

Macro-Connection Exercises

For Range Expansion, Accuracy and Slide Technique

Besides developing, bridging and connecting various fairly discrete embouchure areas, the other major half of my physical practice consists of developing speed and accuracy through all ranges. It consists of the following types of exercises:

1-Harmonics

2-Flexibilities

3-Slide technique

4-Long Scales

5-Free blowing

A quick note here before we start this section. In the interests of simplicity, I am writing the examples in this book for a trombone without valves. When I do exercises of the sort that follow here and/or when I am doing exercises that can profitably entail the use of extended positions on my trigger horns, I simply consider whatever ranges in which I regularly use the trigger(s) as another available partial on the horn. So for example with a single F attachment tenor, I consider the partial that includes trigger C an octave below middle C in 1st position as a valid partial through all possible slide positions, as I do also the trigger F and pedal trigger F partials below it. With double trigger horns... dependent or independent... I do the same.

So should you.

If you can play a C below middle C in trigger first position and the B below it in trigger second with a good sound and if you have some facility in using those trigger notes in rapid passages, then you should also be able to play trigger Bb, A and Ab below them... and depending on how you tune your F attachment, maybe a trigger G as well...with an equally good sound and equal facility as well. The trigger Bb, A and Ab are invaluable notes for smooth and facile playing in that register if you know how to use them, as are the Gb trigger notes in the most common independent double trigger tuning both in that register and in the ones below it. Especially since the advent of more open, better playing valves and valve wraps, these available trigger notes have expanded the positional possibilities below third partial F enormously.

Learn them well, those of you who play horns with triggers.

And then learn how to use them.

1-Harmonics

I use these exercises in many variations. The simplest are Harmonics Up, Harmonics Down, and Symmetrical Harmonics. I play them all in a progressive fashion (gradually expanding through each adjacent partial in each successive segment of the exercise), at basically three speeds... slow, medium and fast ...and from all possible ranges of the horn. I will first illustrate them from 3rd partial F in quarter notes played at approximately MM=60. (Quarter notes at MM=60 would be a fairly slow version. Medium speed might be more like eighth notes at about MM=100, and fast would be as fast as you can play them really accurately and well, always remembering that when you hit difficult areas...difficult in terms of control, connection, whatever... you should slow down until you are playing them right. My general [and oft-repeated] take on this is that you should strive to be able to practice all moving exercises as fast as you can play them nearly perfectly, *no matter how slow that may be*. I might start one of these exercises playing it in sixteenth notes at MM=120 but by the time I hit say the sub-pedal ranges or notes through a difficult break area in the altissimo ranges I might be playing them more like quarter notes at MM=40 in order to get the timings right. For now, leave the mouthpiece in proper contact on your lips when you breathe and tongue only the first note of every phrase. Take the mouthpiece off and rest/reset if you so desire during the held rests at the end of each segment. And remember...tap your foot and do these exercises in good, relaxed but accurate time. This idea will seem fairly elementary to many of you at present, but as these exercises get more rhythmically complicated later on in this book you will soon see the value of it.

Harmonics Up

Example I-9 (Harmonics Up, One Direction)

Etc., as high as possible

Notice that I first establish the notes in the originating partial before I go about trying to connect them to adjacent partials. In this exercise, these are the Establishing Notes. When the root of an exercise is correct the rest of the exercise has a better chance of being constructive. I do not generally include 7th position once I get past the 5th partial because as I go higher on the horn I use progressively fewer extended positions. If within any of the progressive range exercises that I offer here the top or bottom notes in a given position are not ones for which you have much practical use, simply do not do the exercise in that position. I personally rarely use 7th position above the 6th partial, 6th position above the 8th partial, 5th position above the 9th partial and 1st position only up to the 12th partial. Your needs will probably vary. Also...the 5th partial is flat on most horns, and of course the 7th partial is very flat. Use your ears to tune the lower positions in the 5th partial and be careful

to accurately tune all of your sharp positions in the 7th partial. The partials above the 7th partial? They are so idiosyncratic as to be almost unpredictable. Every horn and every horn/mouthpiece combination will produce different results. Use your ears. One of the distinct advantages of the use of these harmonic exercises is that through constant repetition from all directions at fairly slow speeds, the pitches of various partials on any given equipment/player combination...all of them, high low and in the middle...can be thoroughly explored and accurately tuned to one another.

Try everything and use what works. For you.

Example I-10 (Harmonics Up, Two Directions)

Etc., as high as possible


Harmonics Down

Example I-11 (Harmonics Down, One Direction)

Etc., as low as possible

Remember, trigger players...simply include your available trigger partials in these exercises wherever you wish to be able to use them use them. Also remember...there are alternate partials available below the 1st partial. (Below the normal pedal tones). They are available using the valves as well.

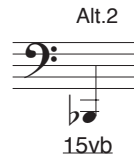
There is an F in Alt. 2.



A double pedal Bb also in Alt. 2. (Or Alt. 3. Or in between. Search for it. It lies in different places on different equipment.)



And even a triple pedal, once you get loose enough to play it while still maintaining some amount of embouchure focus and breath support.



And even lower. Explore. All of these alternate partials continue right on down to (lipped down) Alt.7th position and up to Alt. 1 as well.

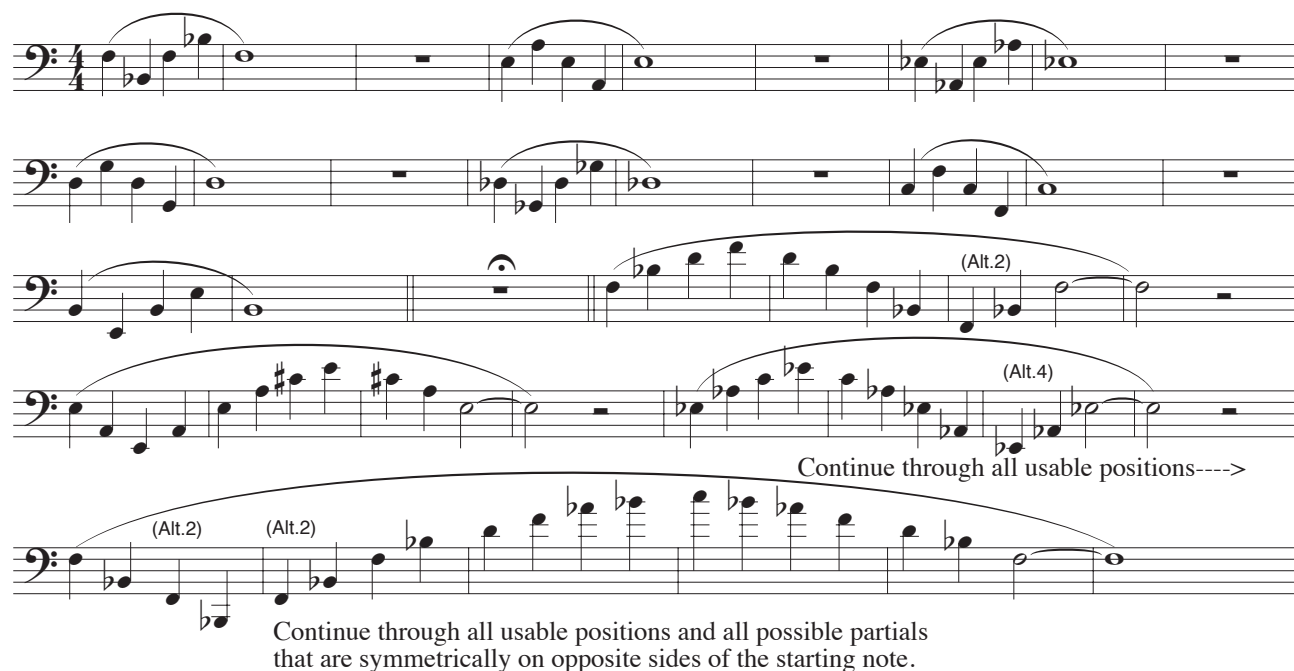
Example I-12 (Harmonics Down, Two Directions)



Symmetrical Harmonics

I do these exercises in roughly equal intervals from both sides of the starting note. Thus there will usually be more partials played above the originating note than below it. I will dispense with including the Establishing Notes in many of the rest of the examples in this book. You know what to do by now. Get a good balance in the originating range before beginning any of these exercises. Make it a habit. While you are at it, also make habits of taking a good breath during the rests, keeping the time going with your foot while mentally subdividing and keeping the mouthpiece in consistent contact with your lips (at least until further notice) as well.

Intro Example I-13 (Symmetrical Harmonics)



Continue through all usable positions and all possible partials that are symmetrically on opposite sides of the starting note.

Notice that in this version of the exercise I alternate starting directions from phrase to phrase. The basic idea of this exercise is to establish a consistent and even set of ranges going in both directions from the originating partial. If all of the exercises are played beginning in the same direction, the embouchure will tend to favor that range over the following one, but when you alternate starting directions you get a compromise embouchure system that makes for an even set of ranges. After doing this from many different originating partials over a period of months and years, everything begins to even out.

2-Flexibilities

Short Flexibilities have as much to do with slide technique, extended positions and mobility as they do with sheer flexibility. Along with scale and slide technique work, they are really the part of this approach that best physically prepares the student to be a technically fluid player.

They can be done through any number of contiguous partials, but I have found the smaller numbers...through 2, 3 and 4 partials...to be the most effective, I will sketch out the beginnings of these three approaches, once again in Bb Major, this time starting from 3rd partial C and going up. They can start on any note, be played using any and all scales and go in any direction(s) equally profitably, but for the sake of clarity and simplicity I will start on the lowest diatonic note of the Bb Major scale that can be played in the third partial.

Two Partial Short Flexibilities Up

The idea here is to reach all the notes of any given scale...in this case Bb Major...that exist in the partial just above the one in which you start (or below the originating partial, should you be playing Two Partial Short Flexibilities Down) *in all available positions*. (By the way...this is the best set of extended position exercises that I have ever found. Bar none.) When you are beginning to practice these exercises, only practice the notes with slide motions that can be practically played at a fairly rapid speed. This generally limits one's choices to notes that are within 2 or at most 3 positions on either side of the originating note, although as you progress in this study even motions of 6 or 7 positions can and should be included. They should be played at the fastest speed at which they can be done smoothly and well, *no matter how slow that may be*, and with all possible tonguing styles or patterns. (Most importantly including no tongue at all. Once you have timed in these motions without the aid of your tongue, adding various articulations merely perfects them. The tongue acts as a timing

device to smooth out the inevitable minor inconsistencies in resistance between various partials.) Feel free to alter tempi in mid-exercise as you encounter slide throws of varying difficulty or inaccurate embouchure/slide/tongue coordinations. Over the course of many months, many scales, many articulations and many registers this kind of practice teaches the student what he or she can and cannot do in terms of speed in getting from one note to another, and once these possibilities are thoroughly internalized they become a reflexive system that helps to govern one's technique. Combined with the slide technique exercises and tonguing approaches that I present this can make for some extremely rapid, extremely clear and clean playing.

As can be plainly seen from the examples below, these exercises can get quite complicated. In the following pages of Example 14 I have covered all of the practical permutations and combinations of the available notes in the key of Bb Major that exist going up from the 3rd to 4th partials of the horn. When you practice them, learn to do the ones with the easiest slide motions first. Then combine those that you have mastered into more complex patterns and proceed as you get better at playing them through all of the permutations and combinations that are available to you. Do not overdo them, and stop when you get tired. (Stopping just a little before you get so tired that things are not working well would be even better. As a matter of fact, you should adopt this idea as a general rule throughout all of your practice.) As you progress in these exercises, you will gain endurance.

And...work on smooth and accurate slide movement. The slide technique concepts and exercises in the following Slide Technique section will help a great deal in achieving this goal. If the bell of your horn is jerking around when you are playing these patterns then you are not moving the slide parallel to its axis, and in the more complicated versions you must not try to make a dead stop at the various middle positions but rather smoothly flow *through* them using accurately timed-in accelerations and decelerations.

Imagine the practice material that becomes available to you with this one idea when all of the available variations that I offer in this book are applied. All of the keys, added chromatic notes and scale forms, all of the time signatures and subdivisions on which they can be started, all of the tonguing possibilities, all played through the many partials and multiple combinations of partials (including trigger additions) that are available on the horn.

The endless practice tool. One that will be challenging for you every day of your life.

Bet on it.

A quick idea regarding how to construct the following types of exercises. Once you add a note in the next contiguous partial to the one in which you started, simply connect all the notes that you have previously played in the exercise to that note in every way that makes physical sense to you while staying in or at least near your chosen meter and initial subdivision. The more notes that have been previously accessed in each partial, the more complex the exercise becomes. As you progress in your scalar choices you will find yourself starting on notes that are played in the middle of the slide rather than at the extremes. Since you will only be going in one general direction with these exercises, this acts a sort of filter that limits the length and complexity of these exercises so that you can more profitably concentrate on one particular set of notes. No matter where you start on the slide, choose relatively simple combinations and work your way into the really complicated ones over the course of time. This exercise is about accuracy and timing, not about how many notes you can cram into a given practice session. The examples below are very long only because I included all combinational possibilities within a given few partials as an illustration of how this exercise can develop. It is more of a theoretical illustration than it is a practical one. It changes meters and sometimes uses two sets of repeats rather than one in order to provide all possible looks at these combinations. Those necessary changes will be different in different meters and with different starting subdivisions. When played in a practice session, the actual meter is relatively unimportant. It is the physical exercise, the timed movements that matter here. Once these motions and coordinations become reflexive through diligent practice, then they can be applied to any metric requirements. And remember...practice all moving exercises as fast as you can play them nearly perfectly, no matter how slow that may be.

Example I-14 p.1 (Two Partial Short Flexibilities Up)

Repeat all as long as one breath lasts.

(6)

(6)

(2)

(2)

(6)

(2) (6)

(1)

(The same series of alternating contiguous partials continues throughout this exercise.)

Example I-14 p. 2

The image displays a musical score for Example I-14, page 2. It consists of 12 staves of music, all in bass clef. The first seven staves are in 4/4 time, and the last five staves are in 3/4 time. The key signature is one flat (B-flat). The music features a complex rhythmic pattern of eighth and sixteenth notes, often grouped into sixteenth-note runs. The first seven staves show a sequence of phrases, each starting with a double bar line and a repeat sign, followed by a rest. The eighth staff introduces a new phrase with a double bar line and a repeat sign, and includes a circled number (6) below the staff. The ninth, tenth, and eleventh staves continue this pattern, each with a circled number (6) below the staff. The twelfth staff concludes the sequence with a double bar line and a repeat sign.

Example I-14 p. 3

The image displays a musical score for Example I-14, page 3. It consists of 13 staves of music, all in bass clef, 4/4 time, and a key signature of two flats (B-flat and E-flat). The music is characterized by complex rhythmic patterns, primarily consisting of eighth and sixteenth notes, often grouped in pairs or fours. Many of these patterns are enclosed in slurs and repeat signs, indicating repeated rhythmic motifs. Fingering indications are present throughout the score, with the number '6' appearing frequently above notes, and the number '1' appearing once above a note in the fifth staff. The notation includes various articulation marks such as slurs, repeat signs, and fermatas. The overall structure of the piece is highly rhythmic and technical, typical of a study or exercise in advanced bass clef technique.

Example I-14 p.4

The image displays a musical score for Example I-14, page 4. It consists of 14 staves of music, arranged in two systems of seven staves each. The music is written in bass clef, 4/4 time, and has a key signature of one flat (B-flat). The notation features complex rhythmic patterns, primarily consisting of eighth and sixteenth notes, often grouped with slurs and repeat signs. The first system (staves 1-7) shows a sequence of notes in the first measure, followed by rests in the second and third measures. The second system (staves 8-14) shows a sequence of notes in the first measure, followed by a sequence of notes in the second measure, with rests in the third and fourth measures.

Example I-14 p.5

The image displays a musical score for Example I-14, page 5. It consists of 14 staves of music, all written in bass clef. The time signature is 4/4, and the key signature has one flat (B-flat). The music is organized into two main sections. The first section, from the first staff to the eighth, features a rhythmic pattern of eighth notes grouped in pairs, with a repeat sign at the end of each group. The second section, from the ninth staff to the fourteenth, continues this pattern but includes a change in the rhythmic grouping, with some groups containing four eighth notes. Each staff begins with a bass clef, a key signature of one flat, and a 4/4 time signature. The notation includes various musical symbols such as repeat signs, slurs, and rests.

Example I-14 p.6

The image displays a musical score for Example I-14 p.6, consisting of 14 staves of music. The score is written in bass clef and features a complex rhythmic pattern of eighth notes, often grouped in pairs and beamed together. The time signature is 4/4 for most staves, but it changes to 3/4 for the 9th and 10th staves. The key signature is one flat (B-flat). The music is organized into two main sections: the first section (staves 1-8) and the second section (staves 9-14). Each staff begins with a double bar line and a repeat sign, indicating a specific rhythmic motif. The notation includes various articulations such as slurs and accents. The 9th and 10th staves are marked with 'Ex. I-14 p. 6' and 'Ex. I-14 p. 6' respectively, suggesting they are examples of the rhythmic pattern. The overall structure is a series of rhythmic exercises or patterns.

Example I-14 p.7

The image displays a musical score for Example I-14, page 7. It consists of 14 staves of music, all written in bass clef. The key signature is one flat (B-flat). The time signature is 4/4 for the first 13 staves and 3/4 for the final staff. Each staff contains a single melodic line with a series of eighth notes, often grouped by slurs and repeat signs. The first staff begins with a 4/4 time signature. The second through fourth staves continue with 4/4 time. The fifth through eighth staves also continue with 4/4 time. The ninth through thirteenth staves continue with 4/4 time. The fourteenth staff changes to a 3/4 time signature. The music is characterized by a consistent rhythmic pattern of eighth notes, with some staves featuring repeat signs and first endings. A first ending bracket is visible on the fourth staff, and a first ending bracket is also present on the eighth staff. The notation includes various musical symbols such as slurs, repeat signs, and first ending brackets.

Example I-14 p.8

The musical score consists of 14 staves of bass clef notation in B-flat major. The time signatures are 3/4, 4/4, and 3/4. The score is characterized by complex rhythmic patterns, including sixteenth and thirty-second notes, often grouped in pairs or fours and beamed together. Many of these patterns are enclosed in brackets and repeat signs, indicating repeated rhythmic figures. The notation includes various rests, such as whole, half, and quarter rests, interspersed with the rhythmic patterns. The overall structure is highly rhythmic and technical, typical of a study or exercise piece.

Example I-14 p.9

The image displays a musical score for Example I-14, page 9. It consists of 14 staves of music, all written in bass clef. The key signature is B-flat major (two flats). The time signature is 3/4 for the first two staves and 4/4 for the remaining 12 staves. The music is characterized by complex rhythmic patterns, primarily consisting of eighth and sixteenth notes, often grouped in pairs or fours and beamed together. Many of these patterns are enclosed in brackets and repeat signs, indicating repeated rhythmic figures. The notation includes various rests, including whole and half rests, and some measures contain only rests. The overall structure is a series of rhythmic exercises or patterns, likely for technical practice.

Example I-14 p.10

As can be plainly seen from the preceding 12 pages of exercises based on only two partials, these exercises can get very complex. Simplify them as you must for practicality's sake, of course. Eliminating long, relatively uncommon slide throws will cut their lengths way down, for example, as will not including more than a couple of notes in either partial during any given exercise. But USE them. They work.

You will notice that I used C, D, Eb and 1st position F in the lower (3rd) partial of the previous exercise and 6th position F, G, A and Bb in the upper one. (The 4th partial.) Were I to pursue this exercise further on any given day I would next do the Two Partial Short Flexibilities Down exercise (the one that follows this section) between the 4th and 3rd partial and then repeat the process going up between the other partials that exist above. However in the following Two Partial Short Flexibilities Down exercise (where I go down from the 4th partial to the 3rd) I would use only G, A and Bb as starting notes in this key.

As a general rule in constructing these exercises I practice from the positions that I would use when normally playing the scale to *start* the exercise but I go to all practical possible positions for that scale in the ensuing partials. This is only common sense for an improviser or sight reader because you so often have very little idea of precisely what you are going to have to play next. One of the main goals of this exercise is to teach you to move from normal, habituated positions to other less familiar ones as a matter of course, to create reflexive habits through the use of repetition done in good internal time so that if you encounter a phrase like the following in written music or want to play it as part of an improvised solo:

Example I-14 Insert 1 

you will be able to smoothly and quite automatically play the Fs in their most efficient positions.

The above example may seem fairly elementary to the more advanced players among the readers of this book, but I guarantee that as you begin to get into deeper waters on the horn like the examples below (at about MM=120):

Example I-14 Insert 2 

or this:

Example I-14 Insert 3 

you will begin to see the value of such practice.

Two Partial Short Flexibilities Down

As must be obvious by now, these exercises can become quite complex. In the interest of a certain brevity I will only explore the variations of the Two Partial Short Flexibilities Down from the 4th to the 3rd partials in this Bb Major scale as far as the ones that originate on G are concerned. Extrapolate the rest for yourself. Given the other variations that are possible with this exercise...all the other diatonic scales in other keys, the various pentatonic and minor scales, those same scales with one or more chromatic passing notes added, the so-called “jazz” scales and any OTHER scales that you might find or invent, different time signatures and the option of starting on all the subdivisions of those time signatures, different articulation styles plus the many available partials (and practical trigger notes as well for those with valved horns) you can easily see that the available permutations and combinations of such a series of variations are nearly infinite.

Once you thoroughly understand this concept, build your own exercises. Daily. I have been practicing them in this manner almost every day for over 20 years, and I believe that I have rarely if ever repeated myself. Yet over the course of time, they ALL become reflexive.

Example I-15 p.1 (Two Partial Short Flexibilities Down)

All repeats as long as one breath lasts.

The musical score is written in bass clef, 4/4 time, and Bb major. It consists of eight staves of music. Each staff shows a sequence of notes with slurs and repeat signs, indicating a continuous exercise. The notes are primarily eighth and sixteenth notes. Some staves have circled numbers (6) and (1) above them. The exercise is designed to be repeated as long as one breath lasts.

(The same idea of alternating contiguous partials continues throughout this exercise.)

Example I-15 p.2

The image displays ten staves of musical notation in bass clef, B-flat major. The first two staves show a continuous eighth-note scale with a repeat sign in the middle. The next six staves show a pattern of eighth-note scales followed by rests. The last two staves show eighth-note scales in 3/4 time, with rests in the second measure of each staff.

To continue this exercise you would simply add the possibilities from 4th partial A and B \flat down to the F, E \flat , D and C in the 3rd partial, including all of those that could practically include a 4th partial G. (And maybe even a 4th partial F as well if you were feeling adventurous. It's all up to you.) Then if you wanted to proceed with it, you would do the equivalent procedure between B \flat Major notes in the 4th partial and those in the 5th. Since in my own approach to this scale I would use the following positions:

Example I-15 Insert 1

Musical notation for Example I-15 Insert 1. The first staff shows an ascending scale with fingerings: (4), (#4), (4), (4), (3), (3). The second staff shows the descending scale with the instruction "(Same going down)".

Or possibly these positions if was intent on working on my extended positions in the middle range:

Example I-15 Insert 2

Musical notation for Example I-15 Insert 2. The first staff shows an ascending scale with fingerings: (6), (5), (6), (4), (#4), (4), (4), (3), (3). The second staff shows the descending scale with the instruction "(Same going down)".

there would be far fewer combinational possibilities in the higher partials. Generally speaking, the higher you practice these exercises the less combinational possibilities present themselves, and the reverse if true in the lower partials. Simpler scales such as pentatonics also offer fewer possibilities while the addition of chromatic passing tones makes all scales even more complicated. Add trigger possibilities in the lower ranges and things get even more complex. However, once you become familiar with the general idea of how to construct this sort of exercise, the actual practice gets much less complicated than the notated versions above would suggest. There is very little necessary thought about actual time signatures, etc. while practicing. Instead the variations roll out one after another in a much more physically and aurally dictated manner than might seem the case on first examination.

Work on them. You be bettah off.

Three Partial Short Flexibilities

In the further interest of brevity, I will confine my illustrations of the possible variations on this and the following exercises to those that are within easy reach of one note in each partial. For this series, I will give a fairly full picture of all of the possibilities from 3rd partial Eb through the 4th and 5th partials in this key and then sketch out the beginnings from 4th partial G in both directions and 5th partial C down as starting notes. When I practice them, however, I start all exercises on whatever notes in those partials that I normally use when playing the scale, but I go *from* them to all the other possible notes in that scale that are within practical slide reach at a moderately fast tempo, even if those possibilities are in rarely used extended positions. Eventually those extended positions become reflexive and thus more often and more naturally used.

Example I-16 p.1 (Three Partial Short Flexibilities)

All repeats as long as one breath lasts.

(All extended positions for notes in the 4th and 5th partial hold true for the duration of this exercise.)

Example I-16 p.2

The image displays a musical score for Example I-16, page 2, consisting of 14 staves of music. The music is written in bass clef with a key signature of one flat (B-flat) and a time signature of 4/4. The score is characterized by complex rhythmic patterns, primarily consisting of eighth and sixteenth notes, often grouped into beams and accented. Many of these patterns are enclosed in double bar lines with repeat dots at both ends, indicating repeated rhythmic figures. The notation includes various articulations such as slurs, accents, and dynamic markings. The score is organized into several measures, with some measures containing rests. The overall structure is dense and rhythmic, typical of a technical exercise or a specific musical style.

Example I-16 p.3

(All extended positions for notes in the 4th and 5th partial hold true for the duration of this exercise.)

Now that you have the idea, here are some shorter sets of examples:

From the 4th partial down to the 3rd and then up to the 5th.

Example I-16-a

Developed in the same progressive manner as Ex. I-16

From the 4th partial up to the 5th and then down to the 3rd.

Example I-16-b

Developed in a similar manner

From the 5th partial down through the 4th and the 3rd.

Example I-16-c

Developed in a similar manner

Four Partial Short Flexibilities

Once again I will limit my illustrations to one starting note from each partial. This time I will use 3rd partial Eb, 4th partial G, 5th partial C and 6th partial (4th position) D as the starting notes. However, *you* should start all exercises on whatever notes in those partials that you normally use when playing the scale, but go from them to all the other possible notes in that scale that are within practical slide reach.

Example I-17-a (Four Partial Short Flexibilities)

All repeats as long as one breath lasts.

Etc. through all practical contiguous combinations of these 4 partials up and down the slide in this direction in this key

Example I-17-b

Etc. through all practical combinations as above

Example I-17-c

Through all practical combinations

Example I-17-d

Through all practical combinations

Example I-17-e

Through all practical combinations

Example I-17-f

Etc. through all practical combinations in all playable partials

As you can see, these exercises expand in innumerable directions. Practice them assiduously, however, and they will open up your playing in ways of which you cannot even dream at present.

Bet on it.

All keys, all scales, all chromatic additions, all ranges (including the addition of trigger possibilities) all rational and reachable positions, all directions, all articulations...they are nearly endless.

Have fun...