

REEDMAKING

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This is a dissertation on reeds and my reasons for the procedures I use. The whole process is governed by the fact that we make reeds out of *Arundo Donax*, i.e. reed cane. Among the many facts that Heinrich states in his excellent article that appeared in the IDRS Journal in 1978, one, I think, is most pertinent, and it governs cane and reeds.

Heinrich states that the composition of cane consists of two main elements. One is parenchyme, and one is sclerenchyme. For our purposes, I will call the parenchyme, pulp, and the sclerenchyme, grain. The analogy he draws is the one of concrete re-enforced with steel rods. In order to provide predictable strengths, engineers have calculated the amount of steel rods (grain) and their distribution in concrete (pulp) that is necessary to produce the strengths necessary in predictable situations. To pursue the analogy, while using steel (grain-sclerenchyme) to reinforce concrete (pulp-parenchyme) the resulting strength of the concrete can then be calculated, produced, and proven.

The analogy to cane breaks down because of the Heinrich revelations. I have simplified his statements, but he states that in cane, the distribution of pulp and grain is mosaic, and their distribution is random. No one as yet has been able to predict the makeup of cane that makes good reeds. As with natural growths in nature, no two of the same species are exactly alike. Until cloning, and except in the instances of natural identical twins, we can safely say that no two apples are exactly the same size and shape—even from the same tree. Since the discovery of DNA, the same DNA patterns recur only in one case among many billions. Nature does not duplicate any of her creations. Cloning good cane is a far off dream.

A good piece of cane is one that responds to trimming and adjustments and maintains them. Conversely, a bad piece of cane will not respond and will require constant trimming and adjustment until there is no further adjustment or trimming possible.

There is no valid test for cane until the reed is made and tried. Test techniques such as dial indicator use and "crowing" are fallacious. It should be obvious that we do not trim or adjust reeds to satisfy the "crow" and then consider them finished. I have had fine reeds that do not crow and very bad reeds that do. In the case of

the dial indicator, it tests only thicknesses and not the composition of cane. As I have stated, the method of testing a reed relies solely in putting it on the bocal and playing it on the bassoon.

There is no place for prior "crow" testing in these procedures. As for indicator measurements, there may be similarities in them, but they do not always predict results.

Furthermore, since cane presents us with imponderable complexity in its variables, the first task is to eliminate as much human error or variation in the construction of reed blanks as possible. We then can have a better foundation to work on the blank (a level playing field) and therefore find the solutions to deal with the endless variety in cane. Consequently I designed and had manufactured two coordinated tools to help construct consistent blanks. One is a flat shaper, and the other is a profiler. Both are made with precision and the component parts are within .003". To give you an idea, human hair is between .002" and .003". Another feature is the ability to place the symmetrically shaped cane from the flat shaper precisely on the profiler every time and therefore retain the ability to profile it symmetrically. This enables me to make a shaped and profiled piece of cane where any of the four corresponding spots on the blades fall within .003". Then I am able to construct a symmetrical blank whose blades are within those .003" tolerances at any four corresponding places. Furthermore, I can adjust the profiler for different thicknesses and I have three different patterns to choose from, or I can take sections of one cam pattern and combine it with another. The results of any adjustment remain within the .003" tolerances. There are many other features to the profiler, but for this discussion, this description should suffice.

With the production of symmetrical blanks, I am trying to eliminate the "human error influence" that may bias results in good reeds as well as in poor reeds. Since results can be influenced by human error, they cannot always be repeatable or traceable. Therefore, due to the Heinrich factor, we must leave room for further trimming of the "precision blank". We must learn to trim reeds according to the response of each specific piece of cane and the reed must meet the demands that our playing requires.

Since I have the ability to produce a sym-

metrically precise blank one would think that many beliefs in the dial indicator would be substantiated. Further, the reeds would be playable without alteration. Having that ability with the shaper and profiler I have mentioned, I can say that while many reeds made with my shaper and profiler do play amazingly well at first, I have found none that can remain untouched. The advantage my tools give me is that the blanks are brought closer to my playing requirements. The tools also allow me to make the "sterile" blanks much faster and thus have many of those blanks from which to choose. Recalling my definition of a good piece of cane, my tools also give me the further advantage of being able to discard those blanks that show little or no promise much sooner.

Thus we find ourselves embracing traditionally proven methods of making reeds. What I advance is the rationale I use in classifying them and coordinating them with the bassoon playing exercises that help produce progress in both.

My system of trimming the precise "sterile" symmetrical blank (no human error), consists of dealing with the factors of shape, thickness, wire placement and adjustment, and the influence of the bevel. These four systems come into play when we trim and adjust reeds in order to bring them to the required bassoon playing demands. Symmetry as well as fixed indicator measurements in final finishing must be modified. They cannot be maintained because of the natural variables in each piece of cane.

Heinrich has added the complication of splitting the tube. He claims that the random splitting of the tube cane can condemn a reed before it is made, and unfortunately the time it takes to carefully split cane precludes commercially sold cane from that operation. A student with whom I have worked has told me that the first thing he did after reading Heinrich was to buy a gouging machine. He has described his tube splitting techniques. It is time consuming, but very productive.

A colleague of mine, **Arthur Weisberg**, is reported to have said that "you get the reeds that you deserve". Implicit in his statement, in my opinion, is the work you must do on reeds, the large quantities you must make, and most important, the knowledge you gain from the symbiotic relationships of reeds, testing, and practicing. Ultimately, your practicing, if it is comprehensive, will reveal shortcomings, and you gradually must learn what is responsible for flaws in playing. Reeds are not always the culprits, but in any case, your expertise in playing must meet the reed's capabilities and vice-versa. No blank spaces between those two factors can be permitted. For that matter, instrument faults, local shortcomings are additional factors, but reedmaking is the theme here.

"Failure" becomes an important word in these procedures. No one is perfect, and we learn more from correcting bad reeds and by correcting playing mistakes than if all reeds were good, and if all playing were perfect.

Details of practice procedures such as scales, intervals and long tones, as well as thorough reedmaking techniques involving the four systems in reeds are the essential ingredients to fine playing. Between the two, practicing and reedmaking, there is no "chicken and egg" situation. Practicing must come first. I recall that when I started bassoon, I did not think it was a difficult instrument, and that all reeds were good. It was only when I tried to become better through practice that reeds became impediments.

Over many years I realize that the symbiotic relationships I have mentioned require the mating of specific practice techniques and specific reedmaking procedures. Knowing when to blame lack of practice, reed correction, or both, is crucial.