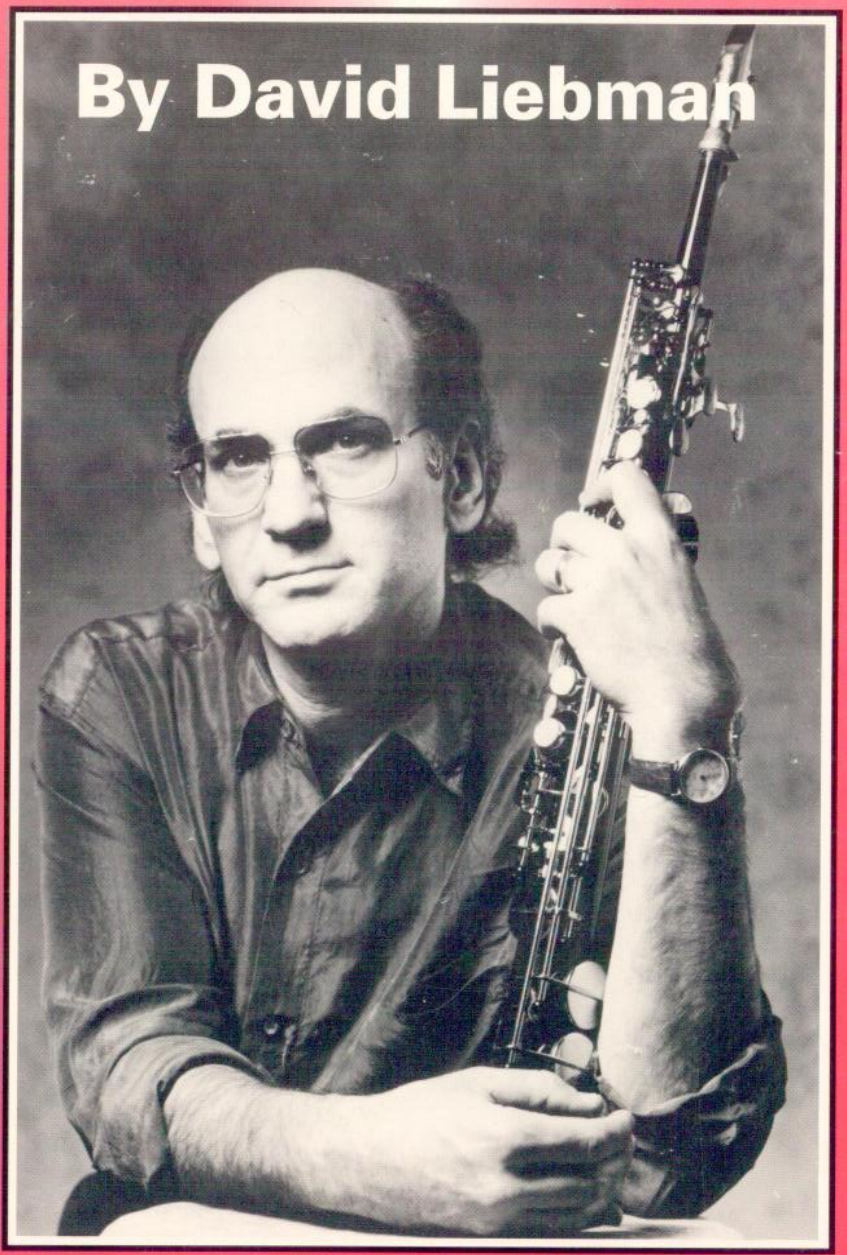
Developing A Personal Saxophone Sound

By David Liebman



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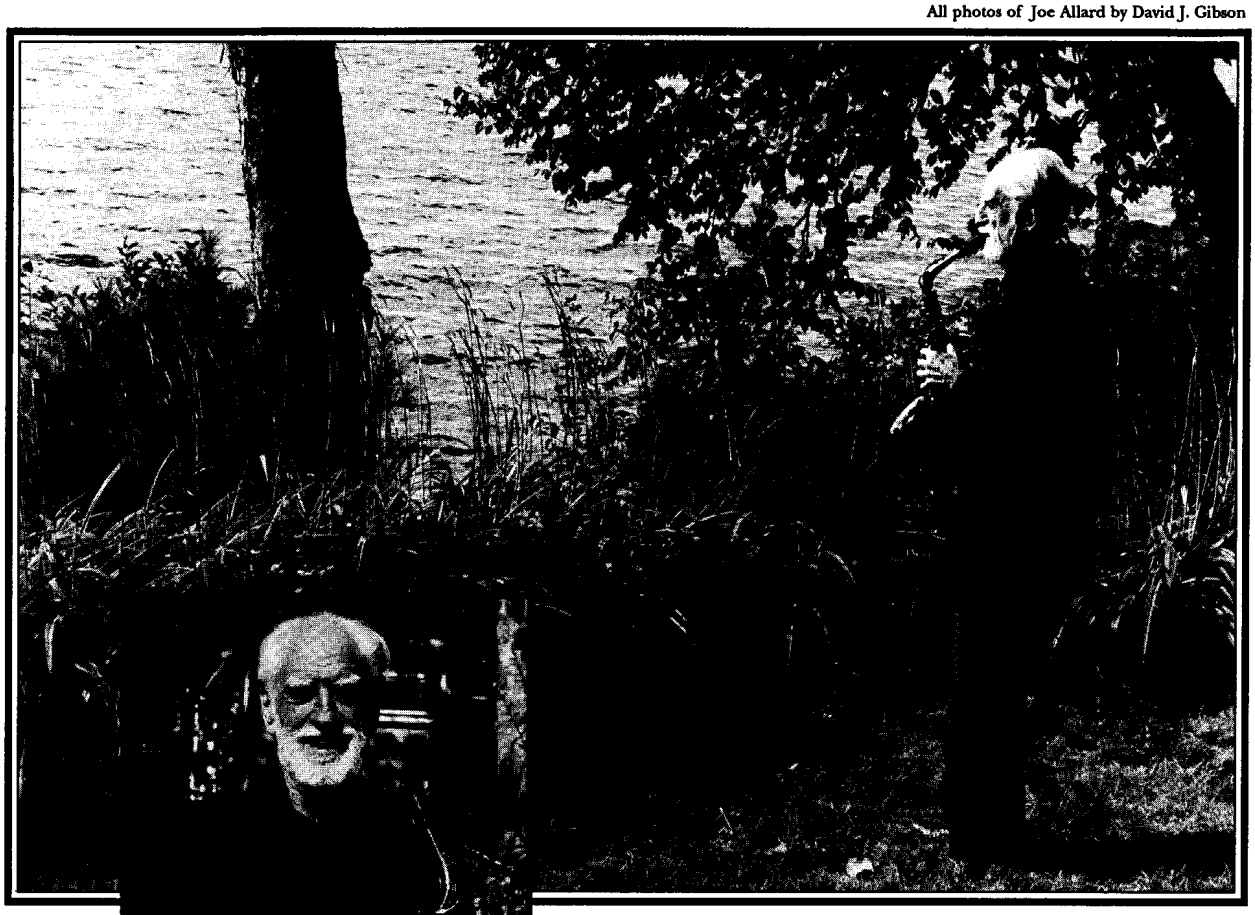
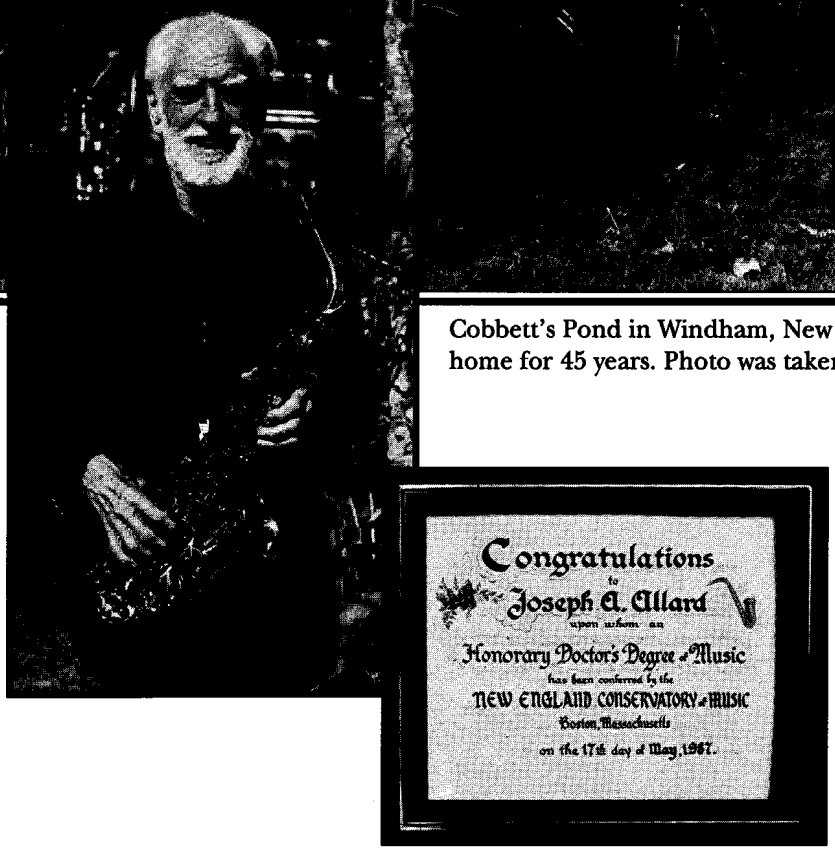
All photos of Joe Allard by David J. Gibson



Cobbett's Pond in Windham, New Hampshire, Joe's summer home for 45 years. Photo was taken in the summer of 1987.



This book is dedicated to a truly inspiring man. A master, who taught with humor, patience, and metaphor — Joseph Allard.

David Liebman

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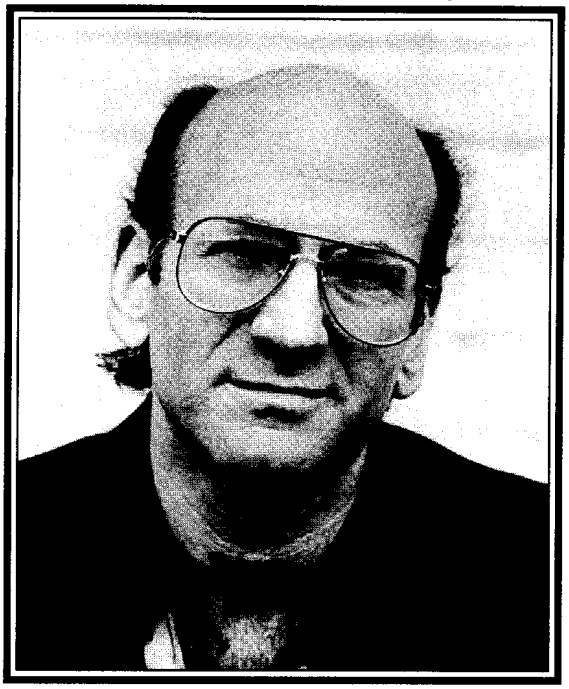
PREFACE

Photo by Walter Bredel



This book is the result of several decades of experience as a saxophonist and teacher. Much of the information reflects my interpretations of the ideas and exercises derived from the teachings of a true master, Joe Allard. I have often paraphrased his words as I remember them through notes and memory. In many cases his ideas have led me to further study and thought as to what was actually implied in his words. As should be the case with any great teacher, they inspire you to develop upon their initial ideas and exercises.

My first experiences with Joe began as a teenager in New York City. Up to that time I had studied locally with a fine teacher, Mr. Nat Shapiro, who taught me the basics of sound production, fingerings, and technique. With Joe's lessons came principles and concepts. He is legendary, and rightfully so, primarily because he taught you to be natural and relaxed. He would say, "To blow is to breathe, there is no difference." It was that easy! The idea was to train the imagination to hear the sound desired and be able to dictate the necessary physical responses to the body. To Joe, it didn't matter whether you played jazz, classical, or were in a studio situation, it just had to be musical.

In all honesty, it took me years to understand some of his directions. This was especially true for the all-important overtone exercises and their significance. It finally dawned on me somewhere during my twenties how much the tone of the great players evidenced ease of production, evenness of sound, a rich and deep sonority, and most of all, personal expressiveness. As I began to teach more and more it became important that I have a means of clearly explaining the entire mechanism as I understood it. In the late 1970s I wrote some articles on saxophone sound for a magazine. Then I spent some time with Joe over the course of two summers trying to clarify my interpretation of his ideas. After many hours of taping with Joe and several book drafts, *Developing A Personal Saxophone Sound* will hopefully be useful to saxophonists playing in all styles.

The problems affecting most saxophonists (besides possible equipment troubles) are often self-inflicted. By that, I mean unnecessary bodily tensions accumulate over time and become habitualized. This results in the player's inability to relax enough to find a physically comfortable and aesthetically pleasing tone. Relaxation is crucial for playing any instrument. This book is concerned with either correcting misconceptions or developing positive natural techniques in order to play the saxophone. Once understood, the artist can attempt to discover a personal sound while expressing one's creative self and inner ear. The premise underlying this book is that if trained correctly and allowed to naturally develop, the body will accomplish most desired artistic results. This is applicable to all instrumentalists on every level. ■

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Over the years my ideas and concepts of the saxophone sound have been influenced by the following books:

The Inner Game of Music, Green and Gallwey
Anchor Press/Doubleday, Garden City, NY., 1986.
Music, Physics and Engineering, Harry Olson
Dover Publications, NY., 1967.
The Science of Breath, Alan Hymes; Institute of Yoga Science
Honesdale, PA, 1979.
Awareness Through Movement, Moshe Feldenkreis
Penguin Books, 1977.
The Master Speaks, Joe Allard and Jay Ira Weinstein
RIA Publications, Seattle, WA., 1988.
The Physics of Music, Scientific American Reprints; several articles
(Voice, Woodwinds), 1960s.
The Art of Piano Playing, George Kouchevitsky
Summy-Birchard, Princeton, NJ., 1967.
Waves and the Ear, Van Bergeijk, Pierce & David
Doubleday, NY.
Sonic Design, Cogan and Escot
Prentice-Hall, Englewood Cliffs, NJ, 1976.

INTRODUCTION

When we learn how to do something, we often pick up bits of knowledge in piecemeal fashion. Inadvertently the sequence of the information is sometimes out of sync and we may have difficulty understanding the entire picture. There comes a point in the development of anything, when it is important to see how all of the parts fit together. Because the rate of learning is by nature slower as the complexity becomes greater, it can be helpful to conceptually see the logical progression from point to point as one entire chain of events. After years of slowly recognizing how this or that element worked separately, I have attempted in this book to show the entire sequence which takes place in playing the saxophone. Although at this time my main idiom is jazz, primarily played on the soprano sax, these principles apply for other musical styles and all of the saxophone family. The differences are of degree and emphasis.

The main premise underlying this book is that the natural functions of the human body must work in tandem with the fundamental laws of physics and acoustics. Specifically, the discussion centers around generation of an air stream in the body which is then directed through the lungs, larynx, and mouth cavity into the reed and mouthpiece before exiting through the horn. The steps along the way are very complex, but when described in detail become easier to comprehend and execute.

In beginning the process some thought must be given to why these principles are vitally important to a performing artist. The goal of any artist is to find his own voice, or sound, on the instrument, in addition to personal musical vocabulary and style. These two pursuits permeate the artistic life of both jazz and classical musicians. This text is intended to make the goal of finding a personalized tone obtainable by demonstrating the ease by which a saxophonist can play, while confronting as few obstacles as possible. In this way the saxophonist is not handicapped in pursuit of the desired sound—leaving one's imagination free to explore musical ideas.

Sometimes simple goals become encumbered by too many stresses and strains due to confused directions or interpretations. The result may bring an artist further away from the goal without knowing why. No one can give a saxophone sound to another person, but guidance can be offered so that the individual is able to maximize his potential in seeking a personal tone.

It is within the voice box that a saxophonist's sound truly emanates. There is the misconception that tone is generated by manipulations at the reed on the mouthpiece. This is only a small part of the process and unfortunately many saxophonists will often exaggerate these movements at the mouthpiece leading to clamping down upon the reed. The result is a pinched reed as well as a tightened throat. When this happens there is little chance for the sound to be personally molded, let alone aesthetically pleasing. Obviously some sound will come out, but not a musical or artistic one. By the time the air stream reaches the mouthpiece, the major portion of the work for a personal sound has already been completed.

A human voice is like a set of fingerprints, unique and one of a kind. The tone of one's voice while speaking is evidence of this fact, as well as when singing, which is an extension of speech. In both activities it is apparent that pitch can be changed by movement in the voice box located in the laryngeal area. Even when speaking there are rises and falls of pitch. These laryngeal manipulations, coupled with the necessary and minimal movements at the reed, can be executed in infinitesimal and subtle ways resulting in the ability to artistically control the shape and color of a sound. In this text, color, sonority, and timbre are used interchangeably. These mechanisms work as a result of ear, mind, and body coordinating together. A sound is heard and cognized; the message is then sent to the involved anatomical parts which are all coordinated to achieve the desired musical result. The saxophonist's task is to make these operations occur in a fast, efficient, and subtle manner, so that the process becomes subservient to the goal and at the same time second nature. This allows energy to be directed towards the artistic details of performance.

Concerning a concept of sound, I refer to an ancient Chinese description of the qualities which should be present in a satisfying tone: happiness, elegance, sadness, sweetness, subtlety, resonance, and strength. Added to this poetic description are words used by musicians themselves: light, airy, cutting, brassy, bright, full, fuzzy, deep, dark, nasal, piercing, clear, smooth, shimmering, silky, biting, watery, tinny, cool, harsh, dry, sour, screeching, lush, luxurious, velvety, and bell-like. These words allude to the point that within a beautiful and artistic tone, emotions and feelings are apparent. When a saxophonist performs, he is telling a story, painting a picture and relating his feelings as the music unfolds. What the listener first perceives is his emotional response to the sound emanating from a musician. Then the musical ideas of melodic construction, harmonic ideas, rhythmic impetus and form are recognized. Therefore, a saxophonist must be able to manipulate the sound as his feelings and ideas are sorted out. He is constantly striving towards flexibility and the ability to respond, as quickly as possible, to the creative impulse—to his inner ear.

Exactly what is this sound I'm talking about? How does it change colors and become altered from note to note in a truly fine player?

Within a single note, there are other pitches inherent. These additional, hidden notes are called overtones and are a phenomena of acoustics. The highlighting, or suppression of one or another partial in a tone, changes the proportions so that a note can have countless shadings and hues. Shaping the note by manipulating the overtones constitutes the major portion of the expressive qualities one hears in a tone. Other contributing factors are dynamics, articulation, duration of the tone, vibrato, and personal nuance all combined together. It is within the larynx and mouth cavity where most of this tonal sculpturing takes place. The remaining activity occurs at the reed and mouthpiece where air causes vibration and consequent disturbance of material further contributing to the sound output. For these reasons it is particularly important for a saxophonist to have control, flexibility, and efficient operation of the activities occurring in these areas. Of course there is no one way to be expressive when it comes to the possibilities inherent in a tonal palette. The very beauty of music is that it is so individual and whatever works, no matter how unorthodox, is fine. What works for one artist (or listener for that matter) as an artistic statement, may not work for another. Everyone's evaluation in the end is subjective. So without a common ground to rely upon, how can one method of operation be superior to any other?

In truth, there are no rules, only concepts. Once a musician has achieved some level of personal satisfaction and reinforcement, the true reward is that he can continue utilizing that explorative spirit with the knowledge and confidence to try other approaches. The correct way of doing something means to make it easier in getting to his own personal viewpoint. If the results are successful, he may find that using the very methods avoided earlier in his training can now provide even more variety and invention. Basically, the adage "learn to walk before you run" is appropriate. The concepts being touted here should lead to more ease in finding oneself, but they are not an end in themselves. True freedom to create comes after the hard and long discipline of really learning how to do something well. When I play now my larynx, tongue, and lip may at times move into extreme positions in order to satisfy an artistic impulse; even into positions formerly avoided at all costs. This is the real process: one learns in order to forget!

In summary, when everything is working smoothly, the body and mind will be at ease, therefore increasing the capability of creating and satisfying an artistic impulse. The less energy spent on technical production, the more available for creativity. Being as relaxed as possible in playing allows the creative mind as well as the emotions to more easily come forth.

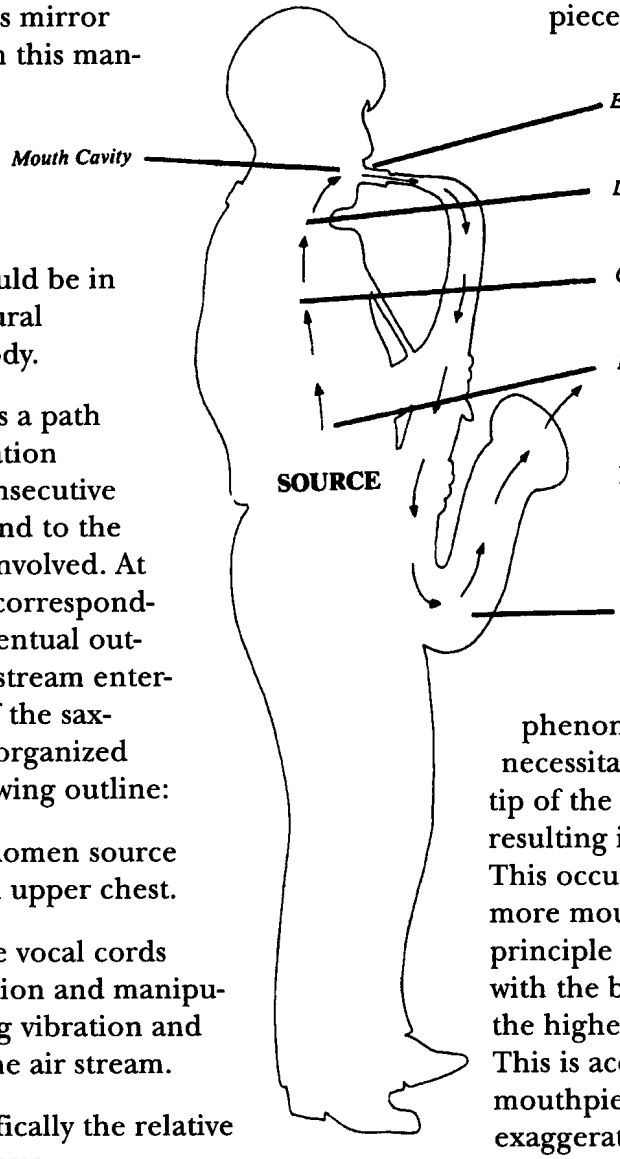
The concern of this book is to show how logical is the process of sounding the saxophone. With this knowledge, the true soul of each individual artist can be reached and conveyed to his listeners. This book is addressed particularly to musicians who consider themselves artists; those who rise above mere technique to express something of lasting value.

Stroudsburg, PA
September 1989

Chapter One
Overview Of The Playing Mechanism

This chapter examines playing the saxophone in several different ways. These are concepts which can be easily visualized so the reader can see a total picture of the process.

The saxophone can be viewed as an extension of the body. In fact, it can be loosely described as the body's mirror image. Visualizing it in this manner, there is a physical continuity between instrument and body. This picture emphasizes a main point of this book: playing should be in harmony with the natural physical flow of the body.



The air stream takes a path from source to destination through a series of consecutive events which correspond to the parts of the anatomy involved. At each point, there is a corresponding effect upon the eventual outcome, which is the airstream entering the vented bore of the saxophone. This book is organized according to the following outline:

Breathing — from abdomen source through the lungs and upper chest.

Larynx — contains the vocal cords which are set into motion and manipulated by the air causing vibration and resultant shaping of the air stream.

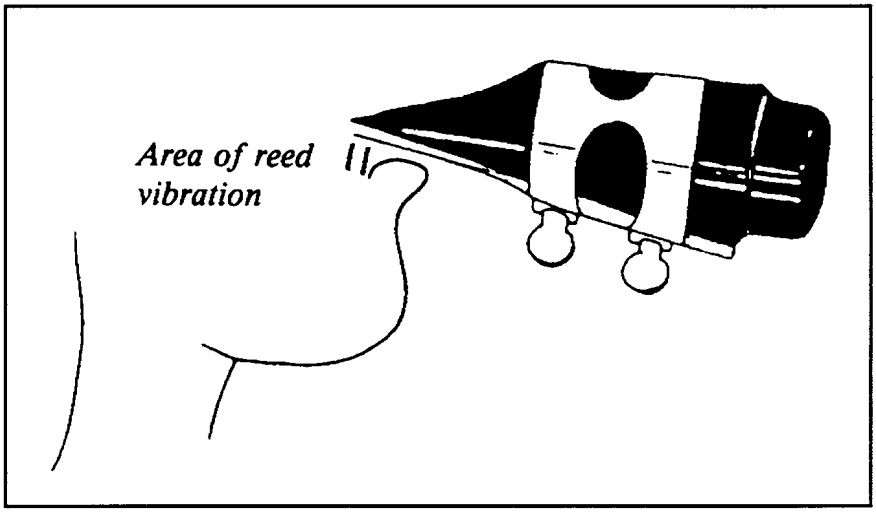
Mouth Cavity — specifically the relative positioning of the tongue.

Embouchure — includes teeth, jaw and lips; all interact to hold the mouthpiece and affect the air stream's capacity to vibrate the reed.

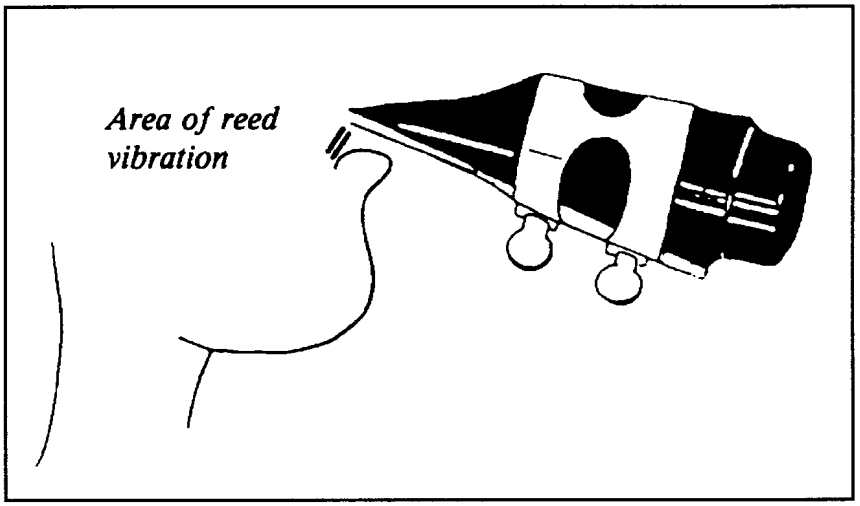
Mouthpiece and Reeds — includes mouthpiece, reed, and saxophone body; air stream disturbs reed to produce sound wave which is then distributed through the mouthpiece and saxophone body where fingerings further regulate specific pitch.

Another image is to visualize that the important mechanisms at work resemble two mouthpieces constantly vibrating as well as adjusting. One is the actual mouthpiece holding the reed. The reed is acted upon by the lower lip in constant minute movements. The lower lip manipulates the reed against the two side rails and front edge of the mouthpiece, thereby facilitating response. The acoustical phenomenon of sound production necessitates uncovering a portion of the tip of the reed for frequency excitation resulting in the sounding of high notes. This occurs when one appears to take more mouthpiece. For low tones, the principle is to cover the tip of the reed with the bottom lip, helping to muffle the higher and more excitable partials. This is accomplished by taking less mouthpiece body into the mouth. The exaggeration of this last movement is apparent when playing in the subtone manner, where the reed must be almost entirely covered by the lower lip.

The other mouthpiece at work is also constantly adjusting and vibrating, and consists of the vocal cords located in the larynx. Sound is the result of disturbance of material, whether it be the lips as on brass instruments, strings and wood on violins, or the vocal cords which are set in motion by the pressure of breath. The imagination in conjunction with the physiological and psychological state (emotions) of the individual at any given instant will set the vocal cords into a mode of action. The emitted frequencies of the air stream affected by vocal cord adjustment enter the mouth cavity where tongue positioning affects the harmonics inherent in the sound. The final influences upon the sound are the result of reed vibration and air circulation in the mouthpiece and bore of the horn itself. Added to this is the undefinable effect of the vibration of the person's chest cavity as well as the bony structure of the head. The key element in this entire scenario is vocal cord adjustment. This activity is intrinsically tied to the body, yet occurs below the threshold of conscious feeling. Speech is a natural function of the body as is its extension, vocalization. We want to develop this natural tendency and work with our body, rather than against it. ■



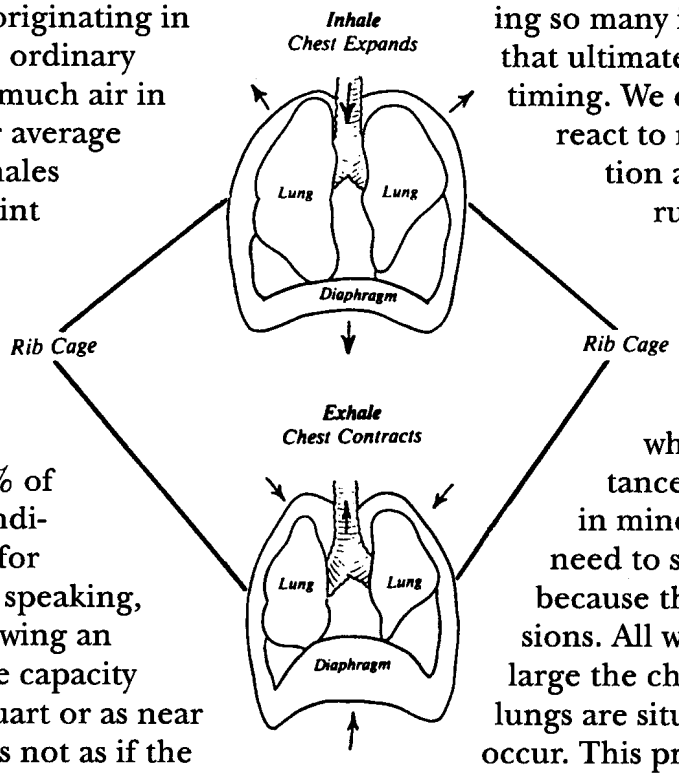
HIGH NOTE POSITION
More of the reed tip vibrates as the bottom lip rolls away from the tip of the reed.



LOW NOTE POSITION
Less of the reed tip vibrates as the bottom lip moves towards the tip of the reed.

Chapter Two
Breathing

The breath is what sets the vocal cords, as well as the reed, in motion. The vocal cords adjust the laryngeal openings. I will spend a good deal of time discussing the direction, velocity, and dispersion aspects of the air stream, but it all begins with the initial momentum originating in the abdomen area. The ordinary person need not expel much air in daily life. In fact, under average conditions a person inhales and expels about one pint per breathing cycle. Another way of perceiving ordinary air usage is that when operating at full capacity, the normal person only uses 70-80% of the potential. For the individual who uses breath for activities such as public speaking, singing, athletics or blowing an instrument however, the capacity should be nearly one quart or as near to 100% as possible. It is not as if the breath necessary for every phrase demands such a powerful and full reserve. In fact, what is referred to as a silent breath connotates the use of the least amount of air to play a very soft note. This silent breath is accomplished by merely opening the nose and throat and letting the immediate air come from outside. Opposing this is the very full breath needed for strong playing, especially in ensembles where more volume is necessary because of competing instruments. If the correct breathing mechanism becomes second nature, the resulting efficiency and support for use, even when only a short breath is required, can make a difference in the tone. This is especially true for pianissimo levels. Flautists can easily hear the difference when they don't use a full breath. High register notes don't come out as fully or as well projected. In the final analysis, it is really the efficient use of breath which is sought.



Breathing is a complex act involving so many interacting muscles that ultimately it is a matter of timing. We do know that muscles react to messages of contraction and relaxation. As a rule air flows into an enlarged cavity because as the contained air spreads it loses resistance. Air will always flow to where there is less resistance. With this principle in mind there should be no need to suck or draw air in because this will only add tensions. All we need to do is enlarge the chest cavity where the lungs are situated and a breath will occur. This process involves raising the rib cage by using the intercostal muscles between the ribs when inhaling. This is accompanied by a corresponding lowering of the diaphragm which in turn raises the abdominal wall. Actually, the ribs are going from an acute to a right angle which subsequently causes the space in the lungs to become larger lessening the resistance. This motion allows air to flow in from the larger outer chamber, which is the outside air around us. You can experience this feeling of change in the shape of the lungs by doing the following. Interlock your hands behind your head and then slowly drop them to your side as you breathe normally. Though this is a bit more exaggerated than usual, this motion gives you some feeling for the

correct contraction and expansion of the lungs.

There has traditionally been a lot of emphasis on the diaphragm. Teachers exhort students to "use the diaphragm" and to "push" air out from this area. The truth is that the diaphragm is not visible to the naked eye and it cannot be specifically felt. What is true though, is that the movement of this sheet of muscle can be observed by its effects on other body tissues. In essence, the diaphragm can be thought of as an area made up of many muscles embedded deep in the abdomen separating the chest (rib cage) and abdominal cavity. When at rest, it billows up like a parachute or dome into the chest cavity. The best way to conceptualize the diaphragm is as encompassing the entire abdominal area including stomach, back and side rib area, all below the lungs. This area is shaped like a doughnut and when in motion resembles the action of a bellows. Immediately above the diaphragm area are the lungs. When the diaphragm contracts and shortens as in inhalation, it moves downward. This movement raises the abdominal wall and the rib cage. As in a chain reaction, the chest (thoracic cavity) enlarges. The subsequent lung expansion results in suction and the natural pulling of air into the lungs through the bronchial tree and downward through the throat. The point is that if you attempt to push or pull air in from the abdominal area, the only result will be added bodily tension. With the correct and natural sequence of movements, the air will follow its prescribed course.

How these internal muscles (over thirty are involved) in the diaphragmatic area, as well as the remainder of the breathing apparatus are set into motion, can be demonstrated in several ways:

1. Extending the diaphragmatic floor downward

This can be experienced by bending over, placing your hands around the left and right rib cage area and inhale. This necessitates increased abdominal breathing. Gradually straighten up and try to maintain the feeling in the abdomen. Panting, as if you're out of breath while bent over provides a more extreme example of this abdomen activity.

2. Expanding the chest wall outward

This can be experienced by lying on the floor and placing your heels as far back as possible with knees bent. Inhale while raising your buttocks off the ground. This causes a slight exaggeration of mid-chest cavity enlargement, followed by abdomen movement.

3. Moving the top of the chest cavity upward

This can be experienced by panting as if you are out of breath. This movement of the shoulders is similar to the manner in which most people breath normally, (of course not as extreme as in this example).

The three breathing methods above are respectively called diaphragmatic, chest (thoracic) and clavicular (collar bone) breathing. Each method on its own is less efficient than all three combined. Although the use of diaphragmatic breathing as the sole method is fairly efficient, the other forms are not. Chest breathing requires more blood to circulate through the lungs, while clavicular breathing is only called for when the body's oxygen demands are very great, as when one is out of breath. The movement of the shoulders upward allows the air to enter quickly.

All three can be combined into one wave-like motion as practiced in the complete yogic breath. Conceptualize the air stream as a wave, which after initially entering the throat during the beginning of the inhalation cycle, descends downward into the abdominal area below the rib cage. All of the proper expansion and raising activities then occur allowing the air to ascend through the diaphragm, lungs and clavicle before finding its way to the larynx and oral cavity for exhalation purposes. The following exercises demonstrate this full breath process.

TO INHALE

1. Place your hands on the sides of the ribs so you can feel them expand outward. At the same time push your stomach out filling the entire bottom of the torso with air.
2. Expand the chest cavity (lungs), filling it with air. This can be visually observed.
3. Feel, and observe a slight rise of your upper chest and shoulders as the air stream rises to the larynx. For the sake of the exercise, inhaling is done through the nose while exhaling is executed by blowing out through the mouth. (In actual playing most air is inhaled through the mouth).

Note: When actually playing the saxophone don't drop your jaw in order to inhale, rather, breathe "over" the mouthpiece. This results in the head slightly lifting off the mouthpiece causing minimum disturbance in the larynx as well as not upsetting the bottom lip. By using this technique, the embouchure will remain undisturbed and in its optimum position.

The act of inhaling involves many muscles as described, but exhaling involves only two; the hydraulic pull of the abdomen and ribs. The simplicity of exhaling is due to the fact that upon exhalation an action is taking place such as singing, blowing or speaking. Nature has conveniently eliminated complexities which might cause tension and lead to closing the larynx, making it impossible to vocalize.

TO EXHALE

1. Feel the shoulders and upper chest relax as you blow out.
2. Notice the lungs (mid-chest) fall slightly as the air is emptying.
3. Pull the stomach and surrounding rib cage in as much as possible, therefore fully emptying its contents. In yoga, they suggest trying to feel the spine with the inner stomach wall.

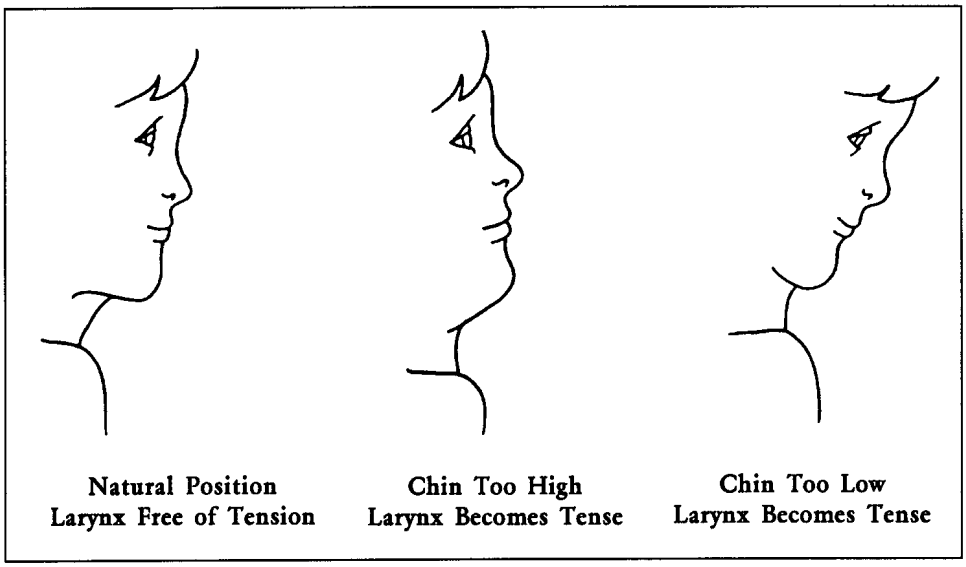
In time, the effect of this three part breathing exercise in your abdomen area, in terms of strength and capacity, can be increased by doing it with a form of resistance. Lying flat on the floor, leaning against a wall or placing some kind of weight on the stomach area, can increase the efficiency and strength of this important part of the breathing apparatus. Also, try rapid inhaling and exhaling as well as the slow methodical yogic breath. Remember that the point is to have efficient breathing become second nature and intuitive since there are so many other factors to think about while playing. One must breathe well without thinking about it. The idea of even blowing is too extreme. Think of the breath as puffs of air measured in various intensities, according to musical dictates.

All of these steps should be practiced slowly, smoothly, seated comfortably, or standing with arms relaxed, eyes closed, and without distractions or strain. Deep breathing exercises are excellent for overall health and well-being, especially when done early in the morning. It is widely known that taking deep breaths constitutes the natural body reaction to pain or danger. Childbirth is accompanied by deep breathing, for example. Many forms of meditation begin with mental concentration on the movement of breath. The concept of breath as the life force is frequently discussed in many spiritual writings, especially in the oriental philosophy. If you can do this exercise in some format daily, the benefits go far beyond those necessary for blowing a saxophone.

In summary, correct and efficient breathing means expansion and contraction of the abdomen area containing the diaphragm and other associated muscles. Expansion causes air to enter because of the accompanying enlargement of the chest cavity. Contraction results in the emptying of the air to be used for blowing the saxophone. ■

Chapter Three
The Larynx

Before discussing the laryngeal mechanism, it is important to take notice of any extreme body positioning which might place unneeded tension on this delicate system. For example, if a person holds his breath, the only tension felt should be in the ribs and diaphragm area. The throat should be free of tension. Likewise, the relationship of the head alignment to the shoulder line can cause problems for the laryngeal area.



Natural Position
Larynx Free of Tension

Chin Too High
Larynx Becomes Tense

Chin Too Low
Larynx Becomes Tense

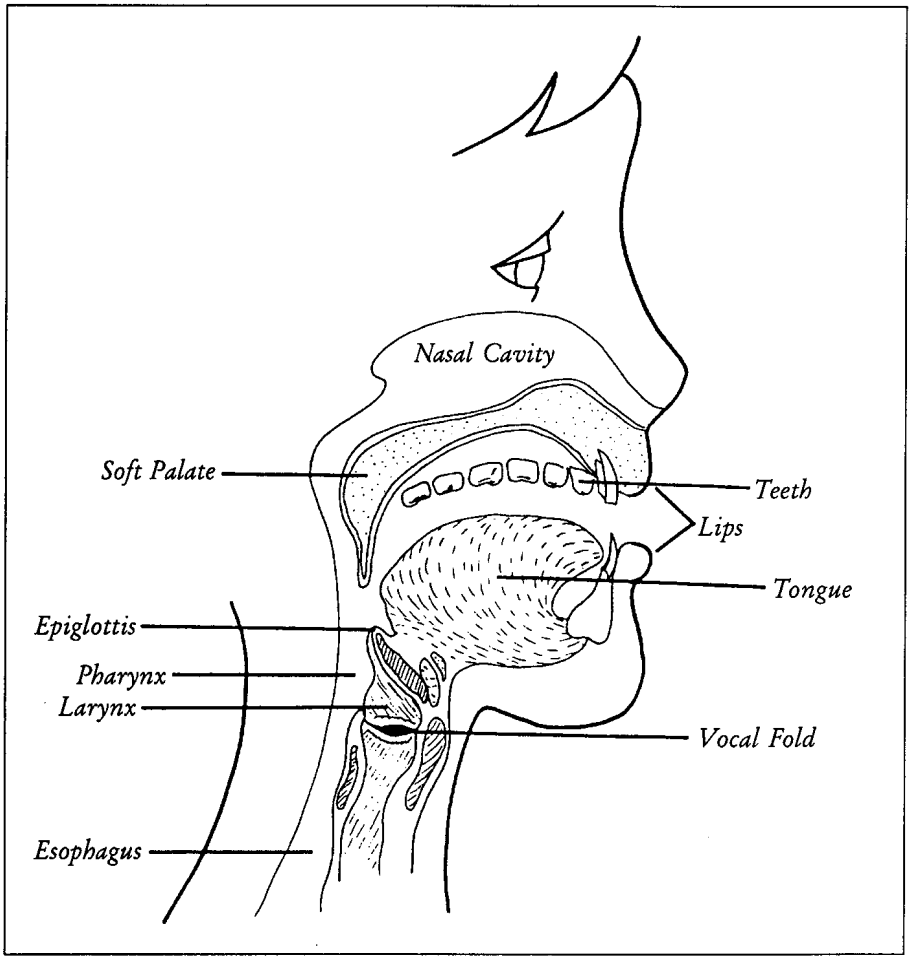
If you are speaking and raise or lower your head in an extreme position, your voice will sound strained. Sustain the letter *E*, and as you raise, or lower, the chin, notice the distinct change of color and sound clarity. This is because the vocal cords within the larynx are extremely sensitive to any kind of pull upon them. When an exertion is placed upon this area, its workings and manipulations are severely limited. Therefore, if the head is bent drastically either way (backwards with chin raised or downward with chin towards the chest), you are already beginning the process of playing with a great handicap because the vocal cords cannot operate to their fullest potential. The correct way is to keep a natural head position in relation to your shoulder line (check in a mirror). This is very much the same as when looking straight ahead and speaking normally. Remember to use the neck strap to bring the horn to you.

Note: I have discovered that if I can feel a sensation of fullness of air immediately in back of the apex of the jaw when blowing, the sound is fuller and the larynx has more flexibility. This fleshy area, or "sack," provides a focal point for projecting the air throughout the oral cavity. The pitch may flatten, which would have to be compensated for in the larynx.

Also, there is a definite feeling of movement in the back of the oral cavity. Specifically, it is the soft palette which seems to move as you go higher in the overtone series. This subtle sensation plays a role in affecting the tone color, and pitch, of the higher tones.

The larynx is where a steady airflow is converted into a periodic and varying modulation. (Don't confuse this with the activity in the oral cavity which affects the relative harmonic content of the laryngeal output.)

The larynx is a cartilaginous box open at its top and bottom. This box appears at the front of the middle neck area near the Adam's apple. The larynx represents the upper end of the respiratory tract and at the same time, is the gateway to the lungs. This entire tract is called the gullet or esophagus, which is a muscular canal about twenty-three centimeters long, extending from the pharynx to the stomach. (What is generally referred to as the throat is that part of this tube called the pharynx. A sore throat is actually an inflamed pharyngeal wall.) The vocal cords themselves appear physically from a top view as muscle tissue attached to the inner surface of the larynx. Each cord is attached on three sides; thus they are more nearly lips or folds rather than cords. The opening between them is called the glottis.



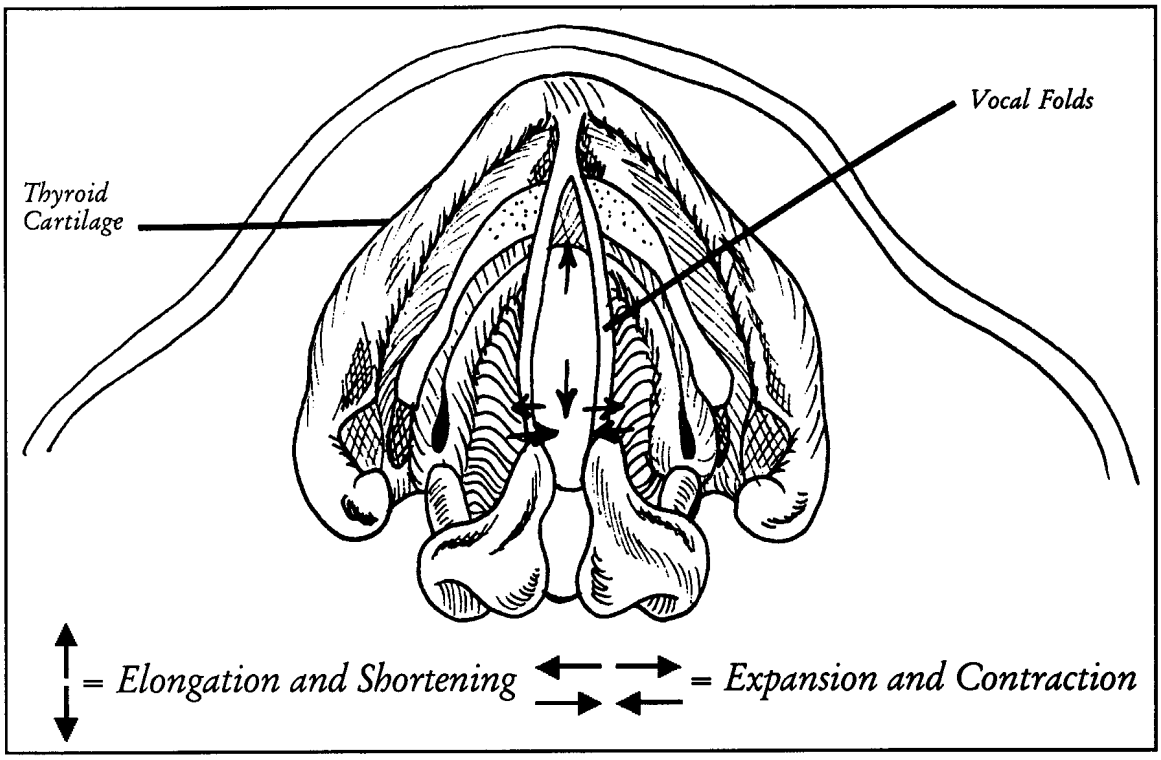
At the top of the larynx we find the epiglottis. The epiglottis works like a lid that closes the larynx during swallowing to prevent food or liquid from going to the lungs instead of to the stomach. This protective mechanism is one function of the larynx; the other is phonation. In phonation, two closely allied actions are taking place: the degree of tension of the folds is regulated as is the length of the vibrating point of the folds.

The epiglottis forms the bottom of the pharyngeal cavity, which is contiguous with the oral cavity. The oral cavity is separated from the nasal cavity by the soft palate. This soft palate closes off the nose when swallowing. The roof of the mouth is formed by the hard and soft palate. The lips and teeth along with the nostrils form the front end of the vocal tract.

The vocal cords, shown on the next page, are capable of a variety of shapes and motions. In phonation, they give emotional expression to our utterances as a consequence of their muscular action. During vocalization, the cords are brought together by means of pivoting cartilages and a complex interplay of many small muscles. The cords oscillate at a frequency determined by their tension and mass. Specifically, the vocal cords move in any combination of four possible motions: elongation, shortening, contraction, and expansion. In fact, if you play one note through the dynamic range from a whisper to a scream, and keep it in tune, all four movements will be manifested.

It is the minute fibers of the vocal folds which are actually bringing about movements. All of these motions interact in a complicated, sinuous back and forth movement similar to the vibrating lips of a brass instrumentalist. A train of air pulses is fed into the vocal tract at different frequencies of vibration; some tones are attenuated, other accentuated. There is great control of these emitted frequencies over a wide range of at least two octaves, making it possible to

The Vocal Cords



produce an infinite number of sounds and in turn, expressive colors. When a teacher advises a student to open his throat, this really signifies awareness of the feeling of movement in the larynx. The larynx doesn't only open; it is very versatile and agile. The saxophonist's task is to make this reflex action respond as quickly and accurately as possible to the imagination realized through the dictates of the ear. Laryngeal activity occurs below the threshold of conscious feeling, similar to the knee jerk response that is tested in a doctor's office. However, we can feel its movements and more importantly, hear its effects. This can be easily demonstrated if you place your hand on the neck while playing. What is felt is caused by the disturbance or vibration of bony material in the head, as well as the larynx itself. The following chapter discusses exercises which help to develop this necessary sensitivity to the vocal cords in the larynx area. The idea is that their movements be utilized for the artistic purposes of shaping a sound. ■

Chapter Four
The Overtone Exercises

It is an accepted acoustic principle that differences in tone color arise primarily from the combination of different partial tones with varying intensities. By changing the number of partials and their intensities, a variety of tone colors can be created from a single fundamental. Each additional partial (and change of its relative intensity) brings a fresh nuance to the color of the fundamental. No instrument produces the same overtone spectrum at all times. Various registers show different spectra while other factors, like dynamics, have an effect. In essence, an instrument is a resource of available tone colors. It is the movement of the vocal cords in combination with reed vibration and fingerings (regulating tube lengths) that all combine to emphasize or de-emphasize partials. Our task is to be able to efficiently use vocal cord movement to maximize the results. Efficiency means minimal response time in laryngeal reaction to an aural and mental perception of a sound. The inner ear works in combination with the nervous system and brain in order to issue commands to the vocal cords. The overtone exercises are the best way of pinpointing this vocal cord movement, cognizing it by the aural result and habitualizing it through practice. Before discussing the specifics of the overtone exercises, I'd like to paraphrase some ideas presented in an excellent book, *The Art of Piano Playing*, by George Kochevitsky (Birch Tree Group). The following are succinct descriptions of how the process of hearing and reaction work in tandem.

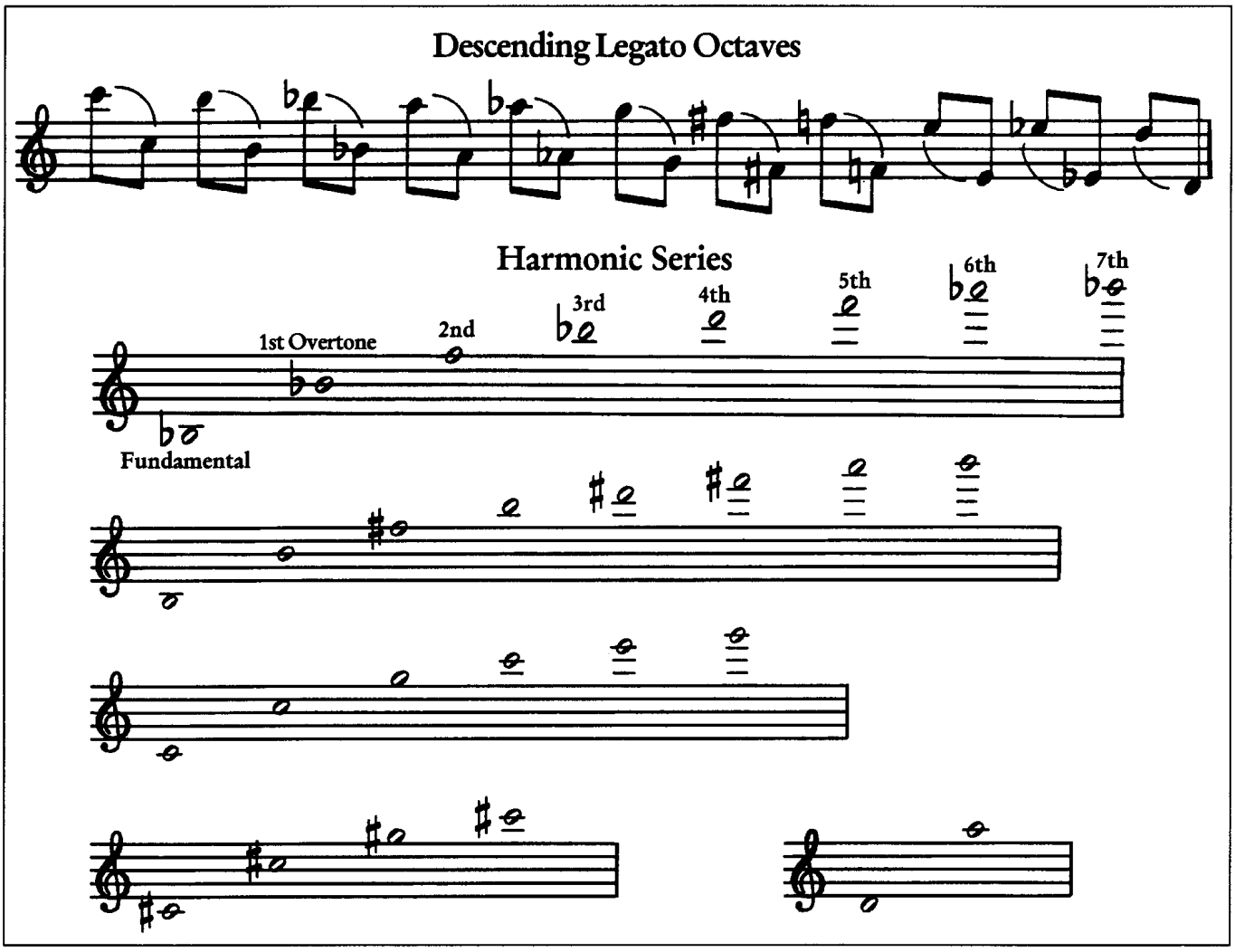
Physiologically, we are discussing the route of a reflex arc movement which is a series of electro-chemical nerve impulses following this pattern:

1. Sensory nerve fibers (called afferent) conduct specific impulses to the central nervous system from that part of the body which receives external stimulation.

2. The orders for motor activity or reaction are transmitted along motor nerve fibers (called efferent) to definite organs; thus the nervous centers receive and interpret external sensations (stimuli). These are not consciously apparent in the brain, which is more concerned with the purpose of our action rather than the process. In our musical situation, the route is as follows:

- Auditory stimulus or visual stimulus (seeing a note)
- Pre-hearing anticipations of motor act
- Motor act resulting in actual physical activity and production of sound
- Auditory perception and evaluation of actual sound.

The first exercise in obtaining mastery of vocal cord movement is to play on the mouthpiece alone, thereby controlling pitch choice without the benefit of the horn and fingerings. In a sense, this is what one does while playing. Fingerings only facilitate and speed up the process of breaking the air stream into various lengths. The horn is like a megaphone which amplifies the sound wave set up by the vocal cords and reed vibration. Air, even air lying still in the horn itself, becomes sound. With the correct lip, teeth and tongue positions, one should be able to play at least the range of a tenth on the mouthpiece, although more is certainly possible. Use a variety of scales (major, minor diminished, etc.) as well as arpeggios and intervals. This is the kind of dexterity one should be seeking. As you begin from high to low, you will notice a certain amount of movement at the reed by the bottom lip. Finding the spot on the reed as it changes position towards or away from the edge is the challenge for the bottom lip, which must be flexible to accomplish this task.



When playing the mouthpiece away from the horn, lip movement is more overt than in regular circumstances. To exaggerate this movement even more, play the scales both pianissimo and fortissimo. You should find that for pianissimo there will be more bottom lip sliding away from the reed edge, while the reverse is true for fortissimo. This exercise is not as difficult to accomplish as it may seem. With daily practice sessions of only a few minutes, it can be mastered within a couple of days. Brass players do this exercise constantly. The importance should be obvious: by exaggerating the necessary manipulations in the larynx and at the lip, these sensations will be familiar to the saxophonist when he moves onto more realistic exercises.

Another means of demonstrating laryngeal activity is to play with what is referred to as double embouchure, meaning no teeth on top of the mouthpiece. By playing with only both lips touching the mouthpiece and reed, especially in the higher register, increased pressure is placed on the laryngeal area, thus heightening awareness of this region.

DESCENDING LEGATO OCTAVES

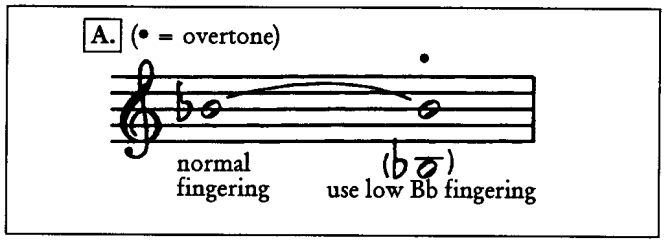
Before attempting the actual overtone exercises a good initial warm-up is to play descending octaves in a smooth legato fashion, as demonstrated in an exercise at the top of this page. Try not to drop the jaw suddenly in order to bring about a smooth descent. Just feel the change as if you were singing it and let the bottom lip naturally adjust on the reed.

OVERTONE EXERCISES

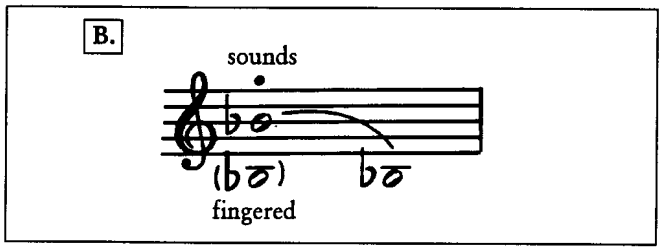
The following overtone exercises presuppose an understanding of the harmonic series (see example above) and should be

done as slowly and carefully as possible. Preferably, use breath attacks (as in legato), rather than the tongue.

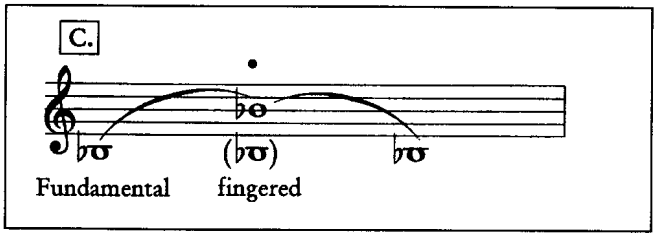
A. Finger middle Bb. After sounding it, go immediately to the low register fingering for Bb while playing the middle register Bb. Do the same for B, C, C-sharp. If there is difficulty producing this first overtone of the octave with the lower fundamental fingerings, use the octave key in conjunction with the lower register fingering for greater ease.



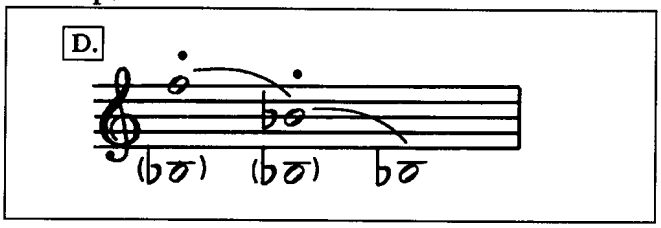
B. Finger low Bb and immediately play middle register Bb. Then slur down to the low register. Do the same for B, C, C-sharp. A slight decrescendo or slowing down of the air stream will help facilitate this downward slur.



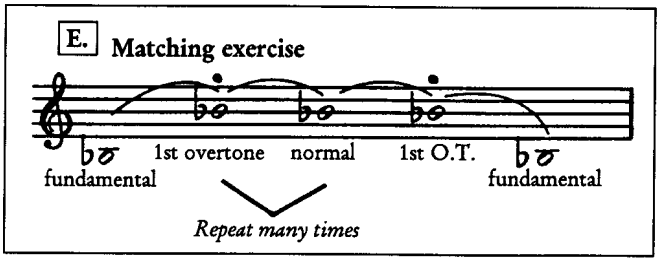
C. Play low Bb and as much as possible, slur to middle Bb. Return to low Bb. Try to feel the adjustments occuring in the larynx and back of the tongue, which is changing the shape of the aural cavity by affecting the soft palate near the throat opening.



D. Finger low Bb and immediately play F, the second overtone. Slur down to the first overtone and then down to the fundamental. Do the same for each higher overtone. Follow through the same way on B, C, C-sharp, D.



E. Matching the natural or real fingering to the overtone is the most important exercise because of the practical benefits in actual playing. Begin by playing the fundamental and then playing the overtone being practiced. Follow this by sounding the same note with the usual normal fingering. Repeat and play the overtone followed by the normal fingering many times making the necessary internal laryngeal adjustments on the normal fingering so that it matches in pitch and timbre, as closely as possible, to the overtone note. Finish by returning from the overtone to the fundamental. Attempt to recognize a strong impression of the laryngeal movement. It's the physical sensation which you want to memorize and be able to utilize in an actual playing situation.



In practicing these exercises you will notice certain tendencies and obstacles to overcome. How the saxophonist responds to these challenges will determine their true success. The benefit of the overtone concept is directly related to the student's intensity of purpose and discipline. It provides a learning mechanism for exercising and in turn, controlling laryngeal activity. This is not an exercise where the only goal is to get through all of the overtones every day and feel it was well accomplished. Instead, this is more of a Zen exercise; slow and concentrated where quality means more than quantity. Patience is necessary for accomplishing this practice successfully. Over a

period of time, results will be observable. The musical point of matching the real fingering to the overtone is two fold: pitch and timbre. The assumption is that the overtone is basically in tune with the fundamental and therefore should be used to tune up the normal fingering for that same note. This is because there is no fingering change from the fundamental to the overtone. (This has hopefully been accomplished in the larynx). Under normal circumstances, even with a perfectly adjusted horn, acoustical imperfections cause various fingerings to have intonation discrepancies. Although the first overtone is slightly sharp, successive overtones become more stable regarding pitch. (On Bb and B, the sixth overtone (Ab, A) is nearly a half step flat). Since the greatest cause of intonation, besides the horn itself, is unnecessary embouchure movement, use this exercise to make the larynx bring about pitch adjustments. You may find that movement of the back portion of the tongue helps because it also affects the air stream. In general, the larynx can bring pitch down better than up. You are attempting to use the larynx rather than the embouchure in order to get the normal fingering to match the pitch of the overtone.

When the saxophonist lips up or down for pitch control, he is using unnecessary as well as unmusical methods: tightening and loosening the pressure at the reed, rather than maintaining stability. Lip movement should be used for all kinds of subtle expressive nuances such as pitch bends, smears and other tonal colors. Basic pitch control should come from the air stream shaped by the vocal cords and resultant mouth cavity shapings. If the pitch differential between overtone and real fingering is very great, first check the placement of the mouthpiece on the neck cork, which may be too far in or out. If the problem persists, this may point towards a malfunction in the horn such as badly aligned pad and key heights, or a neck that doesn't match the horn, or the wrong mouthpiece for the player.

In general, the most advantageous position for the mouthpiece on the cork of the neck is as far in as possible. The reason is that acoustically, this line-up matches as closely as possible the natural conical and cylindrical shapes of the neck and mouthpiece respectively. With the correct shapes overlapping as much as possible, the air stream enters the horn efficiently. In fact, as a saxophonist plays for years and matures technically, the mouthpiece is generally seen pushed in more and more. This is because the pitch settles and becomes less sharp as exertion and tension decrease. Also, the sonority deepens.

The goal of timbral matching is for the normal fingerings to achieve the same fullness, richness and depth of tone one hears in the overtone sound. Usually, the fingerings are rarely as aurally satisfying as the overtones. The reasons are simple and acoustical in nature. Notice that except for the second overtone of low D, which is A, the fundamentals used in the basic exercises are low Bb through C-sharp only. These happen to be all low fingerings which when played cover the entire horn, or nearly so. It stands to reason that when the entire bore is covered and therefore the greatest amount of actual brass of the saxophone body is vibrating, the result will be fuller and deeper in sonority than when only one to two-thirds of the horn is vibrating as is the case for fingerings above D. This comparison is especially obvious for the higher overtones and their corollary natural fingerings. The palm keys in particular cover less than one-third of the horn. So this crucial aspect of timbral matching means that the player is constantly striving to get the sound of the normal fingerings as close as possible to the quality of the sound achieved by overtone fingerings.

There is another explanation for the difference in timbre between certain normal fingerings and their corresponding overtone. The higher overtones emanate from the bell of the horn, in contrast to their equivalent normal fingerings where the

sound escapes mostly at the top portion of the bore. For the sake of explanation, these two categories of tones are what singers refer to as chest (low register) and head (high register) tones. What vocalists grapple with is trying to get the bony structure of the head to resonate as deeply as the rib cage of the chest, resulting in taking the extreme and at times, undesirable edge off high head tones. Attempting to even out the sound in all the registers, with the bottom fundamentals serving as the model for comparison is a similar challenge for the saxophonist.

The overtone is the equivalent of *K* in algebra; a constant that never changes and in reality can never be exactly repeated by the normal fingerings. They serve as an ever present reminder of the sound to which one strives. By incessant repetition over years, the saxophonist begins to slowly habitualize the physical feeling and aural result attained when actually matching. Soon it becomes more and more likely that under regular playing conditions, where normal fingerings are used, the tone will be closer to that experienced when playing the overtone fingering. This is what we're searching for in both the pitch and timbral matching aspects of the overtone/normal fingering relationship. That which is practiced as an exercise with deliberation can evolve to a point where it becomes the norm.

TWO POINTS TO CONSIDER WHEN PRACTICING THE OVERTONE EXERCISE

1. In order to obtain an overtone from the fundamental fingering, you must avoid the common mistake of either overblowing or tightening the embouchure. This form of cheating may easily bring about the first overtone in the series, but it will be increasingly difficult to get higher ones with this inaccurate and counterproductive method. Conversely, when returning down to the fundamental from the overtone, do not drop your jaw. In general, there should be only enough movement in the lower lip necessary to fulfill the acoustical requirements of covering and uncovering the reed surface. (By acoustical requirements, I mean the releasing or muffling of the reed's partials). Also, the pressure between the lips should remain constant from top to bottom range.

The correct way is to pre-hear the desired pitch (fundamental or overtone) in your inner ear. Then, feel as if you are actually singing that pitch in your throat. In fact, try first to vocalize the note in order to acquaint yourself with the physical sensation in the larynx. Then go directly to the horn and immediately duplicate the note with the same physical feeling. The human mind, when a goal is particularly strong, seems to find a way for the body to satisfy its needs and requirements. It is truly a matter of will power; hearing the note so definitely in one's head that the body finds a way to reproduce it, no matter what the fingering. Of course, all of the positions for the tongue, lips, and teeth described in subsequent chapters, should be observed to facilitate this entire set of exercises. Everything is interrelated and part of the whole.

2. The very beginning of the main matching exercise is to play the low fundamentals initially. As a purely musical challenge separate from the ensuing exercise, you should be able to play low notes without heavy articulation or excessively high volume, which is often the case. Low note articulation and tone production are two of the subtle challenges confronting saxophonists, as is the opposite problem of the tendency to go sharp in the high register. To avoid the low note problem, try not to be a victim of the natural habit of dropping the lower jaw. Keep the jaw up; the smaller the opening, the softer can be the attack. The reverse is true for high notes; avoid biting up. Singing teachers tell vocalists to think up when going into the low register and think down when going high. This is in order to counteract the body's natural inclination to physically follow along with the desired range. In fact, if you sing high or low and have not been cautioned, you can observe in

a mirror how the eyebrows, facial muscles and even the entire body seems to gravitate upward or downward as you sing in either direction. Therefore it must be counteracted consciously.

Each series of overtones on one fundamental should be played. Try to play legato. If a breath is taken, begin where you left off. This makes these exercises more difficult, but valuable in the long run. The goal is to manipulate the air stream smoothly as it evolves, rather than beginning anew at each juncture with the aid of a tongued note. It is the feeling of laryngeal movement being sought. In general, the dynamics of these exercises should be a natural middle level, though it is very effective to play them softly.

There are several other extended and more advanced ways to practice obtaining the overtone feeling as follows.

A. Vary the sequence of the overtones; jump from 3rd to 1st to 4th to fundamental for example. This exercise develops greater flexibility of the vocal cord movement.

B. Match overtone and real fingering very rapidly so that it sounds like one continuous note. Start slowly and eventually increase the speed to 16th notes at quarter note=60.

C. Play the upper octave above C without the use of the octave key. Also play the lower octave with the octave key open. This forces an exaggeration of laryngeal control and less dependence on the leak or octave key.

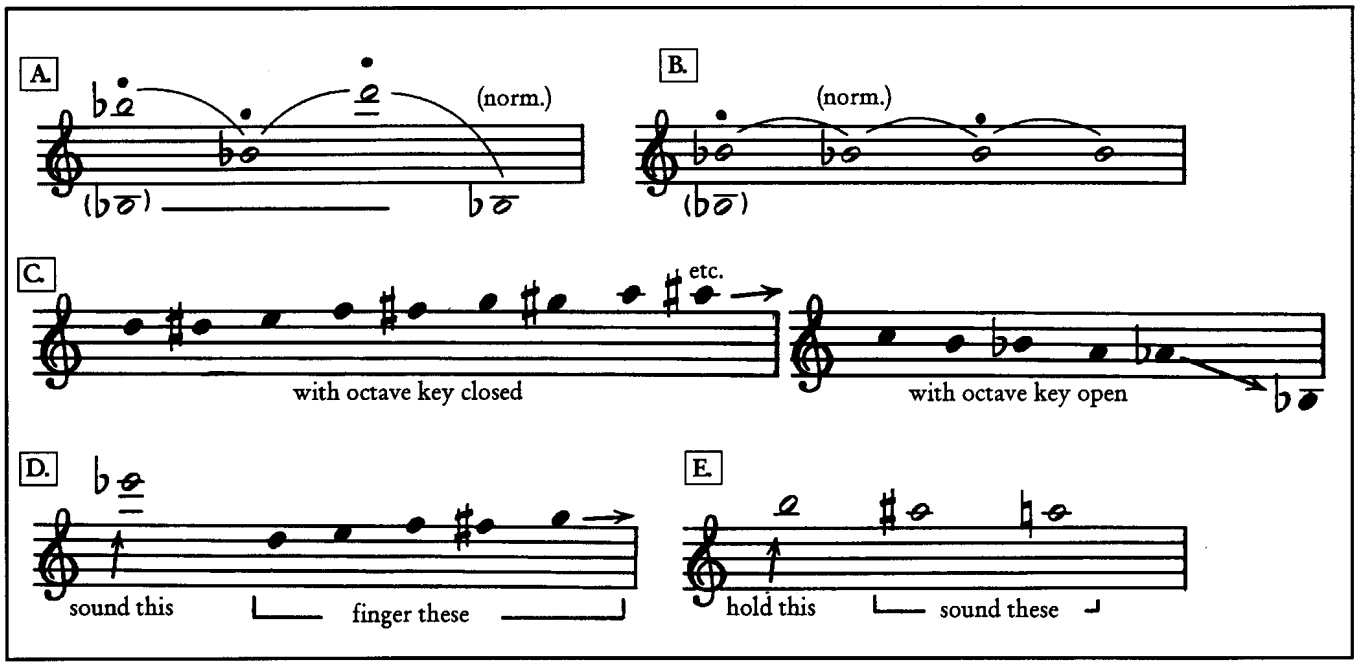
D. Play a high note and with your fingers moving randomly or in a scale sequence, done both slowly and quickly, sustain that initial pitch. The constant adjustment of larynx and lip needed to do this proves that the sounding of a pitch has little to do with tube lengths, and more with laryngeal control.

E. Play an initial note and while still keeping that fingering play a half step below without dropping the jaw or lip. Use only larynx motion. Extend this to a whole step below. This demonstrates how much pitch control can be generated by the larynx alone.

F. Play the bugle call on each fundamental. This involves facile use of the 2nd, 3rd, and 4th overtones.

G. Use **D** and above fingerings as fundamentals for as many overtones as possible.

H. Using any scale, pattern, or written music as a source, beginning from middle Bb upward, play the material by using all overtone fingerings including the use of fundamentals above low D. For middle D, Eb, and E play without the octave key as in the EXAMPLE C below. This is useful for practical playing purposes incorporating



multiple ways of sounding and therefore coloring a note.

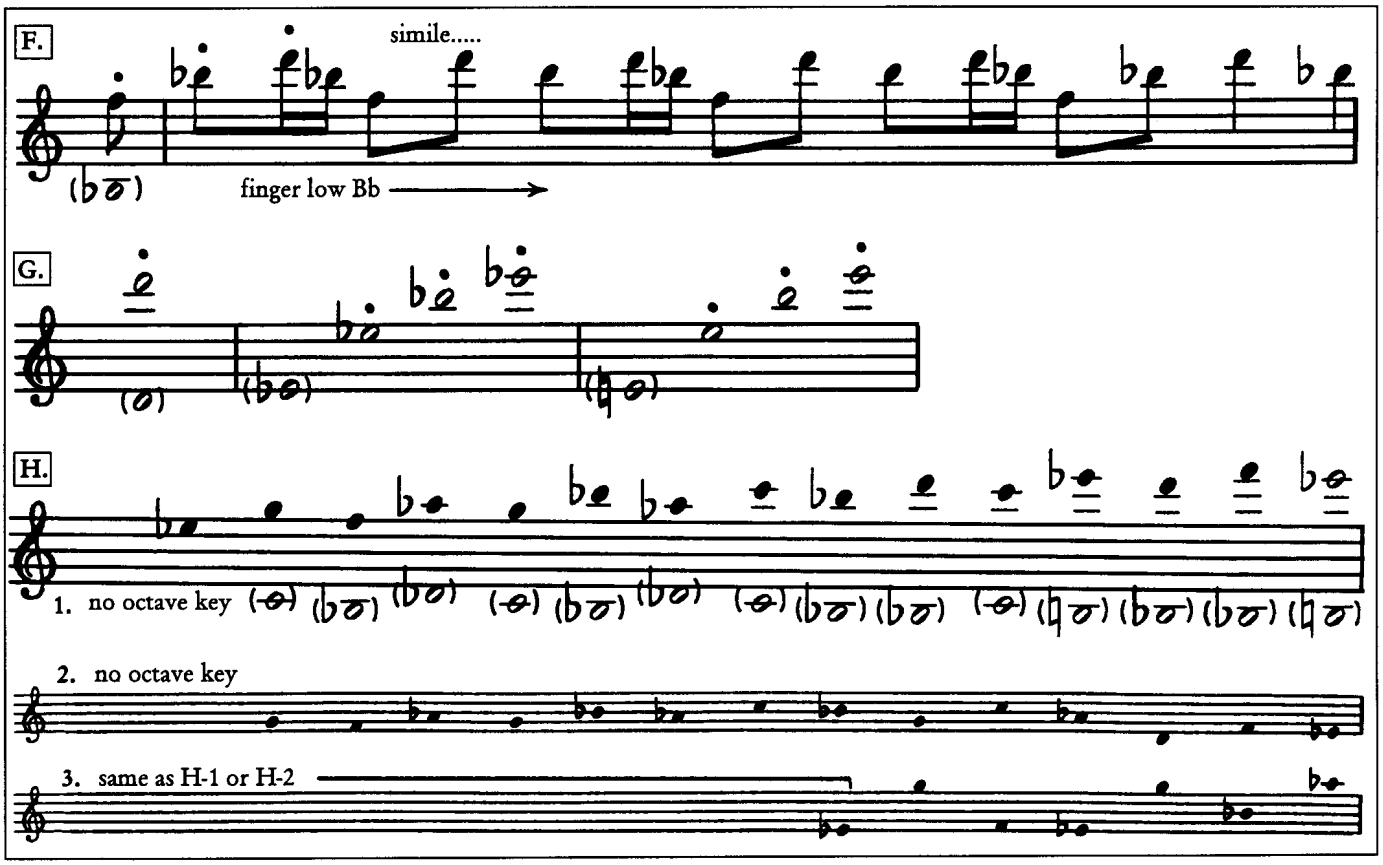
I. On some of the highest palm key pitches, it is possible to play a major sixth and ninth above, still keeping the original fingering. This is possible by exaggerating the overtone laryngeal feeling and taking less lip on the reed (folding inside) so that the reed vibrates faster. This is quite difficult to do, especially on the higher saxophones . Some of these high palm key overtones form the basis of altissimo fingerings.

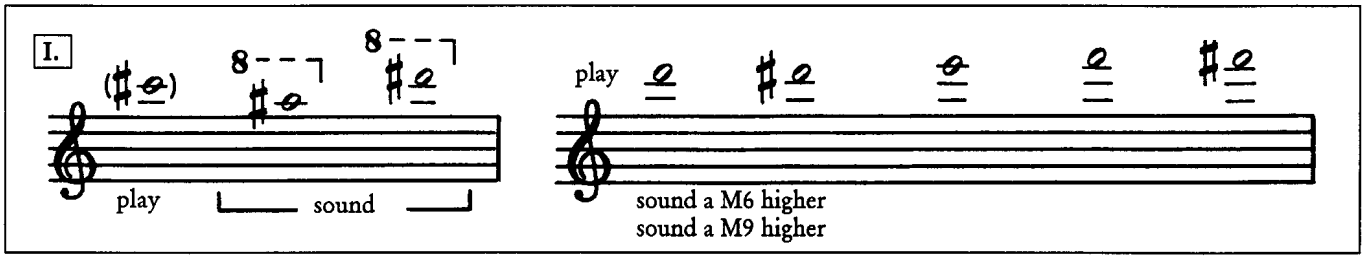
Note: The use of the altissimo range and multiphonic production are extensions of the overtone concept, aided by extreme lip positioning and alternate fingerings which help to create 'vents' in the saxophone bore facilitating these sounds. There are a multitude of books available which suggest approaches, fingerings and exercises for these purposes. (see Recommended Saxophone Books on page 47).

Finally, the benefits of overtone exercises are summarized and briefly described. It should be apparent that this is the most important concept to practice on the saxophone.

1. EVENNESS OF RANGE

Because the same low fundamentals are repeatedly used for all of the overtones from middle to very high register, these exercises help the saxophonist achieve an even sound throughout the horn, instead of the wide differences of color we often hear in an individual's sound from top to bottom. A saxophonist should not sound like he has a different tone for each register. The fundamental and their overtones are similar to having a model constantly available to give you an example of the correct sound. A teacher or guide is always present as heard in the timbre of the overtone fingered notes. This serves to





offset the natural shrillness and strident tone often evident in upper registers, particularly on the alto and soprano saxophones. To check for evenness, play the chromatic scale and intervals very slowly and carefully listen to the differences of timbral qualities as you ascend and descend, attempting to adjust and minimize these differences via laryngeal and slight embouchure adjustments.

2. TONAL VARIETY

During the timbral matching aspect of the exercise and the manipulations which transpire in order to truly match overtone to normal fingering, one discovers all sorts of tonal variety and sound possibilities on each note as well as finding alternate fingerings. Remember what you are actually doing is strengthening the color characteristics of a note by dissecting it into partials. This is of enormous practical value, especially when playing a ballad or aria where tone and expression are highlighted.

3. EXTENDED PLAYING TECHNIQUES

In the more advanced jazz styles of the 1960s, and of course throughout John Coltrane's career, you can observe extensive use of altissimo, harmonics, multiphonics, overtone substitute fingerings as part of the language. In fact, these effects which were first thought of as tricks and novelties are now mandatory for all contemporary saxophonists. For example, you can produce the fundamental and the 1st or 2nd overtone simultaneously, called a multiphonic, with the right degree of air and reed pressure applied. There are also muffled and quarter tones available. Refer to "Recommended Saxophone Books" for suggested resources.

4. MUSICAL RESULTS

The overtone exercises reinforce the combining power of the imagination, ear, and body. They can also be thought of as the combination of creativity, instinct and technique working together to bring about desired musical results. Elements involved include pre-hearing, aural imagination, and physical coordination. If there is a strong will to bring about an effect, anything can be done. By practice and habitualization, these concepts should become second nature.

In general, these exercises provide a tool for maintaining control over an area which operates below our conscious threshold of feeling. Laryngeal adjustment is crucial for developing a personal saxophone sound. ■

Chapter Five
The Tongue Position And Articulation

After the air stream has passed through the larynx area, it enters the oral cavity. Since the teeth are stationary, their effect upon the air stream is fixed. However the position of the tongue influences the direction as well as velocity of the air stream before it enters the mouthpiece. Our first concern is the hump or back portion of the tongue. The front part or edge containing the muscle tissue is used for articulation and is discussed later.

Imagine that the mouth cavity is like a cave with the air entering at one end (from the throat passage) and exiting at the other end into the mouthpiece. The position of the hump portion of the tongue is crucial because of its effect upon air resistance, which in turn influences the final velocity of the air stream. Much like any body of disturbance in the middle of our imagined cave, we have to consider what the best position would be for the desired result.

The goal is to create maximum velocity and minimum dispersion of air. When air exits into the mouthpiece, it should be, as nearly as possible, equal to the same compactness and fullness as when it first entered the oral cavity. The optimum position for this "disturbing" body or tongue hump is somewhere in the middle of the oral cavity, allowing the air stream to go above, below and around it. This results in the air stream recollecting near the front edge of the tongue and receiving an extra push as it enters the mouthpiece. If the hump of the tongue is either too high or low in the cavity, the air will be dispersed. The result is a weakening of air stream velocity.

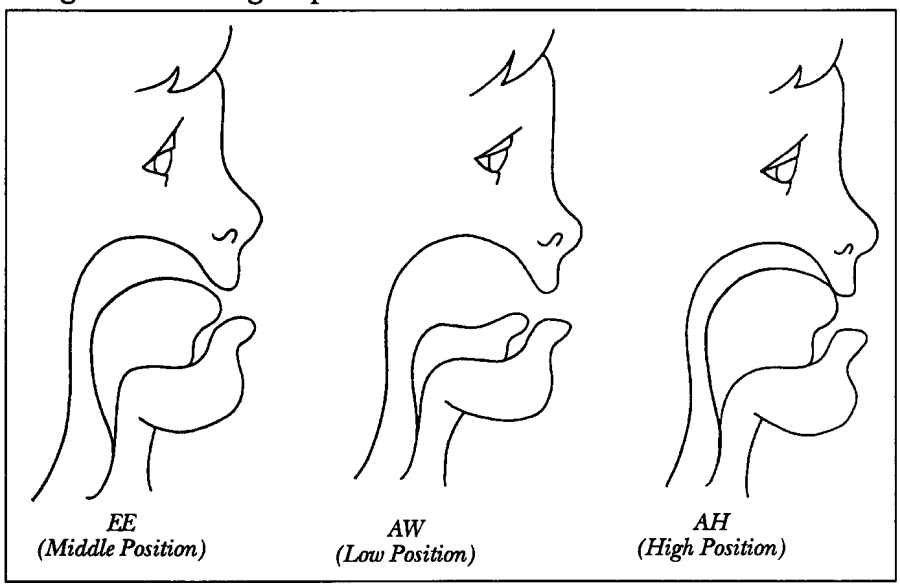
Another valid reason for positioning the tongue in the middle of the oral cavity rather than above or below is that in those positions, there is an accompanying slight strain placed on the laryngeal area. In the low position, with the tongue lying near the floor of the mouth, the glottis is slightly choked. The extreme of this position would be the sensation of vomiting. This inhibits the sensitive vocal cord adjustments which must occur, much like the leaning down or raised head mentioned in Chapter Three on the larynx. Also, a lowered tongue tends to lead to dropping the jaw, which is a bad habit causing low notes to be very difficult to play. Pushing the tongue upward into the roof of the oral cavity would also add to laryngeal strain. Finally, the desirable middle position works together with the soft palate in such a way as to add a bright and compact quality to the tone. When combined with the overtone exercises which reinforce the darker and richer partials, the overall result contributes to a well balanced sound.

Although it is difficult to generalize about sound without actually hearing it, using syllables as sounded in specific words can be useful for demonstrating these various tongue positions:

1. *EE* as in "eat" demonstrates a middle position, with the top side rims lightly anchored against the top side teeth (molars).
2. *AW* as in "law" drops the tongue towards the floor of the cavity.
3. *AH* as in "father" (exaggerate the *AH* sound) tends to push the back portion of the tongue towards the roof of the mouth as well as possibly causing the jaw to drop more readily.

The problem with these examples is that language is idiomatic and the same word can have multiple soundings depending on the individual's geographical region, as well

as context and other factors. In any case, the idea is for the saxophonist to get a visual image of the tongue position.



Try some of the following to obtain a clearer picture of the superiority of the *EE* position:

1. Try singing an arpeggio with the tongue in the various positions and notice how the *EE* position sounds in contrast to the others.

2. Using a candle or lighter at the appropriate distance, try blowing the flame out with an exaggerated, *EE, AW,* and *AH.* The most velocity should be the *EE* position.

In the final result, all tonal shadings provided by various tongue positions may be desirable for expressive purposes. The idea is to play around with different angles and check out the results on a long tone in all the registers. However, the *EE* position is a very good neutral place to begin. As we will discover, this position is also quite advantageous for articulation purposes.

Articulation is one of the major components of phrasing; the others being dynamics, and expressive nuance. The manner in which a note is articulated is important in determining the rhythmic flow of a phrase. Several other factors affect this flow, some of which are musically idiosyncratic to a specific idiom. For example, in jazz, the spacing between eighth notes is crucial as a determinant of how a musician swings. In classical music, exactness of articulation in accord with beat placement is important, especially in the context of ensemble playing. Whichever idiom is being played, the common elements are the intensity and type of attack a note receives. These two factors are inextricably linked. For example, a note can be played staccato, but executed with a light intensity. Or you can also have a note played legato, but with great intensity. These are extreme examples of match-ups between intensity and type of attack, but a mature and artistic musician should be involved with these fine points.

Whatever the situation, it is the front portion of the tongue containing muscle tissue which flaps upward stroking the reed. The result is that the reed's motion and sound are momentarily stopped. The actual sounding of the articulation-comes with the release of the reed. There are many tongue positions available, each exerting slightly different shadings of tonguing. Unfortunately, many saxophonists accept whichever position the tongue assumes on the reed as being adequate without realizing the number of possibilities. In order to have maximum flexibility in articulating, one must find a neutral starting position suitable for using different parts of the tongue on various parts of the reed. These two factors of tongue and reed combine to bring about the various articulations. In fact, conceptually, the tongue can be seen as an extension of the reed.

As noted in the previous chapter, if the hump of the tongue assumes the *EE* position, the direction and velocity of air in the oral cavity is maximized. But this position has another positive side effect which is that it places the muscular edge of the tongue (there is no point or tip as such) in an

advantageous position in relation to the edge of the reed. By advantageous, I mean, that using the least amount of motion, the tongue naturally strokes the reed 1/16th to 1/4th of an inch in from the reed edge; while the part of the tongue being used is also 1/16th to 1/4th of an inch in from its front edge. Given obvious physical differences between individuals, as well as the size of the reed being used, these measurements are approximate. But the point to realize is that this description of the tongue/reed relative placement is a natural consequence of the *EE* position.

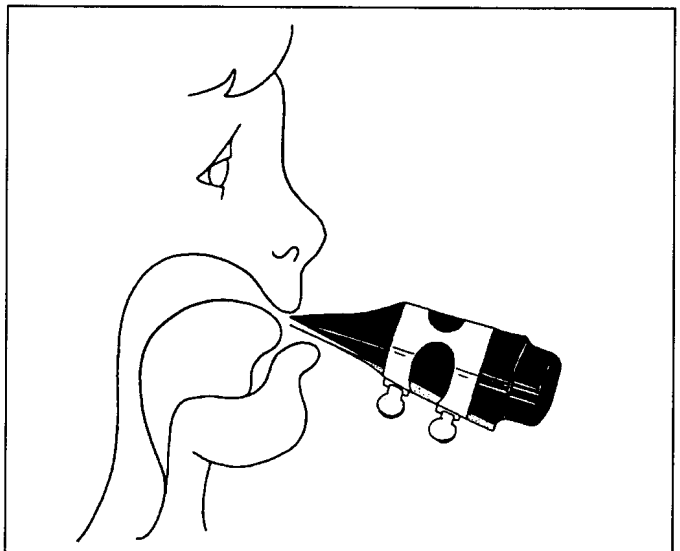
There are several other ways to visualize this scenario. The triple drawing on page 24 illustrates a slight opening in the front of the mouth through which you can picture the mouthpiece being placed. All of these positions should be tried without the mouthpiece at first.

Example 1: In the *EE* position, the tongue is striking the reed at an angle resembling the hands of a clock reading 9 o'clock (or 3 o'clock, depending on which side we look at). This is easily distinguishable from 12 o'clock which would be the tongue pointing upwards towards the roof of the mouth, or 6 o'clock, where the tongue is down behind the bottom teeth.

Example 2: In pronouncing the word articulate you discover that the syllable *AR* places the hump of the tongue close to the *EE* position, while the *TIC* puts the edge where desired behind the top teeth.

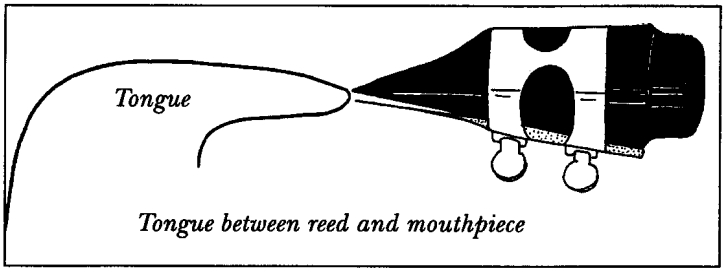
Example 3: In saying the sound *DIT*, the front edge of the tongue moves lightly behind the top teeth while the sides stay anchored as in *EE*.

Example 4: If you have ever heard the French pronunciation of *TU*, this also approximates the correct position.



Tongue in the EE position. Note how close the tip of the tongue is to the reed which maximizes articulation efficiency.

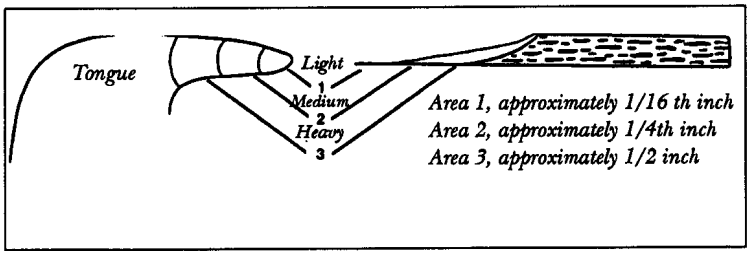
Familiarizing oneself with the necessary sensation of truly feeling the reed is crucial. A good exercise is to place the edge of the tongue directly between the reed and the tip of the mouthpiece. Slowly, and of course lightly, tongue one note for a few minutes. (If you are too aggressive, you can easily split the reed in doing this). After awhile, the edge of your tongue can really feel the cane on its surface. Now we are ready to specify the various areas of both the tongue and reed available to obtain different articulation intensities.



Tongue between reed and mouthpiece

The reed and tongue can be considered mirror images of each other. In fact, each can be divided into equal areas. For the sake of this discussion, I will call the very edge of the tongue and reed, area 1, which if visualized, would be about 1/16th of an inch in from both of their edges. Area 2 would extend from the end of area 1 to about 1/4th of an inch in from both edges. Area 3 would extend to about 1/2 of an inch or

more in on the tongue and reed. Again, the measurements are approximate depending on each individual and also whether the reed is alto, tenor, soprano, or baritone. But the basic proportions hold true. From this description, you should observe that there are many choices as to which part of the tongue is used and where on the reed the tongue strikes. The *EE* position described above utilizes the Area 2 position for both the tongue and reed. This is a good, neutral starting place from which other combinations can be obtained. As you move from areas 1 to 3 on the reed, and tongue, the intensity and attack become stronger and more bold. Pronounce the following sounds to demonstrate various positions of the tongue striking the reed. Say *TEE* using the most forward part of the tongue, say *DEE* back a little, and say *Ke-Ge* to feel the back of the tongue.

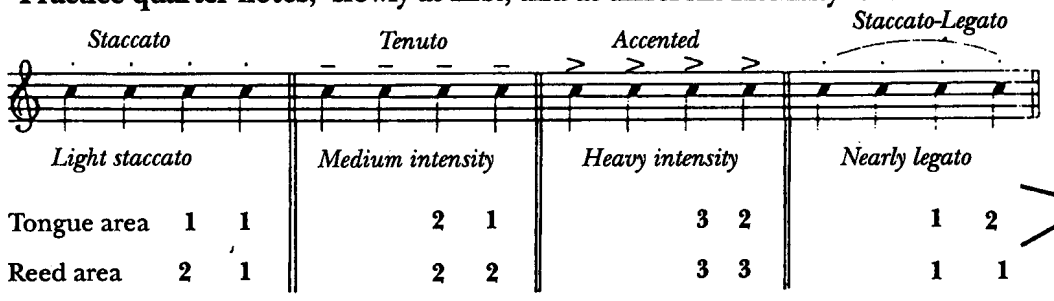


For help in identifying the areas of the front portion of the tongue striking the reed, we can use various articulated sounds, which by their pronunciation provide a good visual image. As far as the reed is concerned, you have to use your imagination in order to sense the various areas being attacked by the tongue. Once again, the difficulty of describing sound on paper presents itself. Remember, the guide sounds are only to aid you for visualization of the activity taking place. Some examples of these sounds along with their various tongue and reed combinations are:

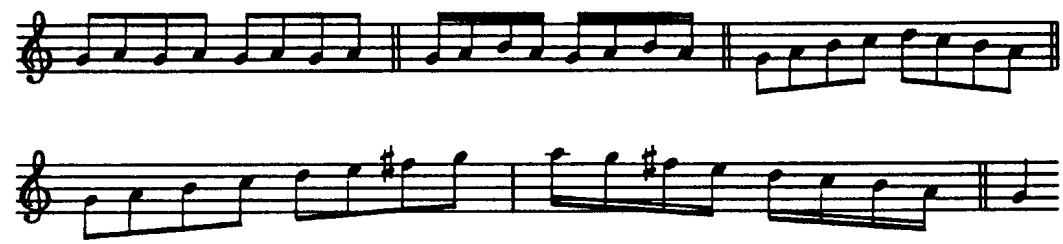
The lightest tonguing would consist of stroking the reed very delicately on area 1 using the sound of the letter T. Duplicating any of the actions described previously about tongue position places the edge of the tongue directly behind the top teeth (tic, dit, tu). This is the correct position for this light form of tonguing, which is extremely subtle and difficult to establish. It also means that area 1 of the tongue is used as well.

The word *THE* pushes the tongue further forward under the tip of the teeth. The portion of the tongue hitting the teeth is close to area 2.

Practice quarter notes, slowly at first, and at different intensity levels:



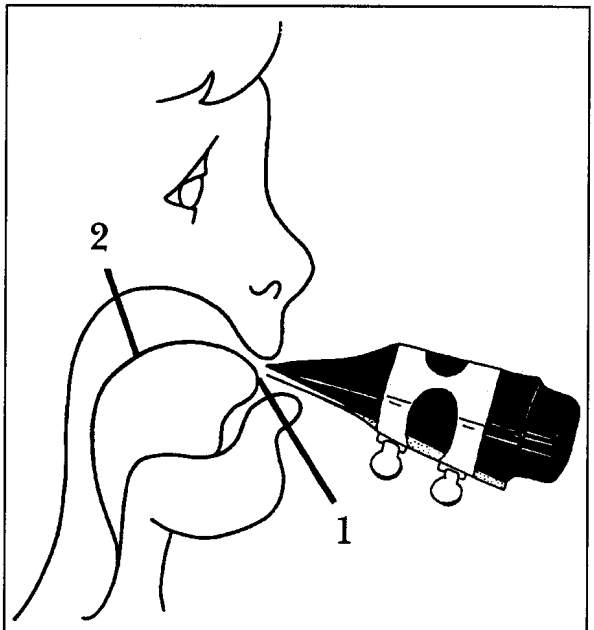
Gradually extend the range and increase the speed to 16th note motion.



The letter N causes the tongue to strike behind the teeth and upward toward the roof of the mouth. The area of the tongue being used is 3. It is this largest surface area of the tongue striking area 3 on the reed which produces the most intense articulation, sometimes referred to as "slap" tonguing.

Staccato articulation can be light or aggressive on any part of the tongue or reed. The important element is that immediately after the initial articulation, the air is quickly closed off by placing the tongue back on the reed and holding it there momentarily.

Combine all areas of the tongue and reed in various ways. For example, try to use tongue area 3 on reed area 1, or try tongue area 2 on reed area 3. The point is to develop a sensitivity for subtle differences and shadings. The division into three areas is in itself arbitrary. It could be more or less. The idea is to use your imagination and discover the many degrees of intensity yourself.



Double Tonguing Possibilities
teh-keh, teh-keh, etc.
keh-teh, keh-teh, etc.
keh-teh, teh-keh, etc.

Triple Tonguing Possibilities
teh-keh-teh, teh-keh-teh, etc.
keh-teh-keh, keh-teh-keh, etc.
teh-keh-teh, keh-teh-keh, etc.

Double Tonguing
1. The front portion of the tongue strokes the reed.
2. Hump portion strikes the roof of the oral cavity.

DOUBLE AND TRIPLE TONGUING

On the saxophone, the techniques of double and triple tonguing are not as effective as on the flute, but for a unique articulation, these colors can be quite useful. Double tonguing consists of two movements: one is similar to regular tonguing which would be the front area of the tongue stroking the reed as in teh. Immediately following this initial attack, the hump portion abruptly rises up striking the roof of the oral cavity which in turn stops the air flow from the larynx. This gives the aural appearance of a second tongued note. The feeling in the mouth for the second stroke is like saying any of the sounds, *keh* or *kuh*. Another way to approximate this feeling is close to the sensation of coughing. The double tongue sequence sounds like *teh-keh* or *tuh-kuh* repeated rapidly. Triple tonguing combines double tonguing into triplet combinations, *teh-keh-teh* followed by *keh-teh-keh*. Both techniques are a matter of timing and slow practice and can be combined in all ways.

Note: There are numerous syllables useful for hearing as well as conceptualizing various shadings of articulations. Some examples are tee, tay, la, lou, dee, day, etc. They differ from each other in that voice activation and the vowel sounds after the initial attack bring about different results.

It is important to realize how the various elements of tongue and reed placement are related to each other, so that one becomes aware of the many varieties of articulation available. The point is to experiment with all the possibilities in order that a flexible approach to, and a heightened sensitivity of the relationships are achieved for musical results. ■

Chapter Six
The Embouchure

The final portion of the air stream's voyage before entering the mouthpiece concerns the various physical parts of the embouchure area. Obviously, the teeth, lips and jaw are all connected and function together to 1. hold the mouthpiece, 2. regulate covering and uncovering of the reed, and 3. provide the source of many expressive nuances. We will consider each element separately.

UPPER TEETH

The upper teeth function as a receiving body for the chewing motion of the lower jaw and its connecting teeth. These uppers should lie naturally in a position relative to the bottom teeth (natural bite) without any separate consideration. The upper teeth exert a natural downward pressure because of the body weight of the head. Therefore, it is important to avoid leaning the head too far downward. This clamping down inhibits the vibrational capacity of the reed and even more importantly, it exerts an undesirable strain on the laryngeal area therefore producing a pinched sound. You can practice avoiding this downward bite and using lighter top teeth pressure by attempting to play with the upper lip only on top of the mouthpiece. This exaggerated position called double embouchure or double lip is useful as an exercise as well as quite difficult to do. When accomplished, this demonstrates that top teeth pressure is unnecessary for sound production. The only situation where the upper teeth would exert a little more pressure and also move more forward on the mouthpiece would be a musical situation when the color desired is extremely loud and percussive for an extended period.

LOWER TEETH

The initial placement of the lower teeth on the reed should be opposite the point where the facing begins on the mouthpiece. Concerning pressure, the situation is similar to the discussion above about the top teeth. In this case, one must avoid biting up more than is necessary to hold the mouthpiece. In fact, there should be more of a conception and physical sensation of holding the reed, rather than the mouthpiece.

One of the universal laws of motion formulated by Isaac Newton states that for every action in one direction, there is an equal and opposite reaction. For the saxophonist, this means that the upward jaw pressure (which of course includes the lower teeth) should be equal to the downward head pressure (felt through the upper teeth). The bottom line is that both pressures should be light. In fact, the needed jaw pressure for playing the saxophone is not much more than what a new born infant uses when sucking the thumb or milk bottle. In its simplest terms, this upward pressure is similar to a chewing motion exerted by the bottom lip and jaw. Another way to feel this motion is to notice the movement used to pronounce the syllable *EX*. This upward bite can produce as much as 100 lbs. of pressure or it can be as little as 1 oz. Chewing is an extension of articulating language; in fact it is impossible to recite the alphabet without a chewing motion. It is a very basic human activity. The following formula summarizes the relationship of the upper and lower teeth:

F (force)	**=**	**R (resistance)**
lower		**upper**
teeth		**teeth**

In physics it is known that force is applied in the direction of the object, the state of which can change. In this case the object, whose state is being changed, is the reed. The jaw and lower teeth are applying the force and the direction is upward towards the top teeth. But this force is minimal and only enough to hold the mouthpiece. It is the lower lip covering the bottom teeth which will cause the state of the reed (covering/uncovering) to change. You can check whether there is too much pressure from above or below in a simple way. Using left hand fingerings place the thumb of your right hand under the jaw and one finger in the corner of the mouth. As you play the low and high octave, you should feel as little tightening as possible.

UPPER LIP

The upper lip is in its natural position which is adhering lightly to the top teeth while resting without pressure on the top of the mouthpiece. The sides of the upper lip meet and naturally fold over the lower lip at the mouth corners. This is in part due to the natural downward pull of gravity. There is no need to tighten or pinch the upper lip which would cause strain to the laryngeal area and inhibit reed vibrating capacity. To avoid downward pressure, try to play a long tone and raise the lip off of the mouthpiece. You can do this difficult feat by using the right hand fingers to manually flap the lip up.

LOWER LIP

The movement and position of the lower lip is next in importance to the laryngeal adjustments. Without a proper understanding of lower lip function and correct placement, the flexibility needed in the larynx will be of little use. The lower lip acts as a buffer zone between the lower teeth and the reed. There is a remarkable similarity to the action of a piano when the hammer, covered by the felt, hits the string in order to excite and vibrate it. The lip, like the felt, absorbs the higher and extreme overtones as a natural physiological function. But there is a secondary function for the bottom lip which is under the player's control. That is the covering and uncovering of the reed for producing all the notes from the low through high registers. There is a direct correlation between the amount of reed allowed to vibrate due to the combination of air stream directed by the vocal cords, the degree of the lip's contact on the reed, and the length of the air stream going through the horn dictated by the fingerings. Each note fingered on the horn has an optimum vibrating spot on the reed. To find this optimum spot it is necessary to experiment by covering and uncovering the reed with your lower lip.

When playing low notes it is the inner lip rim which vibrates, while on high notes, it is the outer lip rim. This is facilitated by a slight forward and backward rolling motion, not up and down (biting). The ear is the supreme judge of the constant and minute adjustments taking place. But if there is not sufficient lip cushioning on the reed, this motion will be impossible to do without requiring both the mouthpiece and horn to move. As stated earlier this cushioning also buffets the harsh overtones which would ordinarily be present. This allows more of the fundamental to be heard in the sound, which is coincidentally one of the major goals of the overtone exercises described in chapter four. To start, we must focus on how to get the fleshier part of the lip on the reed. Then, we must examine how lip pressure applied to a certain spot will result in the needed manipulations.

For lip location we are attempting to get the more inside, fleshier, portion on the reed rather than the outer rim. Since every saxophonist has a different facial structure, it is impossible to exactly describe how much bottom lip should be rolled out. There is a convenient guideline available. When you pronounce the letter V as in the word "victory" (referred to as the "V" position), your lower lip is automatically in touch with the upper teeth; actually six

teeth. Imagine an imprint being made on that line and place the mouthpiece there. Consider this the neutral or starting position for middle register notes B or C, from which the necessary forward and backward rolling motion needed to play high and low register can begin. The lower teeth lay immediately under the lip and should be able to feel the sensation of the reed through the cushioned surface.

For some saxophonists, the bottom teeth are quite jagged and can cause a lot of discomfort as they cut into the bottom lip. Although a protective callous eventually forms, the problem can persist. If this is the case, place folded cigarette paper over the bottom front teeth providing a cushion. This will soften the jaggedness without affecting playing. The best permanent solution is to have your dentist lightly grind the edges down. Up to a point, this can be done safely and quickly, without any pain. I have had this done and rarely suffer discomfort.

Turning to the actual movement at the reed, we summarize the activity: for high notes beginning around high B or Bb (above the staff), the lip must gradually increase the amount of reed uncovered by rolling away from the edge of the reed, resulting in less of the lip's fleshier area on the reed. For low notes, the lip must cover more reed by moving towards the reed's edge and away from the lip's outer rim. Observing flute players demonstrates a clear example of this lower lip rolling motion, except without a reed. Both movements involve opposite pairings as far as the lip and reed are concerned. But even with this movement, the goal is to never lose the initial beginning spot on the reed from which the inward or outward rolling commences, as well as where the pressure is applied. There is an exercise to help develop this sensitivity for finding and maintaining this spot.

Measure between three quarters of an inch and one inch down from the top edge of the reed. On the playing surface, mark with a notch. This is for a tenor reed, adjust accordingly for other sizes. Hold the reed in the normal playing position and place the upper lip's outer rim opposite the notch. Now move your bottom lip to cover more and more reed gradually, beginning from the V position. Do this until about 1/8th of an inch of reed is still left uncovered at its edge. The idea is to accomplish this without moving from the spot where the upper lip is. For exaggeration purposes, eventually try covering the entire one inch. If the upper lip stays opposite the notch while this movement is taking place, then the bottom lip has successfully found its spot on the reed as well as its own place for moving in and out; in otherwords, the V position.

The reed must evenly touch the mouthpiece in three places: the two side rails and the top edge. If the corners of the lip curl around the sides of the mouthpiece, this will pinch the reed unevenly even with the bottom lip trying to adjust correctly. In order to minimize this tightening tendency, do the following exercise, similar to one previously described in relation to the bottom jaw and teeth pushing upward. Using left hand fingerings, play some notes and at the same time, place two fingers of the right hand in the corners of the mouth on either side of the mouthpiece. Press these fingers down on the lip corners, offering some resistance to the curling tendency. After a few minutes this way, remove the fingers and you may have an easier time keeping the lips straight and relaxed. With practice, curling should be eliminated.

In summary, the goal is to be as relaxed as possible in the embouchure area, so that the delicate mechanisms at the reed can be free to occur without exerting a strain on its vibrational capacity. This also assumes that there will be no corollary pressure on the laryngeal area. ■

Chapter Seven
Reeds And Mouthpieces

Finally, our voyage of the air stream is entering the saxophone. We now are in the area of equipment and how to make an imperfect situation as advantageous as possible. What could be worse than having all the preceding work destroyed because the tools are not in order? Although much of this area is beyond an individual's control, there are many aspects to be aware of when obtaining the necessary equipment. Also, improvements can be made on some of the factors involved, easing the situation slightly.

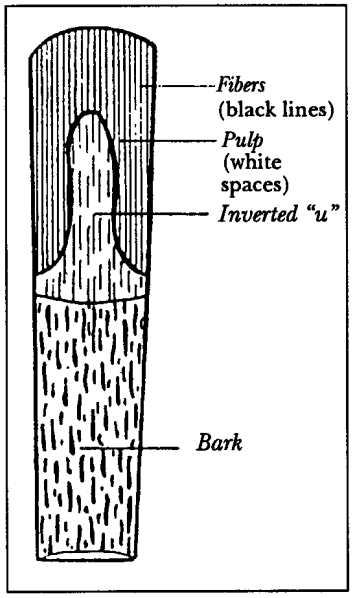
REEDS

Reeds are notoriously inconsistent, as most saxophonists realize. Unfortunately, there has been a drastic drop in quality as demand has outstripped supply. Even the color has changed from a tan or yellowish cast to very white. Some saxophonists use plastic or plastic-coated reeds, primarily because of their consistency and longevity. In any case, learning how to adjust reeds of any persuasion is a necessary tool.

Concerning all reeds, choosing the proper strength depends on the tip opening of the mouthpiece, personal physical characteristics of the musician, and the type of sound desired. In general, a reed must have a certain amount of resistance in order to obtain a wide variety of colors and shadings. If a reed is too soft, manipulations may cause it to shut down on the mouthpiece. There would be just too much play in the reed.

SOME PROMINENT EXAMPLES OF THE INTERACTING VARIABLES CONCERNING REED STRENGTH ARE:

□ Large opening mouthpieces usually warrant a softer reed and small openings require a harder one.



□ In general, a softer reed produces a combination of brilliance and clarity along with an airy, velvety bottom register, but with the problem of a thin upper register.

□ In general, a harder reed will generate a more percussive and biting tone throughout the horn's range.

□ Either too hard or soft a reed, if taken to an extreme will produce unmusical results.

THINGS TO LOOK FOR WHEN SELECTING A REED INCLUDE:

□ Check the tip for hairline cracks by lightly pressing the nail of your thumb along the back of the edge.

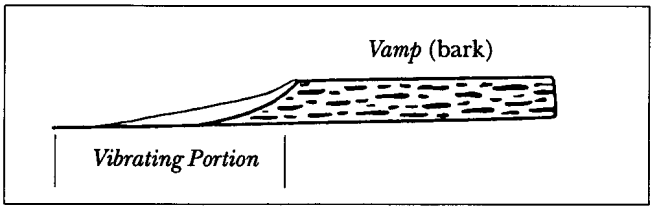
□ Check resistance in the same way. The tip should bend slightly, although there may be a difference between each corner.

□ Holding the reed up to a light, look for an upside down 'U' shape of darkness in the middle of the reed. This is the heart where the resistance lies. The darker color suggests more resistance, which in turn means that adjustments can be made.

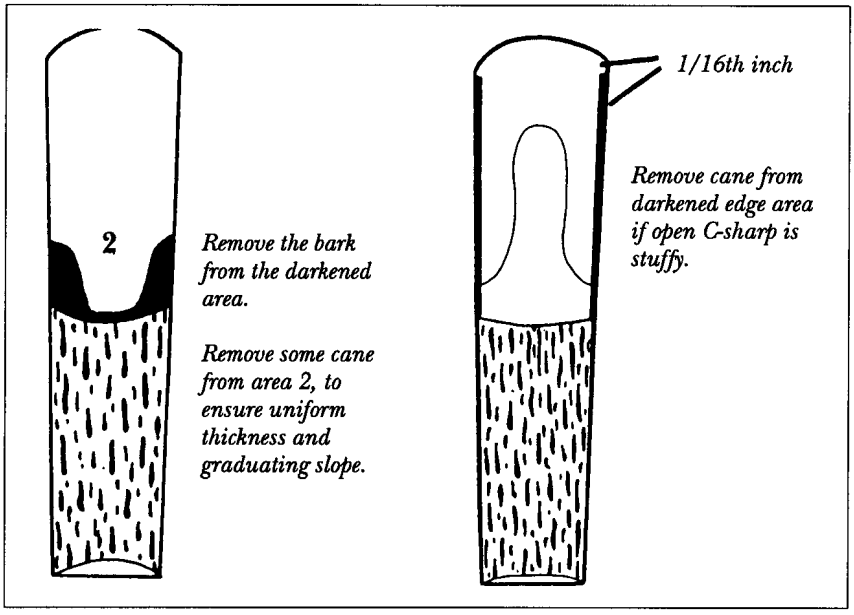
□ Looking at the reed from the side, check the angle of inclination from where the vamp ends and the actual vibrating material begins. It should be as gradual as possible.

□ As closely as it can be, the edge of the reed should adhere to the curve of your mouthpiece; after all this is the surface which the reed closes down upon.

□ Try to pick a reed with a greater number of fibers. These are the lines running up and down the reed. The white spaces in between are the pulp. It is the fibers which actually vibrate. Again, hold the reed up to a light source for examination.



Adjustments are possible using a knife and fine sandpaper which can almost tailor a reed to each individual's needs. The particular desired response can be altered. Of course, making your own reed from scratch is possible, if you can afford the time. I think with some of the advice described here, you can substantially improve commercially available reeds.



You cannot place fibers into a reed, but you can selectively cut them down. The concept of clipping a soft reed in order to stiffen it up is not a good idea. In essence, what you are doing is cutting down the fibers lengthwise. This decreases the vibrational capacity of the reed and makes it appear stiffer, but what you've done is muffle the sound. Therefore, since it is not advisable to attempt making a reed harder, it's a good idea to choose reeds that are 1/2 size above what is totally comfortable to blow. You now have something to work with. Before beginning work on a new reed, soak it for at least twenty minutes in water and let it dry. This allows the fibers to expand and contract which is what occurs naturally during and after playing.

The first adjustments will be on the bark area freeing the reed's vibrations without actually lessening the resistance. It's a little like taking off a blanket causing the reed to sound more lively. For some reeds, this is quite important because the bark area is well pronounced, but even on reeds where the bark in not clearly delineated, this technique will add tonal capacity to the reed.

Using either a reed or regular knife, with gentle strokes, take the bark off the sides of the center on the top surface of the reed (indicated in the diagram). Take enough off so that the obvious brown bark disappears or as in the case of some reeds, the different textured white area. At the same time notice the angle of inclination when viewing the reed sideways. Try to get this to be as even and gradual as possible. Consequently, you must remove some of the cane from the middle of the reed parallel with the bark line so that the thickness is uniform. Clean up and smooth out the work using Emery cloth, grit 400-600 (a very fine sandpaper), or reed rush. You should notice more liveliness in the reed when playing.

Next, try to even out the vibrations from side to side on the reed. Play an open C sharp and by tilting your head, open up one side of the mouthpiece so that you are only vibrating the other. Do this for both sides and notice if there is a difference in response and openness of the sound. If one side is more muted, remove some cane

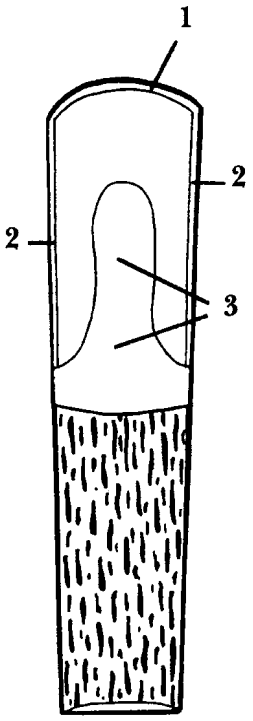
1/16th of an inch in from that side beginning at the vamp up to 1/16th below the edge. You can facilitate this by drawing a thin pencil line as a guideline where you need to cut.

You want to be sure that a particular reed does not have warped sides because there will be a leak at that point negating the efficiency of the air stream in vibrating the reed. Holding the mouthpiece in one hand, place the palm of the other hand over the mouthpiece opening, in effect cutting off the air supply. Then suck the remaining air out. When you take the mouthpiece out of your mouth quickly, there should be a popping sound. This indicates that the sides of the reed are covering. If there is no sound, try adjusting the ligature. If not, the reed is warped, has lost resistance, and will not play well. Sanding may even it out.

As a generally advantageous position, place the reed in such a way that at eye level, one can see a slight crescent outline of the mouthpiece's top edge. Placing the reed higher adds resistance while conversely, lower placement makes it play more easily. The ligature should be a little lower that the end of the facing. Placing the ligature even lower gives the feeling of increased resistance, because in this position the angle of the reed on the mouthpiece creates a slightly larger opening at the edge.

In order to protect a reed somewhat from the eventual breaking down of the fibers and accompanying loss of resistance due to the acidic contents of saliva, you can take a new reed and seal it after final adjustments have been made. Press down the fibers on the back and front with a spoon or other metal object. This will cause them to close down. Then use the back side of your sandpaper or any smooth white paper to rub a sort of sheen onto the surface of the reed. Do this on both sides. This process produces a wax-like finish which will help to deflect the saliva for a while. You may wish to wait a day or two to seal after playing on a new reed so that the fibers finish contracting and expanding, which they are prone to do at the beginning of their break-in period. After playing a reed for a while, you can check on how the seal is holding by placing the butt end (bark) of a wet reed into your mouth and blowing hard. If little bubbles pop up on the reed, then try to re-seal it.

Finally, to fine tune a reed to one's needs, determine if there is too much resistance in a specific register. Is the reed too hard in the high notes only, or the lows exclusively? Or is the entire reed still too resistant even after the initial bark uncovering took place? If it is the upper register, using Emery cloth, carefully rub the area from 1/16th of an inch below the top edge upward in order to take cane off. For stuffy low notes, take off cane 1/16th to 1/4th on an inch in from the reed's sides at first. As a last resort, carefully sand the heart itself. When doing this, be very careful not to take too much off because the reed will then lose all resistance. If all the ranges are resistant, rub the back of the reed across sandpaper, thereby removing cane from the entire length of the



1. *Sand in this area if upper register is too resistant*

2. *Sand in this area if low notes are stuffy.*

3. *Sand in this area (heart of reed) if step 2 leaves low notes still stuffy).*

reed, or sand the entire front vibrating area. In general, the high and low registers of the saxophone correspond to the equivalent area on the reed itself and pure common sense will work. Manipulating reeds takes time to learn, but after experience coupled with trial and error, you can at least make a less than good situation tolerable.

MOUTHPIECES

(See mouthpiece diagram on page 36)

Mouthpieces, even more so than reeds, are a difficult topic because one's choice is so subjective. Each player must find that mouthpiece which will enable him to play with maximum comfort and expression. But one musician's definition of what is meant by a bright or dark tone is by nature different from another's. It is much like a discussion about what is dissonant and consonant. Common sense dictates the desirability for the most flexibility concerning the musical areas of dynamics and timbral qualities. A saxophonist should be able to play soft and loud on the same mouthpiece as well as having a variety of colors available from dark to bright. From my experience however, the mouthpiece is secondary to the principles described in this book. If a saxophonist is secure in the physical workings, particularly the overtone feeling and laryngeal sensation by which the image of producing each note becomes ingrained, he should be able to get his sound on almost any mouthpiece reed-horn combination.

GIVEN ALL OF THIS, THE FOLLOWING ARE COME CONSIDERATIONS IN CHOOSING A MOUTHPIECE:

□ The physical characteristics of the saxophonist in combination with a particular mouthpiece are important. This means that although a certain amount of resistance is necessary in the set-up, there should not be a great deal of discomfort or effort to produce the tone. An opening that is too large can cause the physical effort to be so intense that the musical outcome will suffer. An opening that is too small causes frustrating discomfort.

□ Practical considerations depend on the situation in which one plays. A jazz soloist for example may have different volume requirements than a classical player, just to name one variable. Another example is the difference between saxophonists who must blend with an ensemble as in an orchestra, big band or studio situation and those who are primarily soloists. Even within commericial styles, there are different requirements between a funk, Latin, R&B, Top 40, or dance band musicians. Some musicians have different mouthpieces for various situations in which they may have to perform.

□ Aesthetic considerations are concerned with a musician's personal definition of his sound requirements. Volume, timbral change, and nuance possibilities are some such considerations. Through trial and error, along with analyzing other musician's sounds and keeping an open mind, a saxophonist slowly begins to discover what he prefers in a sound.

FROM THE STANDPOINT OF MOUTHPIECE CONSTRUCTION, THERE ARE SEVERAL GENERAL VARIABLES AND OPTIONS AVAILABLE IN MOUTHPIECES AT PRESENT:

□ Chamber sizes range from narrow to very open. The shapes vary from straight, round, and square to scooped. Fatter side walls and rails usually lead to a duller, darker sound than a thinner configuration. Each shape has different characteristics.

□ Tip openings from small to large interact with reed strength to help determine resistance and timbral quality. Of course, each brand of mouthpiece has its own specific range of measurements. Refer to the "Application Chapter" on page 45 for some unmusical results of certain combinations.

□ Baffle height affects the brightness or darkness of a tone. A higher baffle deflects the incoming air to a more direct angle resulting in less resistance and a brighter

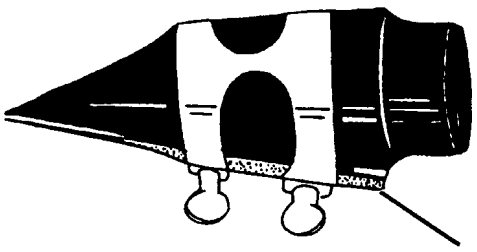
tone than a lower construction.

□ Length of lay or facing measurements mean that a longer lay causes the reed to vibrate more intensely. This results in the mouthpiece appearing to feel more open than what you would expect from only the tip measurement.

□ Materials for mouthpieces range from brass, wood, hard rubber, plastic, stainless steel, and glass, to other exotic combinations. Their characteristics and tonal properties are unique to each material and must be tested and learned through experience. In general, the metal mouthpieces have a more brilliant, compact sound and feel to them. The overall exterior shape should be considered because of how it feels in the mouth itself.

As described in the "Overtone Exercises Chapter," you should be able to play the range of a tenth on the mouthpiece alone after some practice. Besides the aforementioned benefit for cognition of the larynx area, this helps in determining the suitability of the size of the tip opening in combination with reed strength for each individual. If the reed closes up before the range is completed, then either the reed is too soft or the opening too small. If the reverse is true and you cannot close up for high notes, the opening is too wide and/or the reed is too hard.

Experimental Wedge Placement



Place the wedge in this area

In order to artificially feel what a smaller opening might be like for experimentation purposes, insert a wedge-like object (piece of folded paper or matchbook) under the very bottom of the reed near the barrel and play. In effect, this closes the angle of the reed at the tip and gives you the approximate feeling of a smaller opening.

Overall, it seems most beneficial for maximum dynamic flexibility and coloristic range to try using medium to hard strength reeds and middle sized mouthpiece openings. One is then not limited to extremes and can exert more expressive control.

Many saxophonists are tempted to alter a mouthpiece's characteristics, especially the critical baffle height which affects the quality of brightness and darkness. With file in hand, there are countless horror stories of mouthpieces undergoing plastic surgery in the hands of many an unlicensed doctor. You should think twice, especially with metal mouthpieces because of the difficulty of restoring what you've altered. It is better to take a mouthpiece to an experienced technician rather than ruining it. Remember that all the variables on a mouthpiece interact. Changing the measurements of one facet affects the others.

All of these factors, which are very technical, will pale in comparison to more personal matters. One usually begins by trying to imitate his idol or teacher especially in one's formative years. This leads the saxophonist to try that particular musician's setup. As times have changed and styles of playing have evolved, different fads became popular. For example, the older jazz tenor players of the bebop style and prior, often used smaller opening mouthpieces with medium reeds. They played in a kind of sub-tone fashion, bending their heads down and dropping the jaw as they played to get certain notes and nuances. As the volume of the accompanying instruments increased, saxophonists needed more highs in the sound than the darker sound of older jazz players. Dexter Gordon is a prime example of a dark sound, while John Coltrane was influential in popularizing a brighter tone. In classical playing, styles have also come and gone. There is nothing wrong with learning from the immediate environment and other people's direction and advice.

In the final result, the artist must make up his own mind. He must find that mouthpiece-reed strength which will enable him to be the master of his sound, rather than the reverse. It must feel good to blow!

■

Ask yourself these questions:

- ☐ *Am I working too hard or not enough?*
- ☐ *Am I getting those dynamic and coloristic nuances I want throughout the range of the horn?*
- ☐ *Is the intonation correct?*

One thing is for sure about mouthpieces, there is no perfect mouthpiece and the search for it is eternal!

THE SAXOPHONE MOUTHPIECE

Mouthpiece Parts

Baffle

Beginning at the inner edge of the tip rail, roughly the first 1/2 inch of the floor. Can be flat, concave, or convex in contour.

Barrel

The portion of the mouthpiece upon which the ligature rests.

Beak

Portion upon which upper teeth usually rest, sloping from tip to barrel section.

Bore

Round portion inside the shank and barrel which slips over the neck cork.

Chamber or **(Tone Chamber)**

Interior of the mouthpiece, formed by the floor, baffle, ramp, walls, and reed when in closed position against the rails, extending from the tip rail to the bore.

Facing also **Resistance Curve** or **Lay**

The curving configuration of the side rails which allows the reed freedom of vibrational movement.

Floor

That portion of the chamber from the baffle to the throat, as seen when looking down into the mouthpiece through the window. Of various configurations.

Ligature Lines

Grooves cut around some mouthpieces on barrel section to denote optimum positioning of ligature.

Ramp

The inclined segment from the end of the window to the throat, or beginning of the bore segment.

Shank

End opposite the tip, usually smaller in diameter, giving more positive hold on neck cork.

Side Rails

The side supports for the reed, along the sides of the window, extending to a meeting with the ends of the tip rail.

Table

All of the flat portion upon which the reed lies, from the shank to the beginning of the facing curve.

Vamp or Throat

The juncture of bore and tone chamber. The shape, as viewed through the bore from the shank end, varies from round to square, depending on the manufacturer.

Tip Contour

Shape of tip rail when viewed from reed side. Normally conforms to shape of reed tip.

Tip Rail

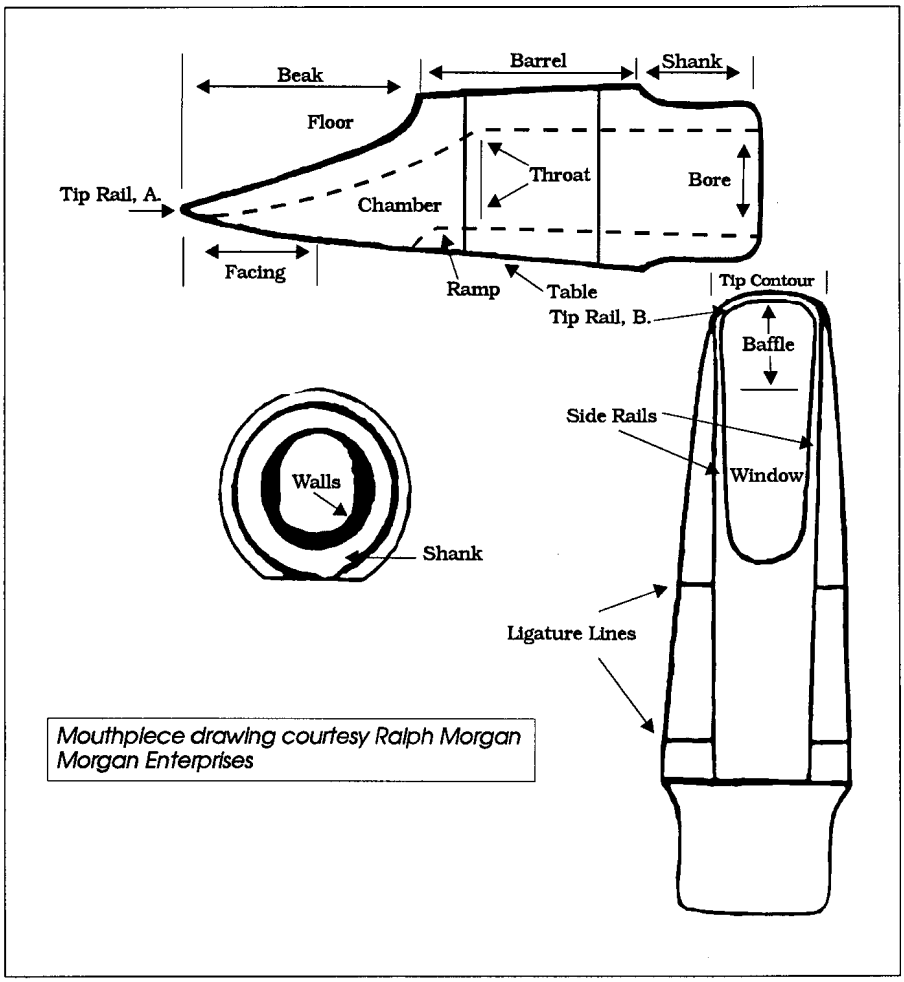
Has two dimensions; A. The frontal thickness when viewing the mouthpiece head-on. B. The width, pertaining to the amount of surface coming in contact with the tip of the reed.

Walls or **Side Walls**

Right and/or left, when looking down into the chamber through the window. Depending on the design and tonal requirements, will be flat, concave, convex, or a combination of these.

Window or **Vent**

The open portion under the reed, outlined by the rails and acting as a passageway for the air column through the mouthpiece.



Mouthpiece drawing courtesy Ralph Morgan Morgan Enterprises

Chapter Eight
Expressive Techniques

A sound envelope has a multitude of accompanying characteristices. Its onset includes the kind of articulation ranging from staccato to legato. The body of a note may evidence dynamic changes and vibrato as it develops. Finally, the note's release or decay includes dampening effects and possible use of terminal vibrato applied near the end of a note's sustain. Pictorially, a note corresponds to the image of a fish: attack = head; development = body; decay = tail. In other words, every note includes all of these elements, no matter how brief. At any stage, the artist can apply tonal nuance. Simply put, more important than what is played, is how something is played. Also, the concept of portamento or how one note attaches to another is crucial. The use of nuance alongside one's tonal characteristics is the major vehicle for portrayal of an artist's personality. Because there are so many possibilities in this area, it becomes clear why it is impossible for a musician to exactly repeat himself, even when playing the same notes!

Any technique is valid for furthering one's personal expression, as long as it is within the bounds of artistic and musical taste. Obviously, what is good or bad taste depends on context and the subjective aesthetic judgement of the artist himself. Throughout this book, I have been emphasizing ease and efficiency in tone production in order that the remaining energy can be used for just such expressive purposes. In the final result, the ends justify the means. For example, if in placing the mouthpiece very far in or out of the oral cavity a different color results, then so-called improper technique is justified. Or if the tongue is deliberately placed lower in the mouth cavity and a unique color is produced, then again technique was used properly to further artistic desires. The main point is that decisions should be made purposely by the artist and not through ignorance of more efficient methods to achieve a given result. Implied in the expression, artistic license, is the implication that one has explored an approach and understood it before discarding it and hastily moving to other methods. Some expressive nuances that can be explored are pitch bending, air sounds, buzzing, growling, spit sounds, flutter tonguing, glissandos, key sounds, and voice effects.

Here are a few exercises for stimulating the use of certain nuances:

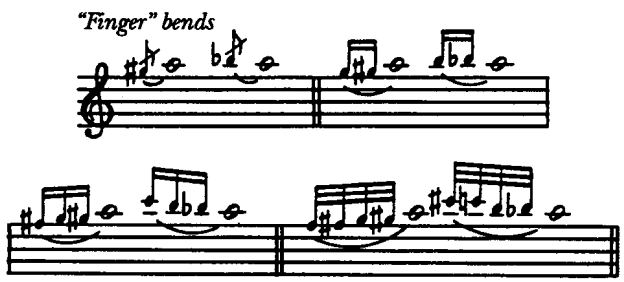
PITCH BENDS

Play a pitch and while holding it, loosen the larynx (which relaxes the air stream) allowing the pitch to dip as much as possible. Also allow the lip and jaw pressure to loosen which should result in even greater distortion of the original pitch. Move back and forth between the real pitch and the range of flatness. Try the reverse by tightening up for sharpness. This exercise can be helped by using an electronic tuner.

PORTAMENTO

Practice portamento by playing a grace note one half step above and below the target note. Work your way to a major second, minor third and major third fingering all the notes in between as quickly and smoothly as possible. The effect is a severe pitch bend or short glissando, but completely executed by the fingers and not the larynx or lips. After awhile, try this in combination with the lip and larynx as well as the fingers.

Finger Bends Exercise



PRE AND POST TONES

For dynamics and precision in the beginnings and endings of a tone, start with an air stream (pre-tone) and slowly let it evolve into a full bodied note. Bring the volume up as loud as possible and then reverse the process ending with air as in the beginning (post-tone). Remember to keep the pitch steady while fluctuating the volume. Be aware of the subtlest connection from air into the onset of the actual note, as well as avoiding an abrupt cut off at the end of the tone.

MUFFLED AND QUARTER TONES

Experiment with all kinds of muffled or quarter tone fingerings as well as overtone fingerings for color differences on a pitch. There are a variety of books available, some listed in "Recommended Saxophone Books," with suggested fingerings, but self-experimentation is the best route for finding the correct combination of fingering, laryngeal and embouchure manipulation. By using a tuning machine all variations of intonation are measurable, including third and fifth tones.

VOICE

Try using the voice as a note is played. Do it in unison and in harmony. Try growling, shouting, or gargling effects. Loosen up and let the body experiment.

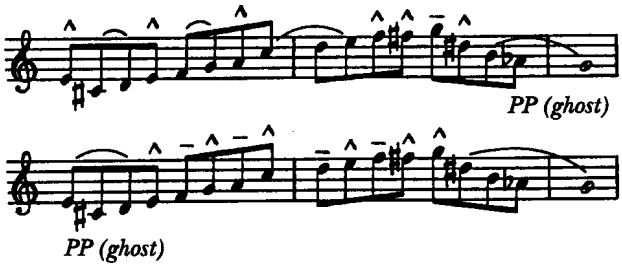
DYNAMICS

For control of wide differences of volume levels, a technique which is quite important particularly in classical playing, play one note from *ppp* to *fff* to *ppp*. You will find it necessary to roll the mouthpiece in as you increase the volume and out as you decrease in order to stay in tune. This is all accomplished by the bottom lip mechanism. It is similar to an earlier exercise described which was to play a scale on the mouthpiece alone. This movement also demonstrates coloristic changes as the bottom lip surface area varies on the reed.

ACCENTS

The use of accents is crucial to phrasing, especially in jazz where it is not predetermined. Entire saxophonist's styles can be described in terms of how they use accents. The "ghost" or "swallowed" note in jazz refers to a note which seems to disappear in the midst of a melodic line. This is because

Ghost or Swallowed Accents



the particular pitch is played with a very light tonguing as well as a soft dynamic in relation to surrounding notes. Practice any line, scale, or pattern with varied intensities of accents placed in all different places.

MISCELLANEOUS

□ Flutter tonguing

This is similar to the sensation of gargling with water. It is a combination of a vocal growl and air activation causing the hump portion of the tongue to vibrate rapidly, giving a note a distinctive color.

□ Sub-tone

As referred to earlier, this dynamic device is caused by backing the bottom lip off towards the edge of the mouthpiece. The bottom lip is extended out as much as possible covering the reed. Also, the air stream must be quite light in its intensity.

Expression is a direct extension of how

one speaks. Study your own way of speaking for discovering individual expressive nuances as well as your body language and facial expressions. And, of course, study how others have done it.

Other, more extreme sounds, are possible by removing the bottom lip "buffer" and biting up on the reed with the teeth producing high squeels. Sucking in air on the mouthpiece causes a highly percussive, popping sound. Multiphonics of all combination are dependent upon lip and air pressure, as well as fingerings, which in some way cause a "leak" in the air column. Especially useful for this purpose is the left hand palm and right hand side keys (Bb, high F, etc.)

VIBRATO

Vibrato is one of the most expressive and coloristic devices natural to the saxophone and all winds. As a guitarist can bend a note or a trombonist can play a dramatic glissando, the wind instruments are a perfect vehicle for vibrato. Vibrato originates in the act of singing which tries to imitate the ups and downs of speech inflection by using volume changes on a long note. For winds, it is a clear cut periodic manipulation of a note by rapid fluctuation and rhythmic pulsation of volume. These two factors tend to affect the partials of a tone at various relative strengths and weaknessess during the brief vibrato cycle, producing minute and subtle changes in tone color. This can be particularly heard on arias and ballads. Because vibrato is so linked with apparent pitch changes, it must be handled with special care or the result can be unmusical.

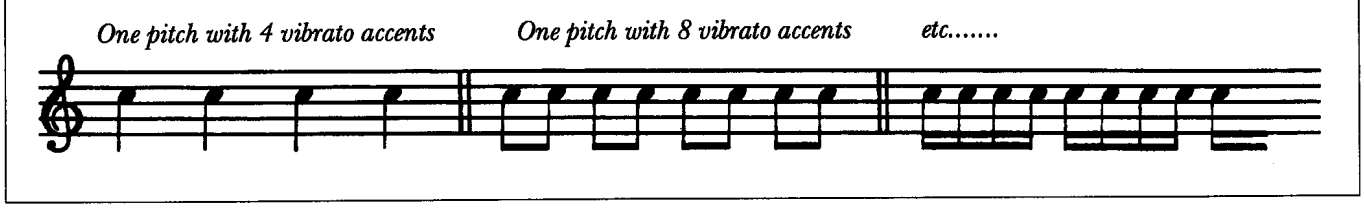
Manipulation of vibrato changes according to the range. Lower pitches, using a longer air stream, need more movement to achieve the same results, as higher tones.

The specifics of the vibrato cycle are speed (frequency) and intensity of vibrations (range). These variables should be used with great flexibility and a sense of variety which will enhance the personality and character of a phrase. For example, a note can begin with a straight tone, work its way into a slow vibrato and conclude with a wider cycle, called progressive vibrato. Or vibrato can be applied only towards the end of a tone; this is called terminal vibrato. It is quite effective to enhance a long descrendo on one tone, with a slowed-down vibrato.

The intensity scale of a vibrato cycle neatly corresponds to how it is physically manifested, ranging from overt to subtle:

- Bouncing the diaphragm is the most pronounced form of vibrato. This is similar to the feeling of quickly inhaling and exhaling noted in Chapter 2.
- A feeling of vibrating the larynx area or more exactly, the vocal cords which is used by vocalists.
- Moving the jaw in a quick up and down motion which dramatically effects the pitch, and volume, was favored by the jazz players of earlier eras as well as certain dance band styles such as Guy Lombardo.
- Backward and forward movement of the hump portion of the tongue towards the soft palate produces a peculiar and fairly subtle vibrato.
- The most subtle form is achieved by minute movements of the lips.

Variable Vibrato Cycle



By playing a long note and trying all of these possibilities, you can find many ways of producing a musical vibrato. Switch between forms; try to regulate the beats into even cycles; vary the speed and intensity. In general, think of vibrato mostly as a change of volume and not pitch, so that the result is musical. Most of all, remember that vibrato should not be used on every single note. It is only another nuance, which like all expressive techniques should add to the artistic result.

My ideal picture of a tone is an area which has width and depth. From that basic shape or color, I subtract elements or change proportions. I have always preferred a dark, mellow, rich tone. For me, the feeling at the mouthpiece must be resistant and always able to hold more input of air with no point of blockage.

I have found that by moving the hump portion of the tongue slowly up and down, I am able to affect the air pocket at the bottom of my mouth cavity directly behind the bottom teeth. Saying *YEAH* produces this sensation. This is quite effective for coloristic changes during sustained passages. Also, by varying the amount of my bottom lip on the reed in different places, the attack color is flexible. For me, vibrato is an everchanging color in both range and frequency. Higher notes are often times accompanied by vocal inflections and effects. In the use of expressive devices, I have been greatly influenced by avant garde jazz saxophonists. A fuller description of my style and concepts is detailed in *Self Portrait of a Jazz Artist* (Advance Music). ■

Note: My own personal style has developed over the years to a point where I use a similar approach to nuance as I do for rhythmic feel. This means a high degree of flexibility and variety. This important aspect of my style means paying attention to each aspect of a sound described above: attack, sustain, and decay. Because of the ease by which I produce the basic sound (through laryngeal control and a loose embouchure), I am able to concentrate on expressive techniques.

Chapter Nine
Practicing

In previous chapters, the principles of sound production have been explained along with some suggested exercises. You should notice by now that I often suggest an exercise be used for exaggerating such and such a feeling. This principle suggests that by going to the extremes, the less severe and more common situation will be easier to handle. Nothing in this book will make sense without hours of thoughtful practice. The concepts put forth are not concerned with heavy technique or hours spent playing finger exercises. The kind of practice here is slow, methodical, and requires a great deal of self discipline to accomplish. They are not so much difficult as they are time consuming and demand extreme concentration.

The goal of practicing is to establish habits enabling musical responses to become second nature. In a sense, practicing is trying to cause behavior to change from a conscious activity to an intuitive process. The less one thinks about a particular action, the more energy can be devoted to another area. In playing an instrument, the idea is to ensure that the needed physical and technical manipulations occur quickly and efficiently, so that a musical idea is immediately transferable from ear to mind to body with the soul (emotions) monitoring the entire process. I am of course referring to artistic music which calls upon the individual to come forth.

When practicing these concepts, it must be remembered that the strength of one's tonal image is the guide in the search for technical excellence. The point is to train the imagination to hear the sound desired and be able to dictate the necessary physical responses to the body. The process works in such a way that if the musicial imagination is strong enough, the necessary physical skills will be stimulated. The connection is between the inner ear and its capacity to prehear followed by the onset of a physical movement and its associated muscular sensations. All along the way critical listening is necessary for adjustments to be made. With practice, the stimulated cells of the auditory area in the brain's cortex become physiologically connected with the proper cells of the brain's motor area, producing a chain of motor responses. The number of repetitions needed to establish these conditioned connections and consolidate many movements into one smooth flowing line, depends on:

1. The simplicity/complexity of the motor act being performed.
2. The mobility of nervous processes of a given individual
3. The ability to concentrate on the real point at hand.

Through daily practice, this cycle can be constantly reinforced in each area of practice. Here are some general guidelines for practicing.

RITUALIZATION

A musician who is in a practicing stage must feel compelled to do it on a daily basis. It must be like eating or sleeping. Without it the day is unsuccessful. You should not skip a few days and try to make it up in one session. The most progress is made when the daily ritual and schedule of practice is observed.

The net effect of practicing is cumulative. Progress in some areas may be quick. For example, the concepts of tonguing or vibrato. But other aspects will only take hold after a long period of daily practice. Patience is a key to learning. Your level of playing may go down before it improves,

especially if you are attempting to alter customary habits used for executing a specific action. With the concept of ritualization firmly entrenched in one's daily schedule, improvement will become apparent.

OBJECTIVITY

One doesn't like or dislike practicing. It is something which must be done without an emotional attachment to it, or even passion. There is a part of the practice routine for creativity and expressing oneself. This is the actual playing portion with records or play-alongs, as well as composition. In particular, the daily rudiments and technical exercises should be looked upon with a neutral emotional or non-subjective state of mind. You just do it! Your involvement on an emotional level is minimal, but your devotion and concentration is intense.

ORGANIZATION

When settling upon a routine, stick to it consistently over at least several weeks. For certain exercises,like the overtone matching, this process may go on for years. Set your goals down in writing and keep a journal of what you have accomplished. Be aware that what you practice in the present time will take months or maybe longer to find its way naturally into your playing. There are several levels of goals which can be set:

Long range of 5-10 years
Medium range of 1-5 years
Short range of 2-15 weeks
Next week
This week
Today!

It is pointless for me to write general objectives in each category, because they depend on so many variables. Most of all, each individual is different. Teachers and peers can aid you in organizing, but ultimately, it is your responsibility to do it for yourself. If you are truly dedicated, objective and realistic about the goals set, only you can be inspired enough to realize them.

SINGULARITY

In connection with organization, try to have each practice event or exercise concentrate on only one, or at the most, two goals at a time. It is difficult for the mind and body to concentrate on more than this number of events simultaneously and achieve good results. For example, if you're practicing overtones, focus your concentration on the laryngeal feeling and obtaining smoothness of transition between overtones and fundamentals. Don't think about pre or post tones, vibrato, tonguing, etc. Or while doing a tonguing exercise, try not to think about the larynx. Be very specific about the elements of what and why you're actually doing a particular exercise.

PRIORITIZATION

Again, objectivity is crucial here. Decide on your most glaring weaknesses on the saxophone and practice them with intensity every day until you feel some improvement. Your time is valuable and there is far too much to do everyday no matter how many hours you spend. Since it is necessary to begin somewhere, it should be with those aspects of technique in which you are deficient. If you are objective and dispassionate, this can easily be done. Don't wait for your teacher or friends to tell you. For example, if intonation is a problem, practice matching the overtones to the natural fingering with that specific point in mind. Or if finger dexterity is slow, use exercise books and devote part of your daily regimen to them. Even listing the weaknesses and strengths you have may be helpful (see Application chapter on page 45).

PATIENCE

As mentioned, the goal of any practice is to either change wrong behavior or begin something new. Either way, it takes time to see results. It is not unusual to notice that some aspects of one's playing may actually

get worse for a period of time, even though you're working on improving these very areas. This paradox is obviously frustrating, yet, quite natural. The body (and the mind as well), resists change and defends itself against it. But with time, a balance between new and old is achieved. Try not to think about the practiced material or the new positions of the lips, teeth, etc., when playing in a live situation. Just have faith that over time, small adjustments will make their way into real playing situations and improve the sound and feeling of playing. One must envision learning as a long-run process.

PRACTICE ETIQUETTE

Organize your available time into strict segments of hours and minutes. Example: if you have five hours, divide it into five one hour areas. For three hours, divide into several forty-five minute portions.

Pointers

☐ Take breaks as needed for air, coffee, or moving around.
☐ Practice early in the day, at least the very technical and rote kinds of exercises (calisthenics), as well as your required doubles to keep in shape. Save the creative playing for late afternoon or evening.
☐ No distractions like phone or T.V. If possible, practice where no one else can hear you, let alone see you.
☐ Once a week, use the time for something related to music and art, but not direct practicing. Take a nature walk, read poetry, or see a play or movie. In other words, take your mind off the routine.

The following is a possible saxophone regimen indicating the chapters in which the topic is discussed. This is meant for all saxophonists in whatever idiom you are involved. They are the basic exercises for developing your sound and minimum technique. It goes without saying, that after these two hours, practicing the vocabulary of music itself must begin.

SAXOPHONE PRACTICE SCHEDULE
TWO HOUR MINIMUM

Breathing
(see Chapter 2)

Five minutes: Done slowly, eventually adding some form of resistance to the abdomen area. Also, fast inhale/exhale breaths.

Mouthpiece alone
(see Chapter 4)

Five minutes: Play scales, intervals over a range of at least a tenth.

Overtones
(see Chapter 4)

Twenty minutes: Clean/low note fundamentals first (don't drop jaw); ability to prehear overtone and play it with a minimum of embouchure movement; emphasis on laryngeal (vocal cord/folds) activity; match the natural fingering to the overtone in terms of intonation and timbral quality; later on, add extended overtone exercises for more challenge.

Long tones
(see Chapter 6)

Fifteen minutes: Useful for checking embouchure positions; to be done intervallically, not just chromatically or scale steps; use crescendo/decrescendo at times checking intonation constantly; check for evenness of sound and breath; also do pre and post tones carefully; check ability to pre-hear interval; keep each aspect separate.

Miscellaneous
(see Chapter five)

Fifteen minutes: position of tongue for both sustained notes and for tonguing; single tongue at various speeds and levels of intensity using all combinations of tongue and reed areas; expressive, coloristic devices to be practiced (see Chapter Eight).

Reading

Twenty minutes: Both classical and jazz solo transcriptions for sight reading purposes; exercises for finger dexterity and smoothness in all ranges; the idea is that practicing fast technique separately will result in it becoming second nature for use in musical ways.

Scales/Arpeggios/Intervals

Forty minutes: In order to learn the alphabet of music; to be done legato at quickest overall speed, in various articulative and rhythmic configurations; use the metronome for accuracy (for jazz players, beats on two and four); these exercises are for dexterity, flexibility and familiarity with the language. ■

POSTSCRIPT

The saxophone is an extension of a human being's voice. It should feel as natural to play as it is to speak. On the average, after ten to fifteen years of constant playing, no matter what kind of music, the horn should feel good. That means comfortable to play; an activity to be looked upon with pleasure and warm familiarity.

Mastering an instrument provides the groundwork for self expression. Through the creative use of one's instrument as well as the language of music, an individual is poised to reveal his innermost being. Artistic creation is the result of three aspects of a person working together: hand (technique), head (awareness), heart (emotion). The artist is constantly challenged to balance these facets as he strives to evolve.

With mastery comes a responsibility. The depth of one's thoughts and feelings will be available for the world to see. The content conveyed makes a difference on an individual one-to-one level, as well as on the spiritual, universal plane. It is the artist's duty to rise above mere craftsmanship and reflect upon matters of importance and meaning. This takes commitment, patience and maturity.

In life, as well as art, there are always multiple paths to the same truth. There is no one, definite way to find beauty. Each human being's universe is unique unto him or herself. The goal is to find the one way that works for you and the means and opportunity to express it to the world. ■

APPLICATION

Let's imagine the scenario at this point: You have read this book slowly and re-read the more difficult concepts. Somewhere between 80% to 90% of the contents are fairly clear. Possibly you have also seen my video which demonstrates visually and aurally the concepts and exercises. You have also practiced the breathing exercises, playing on the mouthpiece alone, some of the overtone exercises, and experimented with various lip, teeth, and tongue positions. You are reasonably sure that the reed-mouthpiece-horn situation is working advantageously for you.

Yet, when you go to play, there is little or no change. The sound is still the same and not as it should or could be. Furthermore, you can't see into the future and to wait ten to fifteen years for results is not on your agenda.

Remember, as I mentioned near the beginning of the book, no one can give another musician the exact recipe for an individual sound. The very notion of individual rules that out. The best that can be done is to offer guidelines and suggestions to facilitate this self-discovery process. More important is the kind of information which corrects and stops harmful actions impeding the individual's progress in this area. In the final result, each musician's inner ear combined with the creative impulse, finds its own unique formula and system. The desire and ability to use one's imagination is the key.

However, in my experience, there are some common problems observed in many saxophonists concerning tone production. What follows is similar to the trouble shooting guide we see at the end of an instruction manual for appliances and gadgets. The problem is stated and the possible cause and remedy listed. Of course, there is a lot of overlapping. These are only possibilities. Each musician's problems are different. The main attitude to have is to experiment; use trial and error; go slowly and patiently; *Listen - Feel - Think!* ■

SOUND PROBLEM

☐ *Thin; too bright, especially in high register*

CAUSE	REMEDY
· Not enough bottom lip on reed	· Assume more of "V" position
· Reed too soft	· Increase strength by half size at a time
· Not enough depth in tonal color	· Practice overtone matching; especially 3rd and 4th overtone for high register
· Jaw tightens up as range ascends	· Overtones; think down for high notes
· Air support too shallow	· Practice three part breathing
· Mouthpiece construction	· Consider lower baffle; different material

SOUND PROBLEM

☐ *Unfocused; too spread, pitch not centered*

CAUSE	REMEDY
· Mouthpiece opening too large; lay too long	· Experiment with wedge under the end of the reed to approximate a more closed opening
· Reed too soft	· Harder reed
· Occurs as you ascend from the bottom register	· Concentrate on getting the 1st and 2nd overtone off of the fundamental; then, move to matching exercise
· Tone changes widely from one note to the next	· Play chromatically up and concentrate on keeping embouchure steady with only necessary lip/larynx adjustments. Listen and react
· Too much bottom lip out	· Check "V" position
· Air stream loses resistance in oral cavity	· Check hump of tongue position; may be too low; use *EE* position
· Too much movement at the reed	· Check that jaw may be moving too much up and down to get high and low register; reinforce l aryngeal concepts by overtones; playing on mouthpiece alone; double embouchure
· Air support too shallow	· Breathing exercises

SOUND PROBLEM

☐ *Small; high register sounds pinched and unclear*

CAUSE	REMEDY
· Reed too soft or dead	· Replace reed
· Mouthpiece too closed, lay too short	· Take mouthpiece to a professional repairman, or obtain a new one
· Reed pinched closed due to bite being too tight	· Relax jaw, put fingers in mouth to avoid tighten ing, check the jaw and related muscles in the mirror for signs of strain
· Not enough flexibility at the reed, lip too thin	· "V" position, practice on mouthpiece along
· Larynx constricted because head bent down or up too much	· Check head/shoulder relationship in the mirror
· Air being partially cut off in oral cavity because hump of tongue too high	· Practice *EE* position
· Vibrational capacity of reed inhibited by too much tongue surface very close to it	· *EE* position, practice using edge of tongue on edge of reed for articulation
· Air support too shallow	· Breathing exercises

SOUND PROBLEM

☐ *Lip fatigue, entire embouchure area uncomfortable*

CAUSE	REMEDY
· Reed too hard	· Shave excess side bark off and if necessary rub entire back portion with sand paper to soften
· Mouthpiece too open	· Consider replacement but first try to close opening with wedge placement below end of reed
· Lip too thin on bottom, straining muscles	· Relax embouchure, check "V" position
· Too much manipulation at reed, jaw move- ment unecessary	· Check jaw movement in mirror, reinforce larynx action with overtones, look for in-and-out rolling motion of bottom lip
· Tightening up on high register	· Overtones, etc., each note has its own balance of vocal cord motion combined with bottom lip position, think down.

SOUND PROBLEM

☐ *Stiff, wooden, stuffy, no range of dynamics*

CAUSE	REMEDY
· Reed too hard or dead	· Selectively sand part of reed that corresponds to register, side bark as well, check for air bubbles (showing fiber break down), and suction test for "pop" sound
· Mouthpiece too open, reed cannot close space for dynamic purposes	· Consider replacement, but first try to close opening with wedge placement below end of reed
· Bottom lip not flexible enough at the reed	· Practice "spot" exercise, placing upper lip 3/4 to 1 inch on the reed and moving from cover ing to uncovering surface (1/8th inch left at tip) with bottom lip

SOUND PROBLEM

☐ *Low notes stuffy, don't come out easily*

CAUSE	REMEDY
· Reed too hard	· Sand down near heart area of reed
· Opening too large	· Consider replacement, but first try to close opening with wedge placement below end of reed
· Jaw drops for low notes	· Practice thinking up in low register, keep jaw up as in chewing
· Reed being forced closed by abrupt articulation, or too much tongue surface	· Practice tonguing concept, especially lighter type intensity

SOUND PROBLEM

☐ *Articulation too percussive*

CAUSE	REMEDY
· Too much tongue surface on too much reed area	· Begin with tongue between reed and mouthpiece for experiencing sensation, gradually work towards feeling various tongue and reed areas

SOUND PROBLEM

☐ *Expressive techniques too difficult to produce*

CAUSE	REMEDY
· Embouchure area too tight	· Loosen bite and corners of lips, try more bottom lip on reed
· Mouthpiece/reed combination not flexible enough	· Try different combinations

RECOMMENDED SAXOPHONE BOOKS

The books listed below are excellent as source material for lines, patterns, and scales to practice. The material is difficult and challenging. They are all exercise type books; there are no collections of pieces listed. Those type of books are readily available and should be used for interpretation and expansion of technique and vocabulary. The books below are suitable for saxophonists of all persuasions.

EXERCISES AND STUDIES

158 Saxophone Exercises
Sigurd M. Rascher,
G. Schirmer, N.Y.
Three Octave Scales and Chords for Saxophone
Joe Allard; Charles Colin, N. Y.
Enseignement du Saxophone
A collection of exercise books by Marcel Mule
Alphonse Leduc, Paris, France.

VOCABULARY AND IDEAS

Repository of Scales and Melodic Patterns
Yusef Lateef
Fana Music, Amherst, MA. 1981.

Thesaurus of Scales and Melodic Patterns
Nicolas Slonimsky
McMillan & Co.., N.Y., 1974.
The Intervallistic Concept
Eddie Harris
Charles Colin Publishing
N. Y., CC4012; 1984.

SPECIFIC TECHNIQUES

Saxophone High Tones
Eugene Rousseau
MMB Music, St. Louis, USA, 1981.
Preliminary Exercises and Etudes in Contemporary Technique for Saxophone
Ronald Caravan; Dorn Publications, Inc. USA, 1980.
Top Tones for Saxophone
Sigurd M. Rascher
Carl Fischer Music, N.Y.
Multiphonics
Ken Dorn
Dorn Publications, Inc.

PROGRESS DIARY

In the long run, it will be helpful to keep track of those ideas and suggestions that help you to develop your own personal saxophone sound, and to discard those that do not. The following pages are designed to facilitate this record keeping process. Start with a certain aspect of your sound that needs improving. With the help offered in this book, as well as suggestions from your peers and teachers, keep track of those suggestions that improve each sound deficiency. Over time you will have your own personal library of techniques that work especially well for you.

Date	Sound Problem	Remedy Tried	Results & Comments

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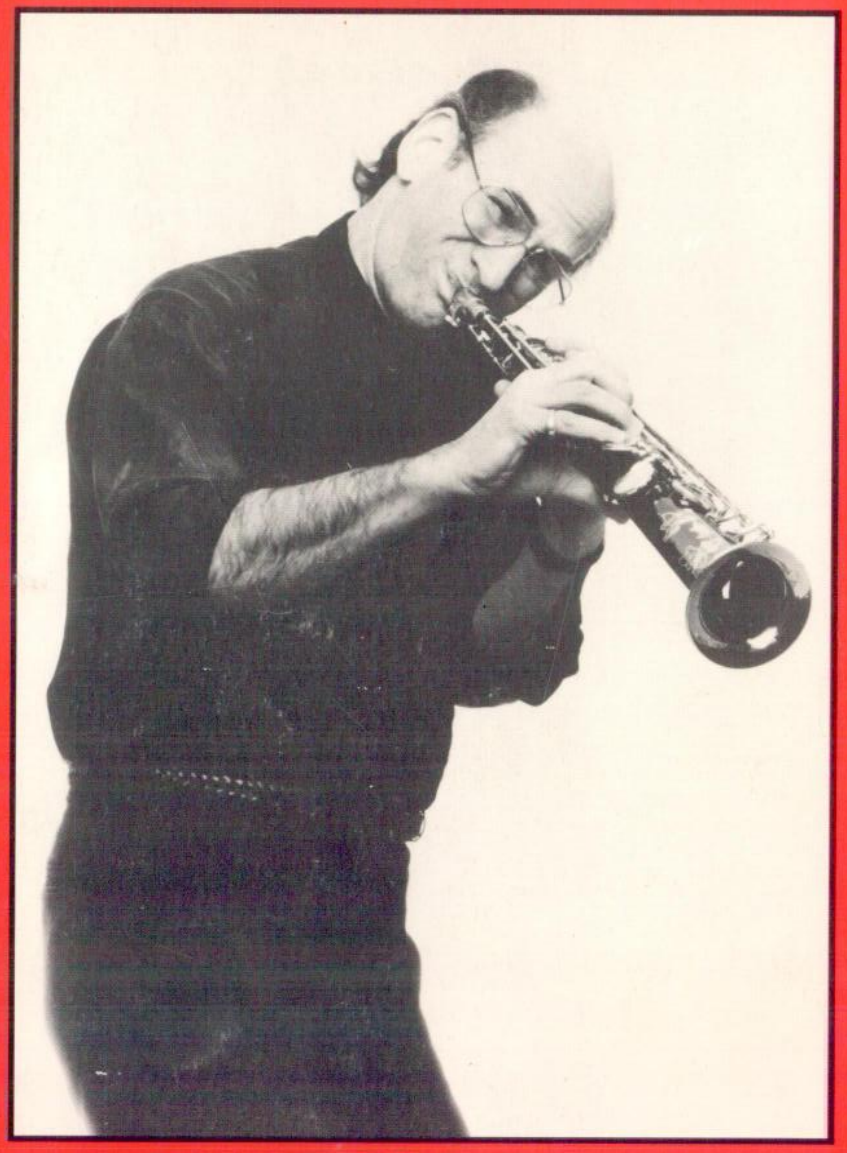

David Liebman

David Liebman was born in Brooklyn, NY on September 4, 1946. He studied, most notably, with Joe Allard, Lennie Tristano, and Charles Lloyd. After graduating from New York University with a B.A. Degree in American History, Mr. Liebman played in one of the early jazz/rock fusion groups, *Ten Wheel Drive*, before spending several years performing and recording with Elvin Jones, and Miles Davis.

As of 1974, Liebman began to lead a succession of groups, among them *Lookout Farm*, and *Quest*. He has over fifty recordings under his own leadership and is featured on more than 100 others as a sideman. His compositional output includes over 175 original recorded compositions, and chamber music for string, saxophone, and woodwind quartets. As an author, his *Self Portrait of a Jazz Artist*, and *A Chromatic Approach to Jazz Melody and Harmony*, along with several play-along recordings, transcription books, and instructional videos, are recognized worldwide. As both a performer and educator, David Liebman travels worldwide and is the founder of the International Association of Schools of Jazz, an organization dedicated to networking students and educators involved with jazz education. He has been a consistent choice of critics, and readers, in both the Critic's and Reader's *Downbeat* polls since 1973, on soprano saxophone. He resides in Stroudsburg, Pennsylvania with his wife Caris and daughter Lydia.