The Akai Electric Wind Instrument (EWI4000s): A Technical and Expressive Method

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THE AKAI ELECTRIC WIND INSTRUMENT (EWI4000s):
A TECHNICAL AND EXPRESSIVE METHOD

By
Matthew J. Vashlishan

A DOCTORAL ESSAY

Submitted to the Faculty
of the University of Miami
in partial fulfillment of the requirements for
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THE AKAI ELECTRIC WIND INSTRUMENT (EWI4000s):
A TECHNICAL AND EXPRESSIVE METHOD

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The Akai EWI4000s is the most recent model of the EWI (Electric Wind Instrument) family, first conceived by Nyle Steiner in the late 1970’s. A relatively young electronic instrument, the EWI lacks a complete, organized publication explaining how to fully utilize its technical and expressive devices. Furthermore, no instructional aid exists to explain the parameters of the Vyzex computer editor used to create and manipulate the onboard sound bank of the EWI4000s.

The purpose of this study is to inform the reader of how the EWI4000s came to fruition, to develop a complete technical and expressive method for learning to play the EWI4000s, and to create a musically based manual for using the Vyzex computer editor. Using text, diagrams, and musical examples, the method acquaints the reader with the EWI’s internal and external controls by explaining their functions using musical terms easily understood by the common musician. Additionally, new notation is created to constrain the EWI’s seven-octave range exclusively within the treble clef staff making it easier to compose and read EWI music without excessive clef changes and musical octave markings. The new notation also develops symbols to dictate use of the EWI’s expressive devices such as pitch bend, glissando, octave doubling, and harmonization.
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The Electric Wind Instrument (also known as the EWI) is a wind-controlled electronic synthesizer and MIDI controller. It is designed to give musicians familiar with conventional woodwind technique the ability to control synthesizers and MIDI instruments using the breath and fingers. First conceived by Nyle Steiner in the late 1970’s, the EWI has intrigued musicians around the world. The Akai Company brought Steiner's design into mass-production and worldwide distribution. It should be noted that Yamaha manufactures a competing wind controller, the WX-7. However this study will be devoted exclusively to the current Akai model, the EWI4000s. The design of this instrument is the closest thing on the market to Steiner’s original concept.

The EWI4000s is an amazingly flexible instrument, capable of a seven-octave range, octave doubling, harmonizing, and electronic effects such reverb, delay, and chorus. It has one hundred onboard sounds that are with fully editable with the Vyzex editor, a computer program available on the Akai website.

Since its invention, exploration and utilization of the EWI has been limited, especially when compared to the electronic versions of common instruments such as guitar, bass, and keyboards. In particular, saxophonists Michael Brecker, Masato Honda, Bob Mintzer, and Steve Tavaglione have all gained a considerable degree of proficiency on the instrument and have no doubt contributed much towards its recognition in the world of jazz and
contemporary music. Interest in the EWI appeared to taper off during the late 1990’s, when Brecker began using it more sparingly.

**Need for the Study**

Despite having some commonalities with its “acoustic cousins,” the EWI must be considered an instrument in its own right. Even for a musician already proficient at playing the saxophone, flute or clarinet, the EWI presents specific challenges not readily mastered. Certain technical aspects of EWI performance require considerable time and dedication. This is the likely reason many woodwind players investigate the EWI, but few continue their study past the early stages.

The major difference between the EWI and acoustic woodwinds is the touch-sensitive keyboard, as opposed to mechanical keys that open and close tone holes. Woodwind performers accustomed to pressing down keys and/or covering tone holes to create different pitches will find that their technique must be further refined in order to achieve a clean transition between notes on the EWI. In a 2007 interview by Andrew Clark, EWI inventor Nyle Steiner states: “I think one of the things that is hard for people is when they pick it up they are touching keys accidentally and not even knowing it. Their fingers are trying to get a scale and they don’t realize they are touching extra keys.”

Another challenge the EWI student will have to overcome is utilization of the instrument’s massive 7-octave range. Those familiar with acoustic woodwind instruments like saxophone, flute and clarinet (2.5, 3, and 3.5 octave range respectively) may initially abandon these additional octaves, feeling more at home producing the octaves they are accustomed to hearing. Furthermore, there is no currently developed system of notation to

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realize the EWI’s range entirely in the treble clef (the clef most woodwind players are accustomed to reading).

Further challenges presented by the EWI include mastering the many expressive devices such as vibrato, pitch bend, and glissando. The methods for activating these devices on the EWI are considerably different from conventional acoustic woodwind instruments. However, use of these devices will deliver aural results similar to the common expressive techniques of acoustic instruments.

In addition to issues of technical proficiency, the computer editor of the EWI’s built-in synthesizer (referred to as the Vyzex editor) can be used to create and manipulate a multitude of unique sounds. Manipulating the instrument's computer editor may be daunting to musicians lacking experience with electronics.

To aid in the process of learning the EWI, the primary focus of this study will be to create a study method for the instrument. Such a method could provide a convenient pathway to improvement for players of all levels, and could help coax the instrument into the mainstream. This method will provide a specific course of study, including both general instructions and specific exercises designed to acquaint the student with conceptual and technical problem areas. The method will also include exercises to help the student develop musically effective use of the EWI’s expressive devices, specifically pitch bend, vibrato, glissando, and harmonization. Importantly, the author will develop new notation specific to the EWI’s extensive range, allowing the student to read the exercises in treble clef over the full range of the instrument. Transcriptions of solos from Michael Brecker and Bob Mintzer will be included, both for practice and as a demonstration of some of the established vocabulary that has been created on the instrument. The study will also contain a brief
history of the instrument to inform the reader of how the EWI was developed and how it has progressed.

To date there is no such method book dedicated to teaching the unique technical and expressive demands of the EWI. Aside from the basic and somewhat cryptic user manual supplied with the instrument and computer editor software, there is no exclusive publication that provides a clear "hands-on" approach to the use of the many electronic features in both a practical and musical context.

**Purpose of the Study**

The purpose of this study is to provide (in order of presentation) (1) a brief history of the Akai EWI, (2) a complete technical and expressive method for study, (3) transcriptions of Michael Brecker and Bob Mintzer EWI solos to demonstrate new EWI notation and to present technical challenges for the student. Familiarity with the above will hopefully encourage and enlighten interested musicians to the potential of the EWI and make the process of learning the instrument easier and more enjoyable.
CHAPTER 2

Review of Related Literature

There are numerous cursory magazine reviews and Web articles dealing with various Akai EWI models. Some provide basic information about the instrument such as photos, capabilities, new features in the Akai EWI4000s, and sell various EWI accessories. Other sources provide interviews with musicians who play the EWI, such as Michael Brecker\(^2,3\) and Bob Mintzer.\(^4\) The majority of articles deal with synthesizer programming and EWI product reviews. The extensive list of related sources at the end of this document will direct the reader to these articles.

There are very few sources that discuss learning to play the EWI from the viewpoint of developing technique. Of these sources, none are extensive or complete. Saxophonist Andrew Clark has published four articles in *Saxophone Journal*\(^5\) based on his own research of the EWI. The first two articles are titled “*Akai EWI Story: The Electric Wind Instrument Past Present And Future*” and contains useful information about playing and programming the EWI, although it should be noted all information pertains to models which precede the current EWI4000s.\(^6\) The majority of information presented in article 1 deals with the fingering mechanism, mouthpiece, as well as analog and digital synthesis concepts such as

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sound waves, oscillators, and filters. Article 2 of Andrew Clark’s article focuses mostly on technical problems with models previous to the EWI4000s and how/where to fix them. This information is in the form of contacts and company names. Clark also includes known bugs that limit the performance of the EWI and identifies patches to fix them.

The most useful of the Andrew Clark articles is his interview with inventor Nyle Steiner. They discuss many topics, including Steiner’s background and how certain parts of the EWI were conceptualized and produced. They also discuss technical challenges that Steiner came across over the years as he utilized feedback from different types of players who learned to play the instrument. Particularly interesting is a recounting of commentary from legendary saxophonist Michael Brecker, one of the EWI's foremost pioneers. Despite all of the information presented in Andrew Clark’s articles, he offers little in terms of useful suggestions for developing both technique and expression on the instrument. A synopsis of this interview will enrich the history portion of this study.

Due to the lack of published material, the majority of information for the history portion of this essay will come from the interviews mentioned above. The websites EWI-EVI.com and Patchman Music (www.patchmanmusic.com) contain information in the form of short pages and unpublished articles. Information from these pages will be referred to when creating the brief EWI history.

Methodology

This study will be divided into four large parts and their subsections. Part one will present a concise history of the EWI. This history will be limited to important events in the life of the EWI from its invention to the present day. This history will not be exhaustive; it is

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meant only to provide the reader with a general sense of the timeline and musical advancements of the instrument. Part two will be the main focus of this document: the study method for the EWI. Part three will serve the same purpose as the EWI method in part two, but will focus entirely on the Vyzex computer editor. Part four will present transcriptions by saxophonists and EWI artists Michael Brecker and Bob Mintzer using the new notation.

The method book and Vyzex editor sections of the study will consist of text, created figures, and musical examples. All musical examples will be made with Finale 2011 and Sibelius 6 music notation software and inserted into a Microsoft Word document. Complicated diagrams beyond the notation software capabilities will be constructed with Adobe Photoshop and/or Illustrator.

**EWI Method Book**

Sections of the method will include *External and Internal Functions, Breath Sensor Manipulation, Technique, Thumb Techniques, Extended Techniques*, and *Working with the Vyzex Editor*. Brief summaries of these chapters are described below.

*Internal and External Functions*

Unlike previous versions of the EWI, the current EWI4000s contains a built-in synthesizer that allows it to be used as an instrument exclusive of a separate synth module. The EWI4000's sonic possibilities are further enhanced by its capability to transmit MIDI information to external sound sources. Adjusting MIDI parameters can be confusing to someone not familiar with synthesizers and MIDI. Therefore the method book will explain each of the adjustable MIDI parameters that can be sent to any external MIDI device. To help users with limited technological background understand the various technical
adjustments, extensive musical analogies will be used. The following elements will be examined:

*External Controls and Menus*

The EWI4000s features many external buttons and knobs used to adjust parameters that affect the playing experience. Additionally, the EWI’s internal menu structure contains adjustable parameters for sounds, effects, and MIDI that can be rather confusing to the new EWI student. The menu structure and all adjustable parameters of these onboard menus will be explained in this chapter using musical terminology when possible.

*Breath Sensor Manipulation*

The breath sensor converts air pressure to sound and allows for dynamics, articulation, and vibrato. This chapter will explain the different ways to produce articulations and vibrato with the breath sensor, as well as reinforcing the information on the breath sensor settings covered in the previous chapter.

*Technique and Notation*

Specific technical exercises will introduce the player to the basic manipulation of the EWI’s touch sensors. Scales and common melodic patterns will serve as the means to acquaint the player with the fingering “break” and the different places this occurs.

To become familiar with the EWI’s large range, a new notation will be developed using colored note heads on a treble-clef staff to represent octaves. This is appropriate given the fact that the majority of woodwind players (saxophonists, flutists, clarinetists) read exclusively in the treble clef. Normal black notation will be used to indicate the written staff octave. Colors will change per octave as the range extends above and below this point.
Once presented in this chapter, this notation will be used throughout the book, including all exercises and transcriptions.

The author acknowledges the fact that some musicians are colorblind and will be unable to accurately read the notation. Through careful examination of many other possible notation techniques (shaped note heads, numeric cues, visual instructions, arrows, etc.), the author has decided that colored notation is the most appropriate solution for negotiating the EWI’s range.

**Thumb Techniques and Note Manipulation**

The right and left thumbs produce pitch bend and glissando respectively. These two types of sonic manipulation sound very much like that of acoustic instruments, yet the thumb techniques used to create them on the EWI differ greatly from the embouchure and key technique of acoustic instruments. Here the reader will learn how to execute these techniques through a series of exercises and transcription excerpts.

**Extended Techniques**

Other functions on the EWI include the harmonization and sustain functions. These functions make it possible to double the line played an octave below, as well as to sustain one note while playing others. Exercises will demonstrate the technique of playing harmonized melodies using these functions, but will not detail the possibilities of various external synth settings that can achieve similar results.

An additional expressive technique is the use of the pitch-bend function in conjunction with fingering whole steps to create an optional way of producing a chromatic scale. This difficult technique can yield results more similar to an acoustic instrument.
Software and hardware settings and adjustments must be made to accomplish this and will be discussed here in detail.

*Working with the Vyzex Editor*

The Vyzex internal synth editor allows the player to manipulate the existing EWI4000s sound bank as well as create new sounds from scratch. This interface does not follow the normal synth parameters of Attack, Sustain, Decay, and Release, therefore requiring time consuming probing and trial to discover how to edit the EWI’s sounds. The Vyzex Editor’s instruction manual describes all of the editor’s parameters in a highly technical manner using graphs and diagrams. This chapter will be devoted to explaining the Vyzex Editor’s basic most useful functions in musical terms, so that onboard sounds can be created or changed more easily and without extensive knowledge of computers and technical terminology.

*Transcriptions*

Michael Brecker and Bob Mintzer are musicians the author feels best represent both technical and artistic musical achievement on the EWI. Solos from Brecker and Mintzer will be included in this chapter in their entirety, written using the colored notation described above. The purpose of these transcriptions is to provide relevant practice material for developing technique, and to further acquaint the player with the colored notation system.
CHAPTER 3

EWI History

Nyle Steiner invented the EWI as well as the EVI. Both are electronic wind instruments activated by breath pressure. EVI is an acronym for “Electric Valve Instrument” and was designed to mimic a trumpet. The EWI (Electric Wind Instrument) came later and vaguely resembled a clarinet or soprano saxophone. Both of these instruments were eventually mass-produced by the Akai Corporation, however the EWI is the only one to continue in commercial production today. In the late 1970’s and early 1980’s, an Italian company named Crumar built some of the first mass-produced EVI’s.8

Nyle Steiner grew up studying music performance and education at the University of Utah, later playing trumpet in the Utah Symphony.9 He never studied electronics formally but acquired his knowledge while working for an electronics company around the same time he played in the symphony. During his time working in electronics he became friends with an engineer named Dick Parker, who later became his business partner.10

In the mid 1960’s Nyle Steiner began to work on the EVI design but did not produce a playable instrument until 1975.11 It wasn’t until 1987 that the first EWI and EVI models were available from Akai.12 Akai produced several models of the EWI over the past twenty-five years. The EVI was only produced in only one model and did not continue. Since commercial production, Nyle Steiner has continued to produce EWI’s and EVI’s himself,

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9 Ibid.
10 Ibid.
11 Ibid.
12 Ibid.
coming up with new capabilities and designs available only to a select few (Michael Brecker, Tom Scott, and Dave Koz played EWI prototypes in the 1980’s built by Steiner himself). One particular design features keys that position the hands directly even with one another instead of one above the other. Michael Brecker was seen playing this model, but it is not mass-produced. Before and after his collaboration with Akai Steiner manufactured many EWI and EVI components by hand, stating that he was “not comfortable with their availability and the performance of some.”

By the late 1980’s several musicians had begun playing the EWI. Some of the most notable musicians include Michael Brecker, Bob Mintzer, Steve Tavaglione, Jeff Kashiwa, Dave Koz, Masato Honda, and Marshall Allen. Of these musicians, Michael Brecker has arguably done the most to showcase the EWI in a creative jazz setting by using it on several of his own recordings. In addition to these recordings, he has played the EWI with the fusion group Steps Ahead as well as in popular music settings with Paul Simon.

Saxophonist Bob Mintzer has also used the EWI since he purchased one of the first Akai production models in 1989. The majority of his EWI work has been with the fusion group The Yellowjackets. It was this group that first inspired Mintzer to play the EWI – a relationship that has lasted over twenty years and still continues. Today Mintzer performs with the EWI4000s.

Woodwind artist Steve Tavaglione uses the EWI for creative music as well as to produce music for movie and television soundtracks. Some of his most notable projects include Pixar’s Wall-E, Sex in the City, and Star Trek: Enterprise.

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14 Mintzer, Bob. “Akai EWI Questionnaire.” Questionnaire. Email: Email correspondence, 2011.
The current Akai production models are the EWI4000s and most recently the EWIUSB. Older models include the EWI1000, 3000, and 3020. All of the older models feature a separate sound module and could not synthesize sound from within the unit. The current EWI4000s contains a built-in synthesizer that eliminates the need for an external sound source and is capable of storing one hundred different sounds, all of which are fully editable and customizable using computer software. The EWIUSB is very similar to the EWI4000s, but can only be used with computer software instruments via USB connection. It also has a limited range when compare to the EWI4000s.

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PART 2

AKAI EWI4000S TECHNICAL AND EXPRESSIVE METHOD

The Akai EWI is a rather complex instrument with many functions and adjustable parameters. This method is not intended to replace the Akai Professional EWI4000s User Manual. Instead, this method is a supplement to the manual that will aid the student in learning to use and adjust the EWI’s many functions as well as to develop a practical technique for playing the instrument. Any questions the reader has about fundamental issues regarding how to adjust or use the EWI from a technological standpoint are directed to this manual. Additionally, the author assumes the reader has sufficient knowledge of a woodwind instrument such as saxophone, flute, clarinet, or oboe as well as music notation as these topics will not be discussed. Fingering charts and diagrams are available in the Akai EWI4000s User Manual available for download at www.akaipro.com.
The Akai EWI4000s has three main groups of external controls that affect how the instrument sounds, feels, and responds: 1) Four white buttons located on the back of the instrument used to access volume, transposition, and effects settings; 2) Seven Breath Sensor Adjustment Knobs that manipulate all parameters of the Breath Sensor (also located on the back of the instrument); 3) Two clear plastic buttons located next to the right hand touch sensors used to navigate menu screens and control the Octave and Hold functions. All external controls are fundamental to the way the EWI responds to the player. In particular, proper adjustment of the Breath Sensor is crucial to ensuring an enjoyable expressive playing experience.

**General Setting of the Breath Sensor Adjustment Knobs**

The seven Breath Sensor Adjustment Knobs control pitch bends, glissandos, vibratos, and breath sensitivity and are fundamental to the EWI playing experience. They are hidden directly above the LCD screen under a plastic cover. All breath sensor settings are used with the internal sound bank of the EWI. When using the EWI with other hardware or software synthesizers via MIDI, expressive devices will depend on the settings of both the EWI and the external synth.

![Figure 1: Breath Sensor Adjustment Knobs](image)
There are four categories within the breath sensor controls: GL (glide/glissando), PB (pitch bend), VB (vibrato), and BR (breath). They are displayed along with A/T, A/W, A, and A/S markings respectively. The following diagram shows settings for an average, practical breath response and should be used as a starting point for the beginner. This setting is used by the author and offers good control and a musically appropriate amount of pitch bend, glissando speed, and vibrato width. Further possibilities for adjustment of these parameters will be addressed later in the appropriate sections. For a more in-depth discussion of the Breath Sensor and its capabilities, see Chapter 5 - Breath Sensor Manipulation.

**Figure 2: General Breath Sensor Configuration**

Within this basic configuration, the BR/S may need additional adjustment. If extreme pressure is needed to create a sound, or sound is produced when not blowing into the mouthpiece, adjust the BR/S knob in small increments. Play-test between each adjustment to find a setting that is comfortable and close to a familiar acoustic wind instrument.
**Touch Sensor Sensitivity Knob**

The Touch Sensor Sensitivity knob adjustment is crucial to ensure proper EWI performance. If this knob is not set correctly, static electricity created by the body and surrounding environment will cause undesired sounds and inaccurate note production based on fingerings used. This knob is located on the lower half of the EWI, directly below the white “FX” and “LEVEL” buttons and resembles a black Philips-head screw.

![Figure 3: Touch Sensor Sensitivity Knob](image)

A tiny notch in the knob is used to indicate the setting in case accidental adjustment occurs. Once this knob is set, very little adjustment is needed. To adjust the Touch Sensor Sensitivity touch the octave rollers and both metal strips with the left thumb, and the top three metal touch sensors (“keys”) with the first and second finger. Twist the Sensitivity knob to the left and right with the right hand, and the LCD display lights will turn on and off. Turn the knob to the left so that the LCD is lit, and slowly turn to the right until the LCD turns off. At this point, turn the knob slightly further for good measure and play the EWI. If notes in all registers and tempos produce a solid pure sound without any “computer fuzz,” the
EWI is adjusted properly. Any problems with the EWI’s touch sensors should be directed to
the setting of this knob before troubleshooting elsewhere.

White Buttons and Clear Plastic Buttons

The Akai EWI has four white external buttons and two clear plastic external buttons
that control access to all of the onboard menu screens and functions. The white buttons are
clearly labeled SETUP, TRANS, FX, and LEVEL. The function of each button and their
various settings are described below.

![Figure 4: Location of the SETUP, TRANS, FX, and LEVEL buttons](image)

When the appropriate white button is held down, the two clear plastic buttons on the
front of the EWI are used to navigate through the menu screens on the LCD display. These
clear buttons are located next to the right hand touch sensors. It should be noted that they
also control the Octave and Hold functions when the white buttons are not depressed. To
navigate “up,” or further into a menu sequence, use the top clear button. To navigate
“down,” or backwards towards the starting point of a menu, use the bottom clear button. All
of the white external buttons must be pressed and held down when using the clear plastic
buttons to navigate.
As is the case with the Breath Sensor adjustment knobs mentioned earlier, the settings of the TRANS, FX, and LEVEL buttons pertain to the onboard sound bank of the EWI only. Using the EWI via MIDI with an external hardware or software synth will override these settings and the settings located on the external synth will be used. To control what information is sent from the EWI, use the parameters within the SETUP menu.

**MIDI**

MIDI is an acronym for Musical Instrument Digital Interface. Developed in the late 1970’s, MIDI was being used in computer interfaces by the early 1980’s. MIDI is a series of very small data messages 1-3 bytes in size. They are grouped in different categories with numeric labels such as volume (7), expression (11), all sound off (120), etc. These categories are known as MIDI control numbers, and tell the interface what to do upon receiving the message. There are 127 different control numbers in total. Additionally, an “amount” value of 0-127 is applied to each control number telling the interface how much of a particular parameter should be applied. MIDI is beneficial because files of complete pieces of music
are very small in size and easily transferrable between interfaces that understand how to read MIDI information.

Several levels of the SETUP menu contain parameters that affect how MIDI information is transmitted from the EWI to an external device. Transmitting the EWI’s expressive capabilities to an external sound source will also require familiarity with how the particular device receives this information. In that external devices can be different in this regard, explanation will be limited to MIDI settings/controls within the EWI.

**Explanation of Internal Menu Functions**

**SETUP**

The SETUP button functions as the doorway to the internal menu structure of the EWI. Where applicable, the author will provide a musical description of the menu items within the SETUP button:

*Ad (Adjust)*

Pressing SETUP once enters the “Ad” or adjustment mode and is the menu selection used to display the visual adjustment of the Breath Sensor Adjustment Knobs.

*dL (Delay)*

Key delay can be set from 00-15 and delays the response of the touch sensitive keys. It becomes very difficult if not impossible to play fast passages when this value is set higher. The author suggests setting the key delay as low as possible, and uses a value of 04. Technical exercises later in this text will provide a foundation that minimizes the potential for technical flaws.
**CH** (Channel)
Channel selects the EWI’s MIDI channel when using it with a computer or other MIDI device. The user can select values 1-16; channel 1 is the default. When using the EWI with an external sound module (computer software or a hardware synth), the same channel on both the EWI and the sound device must be selected in order for the two systems to communicate with each another. Sixteen channels enable players to use multiple MIDI controllers at one time.

**tu** (Tuning)
The EWI is capable of tuning between A=416 and A=465. If the tuning is set to A=440 and the EWI is not playing in tune, the pitch bend parameters of the general breath sensor may be out of adjustment. For more information on breath sensor adjustments, consult Chapter 5.

**bS** (Breath Sensor)
This menu should not be confused with the physical breath sensor adjustment knobs. The Breath Sensor menu is used only for transmitting MIDI information to an external sound device. The following parameters (vo, AF, br, EP, vE) are all adjusted within the MIDI Breath Sensor menu. Adjustments made here will *not* affect how the EWI responds when played alone with the built-in sound bank. All adjustments here will affect how an external sound device reacts when controlled by the EWI.

Most synthesizers recognize Breath, Expression and Velocity as similar MIDI events. In general, any of these parameters can be mapped to a number of different tasks, from volume to sound shaping, using MIDI values from 00-127. The label of the MIDI event on the EWI only defines that exact event if it is routed in the external synth to do so. As a general rule, use the breath sensor labels (aftertouch, breath, velocity, etc) as markers. This will make it easier to keep track of what parameter the EWI is sending to the device. By play testing each of the breath sensor parameters both on and off, one can see how the synth will behave before mapping various MIDI events to specific tasks. The following parameters can either be turned ON or OFF.
When turned on, a small red dot will illuminate on the LCD display. Use the TRANS button to toggle parameters on and off.

vo (Volume)
Volume will send general MIDI volume information to the external sound device.

AF (Aftertouch)
Aftertouch is an expressive tool in some keyboards that allows the user to change finger pressure on a key after it is initially pressed, adding expression to a note as it is sustained. In EWI terms, aftertouch applies to things such as vibrato and pitch bend. Even though pitch bend information is sent separately (further down in this menu), an external synth might not play dynamics, vibrato, or pitch bends correctly unless this feature is turned on.

br (Breath)
Some external sound devices recognize the breath parameter and do not need to be mapped. In some cases, the following Expression and Velocity parameters can be used for similar things as Breath, in which case Breath can be turned off.

EP (Expression)
Expression is a value of 00-127 that can be mapped to a number of expressive devices on the external sound device.

vE (Velocity)
If velocity is selected, the EWI will transmit velocity information controlled by breath strength using a value between 00-127. If this parameter is turned off, no velocity transmitted or a constant unchanging velocity value is used. To select the constant value, proceed down the main menu list to “vE”.

vS (Vibrato Sensor)
Some synthesizers consider vibrato and pitch bend synonymous due to their sonic similarity. The vibrato sensor allows vibrato information to be controlled with pitch bend information or with breath sensor information. In most cases, the user will bite
the rubber mouthpiece to engage vibrato. For this reason, it is advantageous to use breath sensor information to control vibrato.

\[
\begin{align*}
bo & \quad \text{Vibrato controlled by breath sensor} \\
Pb & \quad \text{Vibrato controlled by pitch bend}
\end{align*}
\]

\[vE \quad \text{(Velocity)}\]

As mentioned above, turning off velocity in the breath sensor menu will either send no velocity information or a fixed velocity value. Here the user can choose to turn velocity off, or select a constant value between 00-127. Velocity can be used for expression or volume on an external device (these are most common, but velocity can be used for a wide variety of parameters depending on the external device).

\[Po \quad \text{(Portamento)}\]

Portamento will transmit data from the Glide (GL) strips along side of the octave rollers.

\[PS \quad \text{– Pedal Switch}\]
\[CC \quad \text{– Continuous Controller - Using Glide information in this way eliminates its function as portamento and enables the user to trigger other features of the external synth.}\]

\[Oc \quad \text{(Octave Button)}\]

Previously referred to as one of the “front clear plastic buttons” located next to the right hand touch sensors. The bottom clear button is the Octave button. When pressed, the note played is doubled one octave lower.

\[OF \quad \text{(Off)}\]

Turns the octave button off.

\[oc \quad \text{(Octave)}\]

Doubles note played one octave lower.
Octave Button continued

In (Interval)
Lets the user define (by playing) any chromatic interval, then adds that interval to every note played until button is disengaged. For example, one could play a line in parallel 3rds, 6ths, or any chromatic interval.

dn (Down)
Octave button will only be used to select different sounds from the preset sound bank. This is not the best option because it limits the availability of this button for other creative uses.

CC (Continuous Controller)
Using the Octave button in this way eliminates its function as an octave doubler or parallel harmonizing device and enables the user to trigger other features of the external synth. Cn, dA, and LA of this menu are used for this purpose.

Cn (Controller number)
Cn is used for describing the parameter of the external synth that is controlled. Any MIDI controller number can be used, and is selected using the dA parameter below.

dA (Data)
Data selects a standard MIDI value between 00-127 to be sent to the external device.

LA (Latching)
Latching mode turns the Octave button into a toggle switch for the particular parameter controlled on the external synth. Press the Octave button once to activate the parameter, and again to deactivate it.

Ho (Hold Button)
The Hold button is the top clear button previously referred to as one of the “front clear plastic buttons” located in the mid section of the EWI. When pressed, it allows for a user defined pedal tone. Using the parameters below, this pedal tone can be a single constant tone or many different tones.
(Hold Button continued)

OF (Off)
Turns the Hold button off.

LE (Legato)
Legato mode will sustain the first note played, allowing the player to establish a pedal. Any note slurred to (without a break in airflow) will sound along with the held note. Re-articulating the EWI on a different note will create a new pedal tone.

nL (Non-Legato)
Non-Legato mode is used when one pedal tone is desired for a longer passage with multiple articulations. Play and hold the desired pedal tone, then press the Hold button. As long as the Hold button is illuminated, the same pedal tone will sound any time the EWI is played. To stop or select a new pedal note, press the Hold button again.

Su (Sustain)
Sustain mode is identical to Legato mode if the EWI is used exclusively without an external module. Sustain mode will transmit MIDI Sustain data to the external sound device, where Legato mode will not.

UP
The Hold button will only be used to select different sounds from the preset sound bank. This is not the best option because it limits the availability of this button for other creative uses.

CC (Continuous Controller)
Using the Hold button this way eliminates its function holding specific pitches and instead enables the user to trigger other features of the external synth. Cn, dA, and LA of this menu are used for this purpose.

Cn (Controller number)
Cn used for describing the parameter of the external synth that is controlled. Any controller number can be used, and is selected using the dA parameter below.
Data (Data)
Data selects a standard MIDI value between 00-127 to be sent to the external device.

Latching (Latch)
Latch mode turns the Hold button into a toggle switch for the particular parameter controlled on the external synth. Press the Hold button once to activate the parameter, and again to deactivate it.

Glide or Portamento (GL)
GL is activated by the thin metal strips the right side of the octave rollers. This effect sounds similar to a sliding trombone. The user can select the length and speed of the slide between notes. This is very similar to the GL parameter using the external Breath Sensor Adjustment Knobs but pertains to MIDI only.

\( r \) – rate
\( t \) – time

Pitch Bend Up (PU)

Pitch Bend (Pb)
Pb activates pitch bend up. This must be set to the ON position or the external synth will not receive pitch bend information.

Continuous Controller (CC)
This control is used to map the ‘pitch bend up’ information to another parameter not necessarily related to pitch bend and is generally disabled.

Pitch Bend Down (Pd)

Pitch Bend (Pb)
Pb activates pitch bend down. It must be set to the ON position or the external synth will not receive pitch bend information.

Continuous Controller (CC)
This control is used to map the ‘pitch bend down’ information to another parameter not necessarily related to pitch bend and is generally disabled.
Key Program enables the user to change the onboard sound bank in a variety of different ways. The author recommends turning everything off and to select sounds by touching the large silver screw (called the Program Key) directly underneath the neck strap loop on the back of the EWI. Use the Octave and Hold buttons (clear plastic buttons) to navigate up and down through the sound menu while touching the Program Key. To use each method below simply touch the Program Key, finger a note where the sound is stored, and blow into the mouthpiece to choose that setting. More information on saving sounds can be found in the Reference Manual.

dP – Assign sounds to different notes within one octave
AL – Assign sounds to every note that can be played (96)
Et – Send MIDI sound change information to an external device.

Fn (Fingering Mode)
Select between the following fingering patterns based on familiar acoustic woodwind (or electronic) instruments.

EI (EWI)
Based on a combination of general fingerings of all woodwind instruments.

SA (Saxophone)
SA resembles saxophone fingerings and is the fingering system used for all technical examples in this method. This fingering system allows the player to touch the left-hand pinky G# key while fingerings other notes. In other fingering modes, pressing the G# key while playing other notes will change the pitch.

FL (Flute)
FL fingerings are close to the acoustic flute, but require learning a few new fingerings. This fingering system can be used with this text but may require a few adjustments.

Ob (Oboe)
Ob fingerings are close to the acoustic oboe, but require learning a few new fingerings. This fingering system can be used with this text but may require a few adjustments.

Ev (EVI - Electric Valve Instrument)
Ev resembles brass fingerings and will not be discussed or applied in this text.

Er (EVI Reversed)
Er closely resembles the actual EVI playing experience. This fingering mode will not be discussed or applied in this text.

**UP (Update)**
UP is used when updating the EWI’s firmware. Use the “UP” selection to initiate the update process. Follow instructions provided with the update file.

**CP (Control Protocol)**
CP is used in SysEx communication. It is not used as a musical function and is described in the EWI User Manual. The default setting is “on” and does not need to be adjusted for normal use.

- *on* – set CP on
- *OF* – set CP off

**TRANS**
Pressing this button once will engage the transposition function, putting the EWI into any key the user chooses. When pressed, the key will show on the LCD display and the light above the TRANS button will remain lit, indicating that the EWI is now transposed. Press the button once more to return the EWI to concert pitch. To adjust the transposition, press and hold the TRANS button and use the two clear plastic buttons to select the transposition.

The transcriptions in part four of this text are written in both concert pitch and Bb. Be sure to
follow the transpose information in the upper left corner of the music before playing. All other examples in this text are intended to sound in concert pitch.

FX

All internal sounds on the EWI are capable of independent reverb, delay, and chorus settings. The FX button combined with the SETUP button controls these settings. To change the FX settings, press and hold the FX button and also press the SETUP button. The parameter currently being adjusted will display on the LCD screen. While still holding the SETUP button, release the FX button and use the clear plastic buttons to cycle through reverb, delay, and chorus (rb, dL, and CH respectively). When the desired effect is selected, release the SETUP button and change the value with the clear plastic buttons. Pressing the FX button once again will exit and return the EWI to normal operation. Both reverb and delay have an adjustable range of 00-30. The chorus can be turned either ON or OFF.

Changes in the character of the chorus or the parameters of the reverb and delay must be adjusted in the computer sound editor, called the Vyzex Editor. When these parameters are changed in the Vyzex editor they will apply individually to each sound. Each internal sound can have its own individual effects settings. Information on manipulating these settings can be found in Chapter 9.

For ease of use and enhanced control over the effects parameters, the author chooses to turn all effects OFF (or set all values to 00) and uses the EWI with external effects pedals such as reverb, digital delay, overdrive, pitch shifter, and looping. Using effects pedals in this way offers enhanced control over the various parameters and also offers the ability to
change these parameters in performance without touching the EWI’s menu controls. This eliminates the possibility of changing sounds or other settings by mistake.

**LEVEL**

Pressing the LEVEL button displays a numeric value of the current output volume level of the EWI. Pressing and holding the Level button, volume can be changed using the “front clear plastic buttons.” The volume values range from 00-30. The most practical settings range from 8-15, especially if the EWI is used with an amplifier for live performance. If the signal coming from the EWI becomes too loud, the amplifier can distort. Set the EWI volume low, and raise the volume on the external amplifier.
CHAPTER 5 - BREATH SENSOR MANIPULATION

Breath Sensor Adjustment Knobs

The Breath Sensor and rubber mouthpiece are the features that turn the EWI into an expressive, and creative musical instrument. Careful adjustment of the Breath Sensor will result in a satisfying playing experience that can closely match if not exceed that of acoustic wind instruments. In opposition, improper adjustment of the Breath Sensor can result in undesired sounds, labored playing experiences, and extreme difficulty achieving musical results. Set the Breath Sensor Adjustment Knobs so each device is easy to control.

The Breath Sensor is divided into four groups, each with two adjustment knobs (except vibrato). Adjustment (A) and one additional parameter unique to the group can be independently adjusted. The four groups are:

1 - Glide Adjustment and Glide Time (GL/A and GL/T)
2 – Pitch Bend Adjustment and Pitch Bend Width (PB/A and PB/W)
3 – Vibrato Depth Adjustment (VB/A)
4 – Breath Adjustment and Breath Sensitivity (BR/A and BR/S)

The author’s basic adjustment for the Breath Sensor has been described previously. The following diagram illustrates a basic breath sensor configuration and will be used as a departure point for the description of how each breath sensor parameter influences the performance of the EWI. The knob is turned clockwise to increase a parameter, counterclockwise to decrease.
Glide (GL)

When using the glide function, the left thumb must rest on the thin metal strip to the right of the octave rollers. Any intervals or notes played with the thumb in this position will result in a smooth glissando between the notes. Remove the thumb from the metal strip to disengage this effect.

GL/A – Adjusting GL/A changes the response time of the Glide strip and can also affect glide time depending on its setting. However, GL/T should be used to adjust the speed of the glissando. The settings shown above will yield a faster glissando and will not interrupt the player’s ideas if the metal strip is accidentally touched. It will sound more like slurred notes in real time.

Pitch Bend (PB)

The right thumb sensors both above and below the thumb engage the pitch bend. Keep the thumb touching the metal square, but roll slightly up or down to bend the pitch accordingly. In-depth work on this technique will be discussed later.
It is very important to adjust the Pitch Bend parameters correctly. To do so, press the SETUP button once to engage “Ad” mode. Adjust PB/A so that the LCD display is blank. Second, adjust PB/W so the LCD display is blank.

PB/A – Sensor adjustment. If this setting is not adjusted properly, the entire pitch of the EWI can be shifted up or down by an entire whole-step!

PB/W – Pitch width. If this setting is not adjusted properly, the entire intonation of the EWI can be shifted a quartertone!

**Vibrato (VB)**

Vibrato controls the depth adjustment, or how exaggerated the vibrato sounds (VB/A). Biting or gently “chewing” on the rubber mouthpiece while holding a note activates vibrato.

VB/A – Vibrato depth. Increasing VB/A will create a wide vibrato. Decreasing VB/A will decrease vibrato and approach a straight tone at its lowest setting.

**Breath (BR)**

The breath sensor adjustment is used to simulate resistance created by an acoustic wind instrument. This can be imagined as a hard vs. soft reed, or large vs. small mouthpiece tip opening. The breath sensor can be adjusted for sensitivity to determine how much pressure is required to create sound, as well as how much pressure is required to create volume changes. This gives the EWI an incredible amount of flexibility and expression.

BR/A – Breath sensor adjustment – Increasing BR/A will make it easier to produce sound, and will eventually cause the EWI to play a sound even if air is not used. Decreasing
BR/A will make it harder to produce an initial sound, and is the equivalent of a harder woodwind reed.

BR/S – Breath sensitivity – Increasing BR/S will make it easier to crescendo and decrescendo on the EWI. This may remove some potential for expression by requiring less increase in air pressure to crescendo. Decreasing BR/S will require more air pressure to crescendo. An extreme decrease of BR/S will cause the EWI to produce sound even if air is not used. BR/S adds expressiveness to the EWI by making it easier to play sustained at various points within a crescendo, especially if the sound of the EWI changes as a crescendo is applied.

**Embouchure**

The correct embouchure for the EWI is different from any other acoustic wind instrument. Playing the EWI may look similar to playing a saxophone, clarinet, or double reed instrument. However, these acoustic instruments are very different in that there is a vibrating reed on the outside of the mouthpiece that come in direct contact with the lips.

To produce the correct embouchure for the EWI, simply insert the rubber mouthpiece into the mouth and gently rest both the top and bottom teeth on the mouthpiece. Place the lips around the mouthpiece just firmly enough that air does not escape while blowing. If excessive breath pressure is needed to produce a sound, consider adjusting the BR/A and BR/S knobs. The teeth and lips in this position allow for easy control of vibrato, tonguing, and breath pressure with minimal physical exertion.
Articulation

There are a variety of ways to articulate sounds on the EWI. Many of these methods will sound similar to acoustic instruments, however it is important to think of the EWI as an instrument in its own right, not an electronic version of an acoustic instrument. Breath attack, “coughing” or throat attack, and single and double tonging are the basic ways to achieve articulation on the EWI.

Breath Attack

Produce sound by blowing into the rubber mouthpiece. This will produce a pleasant and smooth beginning to each note. Once BR/A is set properly for the player’s particular taste and breath pressure, the EWI will produce a note at any volume without straining. Set BR/A appropriately do not move it except for small adjustments to the basic configuration. Experiment with BR/A settings to become familiar with how the EWI responds.

![Figure 7: Breath attack with gradual crescendo, soft to loud](image1)

If either of the above examples seem difficult to control, try decreasing the BR/S knob. If it is difficult to decipher the appropriate amount of breath pressure needed to start at varying dynamics, adjust the BR/A knob. Use the following exercises to become more acquainted with varied dynamic changes.

![Figure 8: Breath attack with gradual crescendo, loud to soft](image2)
The “throat” attack is similar to the breath attack, but creates a slight accent in the delivery of the sound. The throat attack could be nicknamed the “cough” attack because it is created by closing off the throat at first, applying air pressure, and releasing the throat muscles much like a cough. This is not the same the “kuh” sound used in double tonguing.
(which will be discussed later in this chapter). The throat attack can also be used in conjunction with other tonguing methods to create more interesting effects and to make fast-tongued passages easier. If the throat attack does not produce a sound with minimal effort, consider increasing the BR/A adjustment of the breath sensor adjustment knobs. Use the following exercises to become acquainted with the throat attack.

![Figure 14: Throat attack, isolated](image)

![Figure 15: Throat attack, connected](image)

![Figure 16: Throat attack, fast and connected with note movement](image)

**Single Tongue Attack**

The single tongue attack is the method of sound production closest to acoustic wind instruments. Similar to tonguing a reed instrument, the single tongue method involves the tip of the tongue coming in contact with the tip of the rubber mouthpiece. One will notice the small opening in the end of the rubber mouthpiece. Since there is no vibrating reed, the tongue must successfully cover most (if not all) of this opening to prohibit air from entering the mouthpiece. Done properly, the player can close the tip of the mouthpiece with the
tongue and apply the appropriate amount of air pressure *without* creating a sound. When the tongue is removed from the mouthpiece, sound is produced.

Figure 17: Single tongue, isolated

Figure 18: Single tongue, moving notes and accents

Figure 19: Single tongue, tongued notes with slurs

Figure 20: Single tongue, long and short notes

Figure 21: Single tongue, patterns using the C major scale
To tongue multiple notes or to re-articulate the same pitch, practice touching the tip of the tongue to the mouthpiece with varied intensities. Cover different amounts of the mouthpiece opening with the tongue to discover how this affects note separation. Remember to play these exercises with a steady stream of air support.

Double Tongue Attack

Another attack similar to acoustic woodwind and brass instruments is the double tongue attack. This attack is useful during a fast succession of articulations when the throat and single tongue attacks are not practical. To produce the double tongue attack, start with one single tongue attack followed by the syllable “Kuh.” The resulting tongue motion will imitate a “Tuh-Kuh-Tuh-Kuh-Tuh-Kuh” sound, where the “Tuh” syllable is the tongue articulating the opening in the rubber mouthpiece. This effect is generally reserved for short fast articulations, but can also be equally effective with slower passages.

Figure 22: Double tongue, basic technique

Figure 23: Double tongue, moving notes

Figure 24: Double tongue, patterns using the C major scale
**Triple Tongue Attack, or Double Tongue Combined with Throat Attack**

To produce a series of three separated articulations that may be too fast for the single-tongue attack, combine the double tongue attack with the throat attack. Start with the double tongue attack described above (“Tuh-Kuh”) and follow it with the throat release feeling of “Uh” described as the throat attack. The resulting syllables should closely resemble “Tuh-Kuh-Uh-Tuh-Kuh-Uh” and can be performed at any tempo. This will make it easier to negotiate fast articulations and can also create interesting effects in slower passages.

The benefit of the double tongue combined with throat attack is that the “Tuh” syllable is not repeated twice in a row like conventional triple tonguing techniques (“Tuh-Kuh-Tuh-Tuh”). This gives the tip of the tongue time to rest between cycles. Once again, ensure that the BR/A knob is adjusted properly if this technique is used on a regular basis. If sound production cuts out at any point in the tonguing process (after sufficient practice), consider increasing the BR/A parameter. Use the following exercises to become acquainted with the Triple-Tongue attack.

![Figure 25: Triple tongue, basic technique using triplets](image)

![Figure 26: Triple tongue, basic technique using 16th notes](image)
In general, if producing sound on the EWI is too easy using these articulation techniques, decrease the BR/A knob to add resistance to the breath sensor. If sound production is too labored when articulating, increase the BR/A knob to “reduce resistance.” If volume increases too easily due to various articulations and bursts in air pressure, slightly decrease the BR/S knob so the EWI requires more air pressure to change volume.

**Vibrato**

Saxophone-style jaw vibrato is one of the main expressive devices separating the EWI from electronic keyboards. Keyboardists can achieve pitch bend and vibrato by using a modification wheel, but the EWI allows the wind player to use vibrato in a familiar and natural manner. Success at vibrato will depend on the skill level of the player and the familiarity with how the vibrato settings work. To engage the vibrato, gently bite or “chew” on the rubber mouthpiece while playing a note.

![Figure 28: General vibrato setting (Breath Sensor Adjustment Knob)](image)

The setting shown above is determined by the author’s musical preference, being the point where the vibrato is wide enough to produce clear results, but not wide enough to sound comical. Adjust the VB/A knob clockwise to increase the depth of the vibrato, thus
creating a wider effect. Turning the knob counterclockwise will narrow the depth of the vibrato, approaching a straight-tone.

When applying vibrato to a note, the player can bite or “chew” using various amounts of pressure to create realistic results. The harder the chewing pressure, the wider the vibrato. The VB/A knob determines the widest limit of the vibrato. Chewing very gently will produce very subtle variations in pitch regardless how high the VB/A knob is set.

To play the following exercises, hold the pitch indicated while gently chewing the rubber mouthpiece to the rhythm indicated below the pitch. Aim to apply the jaw pressure where each “x” is indicated, releasing between each “x.” If too much jaw pressure is required to produce vibrato (particularly at faster speeds), increase the VR/A knob so less pressure is required to produce noticeable vibrato. Keep in mind this will also increase the overall depth of the vibrato if more jaw pressure is applied.

Figure 29: Vibrato, slow chewing motion ¼ notes

Figure 30: Vibrato, medium chewing motion 8\textsuperscript{th} notes

Figure 31: Vibrato, medium fast chewing motion triplets
Figure 32: Vibrato, different speeds holding one note
CHAPTER 6 - TECHNIQUE AND NOTATION

Introduction to the Touch Sensors

The EWI’s fingering mechanism consists of several metal touch sensors that do not move when pressed. These sensors are arranged most similarly to keys of the saxophone. However, the EWI does not have “palm keys” to play above a fingered C#. In place of an octave key, the EWI is equipped with rollers controlled by the left thumb that enable it to play seven octaves. The EWI has a total of three right hand pinky keys and only two left hand pinky keys, whereas the saxophone has two and four respectively. Getting used to the touch sensors is one of the main obstacles faced by the EWI student and will require a certain amount of time to become accustomed to.

All of the examples within this text refer to the saxophone fingering mode discussed in Chapter 4. Note that the terms “key,” “sensor,” and “touch sensor” are synonymous when discussing fingerings. All fingerings discussed should be played with the left thumb touching the octave rollers at all times. Failure to do so will cause the EWI to default to its lowest pitch, regardless of any other sensors touched. Since the EWI is capable of multiple transpositions, all fingerings and notated pitches are intended as written pitches, not the actual auditory result.

Right Hand Pinky Keys

The right hand pinky is responsible for any of three keys (From small to large: Eb, Db, C). On a saxophone, the pinky is responsible for two: Eb and C. The author chooses to remove the middle key so that the fingering options match the saxophone exactly. See the
difference between the two setups below. The first illustrates the unaltered right hand pinky keys, and the second shows the EWI after the middle key is removed.

![Image](image.jpg)

**Figure 33: Right hand pinky key modification**

The player might want to slightly adjust the lower pinky key (C) so it is a bit closer to the upper pinky key (Eb). The author recommends this particular setup for any players whose acoustic instruments have only two right hand pinky keys. This will aid in the familiarization process and will also eliminate unintentional note changes.

**Left Hand Pinky Keys**

The two left hand pinky keys function alone or in conjunction with the right hand pinky keys (much like the saxophone and clarinet). The top key functions as G# (when added to a G fingering) and C# (when added to a low C fingering) only, and can be left pressed while playing other notes, like the saxophone. This is NOT the case with other fingering modes on the EWI. For this reason the author prefers the saxophone fingering mode. Adding the bottom key to any fingering will lower the pitch by one half step. When
this key is used in conjunction with the low C fingering it functions exactly like the low B fingering on saxophone.

Right Hand Side Key

The single right hand side key located in the middle of the EWI is used to raise the pitch of ANY fingering by one half step. It functions as both the “side Bb” and “side C” fingering on the saxophone. Keep in mind the EWI also has a saxophone style “biss Bb” key located between the B and A keys in the left hand. Unique to the EWI, a D is sounded by fingering the right hand side key while playing an open C# fingering. Special attention will be given to this fingering later in this text.

Touch Sensors and Technique

To play the EWI effectively, it is important to become familiar with the touch sensors. To reiterate, EWI does not have moving keys - octave rollers are the only mechanisms that move under the fingers. Since there is no physical sensation when pressing a key, it is necessary to practice very slowly and methodically until using the touch sensors becomes second nature. The following exercises will acquaint the player with the touch sensors. All exercises are to be played slurred, with the left thumb resting in between the two knurled octave rollers. Begin at a very slow tempo and gradually increase over time, achieving clean consistent technique.
Single Octave Exercises

Figure 34: Interval isolation

Figure 35: Major scale notes within one octave

Figure 36: Major scale 3rds within one octave
Using the Octave Rollers

The EWI4000s is capable of playing seven octaves. Some players will rarely use the extreme octaves. However, other sounds and functions can be stored in these octaves depending on the hardware or software synth used externally with the EWI. For either reason, it is necessary to develop proficient technique in all octaves to get the most out of the playing experience. The octave rollers are located on the back of the EWI (in place of the left thumb rest and octave key on a saxophone).

![Octave rollers](image)

Figure 37: Octave rollers

To play in any given octave, place the thumb between two of the octave rollers. It is possible to play the EWI by resting the thumb directly on a single roller, but it is advised to position the thumb between two rollers both for stability and proper function of the EWI in all octaves.

There are two knurled octave rollers slightly below center on the octave mechanism. Placing the thumb between these two rollers serves as a reference point for the octave that occurs in the middle of the treble clef staff. The lowest note playable on the EWI is a low B,
and the highest note is a D (achieved by playing an open C# fingering and adding the right hand side key). Therefore, the EWI is capable of playing a minor 10th without changing position on the octave rollers. The following example shows the full range available while the thumb is positioned between the two knurled rollers.

![Figure 38: Full range within using one octave position](image)

There are seven different positions possible using the octave rollers, which means the EWI can play any chromatic pitch within a minor 10th in seven different octaves. The following example shows the entire written\(^\text{16}\) range of the EWI:

![Figure 39: Akai EWI4000s full notated range](image)

\(^{16}\) Figure 39 shows the written range of the EWI, not the concert pitch range. The notation of the EWI (developed in this study) is similar to guitar and sounds one octave lower than written.
**Explanation of Colored Notation**

Most (if not all) musicians who decide to play the EWI come from acoustic instruments and are used to reading treble-clef notation. Playing the EWI throughout its massive seven-octave range currently requires the player to be fully versed in bass clef, treble clef, 8va, and 15ma notation. Notating frequent large leaps with clef changes and 8va markings clutters the staff and is disorienting to the average clarinet, saxophone, or flutist. It is the author’s experience that reading frequent clef changes while operating the octave rollers in real time can be quite challenging. By translating the full range scale into colored notation, the written music for the EWI can be notated within the normal treble-clef range of most woodwind instruments.

The seven colors shown in the diagram represent the seven different thumb positions on the EWI. The following color map shows the octave rollers (center), color of each thumb position between the rollers (colored blocks between each roller), and the corresponding octave range for each color (right). Note the two knurled octave rollers that correspond with the octave centered in the treble clef staff. The numbers next to each color are the web-safe hexadecimal representation of each color as commonly used in HTML coding for websites and other applications. This information is provided to standardize the colored notation system using colors that are easily visible in a variety of mediums.
Using these colors, notes can be written in any octave on the staff. As long as the proper color is notated there will be no confusion as to which octave the composer intends.

Notice that concert pitch middle C (one ledger line below the treble clef staff) is included in the black “knurled” thumb position. When using the EWI with sounds that do not contain any transposed or altered octaves, the EWI will sound one octave lower than written, similar to guitar transposition. To play a true middle C, the player must finger a second space (from the top of the staff) C with the thumb between the knurled octave rollers. The reader is to assume all exercises and transcriptions provided should be read literally – no further transposition is needed.
The next example shows the same full range scale of the EWI, but encompassing a larger written range before changing octaves. Note how the colors of both examples stay the same while the notes are written in different octaves. This can be very useful when playing ascending passages where it is more logical for the performer to continue reading an ascending phrase instead of having to reset to a lower octave.

Figure 42: Akai EWI4000s full notated range with larger written scale

The next three examples depict how colors can reduce the amount of information used to indicate octaves. Since the EWI can play in octaves typically used for bass, melody, harmony, and accompaniment, all such passages could be written into an EWI composition, even within the same phrase. The following example is a passage in which the EWI functions both as the bass and melodic lead, the bass occurring between the higher melodic phrases.

Figure 43: EWI excerpt using traditional notation
Retaining the clef information, the above example is represented using colored notation:

![Figure 44: EWI excerpt using traditional notation with colors added](image)

Refining the notation further, the example can be represented by removing all clefs and using only the color information:

![Figure 45: EWI excerpt using colored notation](image)
Alternate Notation

The major benefit of colored notation is that although music can be notated in any octave, the color always dictates where the thumb rests on the octave rollers. To achieve the interval of a minor 10th while keeping the thumb between one set of rollers, the player must know how to play the highest D fingering. The alternate D is fingered by playing the open C# fingering and adding the right-hand side key. Since this pitch is sonically identical to a normal D fingering using the next pair of octave rollers, the alternate D is notated using an “x” note head. Using colored notation, the following example shows the two notations of D (sounding identical).

![Figure 46: Traditional D and alternate D](image)

The green D above is fingered with the thumb between the top knurled octave roller and the next smooth roller. The resulting pitch sounds as a D5 on the piano (a D one whole step plus one octave above middle C). The “x” note shows the alternate D fingering explained above with the thumb resting between the two knurled octave rollers. These two notes will sound identical at D5. This notation is useful when a composer chooses to indicate the alternate D fingering to make a passage easier to play without switching octave rollers.

The following melodic excerpts sound identical but are written with different D fingerings.

![Figure 47: Excerpt using the alternate D fingering](image)
Octave Roller Exercises

Playing across octaves on the EWI requires precise operation of the octave roller mechanism. The following exercises are designed to progressively familiarize the player with the octave rollers. Practice each exercise through a variety of tempos, starting very slowly. Only increase tempo when the exercise can be performed routinely without hearing a “glitch” between the transitions. The exercises are written using a C major scale (starting on B, the lowest note for any octave roller position) but should be transposed to all keys to achieve comfort with different fingering combinations. Execute all exercises by slurring each note. Slurring will make it more difficult to play a smooth transition at first, but will be very beneficial in the long term. Begin by mastering the transition between all octaves:

![Full range octaves using low C fingering](image)

The octaves are represented using colored notation. Although familiarity with this notation will take time, one can easily see how such a system simplifies reading the wide range of the EWI. Eventually an automatic connection will be made between each color and the assigned left thumb position on the octave rollers.
The following examples will help familiarize the player with the octave rollers. Focus on gaining control moving back and forth between each octave, repeating each measure many times. As this technique becomes more comfortable, begin to read the exercise as written, repeating each measure once and moving on to the next.

Figure 50: Isolated octaves

Figure 51: Two-octave isolation

The last C in the second measure is notated using the third space due to the face that this is the highest C available using the highest thumb position.

Figure 52: Three-octave isolation

Once the transition between octaves becomes smooth and natural, move on to parallel octave scales. Remember that each exercise is written using a C major scale, and should be transposed through many keys and tonalities to gain control using different fingering combinations.
Figure 53: Two-octave parallel scales

Figure 54: Major scale using 2nds isolation
The following exercise is designed to further familiarize the player with the octave rollers and colored notation. The colors do not necessarily correspond with the direction of the written melody, training the connection between colors and thumb position.

![Random misleading octaves](image)

**Figure 55: Random misleading octaves**

**The Fingering “Break”**

Concepts presented up to this point lead to the issue of the EWI’s fingering “break.” All woodwind instruments have a fingering break somewhere within their fingering system coinciding with a register change. For a saxophone, this break is located between C# and D in the treble clef staff. For clarinet, the break is located between Bb and B in the treble clef staff.

The EWI’s fingering system creates multiple points where the fingering break could occur. There are five break possibilities (ascending and descending) using whole steps and half steps. Because of the flexibility this creates, it is necessary to practice each. The following exercises will help the player become acquainted with the different fingering breaks. They should be played at a very slow tempo then gradually increased in speed. If the EWI changes octaves slightly inadvertently between notes, reduce the speed and use precision as the progress gauge. Strive for clean transitions between each pitch.
Viewing these exercises will seem awkward at first, as the intervals appear to jump drastically at times. This is because the lowest pinky fingerings are used in conjunction with the higher fingerings to facilitate the fingering break. To compare with the saxophone, this is similar to the difference between the first finger B natural and low B with the octave key added. Remember that the colored notation always dictates thumb position. Because the fingerings for low C# through B can only be fingered with the pinky keys, these notes on the staff will be reserved for the alternate fingerings.

The main objective of these exercises is to create awkward or difficult situations that require smooth controlled fingering motion. It is important to remember that the fingers must transition between fingerings at exactly the right moment, or the EWI’s octaves will not change exactly in sync with the desired intervals, thus creating a “blip” sound. Practice the following exercises (as well as the octave roller exercises) to achieve smooth control between the breaks in various octaves.

These exercises are written around the normal treble clef octave, but should also be transposed throughout all the octaves of the EWI, since the drastic change in thumb position over seven rollers can make normal fingerering more difficult.
Figure 56: Half-step fingering breaks via the chromatic scale

Figure 57: Whole-step fingering breaks via major scales
Figure 58: Half-step break isolation

Figure 59: Whole-step break isolation
Using the Rest of the Treble Clef Staff

Exercises up to this point have been written mostly between the B below the treble staff and third space C#.

Figure 60: B below the staff through third space C#5

To follow a musical line further up the staff (the lowest written note on the EWI will always be a low B), it is necessary to utilize more of the treble clef staff as well as ledger lines in the manor of traditional notation. To use any desired amount of the treble clef, colored notation can be extended above C#5. The EWI fingerings for these pitches will always be the same in any octave. The following example shows colored EWI notation used in three octaves.

Figure 61: Expanded EWI colored notation

If necessary, the alternate D “x” fingering can be used in any octave.

Figure 62: Expanded EWI colored notation with alternate “x” notation

Notation using ledger lines can more clearly illustrate the direction of a line. The colors will always indicate the octave roller position, therefore notes can be written anywhere on the staff and will result in the correct octave. Line one of the following example is written logically using ledger lines. Line two may not be practical, however both lines would sound
exactly the same because the colored notation overrides where the written pitches are placed on the staff (as long as the notation does not descend below D).

Figure 63: Identical sounding lines

All notes below D should be fingered using the appropriate “low” C#, C, and B fingerings. These pitches can still sound in any octave (indicated by color), but should always be fingered in this manner and must be notated correctly on the staff. Composers for the EWI may notate these pitches to dictate where the player should negotiate the fingering break. Although confusing at first, the wide gap on the staff alerts the player to this fingering situation. Once accustomed to the colored notation, the three pinky notes can be recalled quite easily, especially because the octave roller position does not change.

Figure 64: Using alternate low fingerings
Full Range Exercises

The player now has all necessary information to begin full range technical studies.

The following exercises are designed to develop technical fluidity throughout all octaves.

Full Range Ascending Arpeggios
Full Range Descending Arpeggios
Full Range Diatonic 3rds

C major

Db major

D major

Eb major

E major
Bb major

B major

Full Range Perfect 4ths

Full Range Perfect 5ths

Full Range Minor 7ths
CHAPTER 7 - THUMB TECHNIQUES AND NOTE MANIPULATION

Pitch Bend – Right Thumb Technique

The pitch bend function adds greatly to the EWI’s expression and versatility. When used properly, it creates musical effects similar to those created by embouchure, larynx, and half-hole adjustments on woodwind instruments. For the overall pitch of the EWI to be in-tune as well as to allow for proper function of the pitch bend sensors, the pitch bend settings need to be calibrated properly. The following settings for the Pitch Bend category of the Breath Sensor Adjustment Knobs should match the following diagram. Once calibrated properly, the actual amount of pitch bend is controlled by the pitch bend parameter within the Vyzex sound editor. Most sounds are usually set to bend the pitch by roughly a half step.

Figure 65: Pitch bend setting (Breath Sensor Adjustment Knobs)

In external synthesizers, this parameter is located within the control interface of the synth is represented by a certain interval. Most synths are capable of bending the pitch well over one full octave, so this parameter should be set to a half step (minor 2\textsuperscript{nd}).

The pitch bend function can be used for three main effects: 1) as a portamento effect to “scoop” up to or down from a desired pitch; 2) to slightly tune or de-tune any note. This effect creates tension much like a guitar player would bend a string on a sustained note; 3) in conjunction with random whole step fingerings to create a chromatic scale. This technique will be covered in Chapter 8 “Extended Techniques.”
The pitch bend sensors are located both above and below the right metal thumb plate. To activate each sensor, slightly roll the thumb either up or down in the direction of the intended bend. Pitch bends are notated with a curved line:

![Figure 66: Bend up and down after a note](image)

![Figure 67: Bend up and down before a note](image)

In addition to the standard pitch bend, one might want to alter the pitch by engaging the pitch bend during a note. The following example illustrates a whole note in 4/4 time with a “dip” in the middle between beat 3 and 4. Notice how the whole note is divided into two half notes tied together with the pitch bend information between each note.

![Figure 68: Pitch bend during a note](image)

Refining this notation further can place the pitch bend at different places within the note’s duration. Below illustrates the pitch bend places after beat 1.

![Figure 69: Pitch bend during a whole note between beat 1 and 2](image)
This method of notation gives great flexibility and allows for specific instruction from the composer.

**Glissando (Glide) – Left Thumb Technique**

Activate the glissando (also called “glide”) by resting the left thumb on the metal strip to the right side of the octave rollers. When the thumb rests on this strip, all notes are connected with a smooth glissando much like that produced with a trombone’s slide. The external Breath Sensor Adjustment Knobs control the glide settings. The following settings should match the external Breath Sensor knobs to create an appropriate general glide speed.

![Figure 70: Glide setting (Breath Sensor Adjustment Knobs)](image)

Glide time will last as long as needed to complete the interval played while touching the metal thumb strip. Usually the glide speed (GL/T) is set faster in case the strip is touched in error. When set this way, the glide will complete the interval very quickly with minimal potential for interruption. If a longer glide time is desired, adjust GL/T.

When glide time is set fast, the notation indicating the glide between notes can be expressed as a simple slur. However, if glide time is set longer and the glide is intended as a specific effect, the glide is notated like a piano roll. To glide from a lower note to a higher note (upward glide), the roll is placed on the left side of the notes. The following example illustrates a glide from D up to G:
To glide from a higher note to a lower note (downward glide), the roll is placed on the right side of the notes. The following example illustrates a glide from G down to D:

To indicate a glide between two octaves, the notes are placed in octaves and each colored accordingly.

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Figure 71: Glide upward

Figure 72: Glide downward

Figure 73: Upward glide of one octave
CHAPTER 8 - EXTENDED TECHNIQUES

Legato Chromatic Pitch Bend

Notes produced on the EWI have the potential to sound computer-like or “sterile.” In other words, the transition between each note is almost overly defined. Although synth parameters change the EWI’s timbre throughout its range, this defined keyboard-like tendency between notes is still evident. Engaging the metal glide strip during phrases can more closely mimic a keyed acoustic instrument, but this technique can be rather awkward. In addition, the player might want to reserve the glide function for more drastic effects.

Using the pitch bend function combined with whole step fingerings can create a similar effect, and is more easily accessible within the EWI’s fingering scheme. This technique is most effective when pitch bends are randomly combined with normal EWI fingerings. Once again, the settings within the Breath Sensor Adjustment Knobs for Pitch Bend parameters must be calibrated properly. As previously described, this will allow the pitch bend sensors to bend each pitch by roughly a half step. Ensure the pitch bend parameter for each sound is set appropriately within the Vyzex editor (Chapter 9).

To begin, isolate the pitch bend action by producing a bend between two notes. Follow the example below to bend from A to Bb, then from A down to G#. A dark straight line indicates the notation for a pitch bend between two notes. If necessary, play each note...
with normal fingerings to hear the accurate pitch. When using the pitch bend, practice bending up or down to that pitch. A tuner can help if it is difficult to hear when the bent pitch is in tune.

Figure 75: Basic pitch bend up and down

Once this basic movement is mastered, practice the same exercise on different pitches. The next example covers a larger range. It should be played at a very slow tempo and gradually increased in speed, maintaining the accuracy of the bent pitches.

Figure 76: Pitch bend over larger range

When the student becomes comfortable with bending various notes, it is time to combine the pitch bend technique with normal fingerings to create chromatic notes within phrases. The simplest form of this technique is to transform a whole-tone scale into a chromatic scale. The whole-tone scale is a six-note scale created exclusively from whole steps. Play the following C whole-tone scale using normal fingerings:

Figure 77: C whole-tone scale
Next, use normal fingerings to become aurally acquainted with the pitches that create a C chromatic scale:

![Figure 78: C chromatic scale](image)

Finally, combine the two previous examples into a pitch bend chromatic scale by following the fingerings and pitch bend notation in the next example. Pay close attention to the 3\textsuperscript{rd}, 5\textsuperscript{th}, 7\textsuperscript{th}, and 9\textsuperscript{th} notes of this scale to make sure the pitch bend sensor is released accurately in conjunction with these fingerings. These exercises should be started at a very slow tempo, and considerable practice will likely be required.

![Figure 79: Descending C chromatic scale with pitch bend information](image)

![Figure 80: Ascending C chromatic scale with pitch bend information](image)

If this entire octave of chromatic pitch bends seems difficult, rest assured that this technique is most effective when used only randomly. Rarely should more than three chromatic pitch bends exist next to one another. The following is an 8\textsuperscript{th} note melody containing five half step intervals. Play the line first with normal fingerings to hear all of the pitches.
Next, remove the half steps within the line to reveal the whole-step intervals.

Finally, follow the pitch bend notation in the next example to realize the line using chromatic pitch bends. In this example, all half steps are notated with chromatic pitch bends.

As stated previously, it is most effective to use this technique only occasionally, rather than on every half step. Often, it may be advantageous to begin or end a line using the chromatic pitch bend technique. The following example is constructed using a C major 7\textsuperscript{th} chord with a chromatic pitch bend between the B natural and C.
For added practice using the chromatic pitch bend technique, play familiar melodies from the jazz or funk repertoire, inserting random chromatic pitch bends where half steps occur. This example shows where to use chromatic pitch bend in the first four measures of the bebop melody Donna Lee\textsuperscript{17} (written in F major):

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure85.png}
\caption{Donna Lee in F major with pitch bend technique indicated}
\end{figure}

\textbf{Harmonize Technique – The Hold Function}

Another interesting and expressive capability of the EWI is its ability to harmonize melodies. The “Harmonize Technique” via the Hold function enables the player to harmonize any desired interval at any time. This technique enables such effects as two-note backgrounds, clusters, and the ability to produce a moving line under a sustained note.

Ensure the EWI is properly adjusted to perform the Hold function by reviewing the onboard menu screens. Navigate to “Ho” and choose “LE” in the sub-menu. Pressing the upper clear plastic button on the fingerboard side of the EWI activates the Hold function, now set to “LE” or Legato mode. From this point, the author will refer to the top clear plastic button as the Hold button and the bottom clear plastic button as the Octave button.

Any interval is achievable using the Harmonize Technique. Execution of the Harmonize Technique is most easily described in four steps:

\textsuperscript{17} Written by Miles Davis, 1947
1) Press the Hold button.

2) Begin blowing lightly into the mouthpiece so any sound is almost inaudible.

3) Play the first note as a very fast grace note, slurred to the second note.

4) Immediately increase breath pressure (crescendo) to an audible volume level sustaining both notes.

To add an additional note and create a harmonization (#3 from above), the player must add a very fast grace note before the melody note of the line. For example, if the melody note is C and the chord is D7, a possible grace note A could be notated as in the following example.

![Figure 86: Notation to visualize Harmonize Technique](image)

Practice the above example so that the grace note is inaudible, and the resulting sound is only the harmonized notes. With practice, it is possible to produce several harmonized notes in sequence. Play the following exercise of four quarter notes harmonized in minor 3rds.

![Four harmonized notes in succession](image)

Figure 87: Four harmonized notes in succession
Hold and Octave Function Notation

Up to this point, grace notes have been used to illustrate the Harmonize Technique via the Hold function. Though this works to demonstrate the technique, grace notes must be reserved for their normal function in notation. Therefore, some other notation must exist to inform the player of a harmonized note. Harmonized notes are dictated by the application of the Hold function. The notation for engaging and disengaging the Hold function is represented by a long vertical dotted line through the staff. Each time this dotted line occurs, the Hold button should be pressed.

![Figure 88: Hold button indication](image)

In addition, the indication to engage the Octave function is expressed by a solid vertical line through the staff. Each time the solid line occurs, the Octave button should be pressed. The Octave line will be used regardless of whether or not the phrase is actually written in octaves.

![Figure 89: Octave button indication](image)

Every time the player sees the Hold line or Octave line, the appropriate button should be pressed. Therefore, each line must be displayed on the staff when the composer wishes to
engage and disengage each feature. Notes written vertically within a dotted line region are to be played as harmonized notes.

![Figure 90: Octave exercise](image1)

The following phrase utilizes the Hold function notation and the Harmonize Technique. The following example is written so that each note within the vertical lines is tongued. Although crucial for the Hold function, separating the notes with the tongue is not important when using the Octave function.

![Figure 91: Harmonize example](image2)

The first vertical line indicates to engage the Hold function; the second informs the player to disengage the Hold function. Within the vertical dotted lines, harmonized notes are now notated as in keyboard music.

When the lower note of the harmonization falls below a written D, it is advantageous to use the low pinky keys to eliminate the need to switch octave roller positions. In this scenario, the notation must be written using the low C#, C, and B keys.

![Figure 92: Harmonize using low pinky keys](image3)
Using the Harmonize Technique, it is also possible to play a sustained note simultaneously with a moving line above or below. This technique is also notated like keyboard music and occurs within the vertical dotted lines. Learn the following excerpt from In A Sentimental Mood\(^\text{18}\) demonstrates this technique. The sustained melody note must be the first note played and the moving line added after. The vertical dotted line is placed after the articulated sustained note (whole note) for this purpose.

\[\text{Figure 93: In A Sentimental Mood – moving harmonization}\]

In the above example, the Hold function is to be engaged immediately after articulating the E whole. The Hold function should be disengaged immediately after the A# and before the D natural in measure three. If the Hold function is engaged during the entire phrase, accurate tonguing is required to avoid accidental harmonized notes.

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\(^{18}\) Written by Duke Ellington, 1935
PART 3

CHAPTER 9 - WORKING WITH THE VYZEX EDITOR

The Vyzex Editor is a powerful, flexible computer program that allows the user to access, organize, edit, and create sounds for the EWI4000s. Pre-existing models of the EWI do not have this capability and are required to use an external sound device. All sounds and parameters available using the Vyzex Editor can be used with the EWI4000s exclusively without the need for any additional device.

Vyzex is a complex program and requires time and knowledge to operate. When using the EWI4000s with the editor, it is necessary to connect the EWI via MIDI to transfer all necessary data. This document does not cover preliminary information instructing how to connect the EWI and transfer data to and from the editor. Instead, the author directs the reader to the Vyzex User Manual for this information. The following text is designed to help familiarize the player with the different technical parameters of the sound editor and to explain them in terms of their musical attributes. This will help the player create and edit sounds based on musical intuition, minimizing the need to understand the technical complexities of sound editing.

Once connected to the Vyzex program, the user can recall, edit, and play-test sounds using the EWI. When play testing, no sound will be generated through the computer program. The EWI must be connected to an amplifier via the 1/4” output or headphones must be connected to the EWI’s 1/8” output.
Editing Interface

The Vyzex interface functions quite differently those found on traditional synthesizers. Keyboard-based synths use Attack, Sustain, Decay, and Release (ASDR) parameters to shape the sound envelope. The breath dictates the EWI’s sound shape, therefore Vyzex must operate using different parameters that will, in the end, create the same result as keyboard synths. The image below shows the Vyzex editing interface. Solid dark lines divide each of the eleven “parameter groups”. Each parameter group is labeled in the upper left portion of the group box using red letters (when viewed in color).

Figure 94: Vyzex Editor – editing interface
Order of Editing

To effectively edit sounds using the Vyzex editor, the user must follow the sound signal through each “parameter group.” Each sound consists of three independent parts: 1) Sound 2) Noise 3) Effects. These three parts are then mixed together to produce one complete sound. Using all parameter groups available in the editing interface, the following paths describe the most efficient route for the audio signal and thus the adjustment sequence:

1) Common → OSC1&2 → OSCFilter → FormantFilter → AMP
2) NoiseGen → NoiseFilter → AMP
3) Apply Effects

The first parameter group is “Common,” however the EWI will not produce any sound unless one of the wave sliders within the “OSC 1 & 2” parameter group is raised to a positive value. “Common” appears first because its settings affect sounds globally and will enable functions of other parameter groups to become available.
In-Depth Description of Parameter Groups and Parameters

The following section will describe all parameters within each parameter group using a musical definition to help the player use musical intuition to create interesting sounds. The author feels this will give the musician a good general understanding of all parameters and will provide sufficient knowledge for personal experimentation. When applying these definitions, little technical knowledge is needed to create original sounds with the Vyzex editor. For a technical explanation of all parameters, consult the Vyzex User Manual. The Vyzex editor and user manual are available from http://www.akaipro.com.

LED Display

Figure 95: LED Display

Located at the top of the editing interface, the LED Display is used to send and receive information from the EWI to the editor, as well as to view the sound currently edited. This window also displays the notes played on the EWI during the editing process. This full size keyboard display gives the player an idea of where the EWI is playing within the grand staff. This is particularly useful if sounds are created using octaves or transpositions other than the normal range for a particular note. It is possible to create sounds that do not correspond to normal octaves described using colored notation. If the player plans on playing exact pitches using colored notation, it is important to double check that the sounds are set to the correct octave using this window.
Common

The Common parameter group controls two expressive parameters (vibrato, pitch bend), the volume for octave doubling (Oct Button), and key trigger (description below). To ensure these functions of the EWI are available during the auditioning process, set these parameters before editing the sound. Note that in order to hear any sound while manipulating these settings, at least one slider in the OSC 1 & 2 section must be set to a positive value.

**Key Trigger** – Two options for Key Trigger are “Multi” and “Single.” It is very important to set this parameter correctly, especially if the user desires definition between notes, even when slurring. “Single” will attack only the first note of a phrase and will not affect any notes during a slurred passage. “Multi” will attack each note regardless if the player is slurring each note. Setting Key Trigger to “Multi” in conjunction with “Sweep” and “Depth” parameters within the Oscillator and Oscillator Filter (discussed later) will result in slightly accented, defined notes.

**Oct Button** – Setting the level of the octave button will determine the volume of the note added when the Octave button (bottom clear plastic button) is pressed. For the melody note and octave note to sound at the same volume, set this parameter at 50%.

**Bend** – This parameter affects how far the pitch bend sensors will alter the pitch, and is adjustable in semitone increments. For most playing situations and to be properly set for playing Chromatic Pitch Bends (Chapter 8), Bend should be set to two semitones. Setting to
one semitone will produce a literal half step, but setting to two semitones will give the player some flexibility with the pitch, and will make it easier to achieve a half-step pitch bend without rolling the thumb all the way onto the sensors. Using the “Step” button will cause the pitch bend to “lock in” to each chromatic pitch, eliminating the even slide that is usually desired in pitch bending. The author suggests leaving this button off for increased expression.

**Vibrato** – Control the width of vibrato using this setting. Test by gently biting on the rubber mouthpiece. Choose a rather high percentage here so that it does not require too much bite pressure to create desirable vibrato, and so there is a little more available if desired.

**Amp** – A rather ambiguous term, Amp applies to the amplification or exaggeration of the vibrato. Setting this to 0% will have no affect on the vibrato from the Vibrato parameter. Setting to a larger percentage will gradually accentuate both ends of the vibrato, making the “bite” end louder and the “release” end softer. If any adjustment is made, the author suggests a very low percentage.

**Osc 1 & 2**

Figure 97: OSC 1 & 2 parameter group
OSC is the abbreviation for “Oscillator.” The oscillators are the EWI’s sound producers. The EWI4000s contains two oscillators that can be used individually or mixed together at different volume levels to create more complex sounds. Without the oscillators, no tuned pitches will come from the EWI. However, it is possible to create noise without actual pitches using the Noise Generator (described later). The parameters of each are identical with the exception of “X-Fade.” Both oscillators can function independently, or the output of each can be mixed together for infinite sonic combinations. All of the following parameter descriptions will be covered using one oscillator.

\[\text{\textbullet\textbullet\textbullet} \text{ Sawtooth Wave } \] – The brightest and most “edgy” of the three waves available, the sawtooth used by itself results in a narrow raspy sound.

\[\text{\textbullet\textbullet\textbullet\textbullet\textbullet} \text{ Triangle Wave } \] – This wave is the exact opposite of the sawtooth wave and provides a very hollow, round tone much like an “electronic clarinet.”

\[\text{\textbullet\textbullet\textbullet\textbullet\textbullet\textbullet\textbullet} \text{ Pulse Wave } \] – The Pulse Wave combines the sounds of both the sawtooth and triangle waves.

Pulse Width – This parameter will drastically change the color of the pulse wave. When set to 0%, the pulse wave will have a very open, round, smooth tone much like the triangle wave. Increasing the Pulse Width percentage adds a bright edge to the tone. When the Pulse Width is set to 100%, the pulse wave will not produce sound unless the PWM parameters are adjusted.

\textit{PWM} – Pulse Width Modulation - The PWM parameter affects only the pulse wave. Increasing PWM adds a “beating” sound to the wave, much like a “wah-wah” effect or exaggerated vibrato. The difference between PWM and vibrato is that PWM will cause the
sound to “beat” independently of vibrato produced on the mouthpiece. Both PWM and mouthpiece vibrato can be used at the same time.

Freq – Frequency within PWM controls the beat speed. Setting this parameter to a low value can add a subtle depth to the sound.

Width – Width controls how far the beat dips away from the original pitch. Setting to a high value will have a very exaggerated effect.

Octave – Octave will change the octave in which the EWI is operating. Adjusting this parameter will transpose the sound up or down the desired amount of octaves. Each oscillator can be set to a different octave, thus one sound can be doubled several octaves apart. To set the EWI to exact concert pitch (using the colored notation system), set Octave to +1 on the primary oscillator.

Semitone – Semitone transposes the sound by half-step intervals. Using this parameter in both oscillators, it is possible to create a sound that is harmonized in any chromatic interval. Using a sound harmonized sound in conjunction with the Octave Button (bottom clear plastic button) or Harmonize Technique can create thick harmonic colors of four harmonized notes.

Fine & Beat – Fine and Beat parameters affect the intonation of the individual oscillators. These are intended for use with sounds that use both oscillators, allowing each to have separate tuning. “Fine” will cause a large change in pitch (cents); “Beat” will cause a much less drastic change (fraction of a cent). In other words, Fine will tune the oscillator, and Beat will “fine tune” the out of tune oscillator. Use the Beat adjustment if the two oscillators create an undesired “beating” effect. Slight adjustment using the Beat parameter can help eliminate this phenomenon.
**Sweep** – Sweep adds a “scoop” into notes within a particular sound. The Key Trigger settings within the Common parameter group dictate whether one or all notes of a phrase are affected by the Sweep parameter. The author has not found it particularly useful, since the same effect can be accomplished using pitch bend thumb technique, which has the advantage of being applied as desired, instead of “built in” to the beginning of every note.

**Time** – Time controls the length of the approach before reaching the desired note.

**Depth** – This parameter is set to 0% by default. When set to a negative percentage, notes are approached from below. Set to a positive percentage, notes are approached from above. Larger percentages in either direction produce a more drastic effect.

**Breath** – The four Breath controls govern pitch as well as the breath threshold required to activate the individual oscillators. When using sounds with only one oscillator, Threshold and Curve adjustments should not be confused with the settings of the Breath Sensor Adjustment Knobs. These parameters DO NOT change the actual Breath Sensor adjustments, but will make the Breath Sensor behave differently. Breath parameters within the OSC groups are best utilized when mixing both oscillators together.

The player may wish to have the tone of a particular sound change in conjunction with volume levels. This gradual change in sonic quality over different dynamics offers a more interesting and perhaps authentic sound. When using two oscillators, breath pressure can be assigned to each, enabling one to sound to dominate at soft volume levels, and the other sound to dominate at loud volume levels. Adjust the parameters in the order below to obtain this result.
1) Thresh – Breath Threshold will delay activation of an oscillator. This adds resistance to all four parameters within the Breath category. For a single or primary oscillator, it is best to keep this setting relatively low so that the EWI responds closely to the settings made with the Breath Sensor Adjustment Knobs. The user may wish to use this control to delay the activation of the secondary oscillator until breath pressure is increased.

2) Curve – Curve will adjust how the sound responds to breath sensitivity in relation to dynamic range. Setting the Curve at +50% will result in no dynamic range (everything will sound at full volume). Setting the Curve at -50% will offer the most dynamic range based on the breath pressure assigned by the Threshold parameter.

3) Attain – Attain will determine the amount of breath pressure necessary to achieve a normal pitch. When set to 0%, the pitch will not be altered. Increasing this value will cause the start of the pitch to be detuned by a certain amount (defined by Depth), gradually tuning itself as breath pressure is increased.

4) Depth – Depth determines the amount of detune effect applied within the Attain parameter. Depth of 50% will result in NO CHANGE in pitch. Setting Depth lower than 50% will detune the pitch below the target note; setting higher than 50% will detune the pitch higher than the target note.

**Level** – Level determines the overall volume for each oscillator. When mixing two oscillators together, the setting of each Level parameter is very important, especially when creating harmonized or detuned sounds. Generally, oscillator one will provide the melody
(top) note of a sound while oscillator two provides the harmony and can be set at a softer volume level.

**X-Fade** – Under normal operation with X-Fade disabled, both oscillators are mixed together based on the threshold parameter within the Breath category of each oscillator. This normally results in oscillator one dominating the sound, and oscillator two coloring the sound as breath pressure increases. X-Fade causes oscillator two to take over as the dominant sound as breath pressure increases, eventually eliminating the sound produced by oscillator one altogether.

The following oscillator configuration can be used with and without X-Fade enabled to demonstrate the function of the X-Fade parameter. A crescendo and decrescendo through the full dynamic range will reveal how the sawtooth and triangle waves mix with each other.

![Oscillator settings to test the X-Fade parameter](image)

Figure 98: Oscillator settings to test the X-Fade parameter
After sounds are manipulated within both oscillators, the sound signal can be further refined when it passes through the OSC Filter, where certain aspects can be changed depending on breath pressure and range. Although complex, this is a very important step to adding depth and color to the basic sound produced by the oscillators. Each oscillator can be sent through its assigned filter, or both oscillators can be sent through one filter. This parameter group allows for a great amount of expression. Although this parameter can easily be disregarded, this could sacrifice much of the potential for color and dynamics within a sound.

Select — Each oscillator can be run through its own filter. To select which oscillator filter is currently in view, use the “1” and “2” selectors. To send the result of both oscillators through only one filter, select “Link.” This is a convenient approach, however using a different filter for each oscillator offers greater flexibility.

Mode — The user must decide if the audio signal coming into the filter needs to be changed or colored in any particular way. Mode offers four different ways to color the sound by removing certain frequencies. See “Mode Parameters” below for information on each filter mode. First, understand the function of the FREQ slider and the Q Factor, since these controls can drastically change the sound of each mode parameter.
**FREQ Slider** – Use the Frequency Slider to select the frequency to remove. Sliding up removes higher frequencies; sliding down removes lower frequencies. Adding high frequencies will result in thin, bright, “edgy” qualities. Adding low frequencies will produce a rounder, thicker, and generally deeper sounding or “hollow” tone. Keeping the slider near the middle accentuates the mid range frequencies, giving an effect similar to an antique radio.

**Q Factor** – The Q Factor determines the range of the frequency that is removed. If a pie represents the entire frequency range, the Q represents a slice of that pie. Q numbers function opposite of their numeric values. Therefore, smaller Q numbers (larger slice) result in more drastic sonic changes. A larger Q number (smaller slice) will result in a mild change.

**Mode Parameters**

- **Off** – The incoming audio signal is not filtered in any way.
- **NTC (Notch)** – This setting will remove a “notch” of the frequency. Use the FREQ slider to determine which frequency to remove. As a general rule, keeping the FREQ slider near the top will result in a smooth, round sound. Moving the slider downward will add brightness and edge to the sound.
- **BP (Band Pass)** – This parameter is the opposite of Notch. Notch removes a section of the sound; BP only allows that section to pass through, eliminating all other frequencies. BP will have a very drastic affect on the sound. Keeping the FREQ slider near the top will result in a very thin bright sound. Keeping FREQ low will result in a very covered, dark sound. Positioning the FREQ slider near the middle will accent mid-range tones (the antique radio sound previously mentioned).
HP (High Pass) – HP will only allow frequencies above the FREQ slider to
sound. When the frequency slider is at the bottom, the resulting sound will be
very similar to the unfiltered sound. Moving the FREQ slider up will
gradually thin the sound making it very bright, brittle, and slightly softer in
volume.

LP (Low Pass) – LP is the opposite of HP and will eliminate all frequencies
above the FREQ slider, allowing only the lower frequencies to pass through.
Keeping the FREQ slider at the top will have little effect on the original
unfiltered sound. Moving the FREQ slider down will gradually thicken and
remove any bright or edgy parts of the sound, resulting in a very hollow,
round tone. Placing the FREQ slider all the way to the bottom reduces the
volume of the sound noticeably.

Key Follow – Values for Key Follow range from -12 through +24. Key Follow offers
another way to control the frequency filters. Essentially, the octave played dictates the Freq
Slider position. Setting the Key Follow at 0 will result in very little change. Setting Key
Follow to -12 offers drastic change in the filter throughout the octaves. Positive values
generally increase volume in the upper octaves of the EWI, allowing higher frequencies that
accent these octaves to pass through the filter.

Breath – A great deal of sonic control is offered in the Breath section of the OSC
Filter. Understanding how Breath Mod and Curve relate to the frequency filters is important
for achieving further expressive capabilities.

Mod – Within this setting, breath pressure can be used to modify the position
of the FREQ slider. As breath pressure increases, the FREQ slider will
“move.” As breath decreases, the slider will “return” to its currently adjusted position. The slider movement is not represented visually within the editor during this process.

Curve – Curve adjusts how drastic the Mod parameter will affect a given sound. Keep the Curve value low (-50 – 0) for a drastic effect; adjust the Curve higher (0-50) for a narrower window of breath expression.

*LFO* – LFO is the abbreviation for Low Frequency Oscillator. It is used mainly to create motion within a sound. LFO creates a pulsation similar to the sound of a Hammond B3 organ with Leslie Rotary speakers.

Freq – LFO can range from nearly inaudible to very present. The Frequency knob controls how fast or slowly the oscillations occur.

Depth – Depth determines the amount of “wah” in the oscillation. This is similar to the PWM parameter attached to the Pulse Wave.

Breath – Breath enables the user to control the LFO with breath pressure. When set to 0%, breath pressure has no effect. Positive percentage values will increase LFO as breath increases. Negative percentage values will cause the LFO to dissipate as breath pressure increases.

Thresh – The LFO threshold will dictate how much breath pressure is required before the LFO engages or how soon the LFO will stop before maximum breath pressure is reached.

*Additional explanation for the use of Breath, Depth, and Threshold*

It is easy to avoid utilizing these parameters, however the author feels the LFO is an important tool for creating sounds that contain depth and “character.” As described
previously, breath pressure can be used to control when the LFO begins or ends. Each of the three LFO parameters must be adjusted together for this feature to function correctly. There are two basic options for LFO controlled by breath pressure.

Option #1: The LFO begins immediately, and ends as breath increases.

First set Depth to the desired amount (any amount besides 0) and set Breath to -50%. Determine how long the LFO should remain active in terms of percentage of available breath pressure, then set Threshold accordingly. Example: For the LFO to remain active for 60% of the available dynamic range, set Threshold to 60%. For the LFO to dissipate any time breath pressure increases beyond a soft dynamic level, set the Threshold to 20% (meaning the remaining 80% of available volume will not feature LFO).

Option #2: The LFO delays before starting and continues throughout the dynamic range. Set Depth to 0% and Breath to +50%. Determine the desired delay before the LFO engages, then set Threshold accordingly. Example: For the LFO to engage only during the loudest 15% of the dynamic range set Threshold to 85%. For the LFO to engage during softer dynamics set Threshold to 25%. After these settings are correct, reduce Breath to any value between 0% and +50% to reduce the overall effect of the LFO. The effect of the LFO decreases as the Breath value approaches 0%. After Depth and Threshold are set, toggling the Breath knob will give the same sonic results as the depth control.

Sweep – Sweep within the Osc Filter appears similar to the Sweep parameters within the Osc 1 & 2 parameter groups. However, Sweep in the Osc groups control how each note is approached in terms of pitch. In the Osc Filter, Sweep controls how each note is approached in terms of how the Osc Filter is applied, resulting in a change of sonic color.
instead of an altered pitch. The Osc Filter Sweep parameters are most effective when used to add slight articulation between each note. The Key Trigger settings within the Common parameter group dictate whether one or all notes of a phrase are affected by the Sweep parameter.

Time – Dictates how fast the Sweep will happen. Sweep time has no effect until a depth is determined (below).

Depth – Depth determines how drastic the change will be within the sweep time.

To achieve better note definition during slurred passages, set Sweep Time at 1% and Sweep Depth at -3%.

Formant Filter

![Formant Filter](image)

Figure 100: Formant Filter

After a sound has been created and filtered, additional color can be applied through the use of the Formant Filter. This filter is usually turned off if a “synthy” sound is desired. The two options for additional color are “W. Wind” for woodwind modeling and “String” for string instrument modeling. These parameters do not necessarily sound like the instruments they suggest, so the author recommends trying each to understand how it changes the sound color of any particular sound.
**W.Wind** – Woodwind modeling is similar to String modeling and will bring out mid/low tones.

**String** – String modeling will add a slight hollow “wooden” characteristic to the sound, accentuating the mid/low tones a bit. It will also add a slight “click” to the articulation, similar to a plucked string instrument.

**Noise Gen**

![Figure 101: Noise Generator](image)

The Noise Generator adds white noise or “fuzz” to the sound, which is perceived as an airy quality similar to breath noise or reed noise of an acoustic wind instrument. This can add a more realistic quality to the sound when applied at small levels. Noise is an independent element from the sound waves created in the Osc groups and can add more color and interest to already captivating sounds. Noise can be created and edited extensively using the editor. When adding noise to pre-existing sounds, the author suggests adjusting the Level sliders within Osc 1 & 2 to 0% so that only noise is heard. When the noise is adjusted properly, return Osc 1 & 2 to their required volume and blend in the desired amount of noise.

**Time** – Time adjusts the attack and decay time of the noise. Short values are best for subtle noise use. Increasing values will add considerable presence to the noise level.
*Breath* – Breath adjusts the breath pressure required to activate noise. Negative values offer greater flexibility for subtle noise use, and greater positive values offer less volume control.

*Level* – Sets the overall volume level for the noise.

**Noise Filter**

![Noise Filter](image)

Figure 102: Noise Filter

The Noise Filter functions (and appears) identically to the Osc Filter. However, it will only filter the noise portion of the sound created using the Noise Generator. If noise is not created through the Noise Generator, the Noise Filter will have no effect.

The Noise Filter features are exactly the same parameters as the Osc Filter. Noise produced using the Noise Generator can be applied to oscillator one, two, or can be linked. All parameters within the Noise Filter function exactly as they do within the Osc Filter. Refer to the Osc Filter section for a full description of each parameter.

**Amp**

![Amp](image)

Figure 103: Amp
Amp functions like a keyboard or guitar amp and controls the overall output level for all sound signals and filters. Depending on the amount of sound waves added in the OSC 1 & 2 section, different sounds can have different volume levels. Use Amp to match the volume of all sounds in the EWI’s sound bank. When setting the volume for each sound, play throughout the entire range of the EWI at all dynamic levels to ensure there is no distortion at any time. If distortion is detected, reduce the Amp level. When the sound level is set via the Amp control, all sound signals are then sent to the Effects parameter group.

Effects

The Effects parameter group is the last step for sound editing. Effects add additional elements to the final edited sound. The effects available are Delay, Reverb, and Chorus. In live playing situations, any changes made in this group can be turned on or off using the external white “FX” button on the EWI. Turning effects on or off using the “FX” button will have no effect if all effects are turned off within this group.
After sound and noise are edited, filtered, and adjusted for volume using the Amp, the entire audio signal travels into the Effects parameter group. When working with the Effects group, the order in which the audio signal will travel is:

Chorus → Delay → Reverb

*Chorus* – Chorus is an effect that drastically enhances a sound by copying the sound signal, modifying it, and mixing it back with the original signal. Some chorus generators copy this process many times while others copy only a few times. The EWI4000s chorus effect creates two copies of the original signal. The user can edit both copies using the chorus parameters. To enable the chorus effect, use the ON and OFF buttons located at the top left of the chorus parameter box.

Dry Level – Dry Level sets the overall volume for the unaffected incoming audio signal. Both altered copies will be mixed with this signal.

Select 1/2 – Use the Select buttons to determine which copy is edited. The Delay, Mod, and Wet parameters indicate number 1 and 2 depending which button is selected.

Feedback – Feedback continuously inserts the altered signal back into the chorus. Setting this value too far in positive or negative directions will cause excessive sonic feedback resulting in an unusable effect. Use small amounts of this parameter at first and tweak as needed.

LFO Freq – Often, chorus effects will contain a pulsating quality. The LFO Freq parameter controls the amount of pulsating effect applied to the chorus. Be reminded that the parameters PWM, Osc Filter LFO, Noise Filter LFO, and Vibrato all contain similar pulsating qualities. Chorus LFO Freq can add
a considerable amount of confusion to sounds already containing many LFO qualities.

Delay 1/2 – Delay controls the offset of each copied audio signal in relation to the original.

Mod 1/2 – Mod performs the chorus modifications to the copied lines. As a general rule, Mod 1 and Mod 2 should be set to different values. The sonic property resembles that of a very mild LFO and is responsible for the characteristic chorus effect.

Wet 1/2 – Wet will control the volume level of the copied lines. Try setting each Wet level at a different value to enhance the depth of the chorus effect.

*Delay* – Delay is a digital effect that repeats the signal played similar to an echo. The delay parameters off The Key Trigger settings within the Common parameter group dictate whether one or all notes of a phrase are affected by the Sweep parameter. er a wide range of flexibility.

Time – Time adjusts the amount of space between repeated echoes.

Damp – Very important, the Damp parameter will completely mute all delay sounds when set at 0%. Gradually increasing Damp will allow for more echo.

Feedback – determines how long the echo will last. A longer feedback time will result in longer repetitions before the echo decays to an inaudible level.

Use Feedback and Damp in conjunction with one another to adjust the length of the echo.
Level – Set the general volume level for the delay in relation to the main input sound level. As a general rule, the delay volume should be set under the main instrument volume.

*Reverb* – Reverb is a common effect used to simulate various environments. It is designed to reproduce the acoustic reverberations of sound waves in rooms of different sizes and shapes. Small amounts of reverb are generally preferred to soften the defined edges of a sound.

Time – controls how long the reverb tail will last past the played note.

Damp – controls the “fine-tuning” of the reverb, allowing the user to gently color the effect. Negative values allow the reverb to sound natural. Greater positive values muffle the reverb and darken its overall color, much like the Osc Filter reduces higher harsh frequencies within a sound.

Dense:Early – This setting will enhance the reverb effect. When set to a smaller value the reverb is more realistic in relation to acoustic environments. Greater values increase the volume and overall amount of reverb for a very exaggerated effect.

Level – Level sets the overall volume level of the reverb effect.

**Auditioning Bar**

![Figure 105: Auditioning bar](image)

The Auditioning Bar is located along the bottom of the editing interface. If the user wishes not to play-test the EWI during the editing process, the Auditioning Bar provides a set
of interactive controls that allows the user to click on a piano keyboard to hear the sound. Once a key is clicked, that note will sound until clicked again. This feature is very beneficial in that the user can actively hear and “tweak” sounds in real-time without constantly blowing or playing the EWI. The Auditioning Bar also features an expression knob that simulates adjustments in breath pressure.
PART 4

CHAPTER 10 – TRANSCRIPTIONS

The following solos by Bob Mintzer and Michael Brecker have been chosen by the author to demonstrate both technical mastery and musical achievement. All solos are written using color and pitch bend notation in order to give the player experience with the author’s system of EWI notation. The following criterion was used as a basis for solo selection: playability, musicality, use of expressive devices, and general musical appeal.

Michael Brecker was involved with the EWI from its very beginning until his passing in 2007. Bob Mintzer also performed on one of the first models of the instrument and continues to develop his approach, currently performing with the EWI4000s. Although both musicians often used the EWI as a doubling instrument for orchestration purposes, the solo transcriptions presented here were completely improvised. They aptly demonstrate the creative vision and technical mastery each of these extraordinary musicians brought to the instrument.

*Bob Mintzer – New Rochelle*

This solo by Bob Mintzer features an attractive melodic approach and reasonable tempo. While one cannot be sure of the exact fingerings Mintzer used on the recording, the author has chosen to write certain phrases using fingering break and “X” notation. One will notice this notation used frequently at measure thirty-three:

![Figure 106: New Rochelle - Fingering Break Notation](image)

Figure 106: New Rochelle - Fingering Break Notation
Fingering break notation and “X” notation is used to help minimize excessive use of the octave rollers. Reading this notation will hopefully familiarize the player with situations where these fingerings are appropriate. With practice, the player can recall these alternate fingerings with very little effort in real-time while reading music or improvising.

![Figure 107: New Rochelle - fingering break and “X” notation](image)

Pitch bends are used economically and are notated accordingly using the pitch bend notation described earlier in the method. The following example shows intricate use of the pitch bend:

![Figure 108: New Rochelle – Pitch bend notation](image)

When playing figure 108, the Db is fingered during the first two 8\textsuperscript{th} notes of the triplet, while the pitch bend is engaged during the second 8\textsuperscript{th} note. This is a great example of how to use the Chromatic Pitch Bend technique covered in Chapter 8.

*Michael Brecker – Pilgrimage*

Michael Brecker used the EWI in several musical situations on his last recording; in most cases it served as an orchestration tool. On the title track however, Brecker features the EWI as an improvisational voice. There is little use of pitch bend technique due to the tempo
and frequent 16th note lines. Most notation featured in this solo is designed to help the player negotiate difficult fingerings by indicating fingering breaks and alternate fingerings. Figures 109 and 110 both minimize the use of the octave rollers during fast passages.

![Figure 109: Pilgrimage – “X” notation](image1)

In measure nineteen of Brecker’s solo, the Chromatic Pitch Bend technique is used between F and E:

![Figure 110: Pilgrimage – fingering break notation](image2)

![Figure 111: Pilgrimage – Chromatic Pitch Bend](image3)

In measure nineteen of Brecker’s solo, the Chromatic Pitch Bend technique is used between F and E:

**Bob Mintzer – Time Squared**

The first page of Time Squared offers exercise in articulation. The repeated C’s at the fast tempo can be played using the double-tongue technique or any combination of tonguing techniques discussed in Chapter 5.
The C’s in measure nine could be notated in any octave. Low C was chosen based on the direction of the lines surrounding C to minimize octave roller use. In the case of measures 9-16, the lines always ascend above C.

![Figure 112: Time Squared – Line ascending above C](image)

In measure 18, the line ascends and descends from the same C. Therefore, the line is written up an octave allowing for space above and below the line. The second space C line (notated in figure 112 as low C) is clearly defined by a division of green and black notation.

![Figure 113: Time Squared – Line ascending and descending from C](image)

Both ascending and descending pitch bends are found in Mintzer’s Time Squared solo. Measure thirty-seven contains three pitch bends: two approaching from below the target note and one approaching from above.

![Figure 114: Time Squared – Multiple pitch bends](image)
Bob Mintzer – The Red Sea

Mintzer solos rarely ascend above brown notation. When they do, careful consideration must be given to how these phrases are notated. Although the point of colored notation is to reduce written octaves to a manageable span, larger intervals can be useful to the player when realized literally. In measure twenty-seven of The Red Sea, Mintzer plays an ascending major 7th. The F# can be written up or down the octave, but looks more appropriate when leaping up by a major 7th from G instead of down by one half step.

Figure 115: The Red Sea – Octave placement

The advantage of colored notation is that the entire line in figure 115 can be also written down the octave, placing all notes of the phrase within the treble staff.

Michael Brecker – In A Sentimental Mood

Many consider Michael Brecker’s performance of In A Sentimental Mood to be a landmark recording for EWI technique. Of many solos by various EWI artists, Brecker is one of the few that often utilize the full range of the instrument in a cohesive musical way. There are two instances where he plays descending lines through the EWI’s full range.

Figure 116: In A Sentimental Mood – Full range descending line, offset grouping
The colors in figure 116 are offset from the regular four-note grouping of 32\textsuperscript{nd} notes. However, the notes are positioned in the staff to correspond with the thumb positions on the octave rollers. This enables the player to mentally visualize the descending pattern within one fingered octave. Grouping the notes in different octaves based on the 32\textsuperscript{nd} note groupings would result in illogical organization of pitches based on the EWI’s fingering system. The descending line in Figure 117 groups itself in groups of five both visually and according to the EWI’s fingerboard, and results in a more natural appearance:

![Figure 117: In A Sentimental Mood – Descending line, even grouping](image)

The Chromatic Pitch Bend technique is used to create the first three notes of each five-note grouping.

Due to Brecker’s creative use of the EWI’s range, colored notation becomes very useful to re-orient the player between phrases. The following excerpt shows the end of a phrase in purple, and the beginning of the next phrase in green, four octaves away.

![Figure 118: In A Sentimental Mood – Four octaves between phrases](image)

In addition to creating expression using the EWI’s range, Brecker succeeds in giving many notes life and character by using pitch bend and grace notes often throughout the solo.
Bob Mintzer's EWI Solo on:

New Rochelle (3:06)

EWI in C

From the Yellowjackets Recording "Blue Hats"
Warner Bros. 1997 #46333

Transcribed By:
Matt Vashlishan

\[=180 \text{ Half-Time Feel Funk/Shuffle}\]

\[\text{Db6}\]

\[\text{Gb6}\]

\[\text{C\#7(sus4)}\]

\[\text{Bbm11}\]

\[\text{Ab7(sus4)}\]

\[\text{Db6}\]

\[\text{Gb6}\]

\[\text{C\#7(sus4)}\]

\[\text{Bbm11}\]

\[\text{Ab7(sus4)}\]
New Rochelle - Bob Mintzer

C#pedal

B♭7

C9

E♭Œ7

A13

G9

D13

C9

F13(b9)

B♭7

F7

B♭7

G♭Œ7

7(#11)

4

4

5:06 After Head Out

B♭(add2)

G7alt.

Cm9

B♭/D

E♭maj7

Ab13

Gm9

Db13

Cm9

F13(b9)

B♭(add2)

F7

B♭(add2)

G♭maj7(511)
New Rochelle - Bob Mintzer

73  B♭(add2)

77  B♭(add2)

81  B♭(add2)

85  B♭(add2)

89  B♭(add2)

93  B♭(add2)
Michael Brecker's Solo on:

Pilgrimage (7:10)

EWI in Bb

From the Michael Brecker Recording "Pilgrimage"
Emarcy 2007 #1726351

Transcribed By:
Matt Vashlishan

\[=126 \text{ Straight 8th}\]

\[\text{Emaj7} \quad \text{Bb7alt.}\]

\[\text{Eb7} \quad \text{A}_7(#11)\]

\[\text{Gm7} \quad \text{F#13}\]

\[\text{Fmaj7(#5)}\]

\[\text{Em7(b5)} \quad \text{A7}\]

\[\text{C#maj7(#5)} \quad \text{B7alt.}\]

\[\text{D/Eb}\]

\[\text{C7}\]

\[\text{C7}\]

\[\text{D7}\]

\[\text{D7}\]

\[\text{D7}\]
Bob Mintzer's Solo on:

Time Squared (1:11)

From the Yellowjackets Recording "Time Squared"

Heads Up Records 2003 #3075

Transcribed By:
Matt Vashlishan
Bob Mintzer's Solo on:
The Red Sea (1:49)
From the Yellowjackets Recording "Run For Your Life"
GRP Records 1994 #9754

Transcribed By:
Matt Vashlishan

Bob Mintzer's Solo on:
The Red Sea (1:49)
From the Yellowjackets Recording "Run For Your Life"
GRP Records 1994 #9754

Transcribed By:
Matt Vashlishan
Rubato throughout (bar lines used for phrase markings)

Michael Brecker's Solo on:
In A Sentimental Mood
From the Steps Ahead Recording "Magnetic"
Warner Bros. 2009 re-release #13458
Duke Ellington
Transcribed By:
Matt Vashlishan

EWI in Bb
Sentimental Mood - Michael Brecker

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\[ E^7 \quad \text{Am}^7 \quad D^7 \quad G^\text{maj}^7 \quad F^m7 \quad B^b7 \]
\[ E^\text{maj}^7 \quad C^7 \quad F^m7 \quad B^b7 \quad E^\text{maj}^7 \quad C^7 \]
\[ B^7 \]
\[ E^\text{maj}^7 \quad C^7 \quad F^m7 \quad B^b7 \]

34 \[ \text{Am}^7 \]

36 \[ B^\text{alt.} \]

\[ C^\text{maj}(sus4) \quad C^\text{maj}(sus4) \quad B^\text{maj}(sus4) \quad E^7 \]

Am \quad Am^\text{maj} \quad Am^7

\[ F^\text{maj}(bs) \quad 5 \quad 5 \quad 5 \quad 5 \quad 5 \quad 5 \quad 5 \quad 5 \]

Em \quad 5 \quad B^m7
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RELATED SOURCES


Mintzer, Bob. “Akai EWI Questionnaire.” Questionnaire. Email: Email correspondence, 2011.


