

# *Breathing: The Central Issue of Flute Playing*

*by Ransom Wilson*

Our instrument revolves completely around a column of air. Without that column of air, there would be no tone, therefore no pitch, nothing to articulate, and no need for fingerings. We have no reed, mouthpiece, or even vocal cords between our air and the music...the air column itself, as it is split, generates the sound. It is surprising, therefore, that this aspect of flute playing has been so rarely discussed. I hope that I can clear up some common misconceptions about the intake and use of air, and offer some simple explanations to help you to better understand the mechanics of breathing.

Most of us (myself included) were taught to “take a deep breath” and “support,” but we had only a vague sense of what either of those things meant. Any specific questions about how to breathe, how to control the breath, how to increase capacity, or what indeed support consists of were answered with equal vagueness or by some colorful anecdote. I apparently had no natural gift for using my air, and I had a tiny, pinched sound that I controlled by closing my throat to one degree or another.

Luckily, I met Philip Dunigan only two years after starting the flute, and he gave me a new point of view about the instrument. His whole approach to playing starts with a full, relaxed breath, and proceeds from there. He stresses using the body organically while playing, and seeks a naturally produced, stress-free tone and technique. I had never encountered such a radical idea in my “vast” experience, and it took him a while to gain my complete trust (I was, after all, a proud and feisty Alabamian!)

I remember clearly the day that Mr. Dunigan said to me: “Well, you’ve gone about as far as you can with your present approach to the instrument, and you’re going to have to change the basics of your playing, particularly your breathing, in order to improve.” I immediately became paranoid—convinced that he was trying to sabotage my playing—especially after he said: “It takes more support to play pianissimo than to play fortissimo,” certainly a frightening concept to me at the time! He could see that I was suspicious and unreceptive, so he suggested, “If you don’t believe me, come to the Winston-Salem Symphony concert tonight. We have an extraordinary Spanish soprano with us, and she understands exactly what I am talking about.” I did go to that concert, and it changed my life forever.

The year was 1968, and the singer was the incomparable Montserrat Caballé, then at the very height of her vocal prowess. Her voice, of course, is of legendary beauty, loved throughout the world. But what impressed me equally was her almost magical control of her body while she was singing. There was no extraneous movement: no grimaces, no special postures, no struggling, no gasping or

grunting...in fact it looked very much as if she were doing nothing at all in particular, yet somehow she managed to produce one of the most glorious sounds on the planet. Clearly there was something important to learn here!

Freshly humbled and anxious to get started, I returned to Mr. Dunigan the next day. He had me literally start over from scratch, without the instrument. We spent some time just talking about relaxation and stress, and he gave me a completely new concept of taking a breath. I will never forget his quixotic advice: "When you have taken a breath it should feel as if you just swallowed an entire watermelon."

With his help I learned how not to raise my shoulders when taking breath, how to expand my abdomen and lower back when breathing, and how then to control that huge quantity of air from the source, without resorting to resonance-killing throat tension. Rebuilding my playing was a slow and often painful process: for weeks at the beginning I could only play one dynamic: forte!!! Needless to say, this made it difficult and embarrassing to play in orchestra or chamber music classes.

Within several weeks, however, I was beginning to notice that my new breathing method was producing a big and resonant tone with far less effort than before. But the best news of all was that I could play really difficult technical passages and phrases requiring delicate dynamic control with no sense of tension or difficulty. This in turn boosted my confidence about all aspects of my playing, and I began to make rapid progress towards a higher level of excellence than I had ever thought possible.

Some years later I had the incredible fortune of studying with Jean-Pierre Rampal, whose playing had inspired me for years. His approach to the instrument is one of high virtuosity, and yet he manages always to produce a gorgeous tone and remarkable spun and tapered phrases. His music-making is intuitive and joyous, and the entire concert world responds to his natural gift for phrasing. I need not also point out that his is one of the great flute sounds in history, and yet one gets the idea that he arrived at his tone production by a natural process. Learning from Mr. Rampal is by example. Any question about exactly how to breathe properly is likely to produce a response like: "Just breathe!" This may seem ironic to some, but to me it is a part of the great genius of his playing. He has no theories, complexes, or inhibitions between him and his playing. The flute is just a natural extension of his body, and whatever his body does is reflected in the instrument directly. What a gift!

For those of us less gifted, however, some understanding of the mechanisms of breathing is essential. In my search for this knowledge I continued to listen to Montserrat Caballé whenever possible, and tried to emulate her techniques of breathing and control from afar, even as my own solo career began to develop. One day, I had a wild idea: I would try to contact Mme. Caballé and ask for a lesson! We recorded for the same label at the time, and I hoped that she might at least consider my request. To my amazement, she was enthusiastic about the idea. When *Opera News* magazine got wind of this event, they decided that it would be interesting to their readers as well, so they sent a writer along. The lesson took place in Mme. Caballé's Central Park South hotel room, and I played the vocal line of an opera aria for her ("O mio babbino caro" from Puccini's *Gianni Schicchi*). Her first comment, in a kind and gentle voice, devastated me: "Excuse me, but can the flute not play a legato?"

She then began to expound on her ideas of breathing and body control in such an articulate way that I was stunned. She said some profound things, among them that one should always keep some air in the lungs "like the principal of a

bank account—never spend that, only the interest!” The magazine article came out a few months later, and contained only about 50% of the actual lesson. But one thing undeniably changed for me that day: I am obsessed about playing with a beautiful legato.

In my own teaching over the years I have focused primarily on breathing as the central issue of flute playing. I have tried to pass along the knowledge that was given to me, and added to it whatever new ideas I have been able to develop in my personal work. But I was forced to admit that my understanding of the breathing process was still largely from a purely practical point of view, and that my knowledge of how the body takes in and utilizes air physiologically was incomplete at best.

I have since been in touch with physicians, researchers, singing teachers, and respiratory therapists all over the world, and thanks to them I was pointed in the right direction to educate myself on this subject. I think I can now finally state with some assurance what is happening in the body during singing or playing a wind instrument. For the purposes of this article, I will try to simplify as much as possible the explanations.

## THE INSPIRATORY MUSCLES (INHALATION)

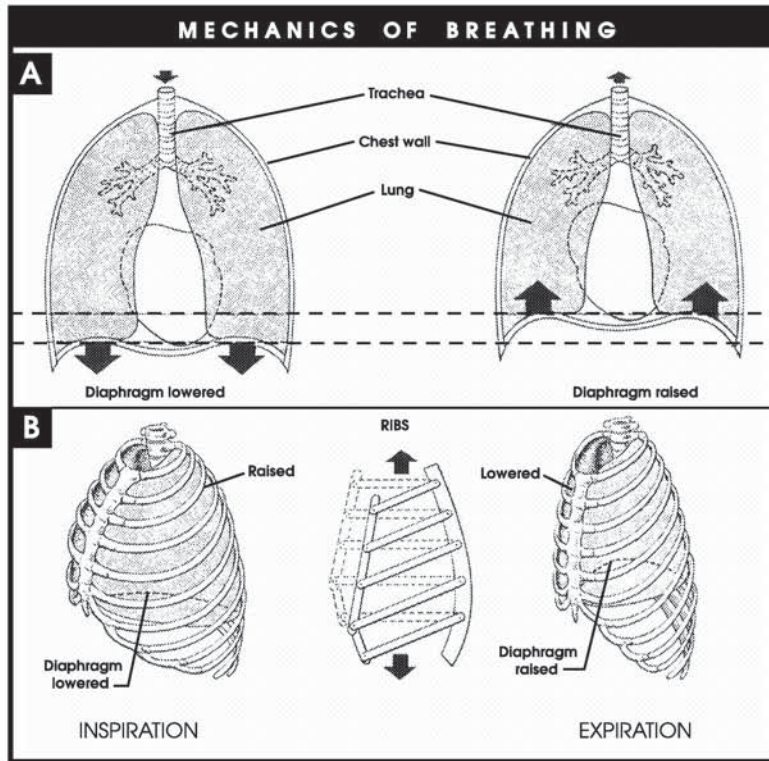
### *The Diaphragm*

This huge muscle (second largest in the body) separates the thorax (chest cavity) from the abdomen. It is shaped like an inverted bowl and attached to the bottom of the lungs, as well as to the ribs, sternum, and spinal column. The diaphragm has only one active function: to take in air from the outside. It has no other capability, and its operation is relatively simple. As it pulls down (contracts), it flattens out to resemble a pizza, and increases the vertical space in the thorax. In pulling the lungs with it, the diaphragm creates a partial vacuum inside the lungs. The laws of physics dictate that the air pressure outside and inside the body must become equalized, thus air rushes in to fill the vacuum. The diaphragm has then fulfilled its duty and cannot assist us further.

It is crucial to realize that the diaphragm itself is one of many striated muscles in the body. The striated (voluntary) muscles can only operate in one direction, and always exist in pairs. One muscle (or group of muscles) pulls, and the other pushes in opposition to the first. Therefore, the diaphragm can only pull, and is incapable of pushing or assisting in any way in exhalation. It is in fact relaxed during exhalation, as it returns to its original position. Also important is the fact that, as there are no proprioceptive nerve endings in the diaphragm, it is impossible for us to feel it. We cannot physically experience any sensation as to the diaphragm's position or movement. What we can experience, however, is its effect. As it pulls down, it displaces other organs in the abdominal region, which we can both see and feel. Since the rib cage is roughly triangular in shape, with the largest side at the bottom, we can see that there is more room for expansion at the bottom of the lungs. To add to this advantage, the ribs at the bottom of the rib cage are shorter and more flexible than those at the top, allowing for even more expansion.

### *The External Intercostals*

The external intercostal muscles are between the ribs, and act in concert with the diaphragm during inhalation. As they contract they lift the sternum and raise the ribs, thus increasing the front-to-back and side-to-side space in the thorax (and creating more room for lung expansion).



**Mechanics of breathing.**

Ventilation of the lungs (movement of air in and out) is due to the bellows-like action of the thoracic cavity (bounded by the chest wall and the diaphragm), in which the lungs lie. Air is forced into the lungs when the cavity is enlarged by 1) the elevation of the ribs and 2) the depression of the diaphragm. Air is forced out of the lungs when the thoracic cavity is decreased in volume by 1) the depression of the ribs and 2) the elevation of the diaphragm. A shows the extent to which the diaphragm is moved during inspiration (left) and expiration (right). The thoracic cavity, filled by the lungs, is shown stippled. B diagrams the extent to which the ribs move during inspiration and expiration. The central figure schematizes the way in which the ribs are loosely joined to the spinal column and the sternum (breastbone): it shows how elevation of the ribs enlarges the volume of the thoracic cavity.

**THE EXPIRATORY MUSCLES (EXHALATION)**

*The Abdominals*

The principal muscles of forced expiration (exhalation), such as singing or playing a wind instrument, are the abdominals. They act in opposition to the diaphragm, and are crucial in preventing the diaphragm from returning to its rest position too quickly, which would also result in a collapse of the rib cage. The abdominals contract to maintain a firm but elastic pressure against the diaphragm as it ascends.

*The Internal Intercostals*

The internal intercostal muscles are located between the ribs, and act in opposition to the external intercostals. This means that, for forced exhalation, the internal intercostals pull the ribs and sternum back to their original position, helping to expel air from the lungs. (Refer to "Mechanics of Breathing" drawing.)

**THE COMPLETE BREATHING AND PLAYING CYCLE (SIMPLIFIED)**

1. The Diaphragm contracts (pulls down), creating a partial vacuum in the lungs: air rushes in. The stronger the downward pull of the diaphragm, the stronger the opposite action. In other words, better inhalation=better exhalation. Though the diaphragm itself can be neither seen nor felt, an attempt must be made to allow it as much expansion room as possible, partially displacing the abdominal viscera. Thus a strong, deep, relaxed breath will cause a temporary bulge at the waistline.

2. At the same time, the external intercostal muscles contract (pull up) to lift the sternum and separate the ribs. This creates a bit more space, maximizing the vacuum in the lungs, and therefore the available room for air.
3. As the player begins to blow out, the abdominal muscles contract to control the diaphragm's excursion back to its resting position. At the same time, the internal intercostal muscles contract (pull down) to aid in expelling air from the lungs. This allows for an even outflow of air, and slows the rib cage's collapse.
4. As the breath is used up, the diaphragm and external intercostal muscles return to their original positions. At this point it is crucial that all action of the abdominal and intercostal muscles cease, so that a new breath cycle can commence from a state of relaxation. Otherwise, the necessary expansion of the abdominal region and the rib cage cannot be fully experienced.

### WHAT IS SUPPORT?

Probably the most misunderstood aspect of wind playing and singing is that of support. Though often thought of in magical or mystical terms, it is really a very logical process. In the words of F. Winckel<sup>1</sup>, "Breath support is the resistance that the inspiratory musculature offers to oppose the expiratory collapse of the breathing organ."

Therefore, we can easily understand it as the balancing actions of two opposing groups of muscles: One group fills the lungs, the other empties them. The flexible and dynamic interplay between these groups creates voluntary control over exhalation.

Without this control from the source, the flute player is forced to close the throat to regulate the airflow. While it can be an easy technique, it unfortunately kills the resonance of the sound. The difference in the sound produced when the throat is tightly constricted and when the throat is open (allowing the use of the lungs as a resonating chamber) is dramatic. It can also be easily demonstrated (ask me to show you!) But playing the flute with a relaxed throat requires control of the entire breathing mechanism.

### HOW CAN EFFICIENT BREATHING AND SUPPORT BE PRACTICED?

I have devised many exercises for practicing good breathing, but space limitations here limit me to four of the most basic of them. I use many more in my teaching, but those really require demonstration in person.

1. To see the result of diaphragmatic movement: Lie flat on the floor, move your feet in towards your body so that your knees are about halfway up, and place a book on your abdomen. Relax completely and inhale deeply, and you will see the book being lifted. Interestingly, you will notice almost no movement of your chest during this exercise.
2. To get an idea of how it feels to expand your abdomen: sit in a chair, raise your legs straight off the floor and hold them there for a few seconds as you inhale as deeply as possible. The pressure and expanded feeling that you get approximates what you will

- eventually be able to feel when you stand up and breathe before playing.
3. To further feel the effects of the diaphragm: fasten a belt (or an elastic band) around your waist, 2–3 inches below your rib cage (not too tightly!). Take a breath, and try to feel pressure against the belt *evenly* in all directions (i.e. not only in front, but on the sides and, most importantly, in the back). After you feel you have some control over this, try to play with the belt attached.
  4. To increase lung capacity: Set your metronome to 60, and play an easily produced note (say middle register “C” or “D”) *piano*, and hold for as many seconds as you can. When you are finished, repeat, but add one second to your time. This can go on for a long time, and you will feel yourself: a) taking in more air, and b) using it more efficiently. This exercise was given to me by Mme. Caballé, and has the added benefit of curing even the worst case of stage fright, when practiced just before a performance.

In conclusion, again let me say that relaxed, efficient breathing will result overall in a more natural, organic way of playing. I can promise that the improvements in your breathing will allow you to produce a warmer, more resonant tone. Eventually you can expect your new approach to affect positively every aspect of your playing, including easy virtuosity and the sheer joy of making music.



## CREDITS

Figure from LIFE: AN INTRODUCTION TO BIOLOGY, copyright c1957 by George Gaylord Simpson, Colin S. Pittendrigh, and Lewis H. Tiffany, and renewed 1985 by Anne R. Simpson, Joan Simpson Burns, Ralph Tiffany, Helen Vishniac, and Elizabeth Leonie S. Wurr, reproduced by permission of Harcourt Brace & Company.

## ACKNOWLEDGMENTS

Coleman Citret, M.D. and flutist, San Francisco, CA (1917–1984).  
Ed Friedlander, M.D., Chairman, Department of Pathology, University of Health Sciences, Kansas City, MO.  
Beatrice Tucker, Lecturer Physiotherapy (Cardiopulmonary), Curtin University of Technology, Australia  
Barbara M. Doscher (1922–1996), former Associate Professor of Voice, University of Colorado, Boulder.  
Keith Underwood, flutist, New York.

## ENDNOTES

<sup>1</sup>Fritz Winckel (b.1907), German acoustician and musicologist. His fields of research include electronic music, musical acoustics, and analysis of the singing voice.

## REFERENCES

- Doscher, Barbara. "Breathing: The Motor of the Singing Voice." *The Choral Journal*, vol. XXVII no. 8, March 1987, pp. 17-22.
- Wordsworth, Stephen. "Heavy Breathers." *Opera News*, vol. 45 no. 3, September 1980, pp.42-47.

## ABOUT THE AUTHOR

RANSOM WILSON hails from Tuscaloosa, Alabama, and was educated at the North Carolina School of the Arts and The Juilliard School. For postgraduate work, he was an Atlantique Foundation scholar in Paris for a year, studying privately with Jean-Pierre Rampal. His other flute teachers have included Sandra Taylor, Lawrence Morgan, Philip Dunigan, Severino Gazzelloni, Julius Baker, Christian Lardé, and Arthur Lora. Mr. Wilson is also a conductor of growing reputation, and he is the founder and conductor of Solisti New York Orchestra, and the Artistic Director of Oklahoma's OK MOZART International Festival. His conducting teachers have included Roger Nierenberg, James Dison, Otto-Werner Mueller, and Leonard Bernstein. He has recorded 30 albums, and was twice nominated for the "Grammy" award. He is an Artist Member of the Chamber Music Society of Lincoln Center, and is Professor of Flute at Yale University. Ransom lives in the woods in Connecticut with his life partner and their 3 dogs.