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The Types and Usage of
Twentieth Century Saxophone Techniques

A Research Paper
Presented to
the Faculty of the Graduate School
University of Nebraska at Omaha

In Partial Fulfillment
of the Requirements for
the Applied Graduate
Recital

by
Steve A. Dygert
April 1987

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THESIS ACCEPTANCE

Acceptance for the faculty of the Graduate College, University of Nebraska, in partial fulfillment of the requirements for the degree Master of Music, University of Nebraska at Omaha.

Committee

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Chapter 1

Introduction

The areas of modern compositional and performance techniques for the saxophone are ones that have not been organized. Composers and players are using these compositional techniques at the present time in serious literature. These techniques are termed "contemporary" or "twentieth century," but have been in use since the instrument was invented. There is authenticated use of the altissimo register by saxophonists E. A. Lefebre who played with Gilmore and Sousa, and H. Benne Henton who played with Sousa and then formed his own band (Schwartz 280).

The subject of the many extended techniques available to saxophonists will be compiled with suggestions on how these techniques are to be performed. Before new techniques are discussed, the history of the saxophone will be reviewed with a discussion of usual or non-extended techniques.

The saxophone is the newest member of the woodwind family, developed in the 1840's by Adolph Sax, a Belgian instrument maker. Two families of saxophones were originally designed; one family in the keys of Eb/Bb for use in the military band, and one family in the keys of C/F for orchestral playing. The instruments of today have developed out of the first Eb/Bb family of military band instruments, primarily because of use in the idiom of jazz performance. It was because the military

instrument instituted itself as the main saxophone choice that the C/F family failed to attain prominent usage. The 'loud' nature of the military instrument made it a perfect choice for use in the new jazz bands playing 'syncopated music' (Harvey 5).

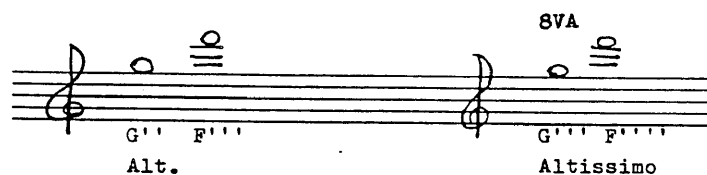
The saxophone is a single reed, conical bored instrument. The instrument's harmonic series is broken into octaves, as are the flute and oboe. The fingering pattern of the saxophone is similar to both of these other members of the woodwind family. The range of the instrument is two octaves and a fifth, stretching from the low Bb to the high F natural. The instrument is usually played with the addition of a measured vibrato. Finally, the saxophone is played in the same instrumental style developed for the rest of the woodwind family during the Romantic Period. All the traditional techniques are studied by all students of the instrument pedagogy. It is the extended techniques that have grown past these traditional techniques of the saxophone that merit further investigation.

Chapter 2

The Altissimo Register

The Harvard Dictionary of Music defines Alt. as the "Term for the tones of the octave above the treble staff (g'' to f'''), which are said to be 'in alt.' The tones of the next higher octave are called 'in altissimo' (Apel 30)." So, too, the notes of the octave over f''' on the saxophone are called the altissimo register.

Figure 1



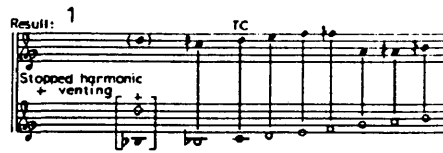
The altissimo register is probably the oldest of the extended techniques in use today. It is the playing of higher tones, overblown from fingerings of the regular pitches played on the saxophone. Ted Nash's method book, Study in the High Harmonics, approaches the altissimo register in this manner. Marcel Mule's method is based on alternate or 'split' fingerings to enable one to enter the altissimo area of performance by use of stable partials of the harmonic series.

George T. Kirck, Professor of Saxophone at Northern Illinois University, has a good explanation for playing these tones:

A predictable 'back pressure' and relatively narrow band width of available pitches in the stopped horn spectrum can be used to help familiarize oneself with the 'feeling' required to control these 'partials.' The perceptive player will soon develop a keen appreciation for the direct effect internal anatomical formations have on the performance success of altissimo, stopped horn, and command of an artist's level tone quality. It is my firm, although not yet scientifically researched, hypothesis that the study of altissimo, and other extended techniques, encourages the instrumentalist to explore a variety of performance postures; and through this personal experimentation, discover a great deal about how one is able to control the saxophone's sonic parameters. This heightened aural awareness and maximized physical control of overtone spectra are absolutely essential in order to realize the subtlety of timbric nuance required of the virtuoso. (5)

Studying the stopped horn is instrumental in developing the technique of playing in the altissimo register. The stopped horn refers to the playing of overtones based on the fundamental tones of the saxophone while fully closing the opening of the bell. While fingering low Bb, the lowest fundamental on the instrument, the student changes his embouchure and the chamber inside his mouth to produce the first harmonic pitch D natural.

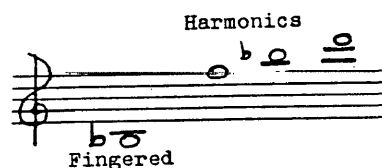
Figure 2



George T. Kirck, "Extended Techniques for Saxophone;"
Saxophone Sheet (No. 14 Fall 1977) 7.

The saxophone is by design an open pipe. In order to make it a closed pipe, one must first close the bell to "stop" the instrument. The altissimo register can also be approached without the instrument first being stopped. The student still plays the overtone series, but in this case it is based on the harmonic principles of an open pipe. This means the intervals are overblown in a normal harmonic progression. Therefore, the first interval above a fundamental Bb that can be overblown would be an F natural, or the interval of an octave and a perfect fifth. This is the easiest interval to play in the harmonic series. The first true harmonic interval, the octave Bb, is actually much harder to sound and will only be played after much experimentation. The third interval that can be played is the Bb above the F already stated. The next interval above this is a major third, or the pitch D natural.

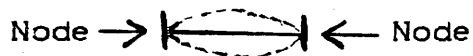
Figure 3



The problem with this harmonic note D, and all harmonic notes above, is that the intervals become progressively harder to play. Thus, in order for the player to develop the use of this technique he must be able to play the interval to get the "feel" of how the note is to be played. The student must first play the note to get the feeling of how it is to be played, but he cannot play the note until he achieves this feeling. The way to rectify this situation is by venting the instrument to enable the interval to be played more easily.

To play the harmonic interval D, the player fingers the low Bb and moves his third or G finger to create a "node" at the point of this key. In Pythagoras' Law of Vibrating Strings, a node is the point that a string vibrates to create an overtone (Backus 116).

Figure 4



If a string is plucked and is allowed to vibrate freely, the string's fundamental tone is produced. If the string is plucked and touched in the middle, a tone of an octave above is produced. This tone is the first harmonic. The air stream moving through the saxophone acts in the same manner as does the vibrating string. A node is created when the air stream touches the wall of the instrument. If a key is opened at the point of this touch, the hole, or "vent," is created and acts as a register key and the pitch of the node is produced. When the G

key is vented open, this vent creates a node for the harmonic pitch D natural and the player will be able to produce this tone and experience the feeling of how the pitch sounds and feels. He then will be able to strengthen his embouchure until the tone can be produced without the assistance of venting.

The following musical example by H. Benne Henton shows extended use of the altissimo register. The use of this register has become so common that another example would be redundant. Almost every modern saxophone composer has used this technique at some time during the last 40 years including a suite by Madame Paule Maurice, Tableaux de Provence composed in 1959, which uses instances of the altissimo register. It is well to note that Monsieur Lefebre was using the altissimo register in 1892. H. Benne Henton made extensive use of the altissimo register while saxophone soloist with the Sousa Band in 1920. An example of one of his cadenzas still exists in his own hand.

Figure 5



Fig. 2 H. W. Schwarz, Bands of America. (Garden City, N. Y.: Doubleday 1957) 280.

In the Sonata for Alto Saxophone and Piano, op. 19 by Paul Creston, the composer uses the altissimo register as the definitive statement of the climax in the first movement. The altissimo G3 is the highest pitch in either of the two instruments in the movement. This use of the altissimo register creates a climax that is supported, not only by the composers intent in writing the music, but by the character of the tone of the alto saxophone in the altissimo register itself.

Another teaching concept for the development of the altissimo register is through use of the open pipe of the instrument. Since by nature the saxophone is an open pipe, as stated earlier in this chapter, it would seem that it would be easier to learn this technique without first changing the nature of the instrument by "stopping" it. Again, this method of learning to produce these notes is eased by venting the keys at the node to produce the overtone. Tim Brechbill, saxophone instructor at the University of Nebraska at Omaha, uses this technique in a "pre-altissimo" manner to produce overtones in the middle of the saxophone register to develop the feel of the altissimo register before actually playing the high notes.

As you master more and more overtones, try matching entire passages of overtones rather than individual tones. Daily practice of perhaps 10 minutes with these types of exercises will not only result in dramatic improvement in the sound of the upper register, but lays a strong foundation for entering the altissimo register. Learning to sustain and match

overtones will almost insure that you are well on your way to achieving the desired even tone quality throughout the entire range of the saxophone that is so important to the artist's level of performance.

One of the major benefits of this technique is that it improves the tone quality from first line F. or F2 and above. This technique is taught by the student playing F2 as a harmonic, or overtone, of the low fundamental Bb of the saxophone. If the overtone F2 will not speak immediately, vent the the second finger on the right hand, the F# finger hole. This is where the node appears on the instrument for F2 and venting the F# hole will let this hole act in the manner of a register key. After mastering the feel of the overtone F2, the next pitch F#2 can be played as an overtone of low B, and G2 as an overtone of low C. The following chart is of the fundamental fingered, the finger vented and the resulting overtone produced. A full fingering chart for open horn harmonics is included in Appendix E.

Finally, to produce an altissimo note the player must have a good command of sound production on the saxophone. The fundamental aspects of musicianship needed in playing the instrument are mandatory in the production of altissimo sounds.

A full fingering chart for the altissimo register is included in Appendix A.

Chapter 3

Multiphonics

Multiphonics are simply the playing of more than one note at the same time. The saxophone is not an instrument usually thought capable of producing chords, but there have been performers who have always pushed the limits of performance. Jazz saxophonist John Coletrane flabbergasted audiences with his use of chords on the instrument since most listeners had never even heard of this technique. The use of multiphonics by single line instruments is not a new technique. Joseph DeLuca utilized three-note chords in his euphonium solos in the twenties and August Helleberg played four-note chords in his tuba solos while performing with the Sousa Band (Schwartz 232).

The secret talent needed to perform this technique is really quite simple. The embouchure and shape of the chamber of the throat needed to perform the altissimo register discussed in the preceding chapter is also necessary to perform multiphonics. Multiphonics are produced by the changes in the mouth and the creation of a sense of tension in the air stream. This tension is produced by breaks in the air stream created by the use of false fingerings. For example, Ronald L. Caravan uses the multiphonic F#1, G2, and C#2. This chord is created by using the regular fingering of the left hand; fingers 1, 2, and 3; and the use of fingers 5 and 6 in the right hand with the addition of the low C key. Multiphonics are used extensively in this

movement and later is included in the use of timbre changes to be discussed in the following chapter.

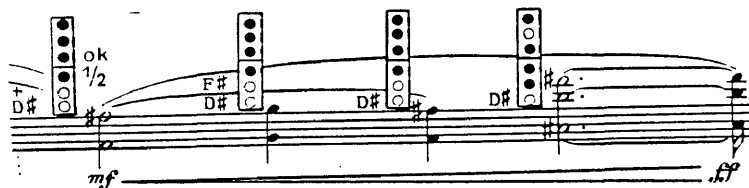
Figure 6



Ronald Caravan, "Reflections" Paradigms 1;
Saxophone Sheet (No. 15 Winter 1977) 16.

Multiphonics are usually approached in a stressed section of the music. Ryo Noda's Improvisation 2 makes extensive use of multiphonics. Mr. Noda is a Japanese composer living in Bordeaux, France, and is a disciple of the great French saxophonist Jean-Marie Londeix, to whom Improvisations II is dedicated. Noda slowly starts his use of multiphonics with two-note intervals. The following example shows the manner the intervals are used.

Figure 7



Ryo Noda Improvisations II. (Paris: Alphonse Leduc & Cie. 1975)

Noda begins the multiphonic section with a succession of three, two-note intervals and finishes the section with a three-note chord. The two-note intervals are actually more difficult to play than three-note intervals because the technique needed to create these intervals comes from a change in the acoustical aspects of the mouth. There is no node required to play two-note intervals but rather a loosening of the lower lip allowing both octaves to sound simultaneously. The fingering indicated for the F1, F#2 intervals is used to create an augmented octave instead of a perfect octave. The sound of multiphonics itself creates tension, and the added color of an augmented octave gives a harsh, screeching quality building to a crescendo. Immediately following, the composer releases the tension by creating a tonal, expressive section which builds energy and culminates in another release of tension. The next section then leads to the final multiphonic section by creating an urgency expressed by the repetitive, accelerated, and hard driven grace notes leading to the multiphonics.

Figure 8

The image shows a musical score for two staves. The top staff features a sequence of notes with various ornaments and slurs. The bottom staff contains similar notes, with a vertical box containing four dots above a note, and a vertical box containing five dots above a note. The bottom staff ends with a double bar line and a fermata.

Ryo Noda Improvisations II. (Paris: Alphonse Leduc & Cie.
1975)

Ronald L. Caravan has a new method book in preparation on developing multiphonics, as well as other extended techniques. In the introduction he cautions:

There is an important warning which I feel must be rendered to the student saxophonist who may be approaching unconventional techniques such as these, perhaps for the first time. I suggest that material such as this is not something to be dealing with unless there already exists, presumably through more traditional studies and disciplines, a reasonable degree of solidification of basic saxophone tone production and technique. Particularly with regard to the study of multiphonics, these unconventional sounds often involve significant and complex deviations from normal tone-production habits -- potentially healthy deviations if built on a well-established, disciplined technique, and potentially unhealthy deviations if added to an unsolidified, inconsistent tone production. The student who is undergoing or has yet to undergo a solidification with basic aspects such as proper breathing and the abdominal support, embouchure, or light staccato tonguing, may be well advised to delay studies in unconventional sounds until a later time. (18)

Multiphonics are not warm consonant sounds expressing emotions such as happiness, or love. But rather these sounds are harsh, dissonant sounds that grate on a listener's ear. In

Jazz performance, a growling sound is quite commonly used to communicate emotional expressions and it is little wonder that John Coletrane, Lester Young, and other great jazz players made the transition from this growl to the creation of multiphonics. Music, in its simplest meaning, is communication. Pierre Schaeffer expresses the theory that any generated or natural sound is music (Apel 561). A listener takes any sound heard and makes an intelligent judgement on what he has heard. If by use of harsh, dissonant multiphonics a composer or musician can communicate more effectively to the listener, this use of the technique can actually become more effective than the normal romantic means of expression solidified during the last century. This does not mean that multiphonics should be used exclusively to create an environment of tension to the listener. Most normal listeners would be shocked to hear this technique performed the first time. But after a period of time, the ear of the listener becomes educated to this technique so that it does not have the same grating effect it had when first heard.

In contemporary music techniques, multiphonics are often referred to as sound-masses. Edgar Varese described sound-masses in a lecture given in Santa Fe, New Mexico, in 1939:

When these sound-masses collide, the phenomena of penetration of repulsion will seem to occur. Certain transmutations taking place on certain planes will seem to be projected onto other planes and at different angles. There will no longer be the old

conception of melody or interplay of melodies. The entire work will be a melodic totality. The entire work will flow as a river flows.

We actually have three dimensions in music: horizontal, vertical, and dynamic swelling or decreasing. I shall add a fourth, sound projection--that feeling that sound is leaving us with no hope of being reflected back. (Smialek 30)

One of the most exciting aspects of these characteristics to the listening audience is the change of texture and density occurring in a contemporary composition. This effect is easier to hear in large ensemble or keyboard works, but is just as effectively used in single-line instruments. The changes in texture and density can be accomplished in two ways: by increasing the texture through vertical aspects, and secondly, increasing or decreasing the density on a horizontal plane (30). Smialek goes on to describe the effects of usage of multiphonics.

By contrasting single sounds with multiphonics composed of varying amounts of notes the composer can manipulate the vertical texture when writing for saxophone. An example of such an effect is found in "Dispersions" of Paradigms 1, where multiphonics are contrasted with single sounds and pulsating single sounds. (30)

Figure 9



Thomas Smialek, "The Treatment of contemporary
Compositional Styles in Pedagogical Method Books;"
Saxophone Journal (No. 25 Spring 1981) 30.

The multiphonic chart in Appendix B includes some selected multiphonics and the fingerings necessary for producing them. A chart of multiphonic fingerings used by the saxophone studio at the University of Arizona has also been added to supplement the fingerings found in this investigation. Neither chart is as exhaustive as was the chart on the altissimo register, but it is hoped that the suggestions offered will be of assistance. Ken Dorn has accumulated thousands of multiphonic fingerings in a source book entitled Multiphonics, and is available from the Saxophone Service Publishing Company, Islington, Ma.

Chapter 4

Other Extended Techniques

The two techniques, altissimo register and multiphonics, are the most commonly used new techniques for the saxophone. As was previously stated, both techniques have existed since the turn of the century, but have recently come into common usage. This section will deal with other extended techniques that are not used as extensively as the first two mentioned.

Timbre

Timbre is defined as:

The quality ("color") of a tone as produced on a specific instrument, as distinct from the different quality of the same tone if played on some other instrument. As shown by Helmholtz and others, tone color is determined by the harmonics, or, more precisely, the greater or lesser prominence of one or another harmonic. (Apel 856)

Timbre change as a compositional device is becoming more commonly used in contemporary music, but timber changes have been used for centuries in the string family of instruments. Bach's Air on The G String is a prime example of this timbre change. The change is used to create a different emotional response in the listener. On the violin, this is accomplished by use of a harmonic fingering of a note on a lower string to create a richer, warmer tone by stressing different pitches in

the harmonic series. This is also accomplished on the saxophone. James Kasprzyk uses this technique to imitate the sound produced on the violin by playing harmonic fingerings.

Figure 10

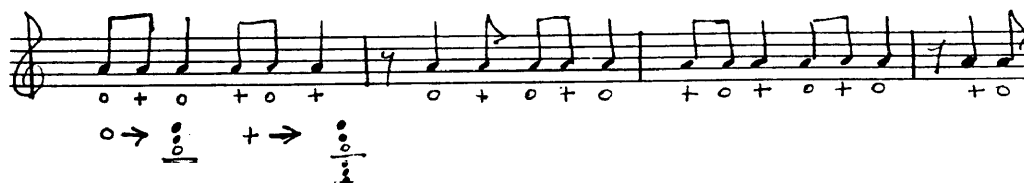


J. S. Bach, Suite No. 1. Arr. James R. Kasprzyk for Unaccompanied Baritone Saxophone (San Antonio: Southern Music, 1967)

The F# used in this example is to be played as a harmonic of low B natural. The effect is simulating a duet between two instruments played on a single instrument. The means used is the change of tone color produced by playing the harmonic F# as well as the regular fingering for F#. Note also the upward direction of the note stems on the harmonic F#s to differentiate two parts on a single line. This technique is used in the unaccompanied Baroque transcription of a violin work in an attempt to emulate Bach's original compositional technique.

Timbre changes were accepted in the jazz idiom before being used as a "new" technique. Lester Young used timbre changes in a solo discussed by Paul Evoskevich.

Figure 11



Paul Evoskevich, "Lester Young;" Saxophone Journal
 (No. 25 Spring 1981) 39.

These effects are also used in a contemporary composition,
 "Reflections" from Paradioms 1.

Figure 12



Ronald L. Caravan, Paradioms 1. Saxophone Sheet (No.
 15 Winter 1977) 16.

An exciting new work for the baritone saxophone is Saxifrage Blue by Dr. Robert Linn, Chairman of the Composition and Theory Department of the School of Music at the University of Southern California. This work was premiered on a recording entitled "Mark Waters Plays Music for the Baritone Saxophone" and makes extensive use of timbre changes. Linn uses timbre changes as a facilitator in moving one direction or the other. In the following figure notice how the C is marked for use of timbre techniques. There is no explanation as to how the technique is to be used or the effect the composer wanted. Mark

Waters played a descending pattern for the timbre effects indicated. Since Waters was a student at U.S.C., and Dr. Linn dedicated this composition to him, the performance of Waters should be taken as the definitive factor in deciding practical application of the techniques indicated. The acoustical structure of saxophones differs from instrument to instrument as well as manufacturer to manufacturer. These effects were used on a H. Couf Superba II baritone and the fingerings that created a descending pattern were variations on the lower three fingers on the right hand.

Figure 13



Robert Linn, Saxifrage Blue. Unpublished.

A list of timbre changes in all the works investigated has been included in the Appendix as an aid in performance of compositional techniques.

Slap Tongue

This device is created by slapping the tongue against the bottom side of the reed. It can be used with or without blowing air into the instrument. The sound, used in conjunction with blowing air, will create a harder "tockt" sound than that created by tongue alone. Greg Bach warns about the development of this technique:

The art of slap tonguing is called for in many contemporary pieces of music. Chances are its use will continue to grow in this music.

Unfortunately, when saxophonists try to slap tongue they develop bad habits. They try to slap tongue by overbiting, underbiting, or by using no bottom lip. I have been successful in developing the technique by keeping my usual embouchure. The Only thing that changes is the position of my tongue. Instead of tonguing the tip of the reed, when attempting to slap tongue, the saxophonist should place his tongue on the bottom of the reed about a half inch from the tip of the mouthpiece. If your tongue is too close to the tip of the mouthpiece, you do not get the slap tongue sound. Slap tonguing sounds like you quickly hit the bottom of your reed with your finger. The tongue should be lying flat on your reed and it should arch sharply upwards to the roof of your mouth. After placing your tongue in the correct position you are halfway there. Now build up air pressure behind your tongue, drop your whole tongue hard and fast down and at the same time, towards you. A popping sound should result. If you are unsuccessful try to put more air through the mouthpiece as you drop your tongue. (16)

Marvin Lamb used slap tonguing in A Ballad for Roland.

Since this work will be quoted throughout this last chapter, the complete composition has been included in the Appendix.

Figure 14



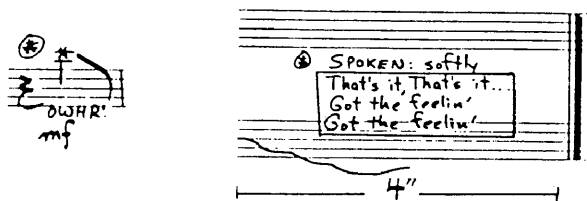
Marvin Lamb, A Ballad for Roland. (Needham, Ma.: Dorn
Pub. 1981)

Notice that different types of slap tongue are used in this composition. Two different strengths of attack are required. The first is an exaggerated, massively accented style and the second is more moderately attacked. The composer also uses many different types of tonguing that are not technically slap tonguing.

Sing/Speak

Sing/speak can be used in two ways. First, hum a pitch while playing another pitch, which creates a type of multiphonic. Second, speaking while having the mouthpiece held by the mouth and jaw. The first is becoming more frequently used in jazz playing but the second is more commonly used in contemporary music. Again, A Ballad for Roland uses this technique in two ways. The first a short guttural cry, "owhr," while playing a short jazz style glissando; and finally in a humorous vane which is spoken at the end of the work.

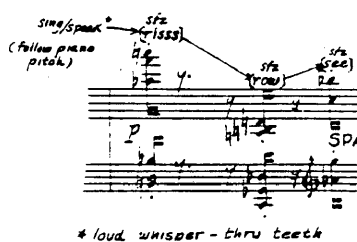
Figure 15



Marvin Lamb A Ballad for Roland. (Needham, Ma.: Dorn 1981)

Mirrors Six also uses this technique, but with the syllables "riss, row, and see", spoken through the teeth as an adjunct to the accompanying piano part.

Figure 16



Edward Diemante, Mirrors Six; Saxophone Journal (No. 15 Winter 1977) 5.

Vibrato

This technique can be performed in two different manners, jaw and diaphragm. Jaw vibrato is the type used by almost all saxophone performers. It is created by lowering and raising the jaw in a rapid manner by saying the syllable "woo." This type of vibrato does not raise the pitch of the instrument, but rather lowers the pitch and then again returns to the original starting point of the pitch. Care must be taken that the pitch

does not rise above the tessitura of sound used. Diaphragm vibrato is created by increasing and decreasing the amplitude of the air stream. In other words, the air stream is used to make the instrument's sound louder and softer in a rapid manner. Composers use this technique to vary both the speed and amplitude of the vibrato to create new effects.

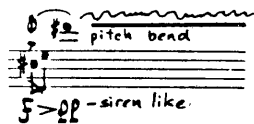
Figure 17



Ronald Caravan, "Reflections" Paradigms 1; Saxophone Journal (No. 15 Winter 1977) 17.

Lamb also uses vibrato concurrently with a pitch bend to create a new rhythmic effect.

Figure 18



Marvin Lamb, A Ballad for Roland. (Needham, Ma.: Dorn 1981)

Key Pops

Key Pops are exactly what the name implies. The keys are slapped closed in a manner to create a pitch from the air being pushed through the instrument by the motion of the keys alone.

Air is not blown through the instrument to create this effect. The keys start from the indicated pitch and are popped down creating the new tone.

Figure 19



Ronald Caravan, "Dichotomy" Paradigms 1.; Saxophone
Journal (No. 25 Spring 1981) 33.

Non-Conventional Trills

Non-conventional trills are used to form new tonal relationships between two pitches. Like conventional trills, this technique may alternate between two pitches a whole-tone or semi-tone apart. William Perconti explains the technique in this manner:

The use of nonconventional trills is a contemporary, extended technique for woodwinds. One form differs from conventional trills in that it is an extremely rapid, machine gun-like effect with one note and its auxiliary.

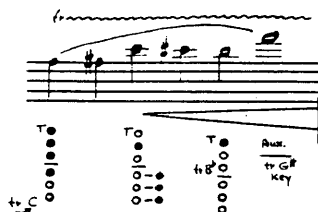
On oboe and clarinet, some non-conventional trills are possible with right and left hand keys for the same note. On saxophone these trills are executed by trilling one key with two fingers. There are two ways to do this: 1) alternate one left-hand finger with

one right-hand finger, and 2) use two fingers of the same hand. Of the two ways, the first is the easiest, and this writer suggests beginning with written trill third line B to C#.

Like conventional trills, artificial trills should be practiced slowly. To execute properly, one should trill evenly between the two notes; do not trill as fast as possible. Nonconventional trills of more than a major second are possible and can be derived from the following table. (13)

The "Reflections" section of Paradigms 1 contains a good example of nonconventional trills. Note that some of the trills, especially the ones on F, C, and B, are timbre trills.

Figure 20



Ronald Caravan, "Reflections" Paradigms 1; Saxophone Sheet (No 15. Winter 1977) 16.

No examples were found of more than a major second but it is hoped that the complete chart of nonconventional trills mentioned in William Perconti's quote above and contained in the Appendix will be helpful.

Lip Trills

The last extended technique discussed in this paper will be lip trills. This technique has evolved through use in the jazz idiom and joins multiphonics, the altissimo register, and growls as accepted standard technique of all saxophonists. Dr. John R. Duke discusses three standard lip trills for the saxophone:

No. 1. The Eb Lip Trill. First, use the standard fingering for this tone and play it. Now add the two palm keys required for high Eb. You are now producing two Eb's, but you are still producing the tone of the middle Eb.

Holding the tone of the Eb as if you are whistling a siren with a wide pitch change. This movement is also similar to saying rather quickly "e-o-e-o-e-e-o".

It is not a movement of the jaw. Use the mirror to confirm this.

When you apply this movement to the Eb fingering given, you will begin to rock back and forth between two tones, the Eb that you began with and a new, lower tone which is a rather flat D natural.

At first, this movement may be difficult for you to produce, especially if you have been playing with a very rigid embouchure.

No. 2. The D Lip Trill. Very similar to what we did on the Eb, first play a middle D using the regular fingering. Now add the palm key required for high D so that you are now simultaneously using the middle D

fingering and the high D fingering while you sustain the middle D pitch.

Holding the D as the upper tone of the shake, apply the "e-o-e-o-e-o" lip movement or the whistled siren as above. When you apply this movement correctly, you will begin to alternate pitch between two tones, the D and a lower pitch that approximates a B natural a minor third below.

No. 3. The Bb Lip Trill. This trill is a bit more involved in terms of fingering but may respond more easily as far as the flexibility is concerned.

First, play the Bb using any of the five fingerings available and get the tone well established in your mind.

Keeping that tone well in mind, now finger a middle Eb, but raise the third finger left hand, but you are not going to play an Eb. The sound that you are going to produce will be that of the Bb. Do this several times until you can produce a Bb using the modified Eb fingering.

When you apply the flexibility described on the Eb and D, you will find that you are able to play Bb as the upper tone of the shake, and a lower tone that is approximately a G, a minor third below. (29)

After attempting these effects, it was found that a lip trill, not unlike a shake for brass, was produced. This effect

would meld smoothly with timbre changes or unconventional trills.

Chapter 5

Summary

The area of extended saxophone techniques is extremely exciting in the realm of tools available to composers and performers. Multiphonics, and the altissimo register are not new techniques, but a continuation of the first techniques devised for the saxophone. As more people continue to explore and try to develop these new techniques, one would expect to see more developed.

A word of warning is required at this point. The extended techniques of multiphonics and the altissimo register should not be attempted by the novice saxophonist. If the basics of good sound production and good embouchure have not been developed, these techniques will be more detrimental than beneficial.

In preparing this paper the services of the Saxophone Journal were indispensable. If one would like to keep abreast of new developments in saxophone techniques, a subscription to this magazine would be invaluable. The articles delved into all areas of saxophone performance.

Finally, the effective use of these techniques depends on a composer's or player's ability to combine them. It is the use and combination of these techniques that eventually determines the merits of a composition. Individually these techniques are neither good nor bad. Rather, the successful use of these effects relies on a composer's creative vision to construct an entity that will become bigger than the individual components.

This concept is not new in music. The viability of a composition has always depended on the talent of the composer to elicit an emotional response in the listener. The drive to create new horizons still lies in the vision of an individual striving to create new avenues of communication.

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Appendix A

Altissimo Register Fingerings

Fingering Chart for Tones Above High F

More pressure is necessary with the lower lip to play above high F. Shoving the lower jaw forward on the reed slightly will help keep the reed from closing when more pressure is used.

- 1- high F key
- 5- side Bb key
- 6- side C key
- Eb key- low Eb, right little finger
- E- 3rd side key, right hand (used for playing high F)

Appendix B

Multiphonic Fingerings

A musical staff in treble clef showing seven measures. Each measure contains a single note with a sharp sign (#) above it. Below each note, a vertical line represents a multiphonic fingering, with small circles indicating finger positions on the strings. The notes correspond to the following fingerings: G# (C, Bb), A# (C, B), B# (C, B), C# (C, B), D# (C, Bb), E# (C, Bb), and F# (C, B).

A musical staff in treble clef showing six measures. Each measure contains a single note with a sharp sign (#) above it. Below each note, a vertical line represents a multiphonic fingering, with small circles indicating finger positions on the strings. The notes correspond to the following fingerings: G# (C, Bb), A# (C, B), B# (Bb), C# (D#, Bb), D# (Bb), and E# (Bb, C#).

A musical staff in treble clef showing four measures. Each measure contains a single note with a sharp sign (#) above it. Below each note, a vertical line represents a multiphonic fingering, with small circles indicating finger positions on the strings. The notes correspond to the following fingerings: G# (C, Bb), A# (D#, Bb), B# (C), and C# (B).

MULTIPHONIC FINGERING CHART

Key to Symbols

- T = thumb or octave key
- ⊙ = open
- = closed
- d = 1/4 step flat
- ⊠ = more mouthpiece
- Δ = slightly more lip pressure
- A = more lip pressure
- △ = maximum lip pressure
- P.N. = prominent note(s)
- † = 1/4 step sharp
- E = easy
- M = moderate
- D = difficult
- D+ = very difficult

The chart displays 16 measures of music, each with a key signature and a fingering symbol. The notes and symbols are as follows:

Measure	Key Signature	Fingering Symbol	Notes	Annotations
#1	E	⊠	low Bb, C	
#2	M	⊠	low B, C	
#3	D	⊠	low C#, C	
#4	M	⊠	low Bb, C	GENERIC NATURAL
#5	M	⊠	low Bb, C	INTRONIC OVERTONE
#6	D	⊠	low B, C	see #5
#7	D	⊠	low C, C	see #5
#8	D+	⊠	low C#, C	Very unstable
#9	D	⊠	low Bb, C	
#10	M	⊠	low Bb, C	fast rolling tone
#11	D+	⊠	low B, C	fast rolling tone, Very unstable
#12	D	⊠	low Bb, C	low Eb
#13	M	⊠	low Bb, C	low Eb
#14	M	⊠	low Bb, C	low Eb
#15	D	⊠	low B, C	Pressure may produce rolling tone, low Eb
#16	D+	⊠	low B, C	low Eb

#17	E	Good octave	low Eb	low Bb	low C#	low C	#26	D	low Bb	low C
#18	N	Not rollable For rollable tone	low Eb	low Bb	low C#	low C	#27	D+	low Bb	low C
#19	M	low B	low Bb	low C#	low C	rolling tone	#28	E	low B	low Bb
#20	M	low B	low Bb	low C#	low C	rolling tone	#29	E	low B	low Bb
#21	N	low C#	low Bb	low C	low C	rolling tone	#30	E	low B	low Bb
#22	N	low C	low Bb	low C#	low C	rolling tone	#31	D	low B	low Bb
#23	E	low Eb	low Bb	low C#	low C	rolling tone	#32	N	low B	low Bb
#24	D	low Eb	low Bb	low C#	low C	rolling tone	#33	E	low B	low Bb
#25	D	low Eb	low Bb	low C#	low C	rolling tone	#34	E	low B	low Bb
#26	D	low Bb	low Bb	low C#	low C	rolling tone	#35	D+	low B	low Bb
#27	N	Good octave chord	low Eb	low Bb	low C#	low C	#36	N	low B	low Bb
#28	N	Good octave chord	low Eb	low Bb	low C#	low C	#37	E	low B	low Bb
#29	E	low B	low Bb	low C#	low C	rolling tone	#38	N	low B	low Bb
#30	E	low B	low Bb	low C#	low C	rolling tone	#39	E	low B	low Bb
#31	D	Not playable on Conn M6	low B	low Bb	low C#	low C	#40	D	low B	low Bb
#32	N	low B	low Bb	low C#	low C	rolling tone	#41	N	low B	low Bb
#33	E	low B	low Bb	low C#	low C	rolling tone	#42	E	low B	low Bb
#34	E	low B	low Bb	low C#	low C	rolling tone	#43	D	low B	low Bb
#35	D+	low B	low Bb	low C#	low C	rolling tone	#44	E	low B	low Bb
#36	N	low B	low Bb	low C#	low C	rolling tone	#45	E	low B	low Bb
#37	E	Good octave chord	low Eb	low Bb	low C#	low C	#46	E	low B	low Bb
#38	N	Add any low key to stabilize.	low Eb	low Bb	low C#	low C	#47	E	low B	low Bb
#39	N	low B	low Bb	low C#	low C	rolling tone	#48	E	low B	low Bb
#40	D	low B	low Bb	low C#	low C	rolling tone	#49	D	low B	low Bb
#41	N	low B	low Bb	low C#	low C	rolling tone	#50	E	low B	low Bb
#42	E	low B	low Bb	low C#	low C	rolling tone	#51	E	low B	low Bb
#43	D	low B	low Bb	low C#	low C	rolling tone	#52	E	low B	low Bb
#44	E	low B	low Bb	low C#	low C	rolling tone	#53	E	low B	low Bb
#45	E	low B	low Bb	low C#	low C	rolling tone	#54	E	low B	low Bb
#46	E	low B	low Bb	low C#	low C	rolling tone	#55	E	low B	low Bb

Appendix C

Timbre Fingerings

Staff 1: Treble clef, notes G4, A4, B4, C5, D5, E5, F5, G5. Fingerings: 2, 1, 2, 1, 2, 1, 2, 1.

Staff 2: Treble clef, notes G4, A4, B4, C5, D5, E5, F5, G5. Fingerings: 1, 2, 3, 4, 5, 4, 3, 2, 1.

Staff 3: Treble clef, notes G4, A4, B4, C5, D5, E5, F5, G5. Fingerings: 1, 2, 3, 4, 5, 4, 3, 2, 1.

Staff 4: Treble clef, notes G4, A4, B4, C5, D5, E5, F5, G5. Fingerings: 1, 2, 3, 4, 5, 4, 3, 2, 1.

Staff 5: Treble clef, notes G4, A4, B4, C5, D5, E5, F5, G5. Fingerings: 1, 2, 3, 4, 5, 4, 3, 2, 1.

Appendix D

Stopped Horn Harmonics

Result: 1

1 Stopped harmonic + venting TC

2 TC

3

4 UNSTABLE PARTIAL TC TC TC

5 TC TC TC

Appendix E

Open Horn Harmonics

Key VENTED: (5) (4) (4) (4,5,6) (3) (2) (2)

Detailed description: A musical staff in treble clef showing seven notes. Above the staff are dots representing notes played. Below the staff are circles representing notes fingered. The notes are: Bb (circled), B (circled), C (circled), C# (circled), D (circled), Eb (circled), and E (circled). Below the staff, the notes are labeled with fingerings: (5), (4), (4), (4,5,6), (3), (2), and (2). The word 'KEY' is written to the left of the first note, and 'VENTED:' is written below the first note.

(SIDE) (1) (SIDE) (SIDE) (SIDE) (SIDE)

Detailed description: A musical staff in treble clef showing six notes. Above the staff are dots representing notes played. Below the staff are circles representing notes fingered. The notes are: C (circled), C# (circled), D (circled), Eb (circled), F (circled), and F (circled). Below the staff, the notes are labeled with fingerings: (SIDE), (1), (SIDE), (SIDE), (SIDE), and (SIDE). The word '(SIDE)' is written below the first note.

- = NOTE PLAYED
 - = NOTE FINGERED
 - () = KEY VENTED
- {
 - 1
 - 2
 - 3
 - 4
 - 5
 - 6

Appendix F

Non-Conventional Trills Table

NONCONVENTIONAL TRILL TABLE FOR SAXOPHONE

Play F with the right-hand thumb on the F key, and trill the E key with the first two right-hand fingers. (1)



Play E with the right-hand third or fourth finger on the E key, and trill the F key with the first two right-hand fingers. (1)



Play G^b by closing with the right-hand thumb the top pad of the right-hand stack, and trill the F key with the first two right-hand fingers. (1,2)



Play G, and trill the F key with the first two right-hand fingers. (1)



Play G, and trill the top pad of the right-hand stack (to produce F[#]) with the first two right-hand fingers. (1,2)



Play G[#], and trill the top pad of the right-hand stack (to produce F[#]) with the first two right-hand fingers. (1,2)



Play G, and trill the A^b key with the left-hand fourth finger and any right-hand finger. (1)



Play A, and trill the G key with the left-hand third finger and any right-hand finger. (1)



Play G[#], and trill only the G key with the left-hand third finger and any right-hand finger. (1)



Play G[#] with the left-hand first finger covering bis-B^b, and trill only the left-hand second finger and any right-hand finger. (1)



Play bis-B^b, and trill A with the left-hand second finger and any right-hand finger. (1)



Play B, and trill A with the left-hand second finger and any right-hand finger. (1)



Play B, and trill the bis-B^b key with the left-hand second finger and any right-hand finger. (1)



Play side B^b with the left-hand third finger on the C key, and trill only the B key with the first two left-hand fingers. (1)



Play B, and trill side C with the first two right-hand fingers. (1)



Play C[#], and trill the B key with the left-hand first finger and any right-hand finger. (1)



Play D^b, and trill C with the left-hand second finger and any right-hand finger. (1)



Play C, and trill palm E^b with the right-hand first finger and (by reaching around) the left-hand first finger. The left-hand keys which produce written d^b, e^b, and f^b are struck with the left-hand palm. (1,3)



Play C[#], and trill the palm D key with the left-hand first or second finger and (by reaching around) any right-hand finger. (1,3)



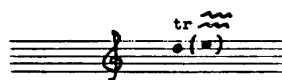
Play C[#], and trill the side E key with the first two right-hand fingers. (1,3)



Play palm D, and trill the side E key with the first right-hand fingers. (3)



Play D, and trill the palm E^b key with the left-hand first finger and (by reaching around) any right-hand finger. (3)



Play palm D, and trill the side F# key with the first two right-hand fingers. The side F# key referred to here produces written f". (3,4)



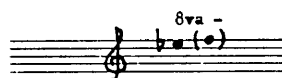
Play D, and trill the side E key with the first two right-hand fingers. (3)



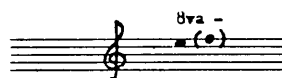
Play D# with the palm D and F keys, and trill the side F# key with the first two right-hand fingers. (3,4)



Play D#, and trill the side E key with the first two right-hand fingers.



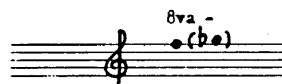
Play Eb, and trill the palm F key by reaching around with the first two right-hand fingers. (3)



Play E with the palm D and F keys, and trill the side E key with the first two right-hand fingers. (3)



Play E with the palm D and F keys, and trill the side F# key with the first two right-hand fingers. (3,4)



Play forked-F, and trill the side F# key with the first two right-hand fingers. (4)

- (1) Also possible one octave higher.
- (2) The top pad of the right-hand stack is directly above the right-hand F key.
- (3) Saxophonists are urged to experiment with these fingerings since the results of using palm fingerings for the middle register differ with each saxophone.
- (4) Possible only on saxophones with the side (written f#) F# key.

I would like to thank Mr. Hymie Voxman for his help with this article.

Appendix G

Ronald L. Coleman, Paradigms 1, "Reflections"

9 - Reflections

FOR SAXOPHONE AND PIANO WITH DAMPER PEDAL DEPRESSED

The musical score consists of five staves of music. The first staff begins with a tempo marking of $\text{♩} = 100$ and a dynamic of *f*. It features a melodic line with a large slur and a piano accompaniment with chords and a fermata. The second staff includes a *rit.* marking and dynamics of *mf* and *f*. The third staff has a *rit.* marking and dynamics of *mf* and *mp*. The fourth staff includes a *Soprano* marking and dynamics of *mp* and *deciso*. The fifth staff concludes with a *ff* dynamic and a note: "[Side Keys] (Palm Keys)".

Below the staves are several diagrams of saxophone keys, represented by circles with dots, indicating fingerings for various notes and techniques. These include:

- A diagram for the *T* (Tenor) key.
- A diagram for the *T* (Tenor) key with a dot on the second finger.
- A diagram for the *T* (Tenor) key with a dot on the second finger and a note "to B".
- A diagram for the *aux.* (auxiliary) key with a note "to G# key".
- A diagram for the *ff* dynamic with a note "[Side Keys] (Palm Keys)".

Dynamic markings: fff , ff , fff



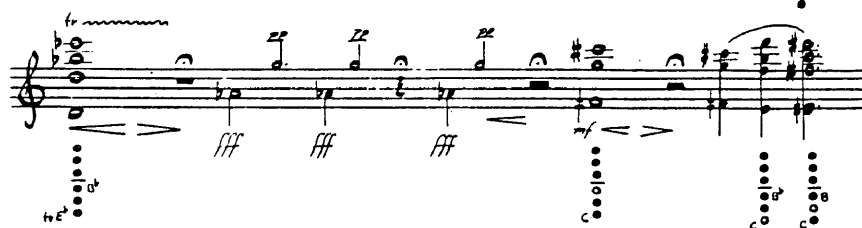
A musical staff in treble clef with a key signature of one flat. It features a series of notes with various dynamic markings: fff , ff , and fff . There are also some handwritten annotations above the staff.

Dynamic marking: fff



A musical staff in treble clef with a key signature of one flat. It features a series of notes with a dynamic marking of fff . There are also some handwritten annotations above the staff.

Dynamic markings: fff , ff , fff , mf



A musical staff in treble clef with a key signature of one flat. It features a series of notes with dynamic markings: fff , ff , fff , and mf . There are also some handwritten annotations above the staff.

Dynamic markings: mf



A musical staff in treble clef with a key signature of one flat. It features a series of notes with a dynamic marking of mf . There are also some handwritten annotations above the staff.

Dynamic markings: mf , mf



A musical staff in treble clef with a key signature of one flat. It features a series of notes with dynamic markings: mf and mf . There are also some handwritten annotations above the staff.

PARADIGMS I

(3:20)

Appendix H

Ronald L. Coleman, Paradigms 1, "Dichotomy"

m2 M3 m2 TT m6 TT m2 d4 P5 m2 M2
(M3)

Example 73

7 - Dichotomy

♩ = 92

(1 2 3) P: 1 2 3 4 5 6 7 8 9 10

11 12 (1 2 3) P: 1 2 3 4 5 6 (5 6) 7 8 9 10 11

R: 12 10 11 9 8 7 6 5 4 3 2 1

10 11 12 P: 1 2 3 4 5 6 7 8 9 10 11 12

8 9 10 11 12 P: 1 2 3 A tempo 4 5 6 7 8 9 10 11 12

P: 1 2 3 4 (1) 8 9 10 11 12 11 10 9

growing more intense

P = Prime Form
R = Retrograde Form

Example 73, continued

The musical score consists of seven staves of music. The notation includes various musical symbols such as notes, rests, and dynamic markings. Fingerings are indicated by numbers 1-5 above notes. Dynamics include *f*, *ff*, *p*, and *pp*. There are several instances of the letter 'R' above notes, likely indicating a specific rhythmic or articulation mark. The score includes several diagrams of musical series, represented by rows of circles, some with numbers above them. One diagram shows a sequence of 12 circles, and another shows a sequence of 10 circles. A circled '7' is used as a symbol in the score, corresponding to the 'Incomplete row' legend. The text 'Somerset Slower (ca. J. 175)' is written below the sixth staff. The score concludes with a final staff of music and a circled '7' symbol.

* g¹ is shared by both series.

⊙ Incomplete row.

Appendix I

Marvin Lamb, A Ballad for Roland

Eb alto saxophone
Whistle

pp - misterioso

1" 1" 2" 5" 3" 5" 12" 6" 7" 9" *♩ = 60*

Sub. Tempo ♩ = 80 (release on 1)

Make shift as quickly as possible

mf = f marc. - - - - - *sub. pp*

drag tempo slightly - play "behind the beat" - - - - -

Sub. ♩ = 60

delicately *mf* *sub. pp* *fff! raucous* *sub. mf - delicately*

Detailed description: This is a handwritten musical score for two instruments: Eb alto saxophone and Whistle. The score is divided into several systems. The first system shows the initial entry of both instruments with specific rhythmic markings (1", 1", 2", 5") and a dynamic marking of *pp - misterioso*. The second system continues the piece, featuring a tempo change to *Sub. Tempo ♩ = 80* and a dynamic range from *mf = f marc.* to *sub. pp*. A performance instruction reads "drag tempo slightly - play 'behind the beat'". The third system includes a tempo change to *Sub. ♩ = 60* and features dynamics such as *delicately*, *mf*, *sub. pp*, *fff! raucous*, and *sub. mf - delicately*. The notation includes various note values, rests, and articulation marks.

Piu vivo 7"

non dim. 6" 3" fff!

3" 1" 2" 3" 5

Tempo ♩=40 5" 10" pitch bend 5 > pp - siren like

7" 3" Band pitch in anal. rhythmic pattern Tempo ♩=60 (Sub. ♩=52) p mp p p - lamentatione

2" 4" 1" 2" non dim. - imitate du. - sul part.

6" 2"

2" 8" 10" *pp cresc.* *sim.*

pp *cresc.*

ppp *sfz* *let die naturally* *(Sub. ♩=72)* *cresc.*

accl. poco a poco *mf* *molto accl.*

sfz *breath accents* *raucous!* *mpo* *♩=132*

swing! *Sub. ♩=60* *Sub. ♩=132* *sub. sfz* *non dim.*

Spoken: softly
 That's it, That's it...
 Got the feelin'
 Got the feelin'

6/3/79

Optional

NOTES

Composition:

The composition follows roughly the form of a Chanson de Geste and is, figuratively, a "song of great deeds" about Roland Kirk. The structure of the work is five "tirades" of equal length following the form A/B/A'/B'/C. The pitch material is based upon the pitches found in the "head" of We Free Kings.











"We came with bells and whistles when they were unheard of!"

-Roland Kirk

The Case of the 3-sided Dream
in Audio Color

Notation:

PITCH, DYNAMICS, ARTICULATION

- 1.)  = pad popping using indicated indef. pitch contour
- 2.)  = strike the keys producing the indicated def. pitch while blowing air through instrument
- 3.)  = variable speed vibrato
- 4.)  = alteration of timbre by utilizing embouchure and focused vocal distortion (i.e. oo, ee), as well as alternating the addition and subtraction of keys for minute pitch distortion.
- 5.)  = rapid alteration/distortion of timbre and amplitude.
- 6.) multiphonics - the multiphonics and fingerings given in the score are suggestions only. It is important that the F#/C#/F4 multiphonio, or its equivalent, be of an abrasive, "high energy" quality. Conversely, the F/G or its equiv., should have a soft, ethereal, transparent sound.
- 7.)  = diminuendo to silence.
- 8.)  = slap tonguing: exaggerated attack
- 9.)  = slap tonguing: moderate attack
- 10.)  = tongue and strike keys simultaneously
- 11.)  = woodwind pizz.: attack note and immediately stop air w/ the tip of tongue. The resultant sound should be thick and heavy - not a light staccato sound.

(notes - cont.)

- 12.) $\overset{WH}{\curvearrowright}$ = very soft windy attack
- 13.) $\overset{\curvearrowright}{\curvearrowright}$ = short gliss, in style of a jazz "fall off"
- 14.) $\overset{\curvearrowright}{\curvearrowright}$ = long downward gliss
- 15.) $\overset{\curvearrowright}{\curvearrowright}$ = "brut tone" attack in jazz style

RHYTHM

- 1.) In all meter changes, $\downarrow = \downarrow$
- 2.) ||||| = accelerated note group
- 3.) ||||| = retarded note group
- 4.) $\overset{\circ}{\underset{\circ}{\curvearrowright}}$ = a pitch of very short duration
- 5.) $\overset{\circ}{\underset{\circ}{\curvearrowright}}$ = play as fast as possible.
- 6.) $\overset{\circ}{\underset{\circ}{\curvearrowright}}$ = unaccented grace note
- 7.) $\overset{\circ}{\underset{\circ}{\curvearrowright}}$ = accented grace note
- 7.) $\overset{\circ}{\underset{\circ}{\curvearrowright}}$, $\overset{\circ}{\underset{\circ}{\curvearrowright}}$ = pause for the number of seconds indicated
- 8.) $\text{---}3\text{---}$, $\text{---}\downarrow\text{---}$, $\text{---}\downarrow\text{---}$ = material should last exactly the number of seconds or beats indicated.
- 9.) $\overset{\circ}{\underset{\circ}{\curvearrowright}}$ = heavily accented grace note played w/ "cutting tone".

Whistle and Spoken Parts

- 1.) Use an Acme Whistle Siren as the instrument
- 2.) Whistle part is $\overset{HIGH}{MEDIUM}$ in notation. \sim indicates pitch contour within the $\overset{H}{M}$ context.
- 3.) $\overset{\circ}{\underset{\circ}{\curvearrowright}}$ = guttural cry w/ short, jazz style gliss.
OWHR!

— M. L. —

Appendix J

Ryo Noda, Improvisation II

à Jean-Marie Londeix

IMPROVISATION 2

Ouvrage protégé - PHOTOCOPIE INTERDITE même partielle (loi du 11-03-1957) constituerait contrefaçon (code pénal art. 423)

pour saxophone-alto seul

Ryo NODA
Bordeaux, 1973

♩ = 60 environ
Cresc long

non vibrato
ppp

vibrato

p *10* *poco a poco cresc.* *12*

mp

ppp ininterrompu *accel.*

ob ad lib.
mf *dramatique*

mp doux et expressif

p *très expressif* *pp* *accél. et*

cresc.

très long

ppp non vibrato *sub. ppp*

Durée: 4' env.

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