

Practical Ear Training for Improvisers

Featuring the Zlotnik System

By David Kane

Illustrated by Amiel Tolentino

copyright © 2025

Hello,

In 1960 I was at Indiana University, a Senior at the music school. I was getting ready for my senior recital which would include JAZZ for the first time at IU on the second half.

In this year, I took one or two lessons from Dr. Asher Zlotnik on ear training, theory, and chord symbols. I'm pretty sure he got me using the triangle for major scale/chords, and a dash for minor and using the first note(s) of popular tunes as a stepping stone to learning intervals.

An octave, ascending, was the first two notes to *Somewhere Over the Rainbow*. A minor third DOWN was the first two notes to *Misty*. This method helped me to quickly learn and HEAR all intervals withing the octave, ascending AND descending and all the chord qualities. I've put my Ear Training chart in many of my books and my Jazz Handbook.

I have on my desk, 65 years later, a cancelled check for \$10 that I wrote for Dr. Asher on December 6th, 1960.

It brings back memories of a time when my musical mind was just getting started and I had no idea where I was going.

After the 1967 release of my Volume 1 Play-A-Long, my life forever changed.

Many thanks to Dr. Asher Zlotnik!

- Jamey Aebersold



Table of contents

Acknowledgements	4
Preface	5
How to use this book	6

Part 1: Interval Hearing

Chapters: 1. Improvisation and the Ear	8
2. Pitch matching	14
3. Interval Singing and Identification	19
4. Harmonic Resistance	24
5. Common Chord Tensions	29
6. Three Tone Scales	35
7. Tetrachords	38
8. The Solfege Principle	43

Part 2: Harmonic Hearing

Chapters: 9. The Pivot System	48
10. Pivot Tracking	55
11. Expanding the System	62
12. Seventh Chords	68
13. Quartal, Atonal and Non-tertian Structures	72
14. Functional Harmony Hearing	83
15. Musical Memory	95
16. Applying Ear Training to Improvisation	99
17. Transcriptions and How to Use Them	107

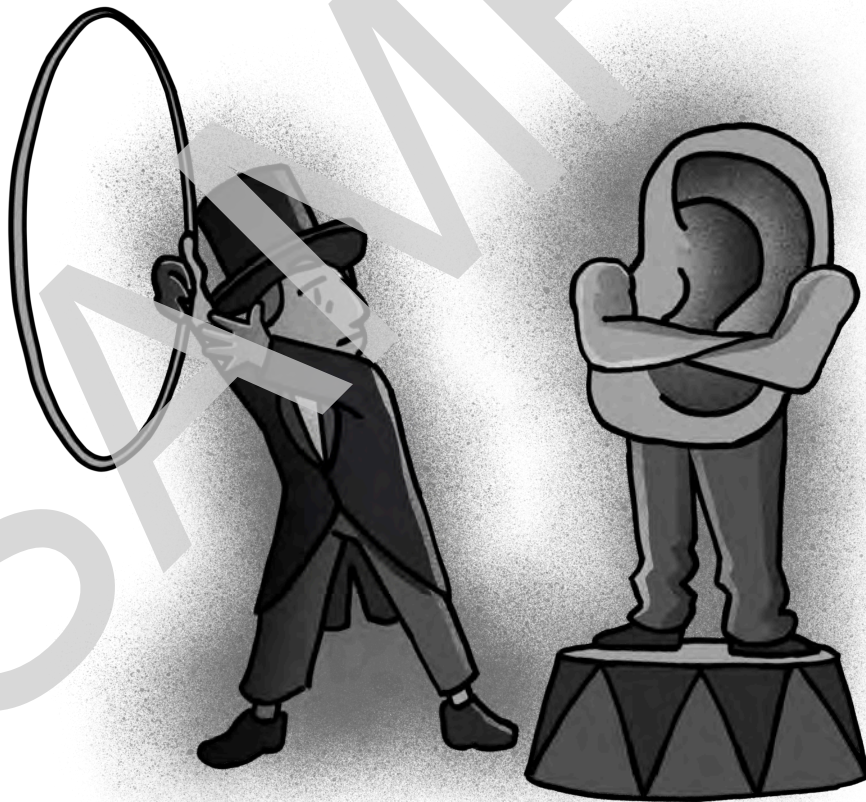
Appendix A: Interview with Marc Copland	112
---	-----

Appendix B: Associative Repertoire Possibilities	122
--	-----

Bibliography	123
--------------	-----

Acknowledgements

This work would not exist without the ideas, advice and assistance of various patient and good people. First of all, I owe much to Dr. Asher Zlotnik. Without his dedicated and inspired work on this subject over decades, there would be no book at all. Also a big thanks goes to Marc Copland, a wonderful creative artist, who years ago, impressed upon me the need to hear what I was doing while improvising. It was some of the best advice I ever received. I also want to thank bassist Paul Langosch, and my good friend, ace drummer, C.E. Askew, who together encouraged me to write this book. Thanks duly go to Jamey Aebersold and Matt Eve from Aebersold Jazz Books for publishing my first book, which gave me the confidence to write this one. I would like to thank my family; Cynthia, Celeste, Ariel and Michael for the patience, love and support they have supplied me through these many months. Finally, I would like to thank Amiel Tolentino for his whimsical and witty illustrations. Thank you all!



Preface

The subject of ear training has long been dear to my heart. It was my study of this skill that first lifted the fog from my understanding of how music “works” and provided the critical tools necessary for improvisation. I wrote this because I consider having a developed ear to be essential to be a competent improviser and a complete musician. I also wanted to illuminate certain important ideas that deserved to be more widely known. Many of these ideas stem from **Dr. Asher Zlotnik**, who I was fortunate to study with for five years. Ear training was a major part of what we worked on along with composition and harmony. Dr. Z developed an innovative approach to the Ear Training that is described and detailed here. The book also contains original ideas focused on the special needs of jazz musicians, based on my years of experience in applying ear training techniques to improvisation. While classically trained Dr. Z. was sensitive to the needs of jazz musicians, he didn’t tailor his material for them.

Although Dr. Zlotnik taught his concepts for decades, his work has remained largely unknown outside his circle of students. He did include some of this material in his book, *The Essentials of Ear Training and Theory* (Simon and Schuster, 1998) but sadly, this excellent primer is now out of print. It was intended to be an introduction to his system and was aimed at music theory novices. I once asked him why he hadn’t published his system. He replied that he was loath to do so, as he felt that Ear Training (hereafter, ET) demanded personal, one-on-one coaching to be maximally effective. I have found this to be true in the decades since that I have taught the system. A student’s prior level of musical training turns out to be a surprisingly poor predictor of how well they master ET. I have worked with seasoned players who struggled with elementary pitch matching. Conversely, I have worked with beginners who were able to grasp some of the more challenging elements of the system with comparative ease. ET study tends to be a very personal experience and musical hearing seems to be directly connected with our innate musicality. As such, students do not derive optimum benefit from a one-size-fits-all approach and hence Dr. Z hesitancy in publishing.

To compensate for the lack of supervision that that so concerned Dr. Z., I have tried to anticipate pitfalls in the descriptions of the techniques. This has rendered the resulting prose wordy, at times. I see that as necessary to head off the many questions that students tend to pose. Like improvising itself, it’s the time spent *doing* ET that pays the major benefits—the time spent reading should be minimal by comparison. The learning part is relatively easy however, applying it takes time and discipline. Those looking for instant gratification may be disappointed. If instead, you are in search of a technique that will enrich your understanding of music, stimulate your creativity and give you the confidence to be a first class musician, then you have come to the right place.

For years, I honored Dr. Zlotnik’s wishes on the matter of non-publication but as he died, heirless some decades ago and his remaining students (and me) aren’t getting any younger, I became concerned that his work could be lost. Besides myself, Dr. Z. certified a small number of his students to teach his system. Most of these students have now either retired or have passed on. A few years ago, I did hear from one of these student/teachers who said he was working a book on the Pivot System. However, I reached out to him but as far as I know, he has abandoned the effort as I never heard back from and his website was abandoned. So I beg Dr. Zlotnik’s posthumous forgiveness as I put his ideas into print. I would like to imagine that he wouldn’t want his life’s work to waste away in undeserved obscurity—he was justifiably proud of this important work.

Training your ear requires effort—it’s not a magic pill— but it is also the *correct* work to be doing if you are serious about being a confident improviser and an aurally aware musician. Its study will challenge you to expand your limits. I can think of no better investment of time in one’s quest for musical mastery. The resulting benefits to you and your audiences will repay those efforts many times over.

1. Play the pitch to be matched on a keyboard or some other pitch source, preferably in tune and at A = 440hz. Release the note before attempting to match it.
2. Listen carefully to the sound—and this is the most important part of the exercise—**form a clear image**. Imagine your musical brain is a tape recorder and “play back” the sound you just heard in your head. Hear the quality of the sound and the timbre as well as the pitch.
3. Now sing this tone using a non-explosive “bah” syllable—now verify it. This verification initially can simply consist of playing back the note and checking your intonation. The problem with singing a note and then playing it while you sing is that you may unconsciously shift the sung note to resolve any inaccurate intonation even if you think you are being alert. Later, as soon as you are comfortable with the procedure, you will use the triad method for more accurate results.

Triad Verification

To check intonation using this method, play the notes of a major triad that ordinarily contains the sung note without including the sung note. For example, if you have just sung “G”, you can play the following triads to check your intonation: G major, Eb major or C major—it doesn’t matter. What matters is that you *don’t* include the note you are singing. So in the case of using an Eb triad, for example, play only the notes Eb and Bb—not the G. If you are out of tune, this will be apparent as it only takes a few cents off-pitch to make the triad sound “wrong”. An example:

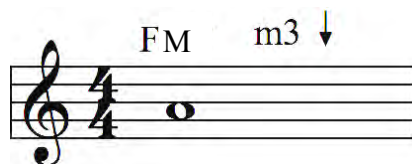
The image shows a musical staff with a treble clef. It contains four measures of music. The first measure has a single quarter note G. The second measure has a G major triad (G, B, D) with the G note crossed out. The third measure has an Eb major triad (Eb, Gb, Bb) with the G note crossed out. The fourth measure has a C major triad (C, E, G) with the G note crossed out. Below the staff, text labels each measure: 'In order to verify the intonation of our sung "G", we can play...', 'a G major triad (minus the G) or', 'an Eb major triad (minus the G) or', and 'a C major triad (minus the G)'.

Pay careful attention to intonation. Don’t be satisfied with “close enough” Good intonation is an important aspect of musicality as well as ET. Even if you play a fixed-pitch instrument such piano or vibraphone, despite the fact that you haven’t needed to worry about intonation up until this point, you need to make it a concern going forward. Remember that we are training your internal “instrument” i.e., your musical mind, and even though no one else but you will be able to hear your internal music, it is important that it be in tune, nonetheless. **Sing the note “dead-on” i.e. no scooping, pre-vocalizations, shooting past the target pitches etc.** Make this goal of hitting the notes dead-on your primary focus when performing these exercises.

Your Practice Sessions

Practice this exercise and all subsequent exercises in 10 minute increments. The reason for this is that, although ET is not necessarily physically tiring, practicing any form of ear training tends to be mentally fatiguing. Though you may feel like you could go on and do more, resist the temptation so as to avoid the prospect of diminishing returns. This does not mean that you are restricted to 10 minutes ET practice per day—on the contrary, you can engage in multiple sessions throughout your available practice period. The general rule is if you practice for 10 minutes, wait at least another 10 minutes before returning to your ET practice. Personally, I find that 30 minutes total per day, in the form of three 10 minute sessions interspersed among my other practice regimes, is ideal for keeping my inner instrument in good shape. And yes, I still practice ear training regularly and will continue to practice it until they haul me away.

Here is what a typical exercise looks like:

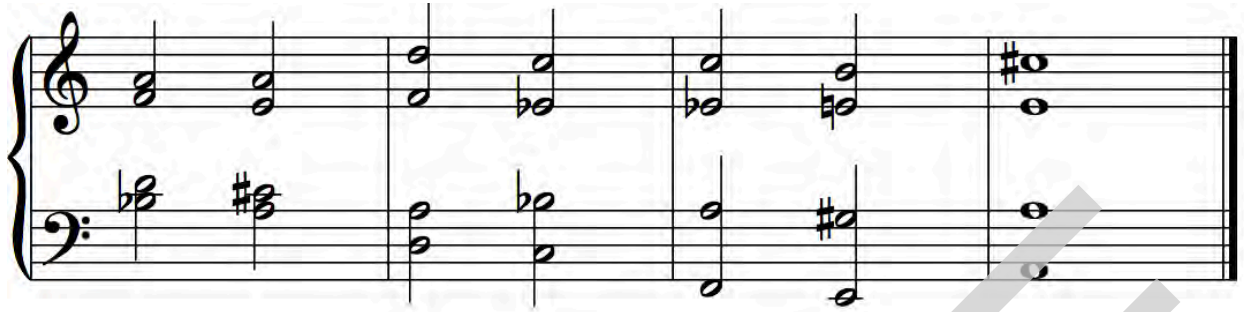


This indicates that you are to sing a minor 3rd down from A over an F major chord. You will perform it like this:

Note that the A to F# interval to be sung is to be performed legato; that is, in a continuous breath while lightly articulating the F# with a soft tonguing action. Also note that the F chord is held while the voice achieves the target F#—it is important to allow the target note and the chord to “rub” before resolving the chord. Resolve the chord using the triad verification method you learned in the interval singing section. In the example above it resolved to an F# major triad—D major and B major would have been equally good choices. Finally, it is important **not** to try to recall your AR melody before you start singing over the chord. To do so otherwise is a form of “cheating” which will not reflect real word conditions. Conditions such as when 1) you have to produce an interval in a context that disagrees with the underlying harmony or 2) you wish to recognize an interval within a complex chord. Recalling your AR tune before you hear the accompanying chord will deprive you of the maximum benefit you could be obtaining from this challenging exercise.

Let’s summarize the procedure, step by step:

1. Play the chord indicated while followed by the first note to be sung. Do **not** try recall your AR tune at this point.
2. Sing the first note of the indicated interval.
3. Only now do you mentally recall your AR tune.
4. Sing the target interval while allowing it to “rub” against the chord for a few seconds.
5. Verify using one of the three triads from the triad verification method already described.
6. Repeat all of the above on the next exercise in the series



In the above case (again assuming the F-set), these pivots would be octave-adjusted and sung as follows:



Now that you have an understanding of pivot tracking, let's proceed to the exercises.

Determining Your Pivot Set

Your pivot set depends on your vocal range so let's determine that. Avoid including the notes at the extreme ends of your range. When singing triads, you will be singing tones up to a perfect fifth above the top note of your pivot set and down to a perfect 5th of below the lowest note of your pivot set. As each pivot set spans the range of a major 3rd, that means you require a usable range of an octave and a tritone. Later, when you learn to sing 7th chords, that range will have to be extended upwards by another major third. The situation for a typical male voice is illustrated below:



Above, **A** is the central pitch of the pivot set—in this example, the F pivot set. **B** indicates the upper and lower extents of this set. **C** shows the outward range limits for singing triads for this set and **D** shows the outward range limits for singing 7th chords. As you can see, singing 7ths requires a theoretical range of almost two octaves. This is a larger range than many people typically possess. Most untrained singers have ranges of around an octave and a fifth. Don't be concerned if you don't possess a two octave range, however. There are a few reasons why you may not require a range that large: 1. By the time you add 7th chords, you may have graduated beyond needing to sing the patterns out loud. 2. If you have mastered the tension exercises described in **Chapter Five**, you may not need to sing the 7th patterns in order to identify the 7th chords. Since our present focus is the singing of the triads, choose a set that corresponds to the range requirements for triads, (**C**) above.

5. The upper structure will either be native to the scale—later, we’ll add altered versions. In this first exercise, we are unconcerned with the upper qualities since we know they will be native to the prevailing major scale.
6. As you listen, make your best guess and immediately play back the chord. Voicing is unimportant. Continue for about five minutes—stop if you feel fatigued before that point.
7. Be sure to clearly identify *both* chord and function. So in the key of C if you heard the chord comprised of the pitches, A, C, E—you would say to yourself: “A-minor; VI chord”

Here is an illustration of what we have just described. (We will assume that you are past the intro stage where each function was presented in order):

On tape: Play: On tape: Play: On tape: Play:

listen listen listen

think: CM; I think: Am; VI think: Em; III

You will likely have the most difficulty with the three minor chords: II, III and VI, so pay particular attention to their qualities. The quality to focus on is not its major/minor quality here, but its relationship to the tonic triad.

Harmonic Functions Exercise 2

Once you are comfortable with the triads, it is time to graduate to seventh chords—the bread and butter of functional harmony. You are likely aware that jazz harmony frequently employs chords with higher tensions than the seventh. This includes various ninths, elevenths and thirteenth chords both altered and unaltered, but the functions are generally defined by the seventh chords themselves and unaffected by the upper tensions in most cases, as least from a functional point of view. Refer to **Chapter Five** for the technique of identifying common chord tensions.

Here are the diatonic seventh chords in the key of C major:

Cmaj7 Dm7 Em7 Fmaj7 G7 Am7 B half-dim7

I II III IV V VI VII

As with the triads, the point here is to ascertain the quality of each chord within the tonal context of key (C major here). Make a recording of the root position sevenths (or use the exercise on the website). Start with the functions in order as with the previous exercise then randomize, remembering to leave pauses. Now drill these as follows:

When doing your own transcriptions, treat it as a serious ET exercise (because it is!). Hear the phrase, sing it back, and try to determine what the notes are before hunting and pecking at your pitch reference to verify your choice. This last point eludes lazy transcribers, and they miss out on the potential benefits as a result.

When transcribing, grasp as many notes in your memory as possible. As we saw last chapter, you should be trying to expand your musical memory whenever possible—the transcription process is an excellent opportunity to do just that. Be aware however that sometimes just getting *one* note can be a triumph. Other times, you will be able to grab a whole bar (especially when sequences are present). Notate extra-musical details like “lay back here”; “bend this note”, etc. Transcription, like analysis, is an essentially *reductive* activity. This means that the notes and rhythms you transcribe will necessarily leave out a lot of important details. But these details are important and should be included wherever possible—if you can’t notate a detail using music notation, then use words. The goal is to have as much information necessary to sound as close to the original performance as possible.

Software Assistance

Of course “cheating” with respect to identifying pitches would be counterproductive, transcription software can make your life easier and help you transcribe both quicker and with less tedium. One of the primary ways that software can help is by slowing down and allowing the repetition of problematic passages. Another advantage is that some apps will allow you to mark the beats visually against the original audio track, making rhythmic notation easier.

Here are a few options:

1. A no-cost option is to use the change playback speed control on *YouTube*. A huge amount of audio already exist on YT so this has certain advantages. You can lower the speed (without changing the pitch) down to 25% of the original recording. This is extreme and results in substantial degradation of the sound quality. With transcription, use the fastest speed you can—ideally, not slowed at all. But when you reach that inevitable passage that requires modification, you have options. When I slow a track, I aim for 70% of the original speed but will lower it to 50% in cases of emergency. The main disadvantage with YT is lack of a looping function.
2. Another no-cost option is the audio editing software, *Audacity*. It is open-source and available on multiple platforms. In the app, process your audio via the “Change Speed” option in the Effect Menu. As with all speed-modifying software, the slower you go, the worse it sounds. Audacity is a bit clunky to use, but it works. The main disadvantage is that you are stuck with one speed unless you chop the file into bits. The app does have an advantage over YT, as it contains looping controls, and other audio tools that may make your life easier.
3. Good professional transcription software will cost you about \$40 (in 2024) and is worth it, if you can afford it. My personal favorite is Transcribe! (www.seventhstring.com/ Disclaimer—I have no relationship, financial or otherwise with this company except as a customer). This was also the choice of Michael Brecker and other professionals. It is a superb tool and it has certainly made my life easier. With it, you can change speed on the fly, create loops, tune the track, mark visual beats and more. Its speed changing algorithm slows tracks with better sound quality than the other options above. It can also analyze the track to produce chord and note guesses, though you should really avoid using those resources except in extreme emergencies.

Let’s take a detailed look at the transcription process: