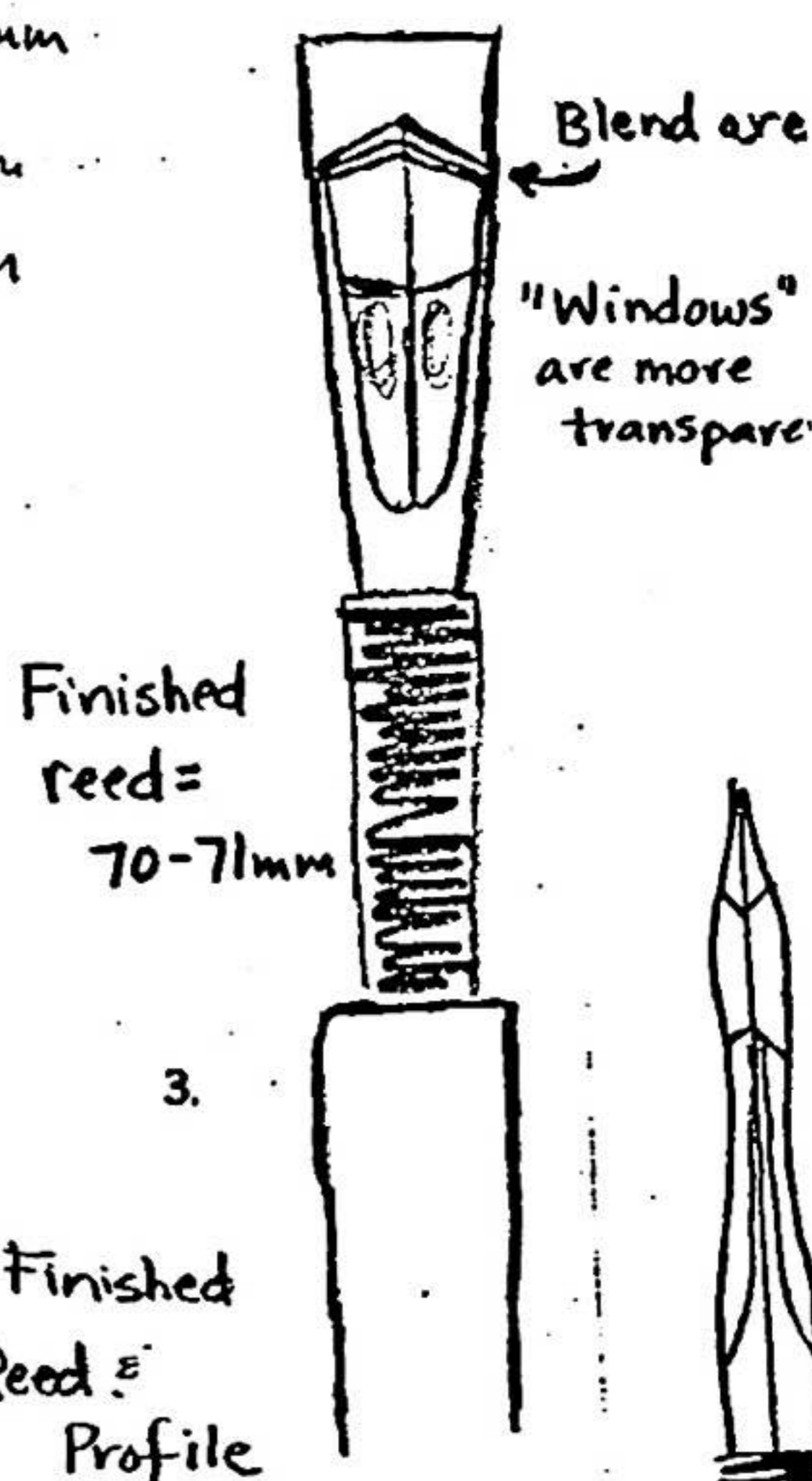
Tie at 72mm

Be sure not to over wrap.



2.

Areas of the reed



3.

Finished reed = 70-71mm  
Finished Reed Profile

Scrape the tip toward the sides and off the corners  
Count the Scrapes

Leave the tip heavier in the middle

4.



Scrape the heart forward and evenly into the blend area

Count the Scrapes

The heart is completely smooth with a hint of the spine.

5.

No gouges or holes in the heart area.

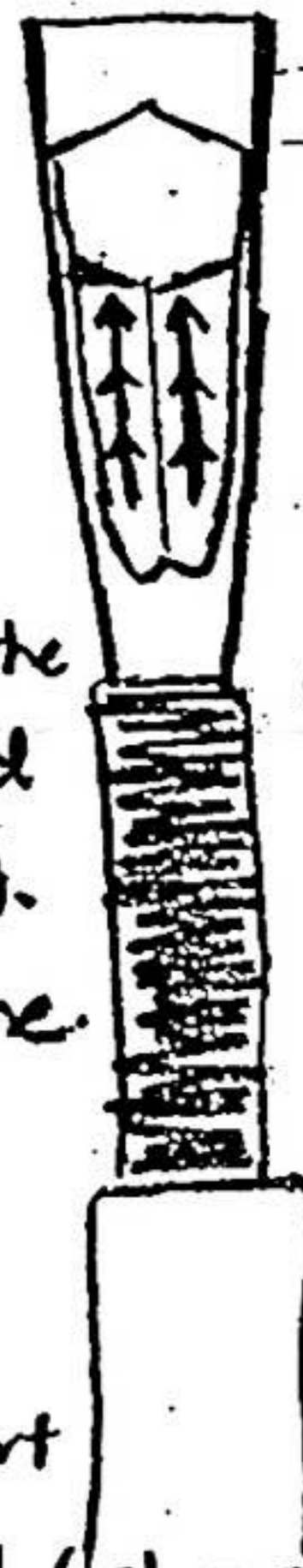


Scrape the channels of the "back" forward to the heart. Leave a spine.

6.

The back part of the channel (closest to the string) remains heavier than the front part of the channel. See "windows" under the heart

Count the Scrapes



My list of "consistents" – not fanatical but within a certain range

- a. overall length within 1 mm (69-70mm)
- b. bottom of reed to back of tip (65-66mm)
- c. length of tube (47mm)
- d. diameter of tube cane (10-10.5mm)
- e. thickness of heart (.45-.51mm)
- f. gouge (about 60 center - 46+ sides)
- g. shape – I use a Lucarelli Pfeifer tip – occasionally a -1 Gilbert

My list of "variables" – really depend on response of individual piece of cane, weather, etc..

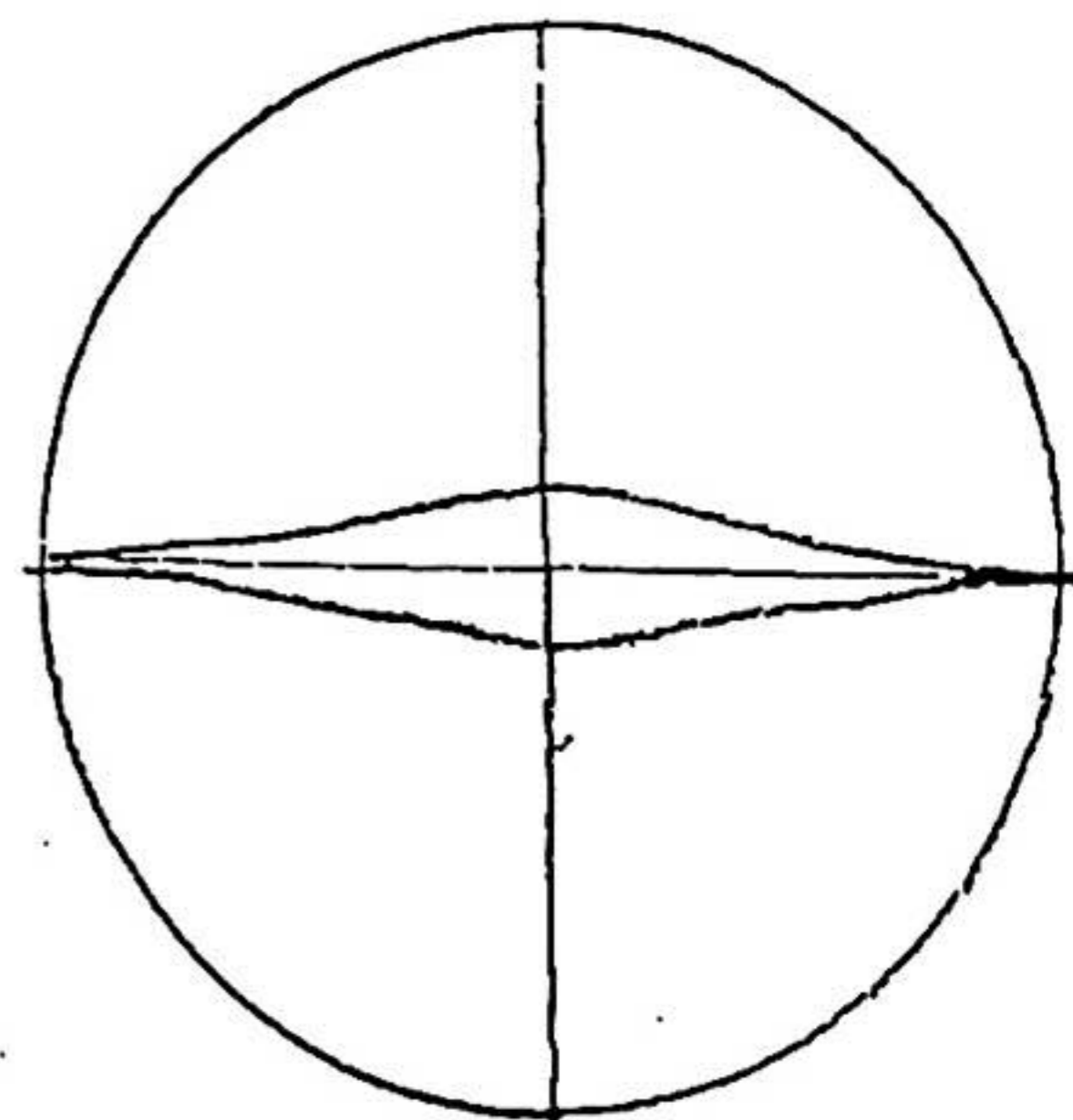
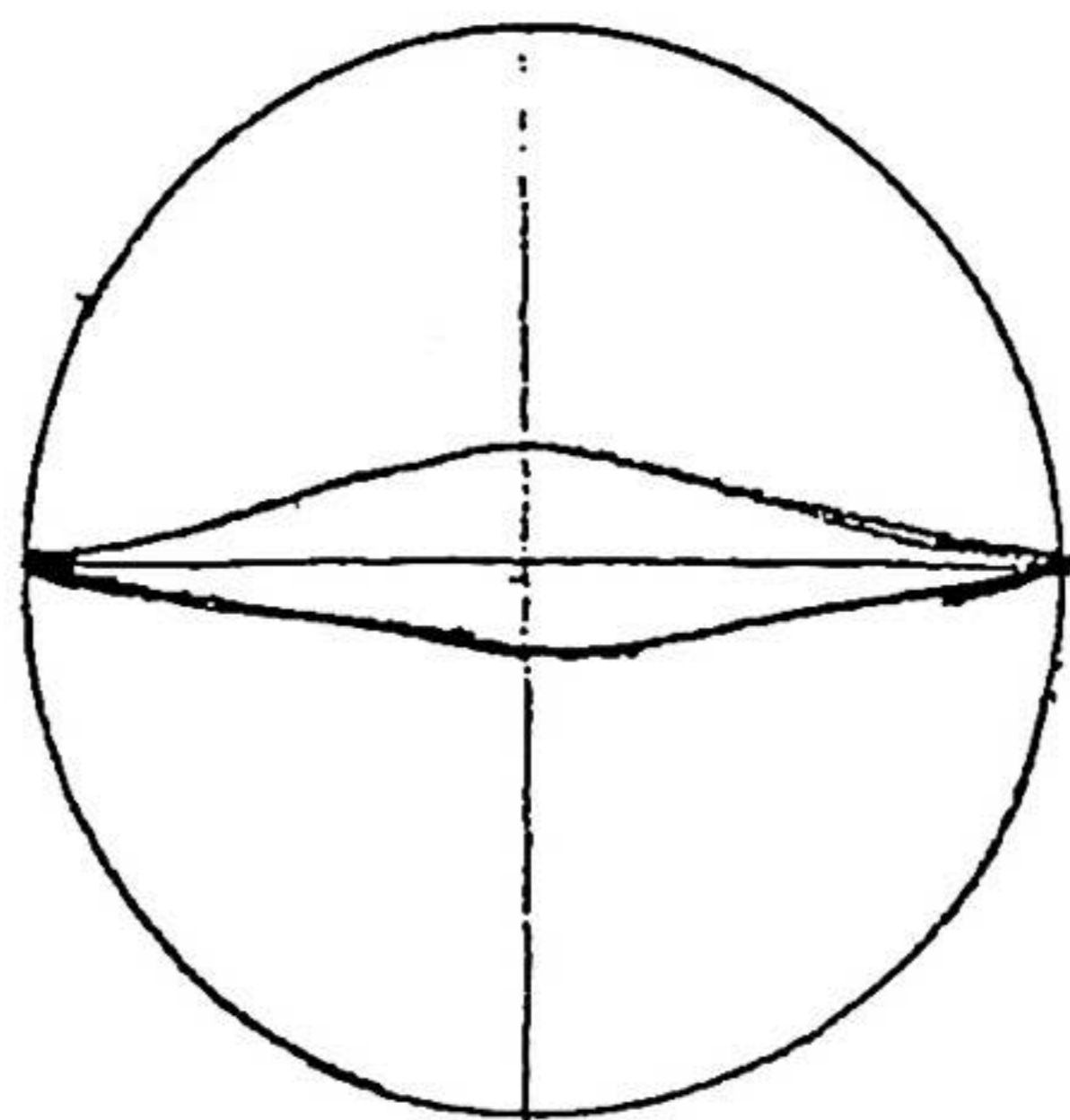
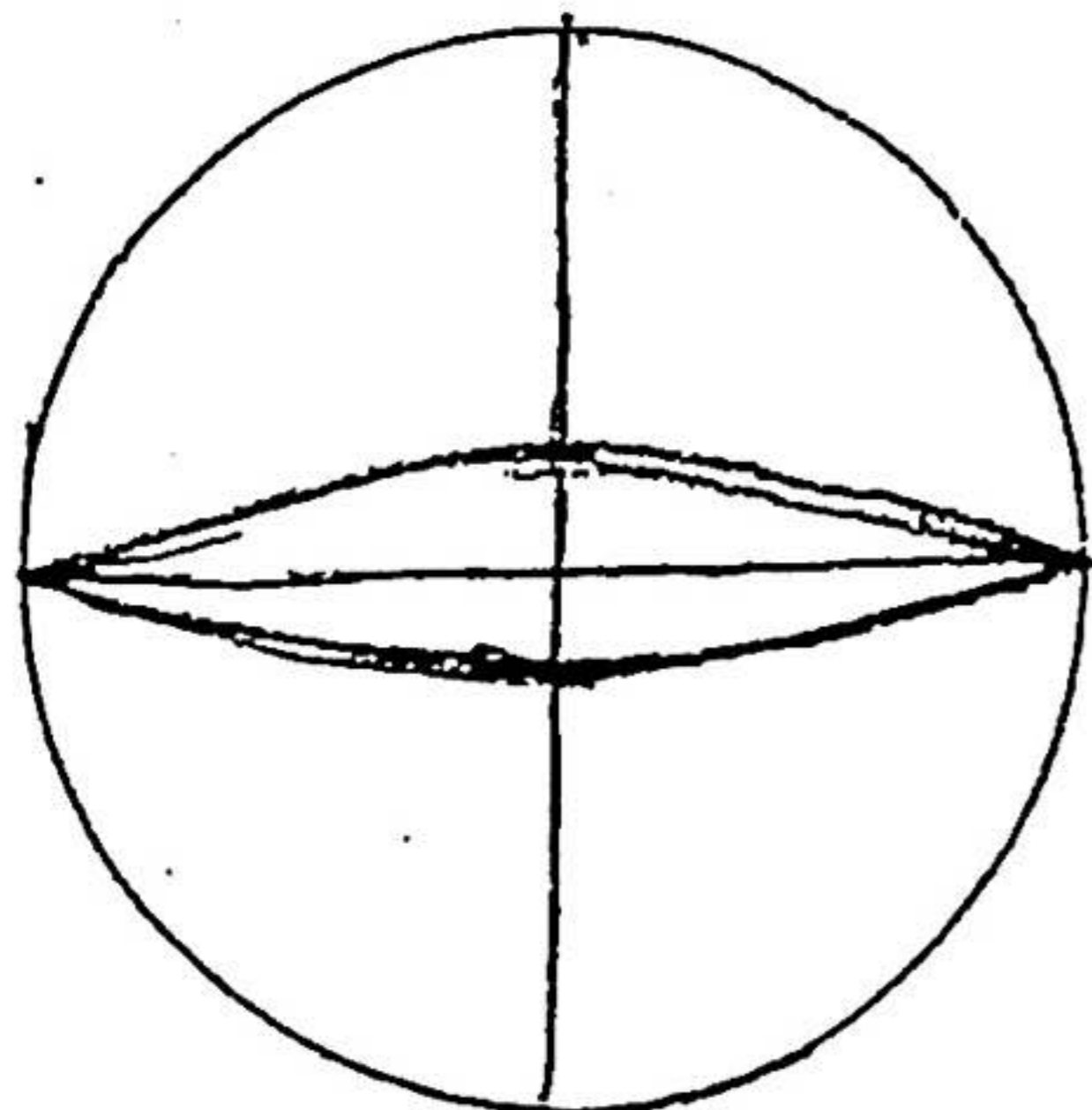
- a. length of heart
- b. thickness of heart areas other than the center of the heart (sides up to center)
- c. length, thickness, and shape of the tip
- d. entire blend area from tip to heart
- e. all scraping below the heart

## 6. Balancing

Balance is a big deal – a properly balanced reed will be less likely to remain artificially "propped open." As you squeeze the reed, sides need to collapse symmetrically toward the center.

Balance in the following ways:

- a. Look at the blades from a front view.
- b. Squeezing the opening slowly and watch the collapse --- think of the four quadrants as in the diagram below. Squeeze from various areas down the tip --- when an imbalance occurs, figure out exactly why --- it might not be the tip!
- c. Well-balanced reeds seem to be more predictable – change less.



**7. Break in a reed some before you scrape it to death.**

Alternate squeezing and opening a nearly finished reed to break it in a bit if it seems almost finished but perhaps a hair too loud or a hair too stiff -- or just play on it a few times before going any further.

**8. Know your own approach to reed making!**

There are many ways to approach reed making – one is to get a reed to play reasonably well but flat and work it up to pitch – another is to work it down from too hard and unresponsive to playing level.

**9. Learn how to go from a bit too responsive to a bit too stuffy with simple tip adjustments.**

I have found that I can get the best possible response and sound out of a reed if I make it too responsive, then slightly too stuffy, then bring it back to the correct response. This is often my final adjustment phase, after I feel comfortable with the basic scrape and the general response of the heart and back.

When you are making these types of adjustments you are working with the speed of the collapse of the sides.

**10. A few notes about tube cane and cane in general**

I am a tube cane hog – I only buy from sources that will take it back if I hate it and I buy 5 or more pounds of cane every year. I usually order ¼ pound of something then a bunch if it works out. Good tube cane disappears almost overnight from suppliers – I make reeds the day I get the tube cane then order more immediately if I like it.

---

I never work exclusively out of one bag of cane – I think it is smart to have reeds on several batches – a weather change may screw up one batch but not another.

**11. What a good reed should do once broken in:**

A good reed should allow you to concentrate on the music – if you are thinking about the reed while you play and worrying, it probably isn't all that great!

## Reed Adjustment Chart

### 1. Understanding the crow

| <u>crow produced</u> | <u>diagnosis</u>  | <u>adjustment</u>   |
|----------------------|---|---|
| crow is sharp        | tip too thick or short  | -thin the sides of tip/lengthen<br>-blend heart into tip        |
|                      | too much cane in the back   | -thin the channels  |
| crow is flat         | tip is too long<br>too much heart/tip blend                           | -clip tip<br>-scrape at corner of tip where heart/tip meet      |
|                      | too much cane scraped all over  | -no remedy  |
| single C crow        | reed is too closed<br>tip too thick or short<br>too much cane in back | -squeeze open gently<br>-thin or lengthen tip<br>-thin channels |
| rattling crow        | too much tip/heart blend  | -scrape at corner of tip where heart/tip meet, clip             |
| itches other than C  | poor balance  | -match scrapes on both sides<br>(count your scrapes!)           |

### 2. General response

| <u>Response</u>                       | <u>problem</u>  | <u>remedy</u>  |
|---------------------------------------|---|--|
| poor response throughout              | leaks<br>reed too thick   | -check for leaks<br>-thin sides of tip, blend heart into tip<br>-thin channels |
| reed is sharp                         | reed too thick  | -thin sides of tip, blend heart into tip<br>-thin channels                     |
| reed is flat                          | tip too long<br>too much heart/tip blend<br>too much cane scraped | -clip tip<br>-scrape corners of tip<br>-no remedy                              |
| reed is loud and difficult to control | opening too big   | -squeeze tip closed<br>-increase overlap                                       |
| reed response is restricted           | possible over wrapping  | -no remedy   |
| reed is stuffy                        | tip corners are too thick   | -thin corners of tip   |

## Cheat Sheet ; -)

1. You can flatten the blade of the reed against the plaque in order to get different scraping angles – this is especially helpful in scraping the sides of the tip.
2. If a reed leaks, check to make sure that it is tied to the top of the tube – you can add one wrap to an underwrapped reed simply by starting 3 or 4 wraps from the top of the thread and wrapping up until you add one wrap above the existing thread – then turn around just as you normally would and tie knots somewhere half-way down the tube or so.
3. How reeds dry the first time is especially important. I dry my reeds under a lamp so that they will dry quickly.
4. You can use 600 grade sandpaper in the following ways:
  - a. smooth over a finished reed – this will usually improve response a bit – works well if reed is slightly unresponsive.
  - b. smooth off the extreme tip.
5. I am convinced that oversoaking cane at any stage is bad – I try to shape and tie with just enough soaking to prevent cracking. I also think that soaking faster in warmer water helps to prevent cracking.
6. Scraping dry works well with softer cane – helps establish areas and improve definition.
7. Many oboists tend to cut the tip as a solution to a problem without considering all the other possibilities. While often cutting the tip is a logical next step, there may be ways to scrape that will solve the problem.
8. ~~Cheap and very decent reed tubes are available from David Stevens, PO Box 97, Healdsburg, CA 95448 – phone (707)-433-3465 – tell him who sent you!~~
9. Super Punjab sharpening stones are available from Success Barber and Beauty Supply in Moravia, Iowa for about 8 dollars – these are excellent stones for the money -- (515)-724-3714.
10. Besides squeezing the blades to check for balance and "breaking in" a reed, you can squeeze the blades to get hints about how thick various areas are in comparison to that of your better finished reeds.

## Random Bits of Reed Advice/Philosophy

(compiled 11/07 by Lara Wickes, stolen from many excellent oboists)

- ❖ Don't scrape reeds when you are angry, stressed out, or otherwise distracted. It will waste your time and cane. There are many times when the right thing to do is walk away.
  - ❖ "Dull knives don't take off corners, people take off corners." Scrape with no pressure. A dull knife shouldn't take off anything.
  - ❖ Don't work on a single reed for more than about 20-30 minutes tops. After that they are too tired and/or water-logged to work right. If you're not happy come back to it the next day. You may be pleasantly surprised.
  - ❖ Work on reeds every day if at all possible, even if for only a few minutes. Like practicing, it is amazing how quickly you will lose ability from lack of use. Keep it fresh in your mind.
  - ❖ Embrace your reed nerdiness and talk (at appropriate, non-irritating times) to your colleagues about reeds. Some of my best tricks I have learned in conversation.
  - ❖ Feel free to blame your cane. Many pieces of cane were not destined to become reeds, no matter how well they are scraped.
  - ❖ Unless you are pretty consistently happy with your reeds, don't be afraid to try new ideas/techniques/equipment. I am constantly surprised by how many poor, frustrated reedmakers are completely devoted to their ideas.
  - ❖ That said, there are many ways to skin a cat (sorry, Allan). Even if you are happy with your reeds, that doesn't mean that there is not an equally effective, yet extremely different approach out there.
  - ❖ Always be conducting some kind of experiment, with cane, equipment, or technique. Anything that gets you excited to return to the reed table is good, and it is amazing what you can learn. (But you might keep a few going with the tried-and-true technique, just to be safe.)
- 
- ❖ Many would disagree with this, but I personally feel like working on reeds during rehearsals is counter-productive and possibly a bit rude (and messy). Aside from slight adjustments, it's generally better to focus on learning to play with what you've got, and work on reeds when you can really concentrate on them.
  - ❖ "Play the reed, don't let the reed play you." Classic advice that is very difficult to follow, but make SURE you are using proper embouchure and air when you test your reeds. Play music, don't just noodle. A reed that can play both La Scala and Don Juan can probably play anything!



- ❖ “Reeds should be shiny” –Dwight Parry. I interpret this as: reeds made with good cane that have been scraped with no pressure with a sharp knife end up smooth and somewhat reflective. The surface off the reed makes a big difference as to how well it vibrates.
  - ❖ If you ever find yourself in a “reed slump”, take some time and think about what you might have changed. This can be hard because often it’s something small or something you sincerely thought would be beneficial. Once I was in a huge reed slump because I switched plaques! And of course, it can be something you did not intend to change. Also, get out your micrometer and make sure your gouging machine is not out of whack.
  - ❖ There is almost no limit to the number of ways you can look at a reed. Try different lighting, look at the sides, look at the surface, look at it upside down and right side up, look at it pointing towards you and away from you. Look at it wet, look at it dry, look with the plaque in, look with the plaque out. Look at the layers of cane. Also feel it, gently squeeze it. What are you looking for?—symmetry, contour, surface quality and thickness.
-

## Reed Priorities

Lara Wickes  
Dec 2007

These are listed in order of priority/what you deal with first while you're finishing a reed, in my opinion:

**Symmetry.** A good reed is symmetrical from side to side and from front to back. It needs to look symmetrical, but more importantly, it needs to act symmetrical—each quadrant needs to have the same amount of “give” and they need to vibrate the same amount. And usually (though not always), to achieve this the scrape will have to look symmetrical. Take a couple minutes and make sure your scrape looks exactly the same in each quadrant.

**Pitch.** It doesn't matter how pretty a reed sounds if it's out of tune. Even if you can compensate with your embouchure, you'll tire yourself out very quickly. Make this a priority in your reed-making. Since scraping the reed almost anywhere make it flatter, don't scrape a really flat reed—focus on bringing the pitch up first.

**Response.** It doesn't matter how pretty a reed is if you miss all your attacks. Make sure you can attack low notes quietly and immediately. This is mostly affected by the tip.

**Resistance.** If the reed is “easy” or “hard.” Not to be confused with response—a reed can be very responsive and very hard, also very easy and not responsive. While you don't want to bust a gut getting air through the reed, it's very important to have some resistance so that you can blow a very strong stream of air without overblowing the reed and having to fight to control it with your embouchure. An ideal reed has the perfect balance between resistance and response. Resistance is generally controlled with the heart of the reed, but most areas factor in as well.

**Dynamic Range.** Notice how some reeds only play loudly? Another big problem is reeds that won't play loudly enough (especially for orchestral playing). Naturally, we want a reed that can play all dynamics equally well, though sometimes we need to choose a reed that does one or the other better, depending on the music to be played. This is affected largely by the quality of the cane, but also the opening and the overlap, and to some extent, the scrape.

**Tone.** This one is commonly given priority, but notice how it doesn't even make my top 5. This is because usually when a reed has all the aforementioned qualities, it usually also has at least a decent tone. Also, in my opinion, it's more important that a reed functions well than sounds pretty. Tone can also affect dynamic range—reeds that are very dark don't project well, and reeds that are very bright don't blend well. I like a balance between the two, again, depending on the music and my role within the piece. Second oboe reeds should be darker and more blending, likewise, first oboe reeds should be a little brighter and have the ability to cut through an ensemble. The areas of the reed

that most dramatically affect tone are the blend and the corners of the tip, but there are others.

**Stability.** This usually refers to pitch and how easily the reed stays in tune throughout the pitch range of the oboe. Some players demand more stability from a reed than others. Many people want the tone color to stay homogenous through the range as well. This is a personal thing. If you are seeking to make a stable reed, leave as much as possible in the back, heart, spine, and rails, and make the reeds as resistant as you can stand. Also, more definition between the areas tends to help.

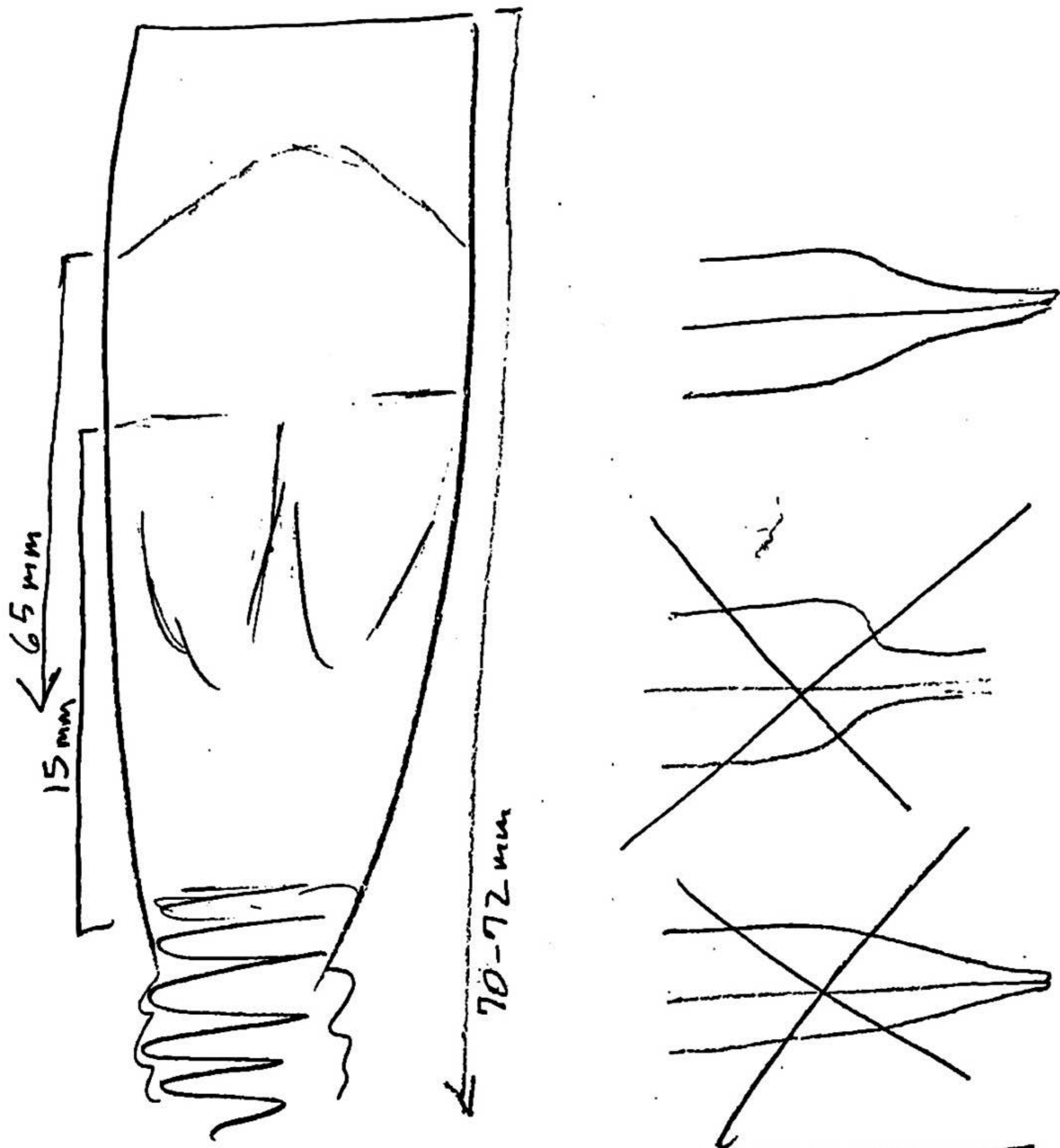
**Flexibility.** This sounds like the opposite of stability, but usually this refers to the ability of the reed to produce different tone colors, by the player making subtle changes in their air and embouchure. This adds interest and sparkle to your playing, but has lower priority than out-and-out function. Sometimes this term can be applied to pitch flexibility as well, if a player desires to be able to dramatically alter the pitch for pitch bending and microtonal playing. Since each player achieves this differently, they will each have to discover which elements of their reed-making most affect flexibility. A tip that is reasonably thin around the edges is more easily manipulated. Also, less resistant reeds tend to be more flexible.

**Longevity.** How long the reed lasts. Not the highest priority, but a very nice characteristic of a reed. This depends most on the quality of the cane, but it also helps to leave as much structure (spine, rails, heart) in the reed as possible. It is also commonly believed that the more slowly a reed is made (usually over several days) the longer it will last. A reed will also last longer if it not played every day—every other day is more advisable. However, don't be fooled into thinking that if you rarely/never play on a reed that it won't wear out. It may slow the process, but the weather's impact on reeds will eventually break down the fibers as well.

**Appearance.** Obviously, this one has to be at the bottom of the list. Some people care about how their reeds look a lot, others not at all. Mostly this is vanity, but it is worth considering that a nice-looking reed looks a bit more professional and also may have a psychological effect on how a player regards how it functions. Or a real effect—reeds that are neatly tied and scraped often do play better and have fewer problems. Some players use thread color to help identify different types of cane, or other variables. Some players use different colors to alleviate the tedium of constant reed-making.

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Taylor 205



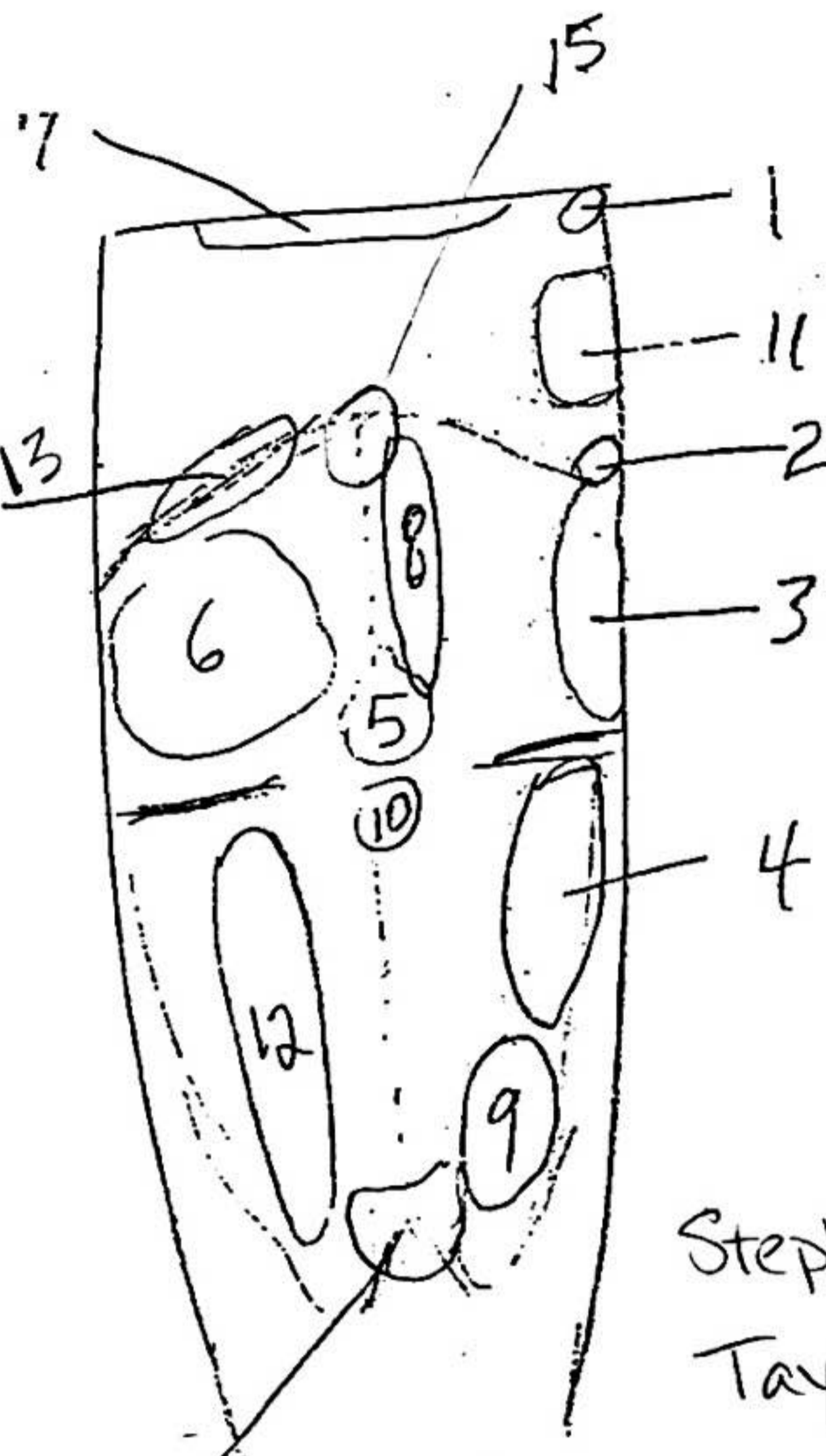
47mm tube 46 now

10.5-11 diam

58.5-61 gouge

GILBERT #1 shape (or similar)

# ADD 14  
15  
16



Stephen Taylor  
(Yale, MSM)

16' break spine  
helps vibrations get around back of the reed

Schumann romance  
lowers upper register spot/2nd spot

1.) Ease attack smooths out general tone, close reed, "edge" will accept air better.

2.) Ease attack, raise high B & C, focus octave G, raise general pitch, lighten general sound close reed.

3.) Ease attack, help to fill out lower & middle req. sound, lower pitch, lower upper B-C, ease low req. attacks

4.) Ease general resistance, focus 1/2 hole tones (C# - Eb) close reed, stabilize & warm general sound.

5.) clean out stuffy reed, open reed. brushy

6.) Greatly ease low to middle attacks, close reed, lower pitch, compromise upper req pitch & attack.

11.) Ease attack, "calm down" sound, improve low note response.

7.) Ease attacks, brighten sound, open reed.

8.) open reed, clear out <sup>just to side of spine</sup> stuffiness, lower pitch

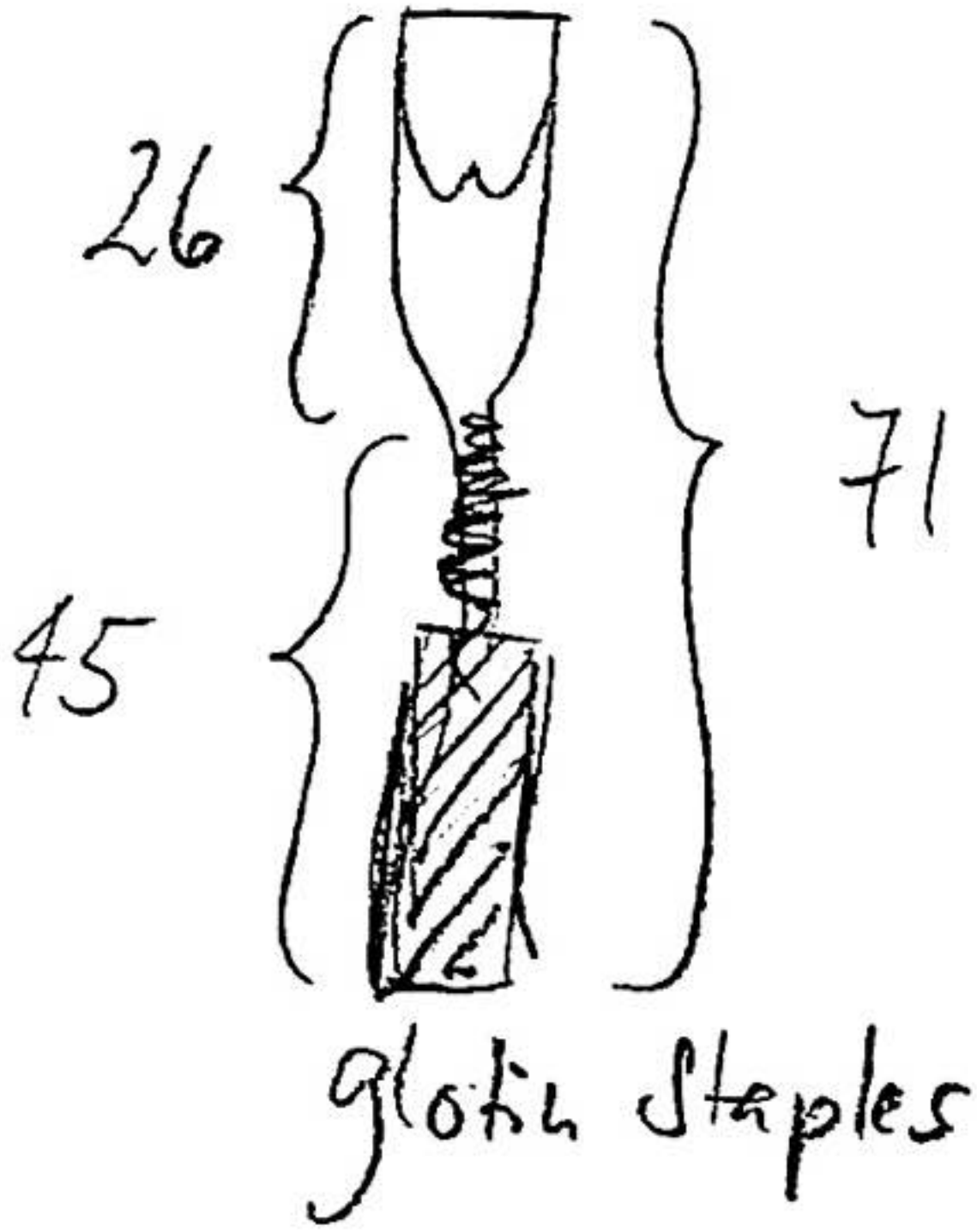
12.) Stabilize high req, ease general resistance, add tone complexity

9.) Dull sound, lower uppers, add tone complexity.

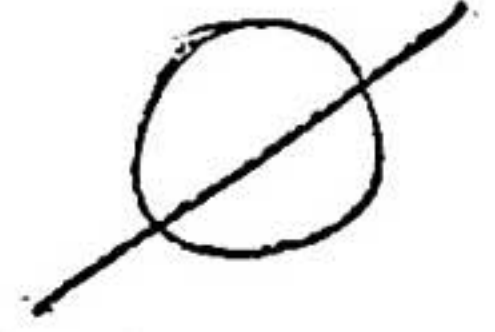
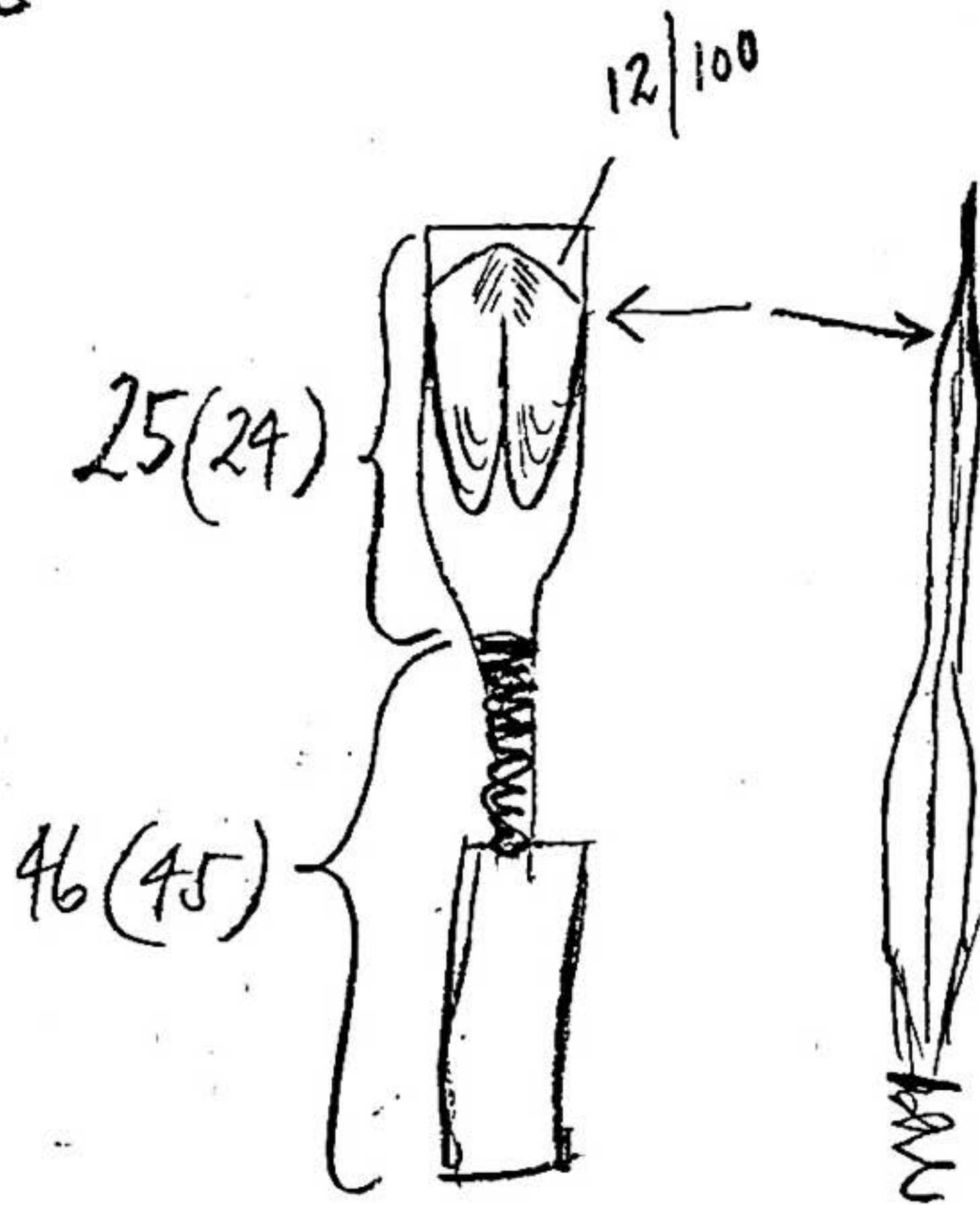
13.) Ease attack, "thicken" sound, lower pitch

10.) "Break" the spine to open mid-lower req & deepen sound E-G#, lower pitch.

Albrecht  
M.

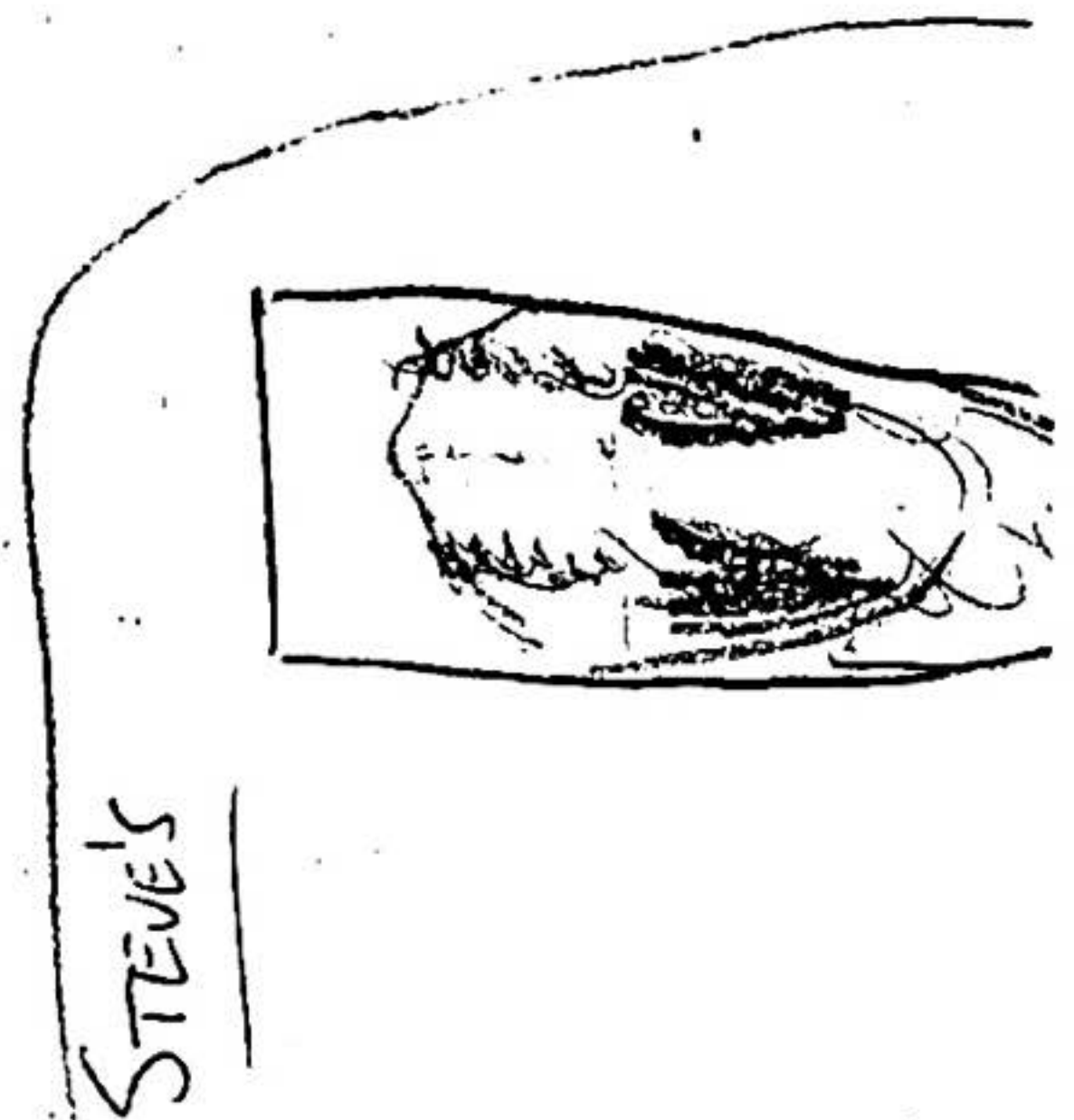


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Mixture  
of  
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Kunibear gauge



## Oboe Reed Tutorial Rebecca Henderson

### Stage 1:

Begin the scrape at 65 mm from the bottom of the tube. If your finished reeds tend to be shorter than 70 mm, you may begin the scrape at 66 mm. This will determine the point of definition between the tip (the area scraped during Stage 1) and the heart.

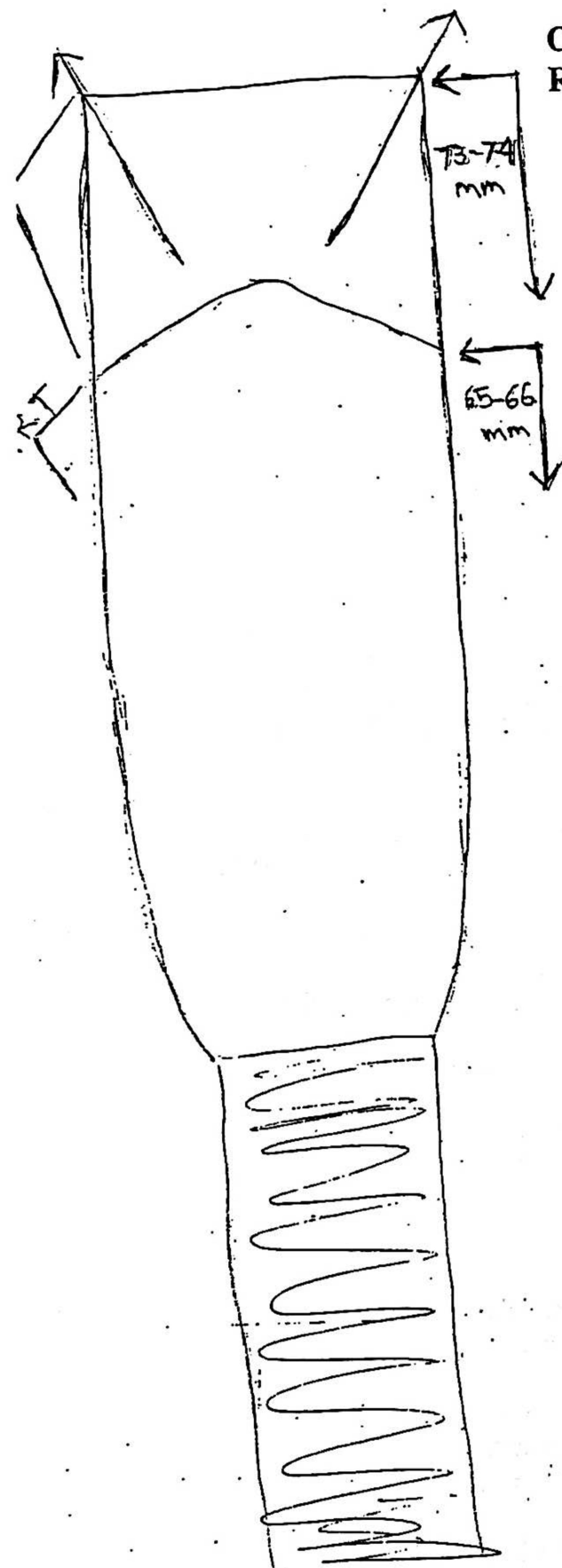
It is of utmost importance that the tip be a smooth slope descending toward the outer corners and that the outer tip is the thinnest part of the reed. Good knife technique is essential to accomplish this. Take care to move the knife forward through the stroke, and avoid 'swinging' the knife too early in the stroke. Swinging the knife creates a 'scooping' type of scrape, leaving areas of depression in the tip that create serious problems in the finished reed.

It may be helpful to begin the first stroke at 65 mm and move each subsequent stroke slightly forward to the outer corners. This can help you avoid scooping, and ensure that the outer tip is the thinnest part of the reed.

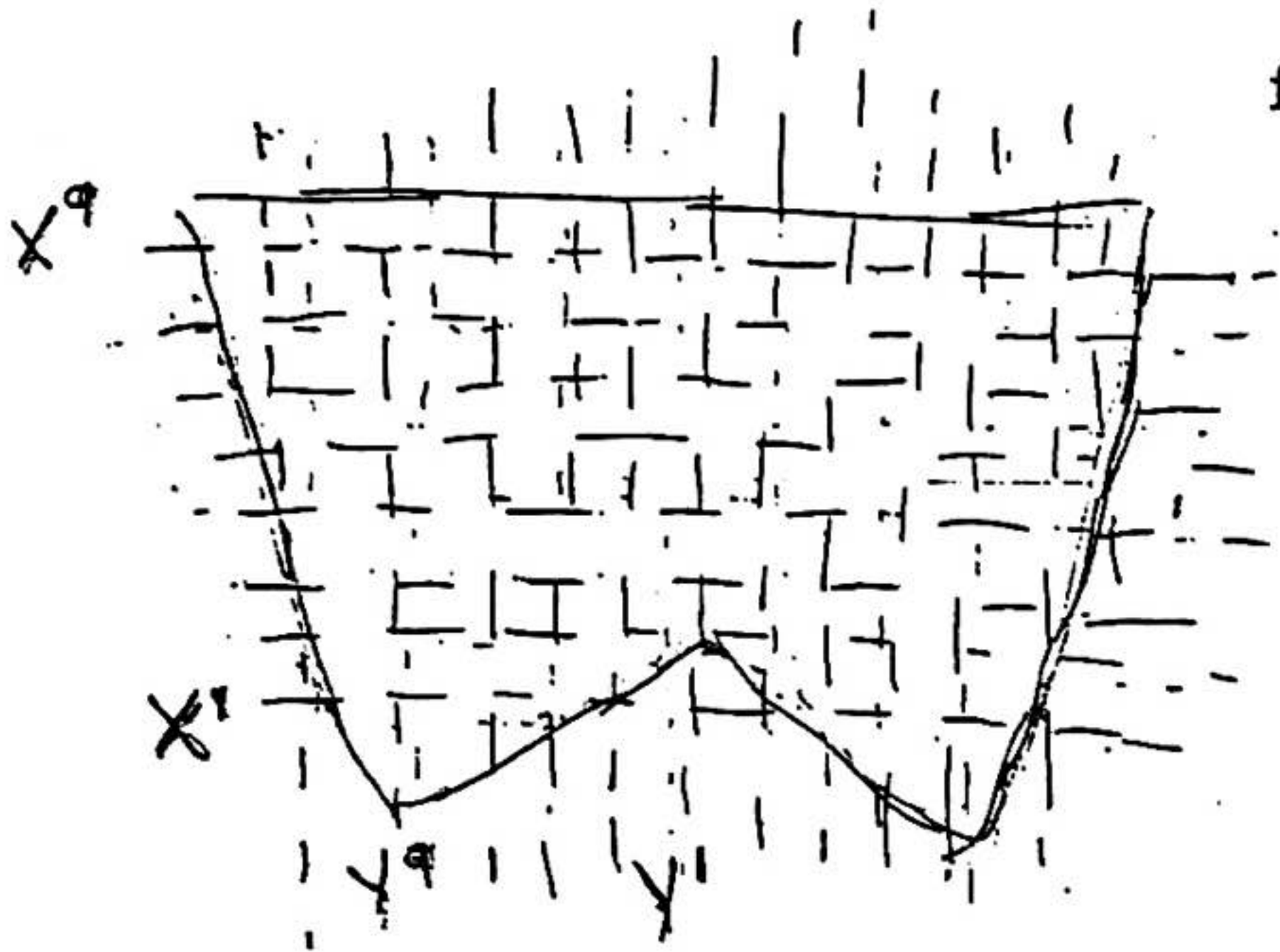
To accomplish a smooth, well constructed slope in the tip, imagine a graph of the tip's surface area. We will call the horizontal lines (from side to side) 'X' and the vertical lines (from heart to outer tip) 'Y.'

When constructing the tip, it is crucial that any 'X' line be thinnest on the sides and thickest in the middle, so that each X line moves from thin to thick to thin.

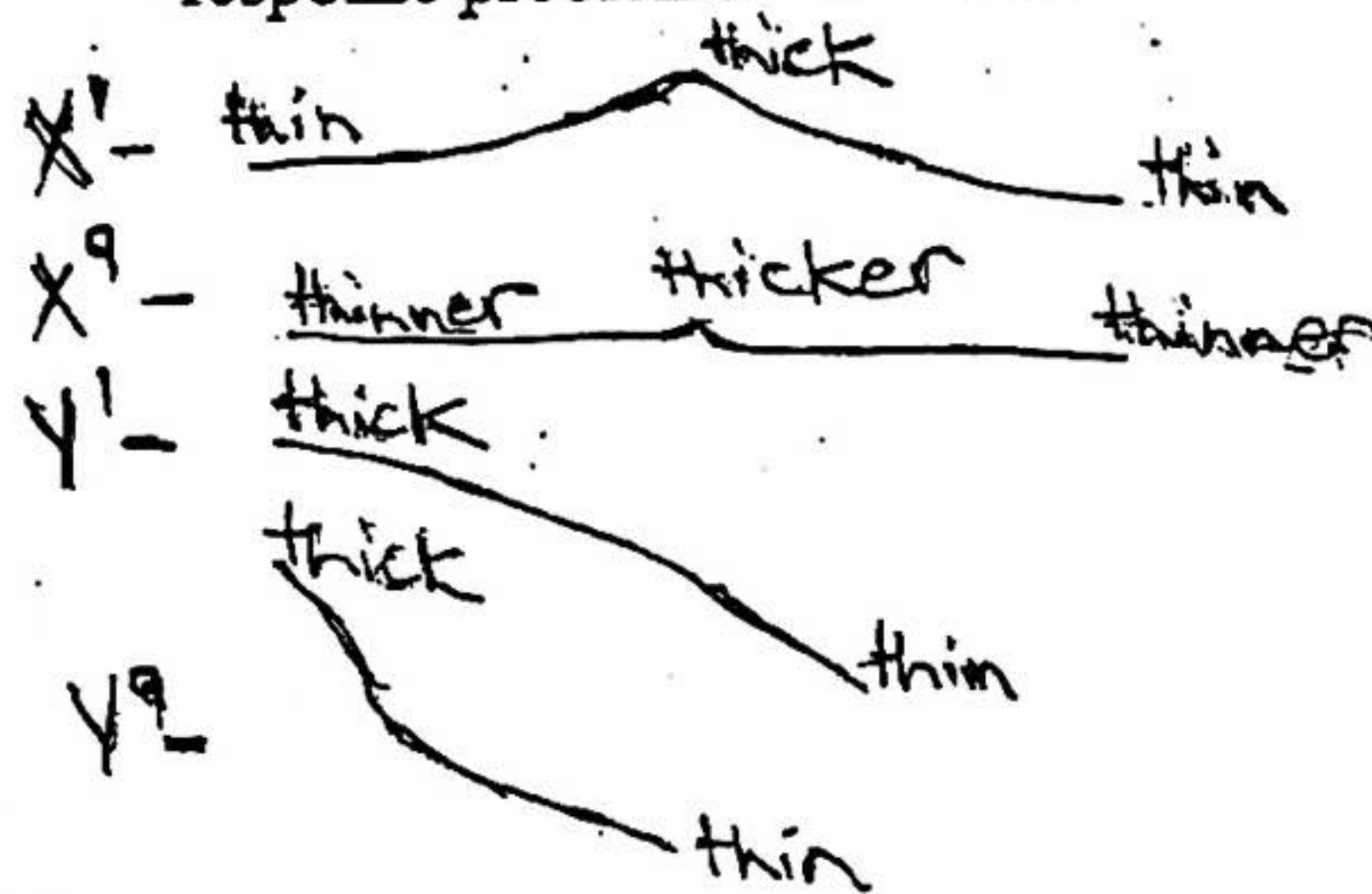
Y lines must be thickest at the point of origin (the area of definition between the heart and the tip), and must always be thinner toward the outer tip, so that any Y line moves from thicker to thinner. AT NO POINT should any Y line move from thinner to thicker! This is the result of poor knife technique (such as scooping), and will lead to problems in the



finished reed such as:



- thin tone
- lack of stability in pitch
- chirps in the high register
- response problems



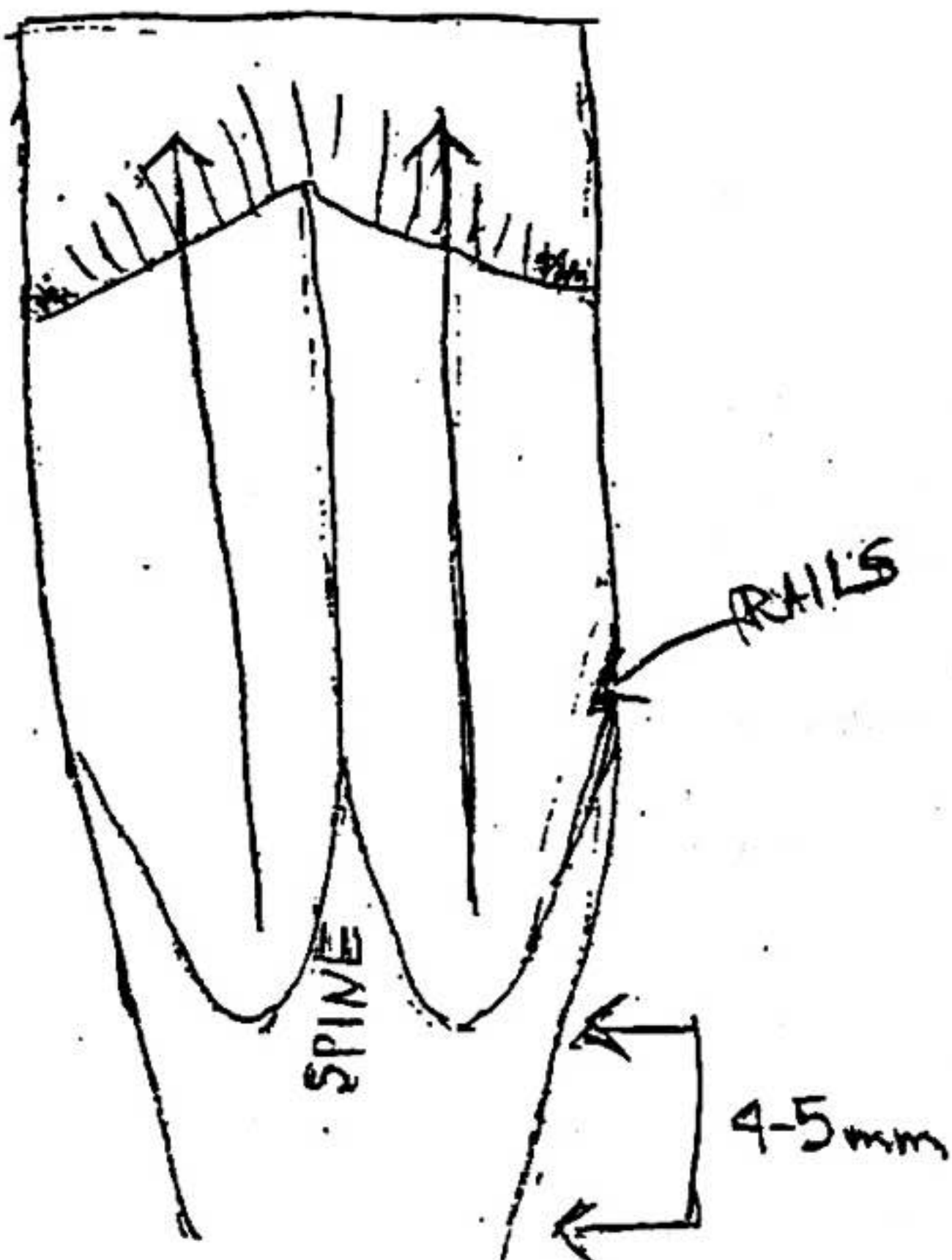
Notice that the rate of 'descent' in the Y lines is affected by its position on the intersecting X line.  $Y^1$ , which is in the middle of the tip and therefore at the thickest point of each intersecting X line, descends gradually.  $Y^9$ , which is at the side of the tip (the thinnest point of each intersecting X line), descends rapidly at first, creating a strong definition between the heart and the tip, and continues along the side of the tip with a slow descent to the outer corner.

X lines are likewise affected by their intersections with Y lines.  $X^1$ , the S line closest to the heart where Y lines are thickest, ascends quickly and stays thicker longer than other X lines.  $X^9$ , the X line at the outermost point of the reed, resists ascent almost completely.

Using this graph concept while constructing the tip helps in two ways:

1. It helps to create and maintain a top that is smooth, with its thinnest points being at the sides and outer tip.
2. It helps to maintain a subtle "spine" through the middle of the tip.

The two structural elements are essential to creating a reed with a dark, rich tone and pitch stability.



### Stage 2:

The scrape begins 4-5 mm above the thread. The knife stroke should be long and smooth, and the cane should roll forward (like a sleeping bag being rolled up). Think of the two areas on either side of the spine as channels that will ultimately serve as pathways for the reed's vibrations.

It is important to keep the knife stroke narrow during this stage. This will help to maintain both

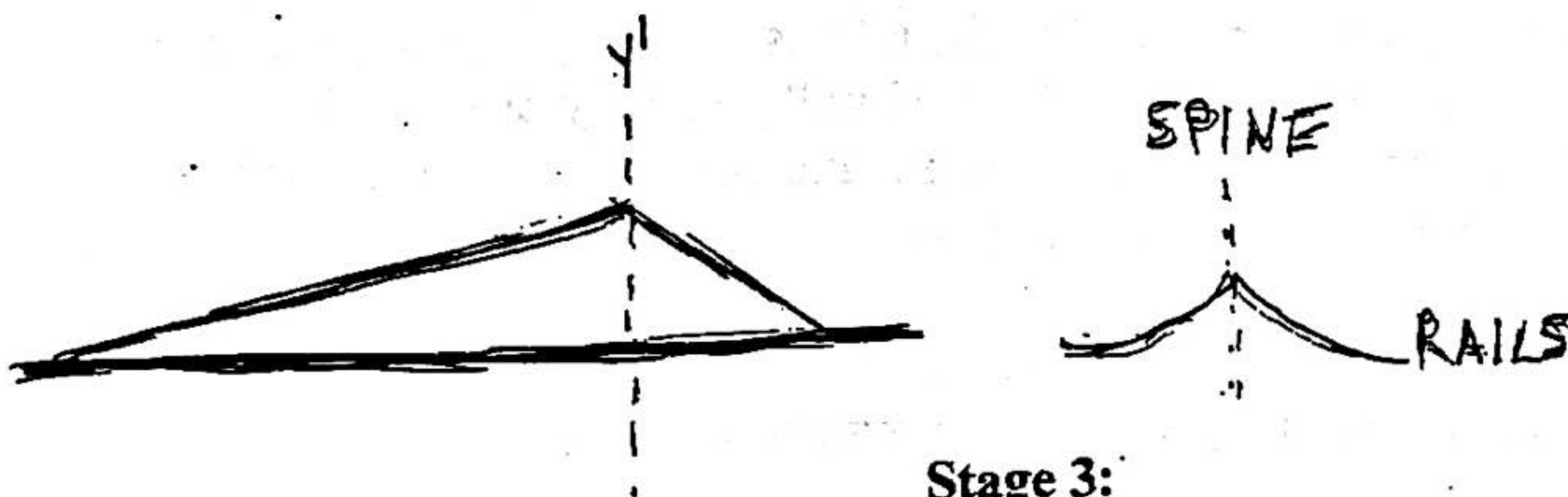


the spine and the rails, which are crucial to the reed's stability and tone. It is not necessary to maintain bark on the spine at the point, but take care not to scrape directly on the spine. It is important, however, to maintain bark on the rails, at least through the back section (up to 60 mm from the bottom of the tube).

The scrape during stage 2 serves two functions:

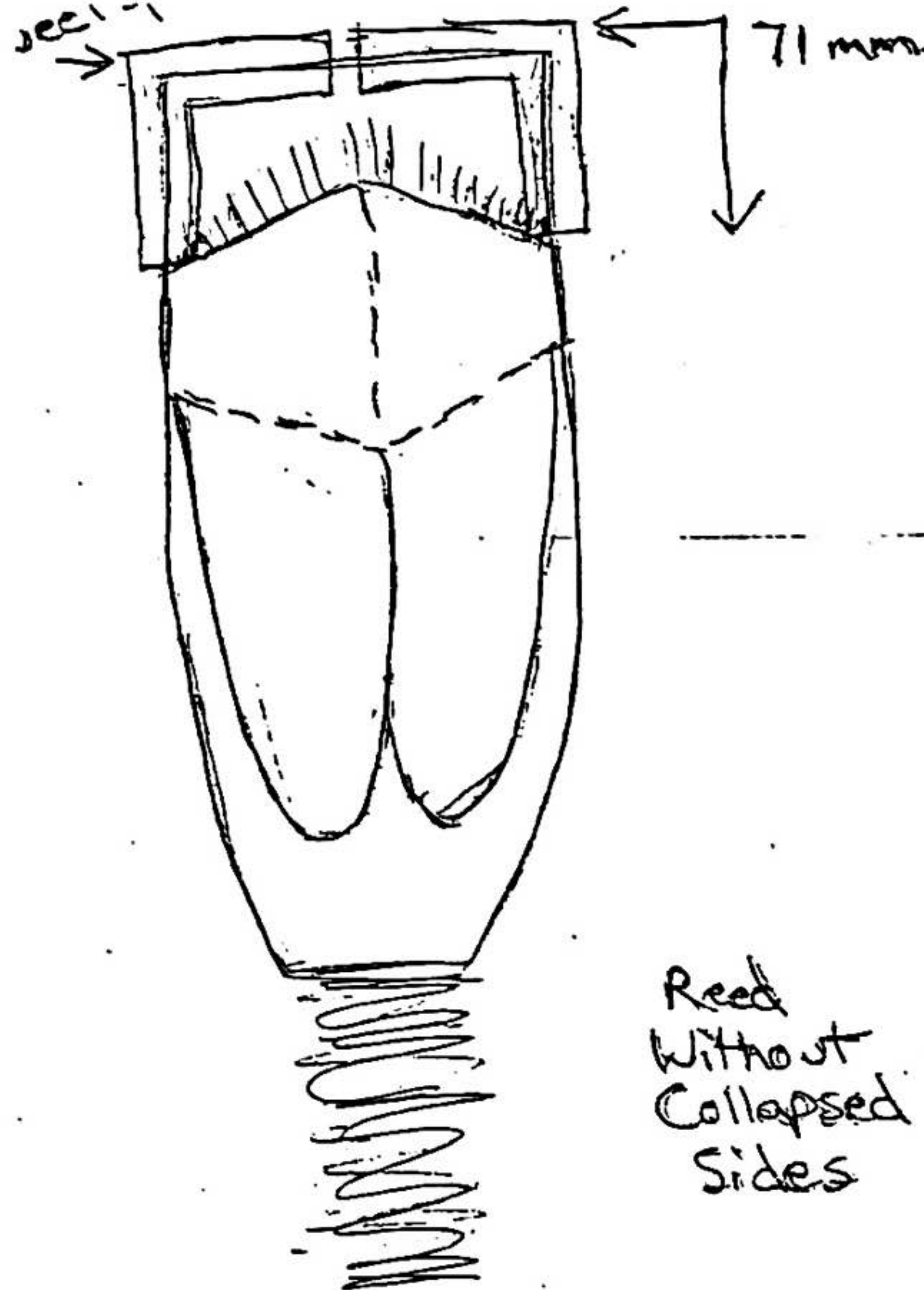
1. to define the basic structure of the reed – the "T" structure, defined by the spine and the line of definition between the heart and the tip. The intersection at the center and front of the heart (where  $Y^1$  begins) should be the thickest point of the reed.
2. creating a reed that will vibrate throughout, without blockages. With that said, it is possible to take too much cane out of the back and heart areas too early on.

That said, it is possible to take too much cane out of the back and heart areas early on. That is why the structure of the reed is so crucial here. To avoid over-scraping or wide-angle scraping in the back (which can weaken the spine), angle the knife blade slightly away from the center of reed (the spine), so that the blade is scraping slightly deeper near the rails. The stroke remains straight however, moving toward the tip through the heart. **DO NOT FAN** the stroke or you will end up with a scrape that is too wide. To establish the total length of the heart (about 5 mm), create a slight catch at 60 mm from the base – This can be done simply by stopping the knife on the reed at that place. Each subsequent stroke across the line will further define the line. Take care not to overdo this. The structure of the reed at this point should resemble a pup-tent:



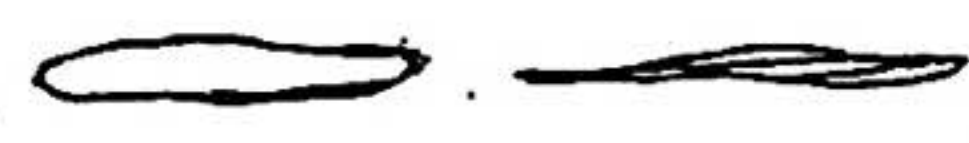
### Stage 3:

Clip the reed open at above 71 mm. Insert the plaque. The focus now is refining the structure of the tip, with greater definition in front of the tip, and extremely thin sides and outer tip (and corners). While doing this it is very important to maintain the smooth descent toward the outer tip that defines the tip's ideal structure—**DO NOT** scoop in the tip, and avoid scraping the middle of tip.

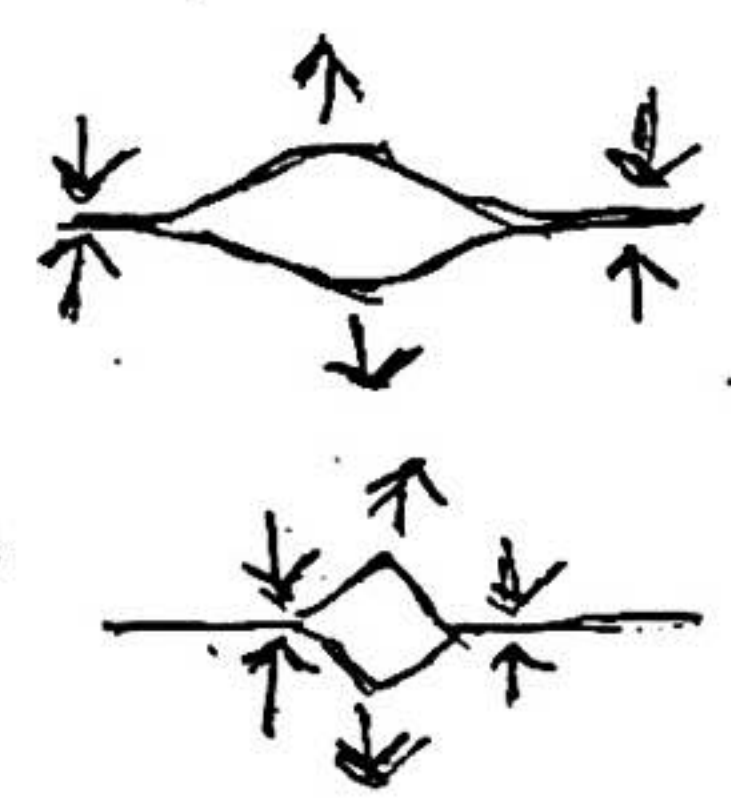


Focus the stroke on the sides and outer tip, otherwise known as the 'sweet spot.' Thinning in this area will help focus and eliminating harshness in the tone, creating a sound that is more 'ooew' than 'aaah.' Ultimately it is desirable to have the sides and outer tip collapse completely onto each other. This actually dulls the vibrations of the tip. It also creates strength in the middle of the tip by supporting it against lip pressure—so that the reed remains open even when a great deal of pressure is applied:

Reed Without Collapsed Sides



Reed With Collapsed Sides



Take care the slope remains smooth and even through the tip. Avoid scraping that creates trenches or sudden drop-offs in the tip area. Angling the knife away from the middle of the tip can help.

You should now 'crow' the reed. This is done by placing the reed in the lips all the way to the string so that the reed is free to vibrate fully. Begin blowing softly, adding more air gradually. The ideal crow is a two octave C – the upper octave C should enter easily with very little air and the lower octave C should enter smooth as the air is increased. The crow should sound in a way that suggests that the reed is vibrating as a whole rather than in separate compartments. The first crow of a reed will generally be either low (a Bb or a B) or high (C#), depending on the gouge, shape, and amount of cane left on the reed.

In tuning the crow (and the reed), remember that there are two general conditions that affect pitch: the size of the internal cavity, and the amount of vibration.

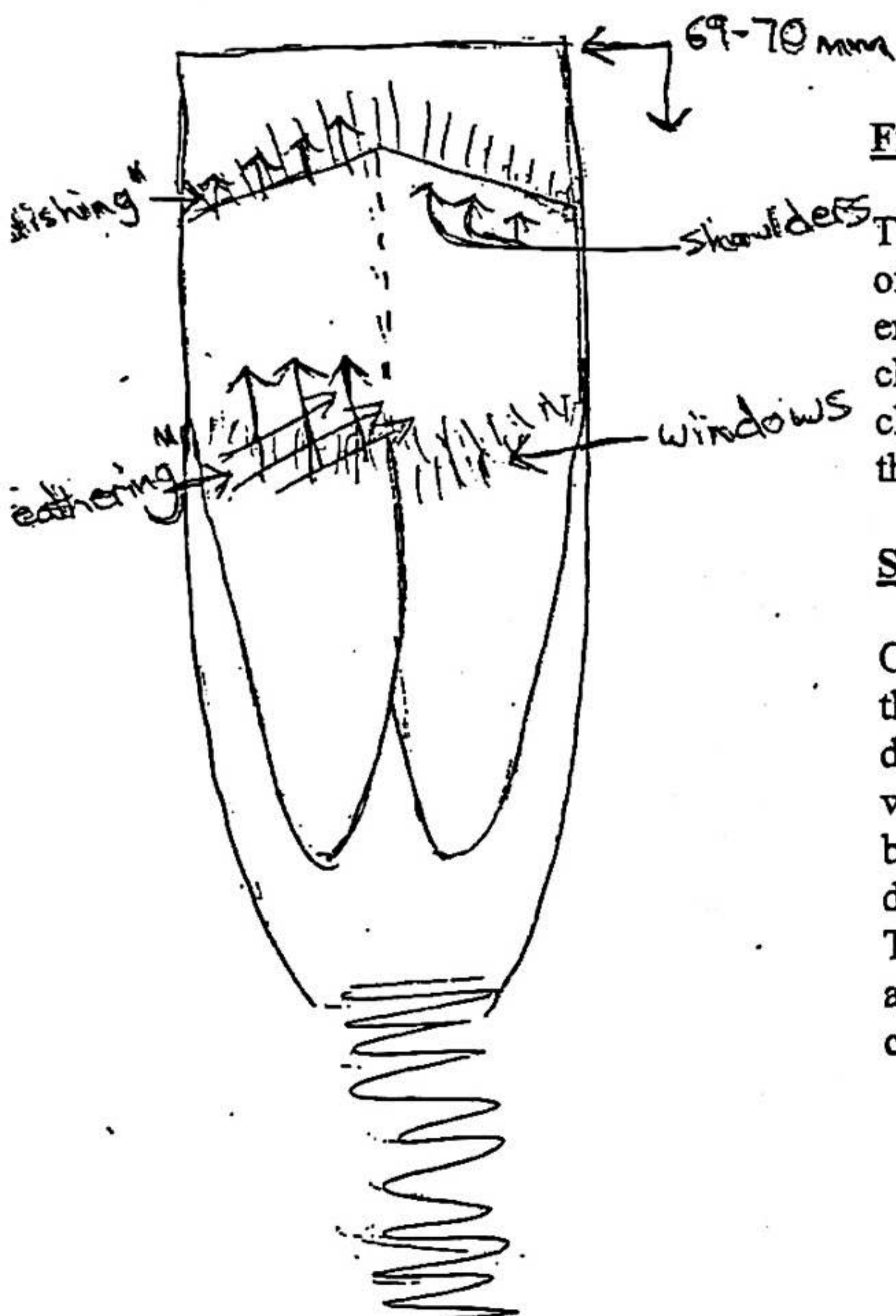
### 1. The Size of the Internal Cavity

Larger instruments sound lower (think piccolo vs. tuba or violin vs. string bass). Likewise, a reed with a larger internal cavity will generally play at a lower pitch level. Thus, a reed with a large aperture or one made on a wide shape will generally be lower in pitch than a reed made on a narrow shape or one that is very closed. Longer reeds tend to be lower in pitch than shorter reeds. But a long reed can be more closed can be more closed as a result of the extra length, causing the overall volume of the internal cavity to be less than a shorter, more open reed – so that the longer reed may actually be sharper than the shorter reed. Clipping a reed is generally thought to make the reed sharper in pitch (due to its shorter length) –

but the resulting shorter tip length may actually cause the reed to spring open, creating greater volume in the internal cavity and resulting in a lower pitch! (A shorter diving board has more spring than a long one). So the volume of the internal cavity is controlled through a variety of conditions. Being aware of this can save you a tremendous amount of time and frustration in the reed making process.

## 2. The Amount of Vibration

When tuning a violin, the pegs are tightened for a higher pitch, loosened for a lower pitch. The loosening of a peg gives a corresponding string more slack, allowing for more vibration, which causes the pitch to lower. Likewise, reeds that vibrate more freely will tend to be flatter in pitch. The quickest and easiest way to bring the pitch of a reed down is by scraping the heart and/or back to make it vibrate more freely. However, scraping in these areas may also compromise the basic "T" structure of the reed. Once that structure is weakened, the reed will vibrate too freely and in areas that cannot be controlled. The result is a reed that is soggy sounding, and especially flat in the middle register. It can also cause the player to bite while playing, in an effort to control the pitch level, resulting in very sharp pitch, especially in the upper register. So it is vital that a reed maintain its structure, especially when scraping the reed in the final finishing stage. It is also important to realize that any scraping will necessarily affect the amount of vibration and/or the size of the internal cavity. Understanding these cause-effect relationships is critical to finishing the reed.



### Finishing the Reed:

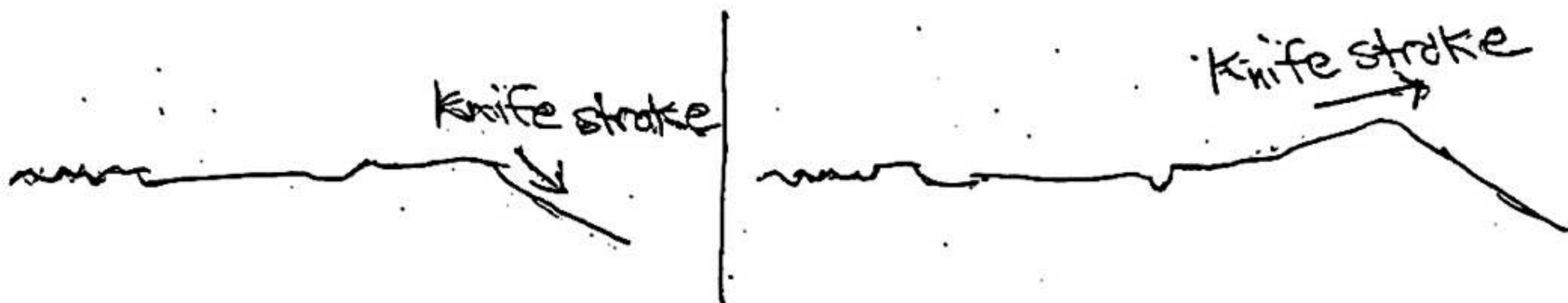
This is the most complex process of reed making. It often seems as if finishing a reed is simply an endless repetition of two tasks: thinning and clipping. There is certainly a lot of thinning and clipping to be done! However, there are other areas that need attention at this point.

### Shoulders:

One area that now needs attention is the area from the front of the heart into the tip. This includes the definition (the hump at the front of the heart) as well as the 'shoulders.' There is an important balance to be struck here. Scraping in the area of definition can help collapse the sides of the reed. This can also help focus the vibrations into the heart and channels of the reed creating a more unified crow and a deeper, more resonant tone. But

defining too severely will create a barrier that the vibrations cannot cross, resulting in a crow that is raspy and a thin, reedy tone. One way to avoid this is to take several very short scrapes in the area of definition followed by a few light, 'polishing' scrapes through the shoulders. The 'polishing' strokes help the vibrations move into the heart, giving the reed more resonance. It also helps with response in the low register. To achieve this polishing effect be sure that the stroke is very light

here. The cane should actually take on a luster with a very smooth surface. It is not necessary for the knife to maintain contact with the cane beyond the line of definition.



### Windows:

The area just below the heart, at the top of the back section, is known as the 'windows.' This area can help greatly in creating a tone that is both resonant and supple. Too much cane here leaves the tone hard sounding, with little nuance. Too little cane in the windows can cause the tone to be mushy, with no projection or core to the sound. It is best to leave this area alone until the reed is nearly completed. Once the reed has excellent response, with the vibrations moving smoothly into the heart and channels, and is crowing a C or a very high B, the windows may be 'feathered.' When done correctly, this can collapse the back of the reed slightly, bringing the pitch up. But take great care of the spine! Reducing the spine at the point will create freer vibrations, but will also result in a loss of stability in the tone.

'Feathering,' like 'polishing,' is one with a very light knife stroke. Begin the stroke 3-4 mm below the line of definition at the bottom of the heart area—about 56-57 mm from the base of the reed. Using light, narrow strokes, move the knife forward across the line of definition and into the back portion of the heart. The line of definition should not become more distinct with this stroke. If it does, lighten the stroke to a more polishing stroke. (To reduce the line of definition that is too distinct—one that catches the knife with each pass—take very small, light strokes parallel to the line moving from the rails toward—but not into—the spine). After several repetitions of the initial 'feathering' stroke angle the knife so that the stroke moves toward the middle of the heart as the knife passes the line of definition. This helps to blend and 'feather' the definition, and creates an angled line of definition that mirrors the line of definition at the shoulders. The result is a heart that is somewhat diamond shaped.

This process should create a thinner area at the top of the back section, or channels. It should also create a heart that slopes down slightly toward the back, away from the shoulders and the middle of the heart.

### Fine Tuning, or 'thin the tip and clip':

We now come to the delicate work of fine tuning the reed. This is when it is most important to:

1. listen to the crow
2. consider the two major influences on pitch—amount of vibration and internal cavity
3. consider the scale of the reed—how well in tune it is in various registers and through various intervals
4. consider the context in which the reed will be performed—Bach, Mozart, or Mahler, woodwind quintet concerto soloist, or large orchestra

### Tuning the Reed

There are a number of intervals to check when fine-tuning a reed. Listed here are some of them.

1. Slur from middle D to C (one step below), making little or no adjustment with the embouchure. The D tends to be sharp, and the C can be quite flat, if the reed is not finished. If the C is flat, the reed is either too long or too open and loose. Adjust by thinning the outer tip of the reed and clipping it until the crow is a double-octave C. The reed can also be closed by thinning the very back of the back (the point where the stroke begins, 4-5 mm above the thread), or by scraping the channels through the back with the knife angled away from the spine and toward the rails. Take care not to over-scrape the back area, as too much vibration in the back will cause the C to say even more in pitch. It is critical to the stability of the reed (especially on the C) that the spine remains intact.
2. Slur F# (top of the staff) to G, a half step above. If the G is low in pitch compared to the F#, there is likely not enough difference between the outer tip and the shoulders (the area in front of the heart, just above the line of definition). Thin the outer tip, define the tip more clearly (at the line of definition), and clip the tip.
3. Slur from C (middle of staff) to the C one octave above it. Also check the octave Bs. If the upper octave is flat compared to the lower octave, thin the tip and clip the reed slightly. Repeat this until the octaves line up.
4. Slur from D (middle of staff) to high D, one octave above. Also check octave Es and Fs. If the high register notes are sharp (more than 10 cents), the reed may be too short, or have a tip that is too sharply defined. While you cannot add length to the reed, you can elongate the ramp (or 'blend' area) by moving the definition back slightly into the heart. A longer and more gradual ramp will add stability to

the upper register.

5. Slur from D (middle of staff) to G one fifth below. If the G is low in comparison to the D, the reed is likely too open. Thin the sides of the tip until they collapse onto each other, thereby decreasing the reed's aperture. Check the crow, and clip the tip until you have a double octave C crow.

Remember that the key to a good reed is balance. What you take off of one area can effectively 'add cane' to another. So if the reed begins to sound thin or wiry, you may want to scrape more cane out of the back and/or heart. Or if the reed reels unstable by has a full sound, you may need to work more at the tip—especially the outer tip and sides of the tip—to stabilize it. Bear in mind that the structure of the reed—the "T" that is formed at the intersection of the spine and the line of definition between the heart and tip—is of utmost importance. The reed must be balanced—front-to-back with the definition as the 'pivot' point, and side-to-side with the spine as the 'pivot' point.

### Bach, Mozart or Mahler

Due to the nature of cane, and the fact that reeds are handmade and susceptible to weather conditions, each reed is unique in character. Our challenge as oboists is to produce reeds that are as consistent as possible while making sure that the reed of the day has the qualities necessary for the performance of the day. A reed that is perfect for a Bach cantata is not likely to be perfect for a Mahler symphony as well. The two pieces demand different levels of dynamics, color, nuance, and technical finesse. In general, a good reed is a good reed. But in order to tailor a reed to a particular performance, there are some important considerations to remember:

#### Bach:

This reed must be flexible, responsive, and light enough that it is not too taxing on the embouchure. It does not need to be loud. A 'Bach' reed is one that is not too open, and has an extremely smooth tip (for a blended, beautiful sound). Be sure that the sides of the tip are collapsed onto each other and that the outer tip is beveled.

#### Mozart:

The 'Mozart' reed needs to be very stable, with a ringing sound and smooth response. Keep the ramp fairly long and gradual while maintaining a clear definition between the heart and the tip. Bevel the tip very well for a smooth response and velvety tone. A great 'Mozart' reed also works well for Haydn and for most woodwind quintet literature. For Beethoven, these qualities are needed, along with a very big dynamic range and impeccable intervals.

#### Bozza, Ravel, Debussy:

The French style of music demands a great deal of flexibility, with a wide dynamic range and a huge pallet of colors. This reed needs to be relatively light, but with a very strong structure. The spine must be clearly present, and the definition must be relatively abrupt into the tip. The outer tip must be quite beveled to keep the tone from becoming too

bright. The back of the heart can be quite blended into the back for more flexibility—but DON'T remove the spine, especially in the area of the windows! Too much out here will make the pitch of the reed unusable.

There are not hard and fast rules for reed making. There are, however, things to consider while making your reeds. You will find in the course of your reed making that some techniques work well for you, while others do not. USE WHAT WORKS! Strive to learn something from every reed, whether it's a good one or not. If it fails, ask yourself why. If it's wonderful, challenge yourself to make another just like it. The art of reed making is challenging at best. It takes years of practice, and hundreds (if not thousands) of bad reeds to get to a point of being self-reliant as a reed maker. The concepts outlined above are intended to help you understand the basic nature of the oboe reed. What you learn in the process of making your own reeds will be much more valuable to you in the long term.

Here are some tips for maintaining sanity while on the quest for the perfect reed:

1. Do whatever you need to do to be as relaxed as possible. Tension creates bad reeds! Stretch, breathe, and create a good environment for reed making (with good lighting and all the tools nearby).
2. Never work on your best reed. Always work on your second (or third) best reed. When it becomes your 'best' reed, leave it alone.
3. Work in stages. Try not to sit down at your reed desk with the expectation of having a performance reed. Rather, keep reeds at various stages of completion, and work on getting a few of them closer to being finished, performance-ready reeds.
4. Never leave the reed desk without having accomplished something positive—even as simple as tying a new blank. Nothing represents hope for an oboist like a blank reed!
5. Learn something from each and every reed! Strive to understand WHY the reed is playing the way it does, crows the way it does, and feels the way it does. By doing this, you will begin to form your own concepts of reeds, and techniques of reed making. These will be much more valuable to you than any book or teacher.