

Jawboning and the Flute Embouchure – Part I

BY WALFRID KUJALA

Editor's Note: By popular demand we are reprinting this series of articles which first appeared in The Instrumentalist magazine in the fall of 1971.

Almost everyone is a mandible virtuoso. If you don't believe it, take a few minutes to observe the mandible (lower jaw) performance of your friends in animated conversation or while eating.

Communication (talking, singing) and physical needs (biting, chewing, yawning) obviously depend on active jaw movements. But the less active motions of the jaw, properly controlled and refined, also can contribute to your development as a flute virtuoso.

Most flutists are aware of the interplay of the jaw and lips, but the precise nature of these movements is often misunderstood. Some flutists, for example, speak about the basic jaw movements as "forward and back." Others refer to the identical action as "up and down." Fortunately, no one has yet suggested "side to side."

To help resolve these apparent contradictions, it would be well to review the repertoire of lower jaw motions. There are three. Try them yourself in front of a mirror:

1. *Down and up.* This is the normal, basic movement we do 90% of the time when we talk, yawn, chew soft foods, etc.

2. *Forward and back.* When determined or angry, we sometimes jut out our chin. The jaw is capable of pushing the chin straight forward about an inch. This movement is also possible when the jaw is in the down position.

3. *Side to side.* For efficient grinding of tough, hard, or sticky foods, the jaw's side to side capabilities come into play.

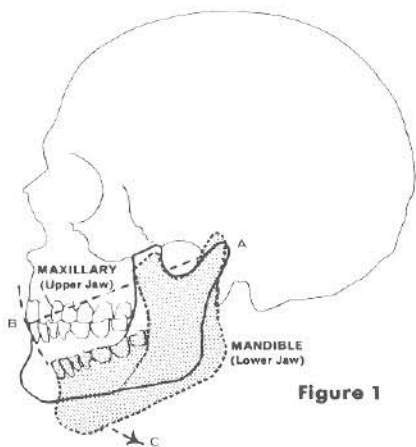


Figure 1

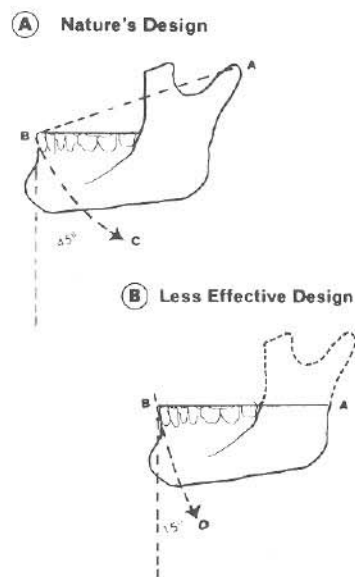
Now look at Figure 1 which illustrates the path that the jaw traces in performing Motion No. 1 (down and up). Clearly, it is not a simple down and up pattern after all, but a circular one that allows the jaw to recede as well as to drop down.

Note also (Figure 2A) how ingeniously our jaw is designed to amplify this recession. Its L-shape puts the pivot point A at a higher plane than the end of its radius B (the front of the lower teeth). Compare what might have been in a less effective design (Figure 2B). Here the pivot point A has been moved down to the same horizontal plane as B. Now you can see the drastic difference in the position of the arc BC (Fig. 2A) compared to arc BD (Fig. 2B). This less effective design (Fig. 2B) would still allow the jaw to recede, of course, but only about 15 degrees from the perpendicular rather than the actual 45 degrees provided by Nature's design (Figs. 1, 2A).

The superb engineering of the jaw is a great advantage to the flutists, as we shall see; but lest you conclude that Nature's only purpose was to advance the flute player's art, we must concede that one of the more practical results was to give more

leverage and efficiency to our chewing technique. For one example, with this design the upper and lower

Figure 2



teeth meet more precisely and with little danger of their sliding against each other. (Most steam shovel scoops are designed to take advantage of the same "rotating-L" principle.)

What element of flute playing, then, is most affected by this dramatic 45-degree swing of the jaw?

Contrary to what many flutists believe, the jaw is not so important for controlling register change. The lip and chin muscles have most of this responsibility, and they are capable of a surprisingly wide range of movement with no assistance whatever from the jaw. You can prove this by exercising your lips while clenching your teeth together.

On the other hand, to be able to go from the softest to the loudest dynamic levels without sacrificing tone quality or intonation is an element of flute playing that is controlled to a large extent by the jaw.

Theoretically, the lowering of the jaw conveniently enables the flutist to deflect the airstream further into the embouchure hole to prevent sharpness during crescendos. In practice, however, it is not quite this simple. If it were *only* the jaw — and automatically the lower lip with it — that moved down during a crescendo, the tone quality would almost immediately suffer. The missing factor would be the upper lip, which should not remain passive, but must closely follow the lowering (receding) motion of the jaw. Conscious control of the upper lip not only makes it possible to aim the airstream more accurately, but equally important, prevents the lip aperture from becoming too large. Remember, though, that the aperture should get a little larger.

Yet having said all this about the upper lip/lower jaw coordination, the truth is that you really don't have to think about the jaw at all! The message you send from your brain to your embouchure ("forte coming — pull upper lip down") will, for most flutists, automatically activate the proper amount of natural jaw recession. You can demonstrate this in front of a mirror (without the flute):

- Relax your jaw, keeping your teeth slightly apart and mouth gently closed. Then, while continuing to keep your mouth closed, stretch the area between your nose and upper lip by pulling down the center of your upper lip, but do not suck the upper lip around your teeth.

- Now repeat the foregoing as an exercise: Pull and relax, down and up. While doing this exercise, observe your lower jaw. You will be surprised to see it moving down and receding synchronously with every pull of the upper lip, almost like a mild chewing action.

- If your jaw is not moving, you are probably permitting both lips to curl around your teeth. Correct this "oboe embouchure" by making your lips more relaxed. Then the jaw will begin to respond normally to the pull of the upper lip. The upper lip's maximum pull is approximately 3/8 inch, the lower jaw meanwhile moving about twice that distance. The jaw can, of course, move down even further, but not without causing the mouth to open.

This natural coordination of the upper lip and the lower jaw, with the upper lip doing the leading, is

another example of the incredibly complex interplay within our network of facial muscles. This proves again how easily we might be fooled by concentrating more on the effect (lowering of jaw) rather than the cause (pulling down upper lip).

- Next, set your normal embouchure — still without the flute — and repeat the above exercise. Now the synchronous upper lip/lower jaw movement will be somewhat less pronounced. This is because the normal tension added to the corners of the mouth reduces the jaws mobility somewhat. But if your embouchure setting has excessive tension, especially in the region just above the corners of the mouth, this may restrict the jaw too much. Such a situation may be serious enough to warrant a full-scale review of your basic embouchure habits.

- After a few minutes of practicing the "upper lip pull" in full embouchure position, put the flute to your lips and, without producing a tone yet, repeat the exercise. Remember to concentrate mostly on pulling down the center of the upper lip, and let the jaw motion follow as a natural reaction. Your hands should be balancing the flute in a relaxed but sensitive manner so that it will easily follow the movement of the jaw. You should feel absolutely no resistance from the instrument.

- Now you can apply FULP↓ (Forte, Upper Lip Pull Down) to actual tone production. Choose any note to start with, preferably in the second or third octave, and attack it at about a mezzo-piano level. Rapidly increase the force of your breath so that you will be making a full crescendo in about two seconds. While you are making this swell, gradually apply more FULP↓, but be sure the increase in breath pressure has started first. In other words, for crescendos, lead with the breath, follow with FULP↓. Experiment with slower crescendos, then faster ones, until you hit upon the best coordination of FULP↓ and breath pressure.

Look in the mirror again. You will be able to see the upper lip moving down — though not dramatically — while the receding motion of the jaw and flute should be quite obvious. If possible, use two angled mirrors so that you can get a side view of your head. Then you can see more clearly the circular motion of the jaw as it moves down

The FULP↓ technique is good for crescendos throughout the playing range of the flute. Moreover, it is superimposed on the normal embouchure settings for the various registers. For example, your lips will be more forward for a higher note, with the lower lip covering more of the embouchure hole. But as you apply FULP↓ to a crescendo on that note, the lower lip should not change its position relative to the embouchure hole. It will still be covering the same amount of hole. Likewise, for the low register, the lower lip will be covering less of the embouchure hole, but the coverage should not change with the application of FULP↓.

This can be confusing. If, for example, you are executing a wide leap from a low note to a high note while making a big crescendo, you should be thrusting the lips forward, but at the same time pulling down the upper lip. At first, these might appear to be contradictory movements, but they are not. The embouchure adjustment for register change is a function of the airstream length, but for dynamic change it is a function of the airstream angle. Playing wide intervals with dynamic markings that oppose the normal expectation gives you an odd sensation (like shaking and nodding your head at the same time); but with concentrated practice and careful listening, you can deftly handle these composite adjustments.

Again, make sure that your instrument is not causing interference. It should furnish the necessary resistance for the forward pressure of the lips when leaping to a higher note, but no resistance for the up or down movements resulting from FULP↓.

When you are doing FULP↓ correctly, your flute will be moving diagonally (down and in).

An outside observer might easily be misled by this, and would assume that you are rotating the flute with your hands. Some flutists, in fact, do that very thing as a substitute for an embouchure adjustment such as FULP↓. Another maneuver that substitutes expediency for skill is the nodding of the player's head for the purpose of changing the airstream angle. This can be useful in extreme cases, but it should not be done as a matter of habit. Virtually all adjustments for dynamic changes and

tuning can be effectively handled through FULP↓.

One final hint: If your tone tends to spread and lose focus as you apply FULP↓, this may be due to the lower jaw moving too far down, even though your upper lip pulls just the right amount. This will make the lip aperture unnecessarily large. In this case you must try to reduce the amount of jaw movement, not by de-emphasizing the upper lip pull, but by more conscious attention to the jaw itself. Through careful practice, you can train the jaw to resist its natural tendency to move down. Do some of this by practicing away from the instrument.

Summary

Having established that the basic and natural jaw motion (No. 1, down and receding) assists in crescendos, and that the conscious but gentle pulling down of the upper lip triggers the correct jaw recession, we can better appreciate why some flutists believe that the jaw should be stationary and that only the lips should control dynamic changes. They are partly right. As we have seen, you need not focus your thoughts directly on the jaw. Also, the desirable jaw motion can hardly even be felt until and unless you confirm it with the aid of a mirror; but the "lips only" school has not properly differentiated between stimulus and reaction, between cause and effect.

On the other hand, many of those who do emphasize jaw motion, but characterize it as "forward and back" are partly right, too. They have misread the evidence, however, by confusing the superficial similarity of jaw motion No. 2 (the less natural jutting out and withdrawal of the chin) with the more natural recessive pattern of motion No. 1. In actuality, very few flutists use motion No. 2 in its pure form, except possibly to compensate for a malformed mouth structure, and even then it would be in combination with the No. 1 motion. What we are really saying, then, is that all fine flutists, whether they realize it or not, use a FULP↓ technique or a modification of it.

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of approaches to breathing, tone production, and authenticity of musical editions, including which movement is actually the first of the C.P.E. Bach Sonata in A Minor. Where flutists are gathered together, the atmosphere is never dull. As a matter of fact, the other restaurant guests learn more than they had ever desired about flute playing. Murray challenges Stallman. "Take 'Twinkle, Twinkle, Little Star'. I'll whistle one note and you repeat it. Continue in perfect rhythm and you'll find that you never have to take in a huge breath. What you blow out naturally replaces itself. Try it." And so they continue to the amazement of the others.

The stage is set for the final round open to the public; about 200 are in attendance. Catherine Ransom plays the D Major Mozart, followed by Alison Young with the G Major. Intermission follows and such comments can be heard as, "Who do you think played better?" "Oh, I liked the way she played her cadenzas, but she moved too much." Everyone becomes a judge.

The second half follows with the D Major and G Major Mozart Concertos again in that order. Finally, after much discussion and mounting anticipation, the judges make their selection and the winners are announced. Fourth prize of \$100 to Alison Young, third prize of \$200 to Catherine Ransom, second prize of \$500 to Regina Helcher, and first prize of \$1,000 to Jennifer Steele.

During the reception hosted by Wheaton College, congratulations are extended to all participants. Many requests are made by the remaining contestants to enter again next year. Certainly!

The success of this competition indicates the need to continue to provide opportunities for performance. Thanks to Brannen Brothers-Flutemakers, Inc., Wm. S. Haynes Co., Verne Q. Powell Flutes, Sankyo-U.S.A. Flutes, and Yamaha Flutes for their generous support; Wheaton College Conservatory of Music and the Instrumentalist Company for their sponsorship; Mary Karen Clardy, Alexander Murray, and Robert Stallman for their expertise and knowledge; and most of all to the 52 flutists who entered, taking a risk that would help them to raise their level of performance. Congratulations to all!

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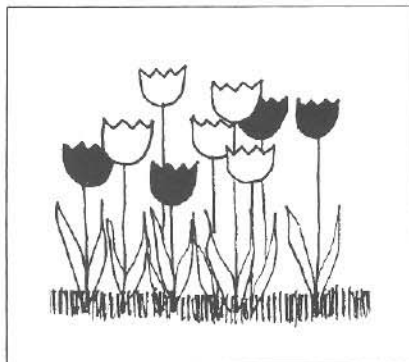
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