

The Vision Thing: Reading Chords on Keyboard Instruments

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Introduction

- For many young players, technical ability is > other skills, including reading
- Reading proficiency is generally achieved through playing experience, not from any organized method
- Vertically aligned notes (intervals, chords) can be particularly difficult for them
- Experienced players can see patterns and groups of notes when they read music
- Keyboard percussionists at all levels can make better use of visual information through better understanding of how they see and process information
- Theories of visual perception can serve as a starting point for developing strategies to improve chord reading

Why Johnny Can't Read (Chords)

The public-school experience

- Early training on keyboards focuses on two mallet literature; four mallet training tends to come much later
- In high school, front ensemble members may play four mallet exercises and show music, but the amount of music they actually have to read is small
- Students rarely have to learn things quickly in marching band, concert band, or orchestra. They don't develop the skills they need to read music efficiently because they don't have to.
- Wind players don't need to read or play chords, so band and orchestra directors are unlikely to focus on the associated skills.

The solo literature they play

- much of it is primarily based on linear patterns
- through the literature, students learn about reading/playing intervals and chords in a sequential manner (one note at a time), which tends to make them analyze chords in a sequential manner as well

Music theory

- the ability to dissect and analyze music is essential, but when reading music, the most helpful skills are the ones that make hitting the right bars easier
- typically, theory training moves at a glacial pace, leaving keyboard players without the knowledge they need to fully understand the music they are playing
- information such as note and interval names or other observations is valuable in other contexts, but has the potential be distracting

What Skills Should They Be Developing?

- in general, better utilization of visual information
- more specifically, a complete understanding of the staff and the range of notes it represents on the keyboard

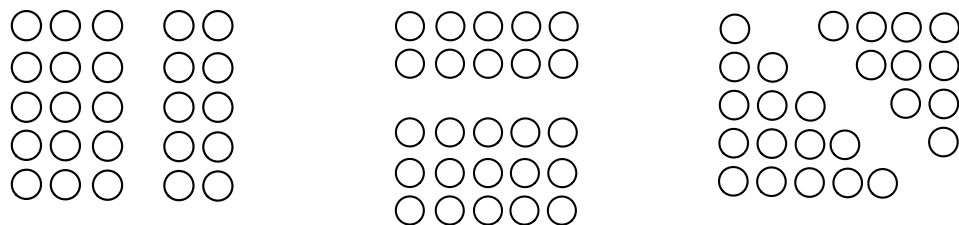
- ability to recognize and play notes without aid of a sequential pattern such as EGBDF
- ability to make reasonable assumptions based on established models (a visual “library” of intervals and chords)
- approximate vertical distances between note heads and horizontal distances between bars/mallets
- quick recognition of intervals and chords on the page and transfer that information to the keyboard
- quicker reaction time- moving the mallets and processing information at the same time
- ability to filter out repeated information and focus on what has changed
- visualizing the topography associated with various key signatures
- most importantly, and the focus of this presentation, how to group information together so that more items can be stored in short-term memory

Before looking for ways to improve music reading, it makes sense to look at how we perceive our visual world. There are many theories that try to explain visual perception; I have chosen a set of principles borrowed from Gestalt psychology as a starting point.

Gestalt Theory

- Gestalt psychology, more popular in the early 20th century than now, focuses on how our brains process information.
- Gestalt means “unified whole.” It recognizes that our brains naturally try to reduce information to its simplest form.
- A key concept is the chunking of information, which allows us to store more information in short term memory.
- I have chosen a few Gestalt principles that can be applied to reading keyboard music and visualizing notes on the keyboard.

The *proximity principle*- our brains tend to group things that are close to each other. For example, if we see three notes on the page that are on consecutive lines (L-L-L) or consecutive spaces (S-S-S), we tend to see them as a single entity- a triad.



A 5 X 5 square- our perception of the square is different in each example

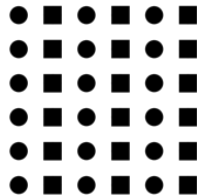


Root position triads are a musical example of the proximity principle

The following graphic is an example of how proximity, or the lack of it, affects our ability to see the three voices as a chord.



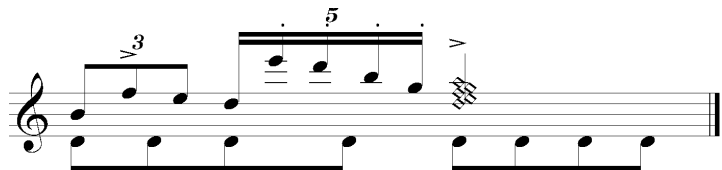
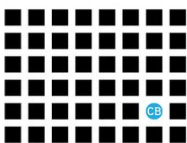
According to the *similarity principle*, we tend to group objects that have similar characteristics. Examples of this abound in our world. For instance,

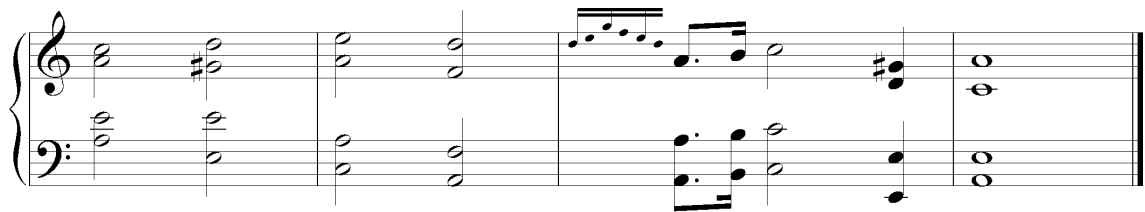


In the musical example below, two distinct groups can be identified by differences in note heads, stem directions, and texture.



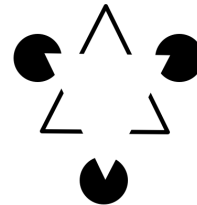
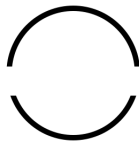
An *anomaly* is an object that stands out because it does *not* resemble the objects around it.





Anomaly examples- In the first musical example, the most obvious anomaly is the cluster chord on beat 3. In the second musical example, the grace notes are the anomaly

The **closure principle** states that our brains try to perceive objects in their complete form, even if part of the object is not visible.

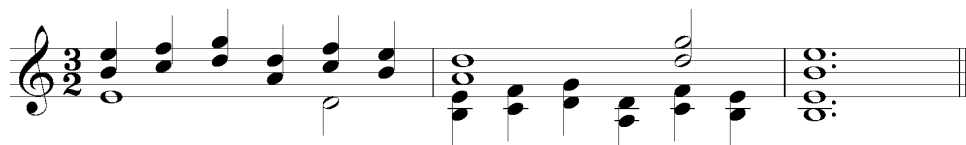
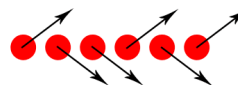
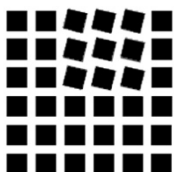


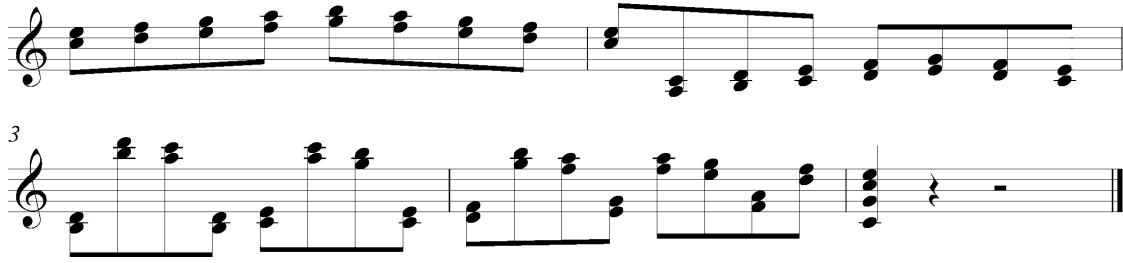
Examples of the closure principle

In the following example of the closure principle, the goal is to complete the chord by filling in the missing voice(s). Bar 1- probably a C maj triad. Bar 2- could be C maj again, or A min. Bar 3- adding E and G would make a C maj 7 chord. Bar 4- a G would make it C maj; an A would make it A min.



The **common fate principle** suggests that we tend to group items together if they move together.





Examples of the common fate principle

Gestalt

- is just one of many theories on visual perception
- provides an excuse for us to spend more time thinking about ways we can use visual information in reading music

Strategies and Solutions

How can we help students develop the skills they need to become better chord readers? Visual information abounds on the page and on the keyboard, but students must learn how to harvest it.

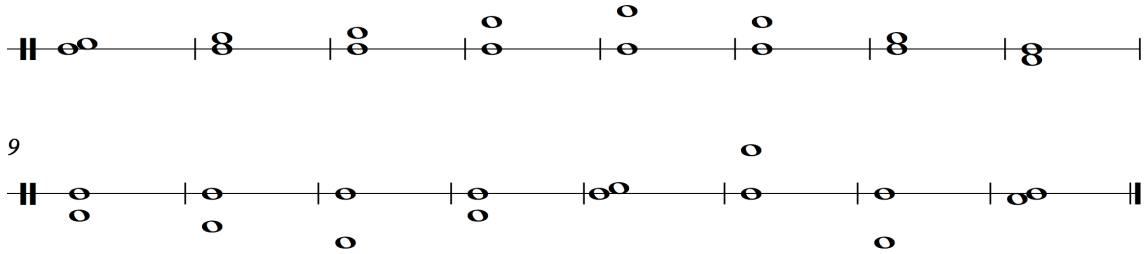
Better utilization of visual information

- The staff is a graph, with specific information that can be translated into physical action.
- General distances are consistent throughout the staff, making it possible to create a set of rules and a visual library of intervals and chords.
- To improve, players need to react (move!) quickly to make the horizontal distance between mallet heads reflect the vertical distance between the notes.
- As this physical action is taking place, adjustments can be made, based on additional information (key signature, accidentals, etc.), but the *approximate* spread of the mallets will not change.

In the next example, the distance between the two notes varies quite a bit. An inexperienced mallet player will stand motionless until she figures out what the notes are. An experienced player sees how narrow or wide the space between notes is and adjusts her mallet spread so that she will be in position when she identifies the notes.



In the example below, the line can represent any pitch, and the object is to approximate the intervals. What exactly are the pitches? Who knows? Who cares? The point is to develop a quicker response to the symbols (the notes) and the limited information they are providing.

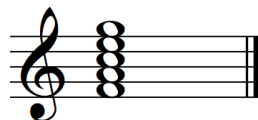
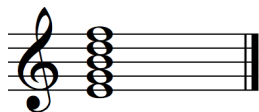


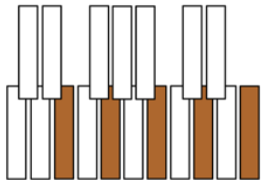
The next three examples contain the same set of intervals. In version 1, very little information beyond the approximate distances can be determined. In version 2, the addition of two more lines allows us to fine tune the intervals a little, but we still don't have enough information to identify pitches. In the third version, all five lines appear, a clef is added, and it is possible to identify specific pitches and intervals.



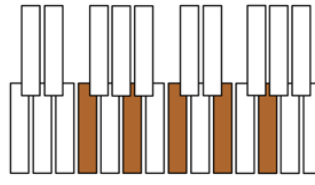
Getting the lay of the land

It is important to develop a thorough understanding of the staff and the range it represents on the keyboard. To illustrate several concepts that can help develop chord reading, I will be leaving out key signatures, chromatic alterations, ledger lines, and other pesky information. The range will also be limited. For lack of a better term, I call the collection of pitches below the "standard" sets.





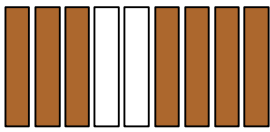
“Standard” set of lines



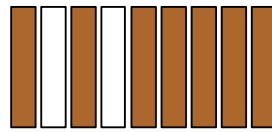
“Standard” set of spaces

Intervals

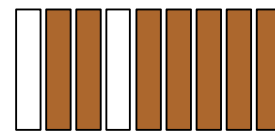
In written music, intervals can be identified by the number of lines and spaces between them. On the keyboard, intervals can be identified by the number of bars between the two notes.



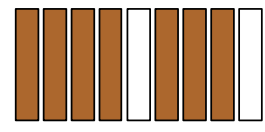
2nd - no bars between



3rd - one bar between



4th - two bars between



5^{ths} - three bars between

On the staff

- Odd intervals will have either two notes on a line, or two notes on a space
- Even intervals will have one line and one space

Distance on the staff- odd intervals

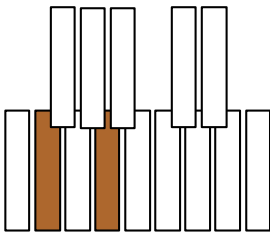
Consecutive spaces, consecutive lines
 S to 2nd S above/below, L to 2nd L above/below
 S to 3rd S above/below, L to 3rd S above/below

On the keyboard

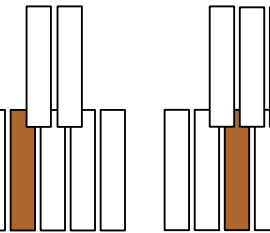
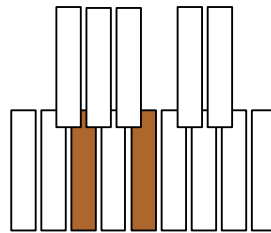
Skip 1 bar
 Skip 3 bars
 Skip 5 bars

Interval

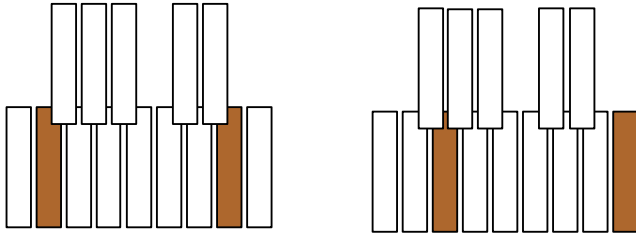
3rd
 5th
 7th



S to S 3rd, L to L 3rd



S to S 5th, L to L 5th



S to S 7th, L to L 7th

Hint- In the case of 7ths, finding the half step or whole step (depending on key) below the octave can be another way to find the upper note.

Distance on the staff- even intervals

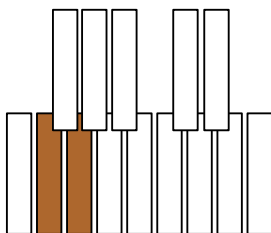
S to next L above/below or L to next S above/below
 S to 2nd L above/below, or L to 2nd S above/below
 S to 3rd L above/below, or L to 3rd S above/below
 S to 4th line above/below, or L to 4th S above/below

On the keyboard

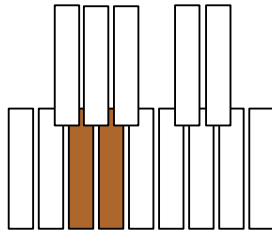
Adjacent bars
 Skip 2 bars
 Skip 4 bars

Interval

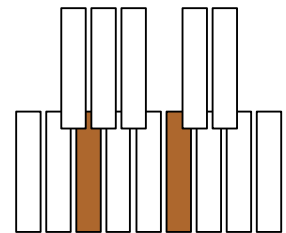
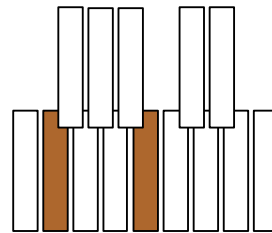
2nd
 4th
 6th



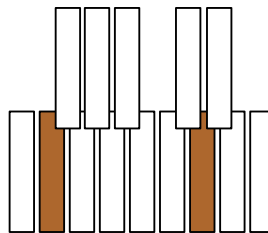
Space to next line, line to next space- 2nds



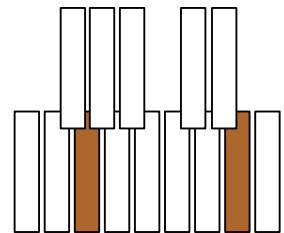
Space to 2nd line, line to 2nd space- 4ths



Seconds are easy to identify because of the way the note heads are offset so that they can share a note stem. Seconds sometimes suggest they are part of a 7th chord, with the upper note as tonic.

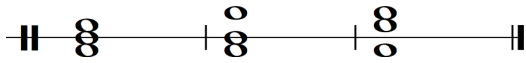


Space to 3rd line, line to 3rd space- 6ths



Triads

For basic triads in closed position, there are only three shapes to memorize- root, 1st inversion, 2nd inversion. As shown below, root position triads are symmetrical, 1st inversion triads have more space between the top voice and the middle voice, and 2nd inversion triads have more space between the bottom note and the middle note.



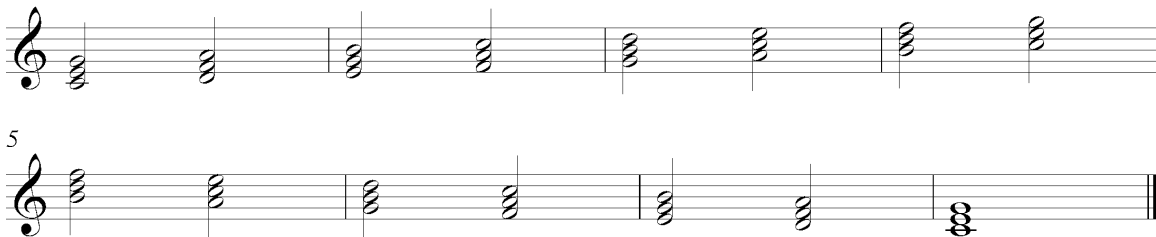
Triad-shapes- single line for reference



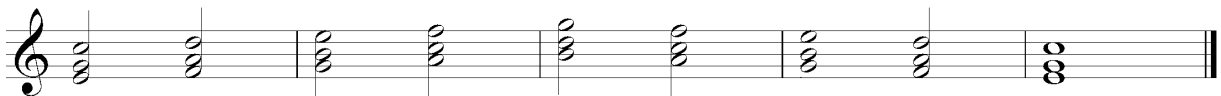
Triad shapes- regular staff

To develop an eye for these three basic shapes, a simple ascending/descending succession of chords is helpful.

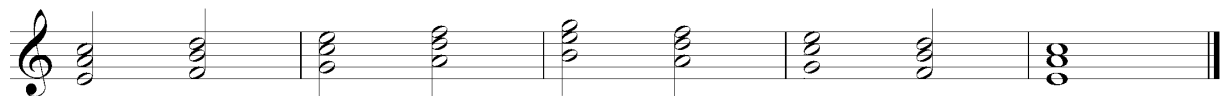
Root position



1st inversion



2nd inversion



As with intervals, triads can be identified by the distance between the notes on the staff and by the bars between the notes on the keyboard.

Distances on the staff

S-S-S or L-L-L
S-S-2nd L or L-L-2nd S
L-2nd S-S or S-2nd L-L

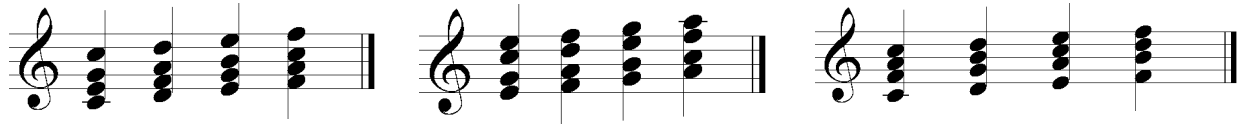
On the keyboard

Skip 1 bar between each note
Skip 1 bar, then skip 2 bars
Skip 2 bars, then skip 1 bar

Chord

root position
1st inversion
2nd inversion

When a fourth voice is added to closed position triads, the easiest way to see the chords is to group the 3rds and 4ths together.

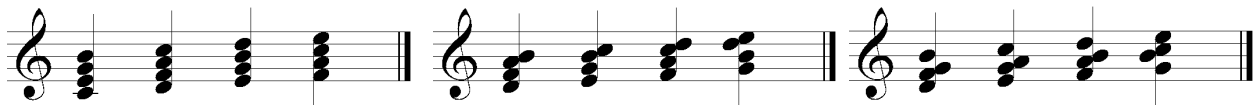


Root position: 3rd in L, 4th in R *1st inversion: 3rd in L, 3rd in R (4th is between the inside mallets)* *2nd inversion: 4th in L, 3rd in R*

Tips on seeing triads with four voices

- in this closed position, the outside mallets are always an octave apart- this helps outline the boundaries
- to find the root, find the 4th; the upper voice will be the root

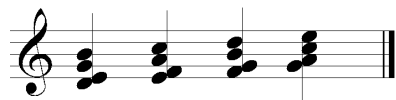
As with triads, **7th chords** can be also be analyzed in terms of vertical distance on the staff and horizontal distance on the keyboard, but it's easier to just see the triads (or intervals, if necessary) and add the 4th voice.



7th chords- root position- stacked 3rds

7th chords- 1st inversion- thirds with a 2nd on top

7th chords- 2nd inversion- 3rds with a 2nd between the inner mallets



7th chords- 3rd inversion- 2nd in the left hand, then 3rds

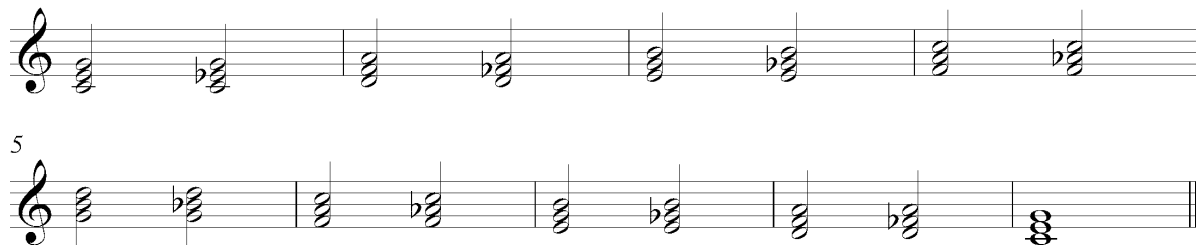
*The type of 7th chord will determine whether this is a whole step or half step.

Tip for seeing 7th chords (in closed voicing)

- Find the 2nd- the root will be the upper voice

Chromatic Alterations

Once a player can see various white key chords, the next step is to add sharps and flats, either by adding a key signature or accidentals. Keep in mind that the goal is to develop better hand-eye coordination, not to teach proper voice leading, functional harmony, etc. In the examples below, the goal is to start with the basic white key models (that should be memorized by now), and look for any changes to those models.



Root position triads with lowered thirds



E min triad plopped into various key signatures- what notes are altered?

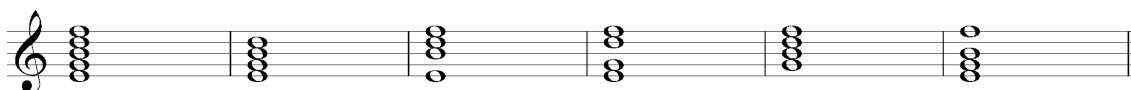


F maj triad plopped into various key signatures- what notes are altered?

The same types of exercises could be continued to cover open chord voicings and extended chords. Everything has a shape.

Other Ideas Related to Visual Perception

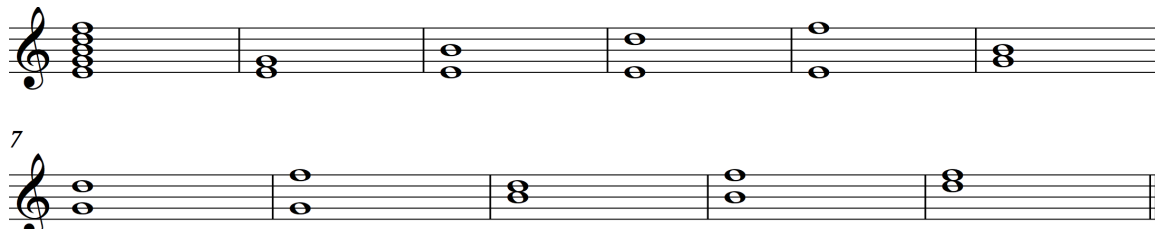
1. Completion Challenge- Using the notes in the standard sets, play the missing notes.



Standard set of lines- missing one note







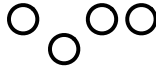








Standard set of lines- missing two notes



Standard set of lines- missing three notes

2. Four mallet shapes- Become familiar with the library of shapes below. What major chords are that shape? What minor chords? Diminished? Augmented? A few of the possibilities are listed underneath the shapes. Worth noting: Chords in the same family will use the same shapes in inversions as well.

| | | | |
|---|--|---|---|
|  <i>C family: C maj, F maj, F# maj, G maj</i> |  |  <i>D family- D maj, E maj, A maj</i> |  |
|  |  |  <i>Db family: Db, Eb, Ab</i> |  |
|  |  <i>Bb maj</i> |  <i>B maj</i> |  |
|  | | | |

Conclusion

Focusing on visual perception can supplement what the student is learning in theory class. It fills in some of the knowledge gaps (getting to topics that might not be covered in theory class until much later), serves as a gateway to better understanding of harmony, and gives students the knowledge they need to better understand the technically difficult literature they want to play.