Chords 1
**Music Fundamentals**   **14-119-T**

The overwhelming majority of compositions written between ca. 1600 and ca. 1900 use harmonic structures built on thirds. That is, *Chords*, or simultaneous sound events that consist of more than one pitch, that we see during this time period are built by stacking 3^{rds}, major and minor, on top of one another. Known as *tertian* harmony, most of these chords are *triadic*, or in other words, the cardinality of these chords is three. In simpler terms, chords with three notes are called triads, and if the triads have the interval of a 3rd relationship, then they are called tertian. Note, that it is possible to have a chord that is tertian, but not a triad. Additionally, chords exist that have three notes, but they may not be tertian if the intervallic relationships between the notes are not 3^{rds}.

Even though concert music from 1600 to 1900 is primarily based upon these harmonic structures, it is still a common practice in other styles of music from jazz to popular to concert music. However, harmonic structures, primarily in jazz and concert music, are at times more varied and complex in today's music. In general, popular styles including rock-n-roll, country and western, folk, and hip-hop, primarily use harmonic structures that are exclusively triadic and tertian. Many times, these styles use only the repetition of three or four chords for the entire composition, whereas, the relationships between other types of music such as jazz and concert music, may use numerous chords.

Anatomy of a Chord:
In traditional harmony, we find four simple types, or qualities, of tertian chords: **Major**, **Minor**, **Augmented**, and **Diminished** [see figure 1]. Although related to the intervals that share the same name, do not confuse these chords with interval names. As figure 1 shows, each of these types of chords are the combination of different arrangements of major and minor 3^{rds}. The major chord is created by placing a note, called the *root*, in the staff. Next, another note is placed a major 3rd (interval) above the root. This second note is called the *third* of the chord. A final note, called the *fifth* of the chord, is added a minor 3rd above the third of the chord to complete the sonority. Regardless of the quality, the members of all tertian triads are called the *root*, *third*, and *fifth*.

Figure 1
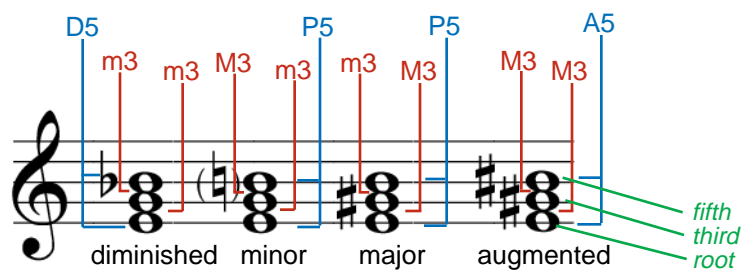
The other chords are built the same way, but with a different arrangement of major and minor 3^{rds}. For example, a minor chord has a minor 3rd interval between the root and third of the chord, and instead of a minor 3rd between the third and fifth of the chord as seen in the major chord, this interval in the minor chord is a major 3rd. The diminished structure does not have a major 3rd in its structure at all, and the augmented chord is built by stacking two major 3^{rds} on top of one another (ie., it does not contain a minor 3rd).

All chords are named after its root. Since the root of the major chord in figure 1 is an **E**, then we call this chord an **E Major** chord. Since the root of the minor chord is an E, then we call it an **E Minor** chord, and so on. Figure 1 shows the pitches necessary to build the four qualities of chords where **E**

Figure 2
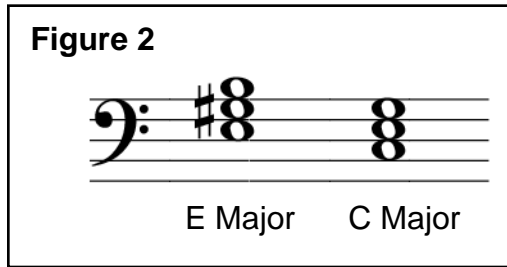
E Major   C Major

is the root; however, it is possible to build any chord with any possible root [see figure 2]. Therefore, to build a **C Major** chord, place a major 3rd above a **C**, and a minor 3rd above that note. As you can see, the members of a **C** major chord are **C**, **E**, and **G**. You can follow this process to build other qualities of chords with different roots.

For another example, to build a **D Augmented** chord, simply place a major 3rd above the root and a major 3rd above the third of the chord. Therefore, a **D Augmented** chord contains members **D**, **F#**, and **A#**. As you can tell, the ability to quickly identify the interval of a 3rd is very important.

In addition to thirds, one other interval exists in the four chords: a 5th. This 5th occurs between the root and the fifth of the chord. For major and minor chords, the quality of the 5th is perfect. For augmented chords, the interval between the root and the fifth of the chord is an augmented 5th. For the diminished chord, the interval is a diminished 5th [see figure 1]. As discussed above, regardless of the root, this interval is the same regardless of the root. For example, if the root of a major chord is **Bb**, then the fifth of the chord will be an **F**, or a perfect 5th above the root.

Figure 3

Root Position

1st inversion
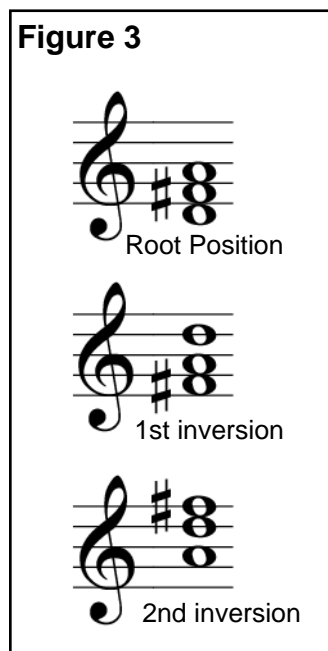
2nd inversion

Inversions:
To make music interesting, composers do not always write chords where the root is the lowest sounding note, or in other words, *root position*. To add interest, composers write chords in different inversions, sometimes called different *voicings.* Inversions for chords are when a note other than the root is the lowest sounding pitch [see figure 3]. Before we fully discuss the inversion of chords, it is necessary for us to revisit intervals.

Intervals are also invertible. To *invert* an interval means to simply place the upper note below the lower note. For instance we know a C up to an E is a Major 3rd. The inversion of this interval, or placing the upper note below the lower note (E up to C) is a major 6th [see figure 4 & 5 on the next page]. Every interval can be inverted including compound intervals.

This brings us back to inverted chords. The determining factor for describing the position of a chord is the lowest sounding note. If the third of the chord is the lowest sounding note, as in chord two of figure 3, then the position of the chord is *first inversion*. Notice that the distance between the outer notes (bottom and top) is no longer a P5. Instead, it is a m6. This should make perfect sense because we have simply inverted the root and the third of the chord. Even though the lowest sounding note is no longer a **D** in this example, it is still called a **D Major** chord, and the **D**, now on top of the structure, is still called the root. Regardless of its position, the notes of the chord maintain their position identification. Also note that the interval from the fifth of the chord and root is no longer a P5 (**A**=fifth of the chord, and **D** is the root), but a P4. Again, this is because the interval has been inverted, or in other words, the **D** is now

placed above the **A**. Instead of writing "first-inversion D Major chord," we generally abbreviate first inversion chords by placing a "6" after the letter. As in major and minor intervals, uppercase letters indicate a major chord and lowercase letters indicate a minor chord. Therefore, we indicate the quality and position of this chord by writing, "D6."

Second inversion occurs when the fifth of the chord is the lowest sounding tone. For the third chord in Figure 3, we indicate this chord by writing "D6-4." Again notice how the intervals of the chord structure have

Figure5

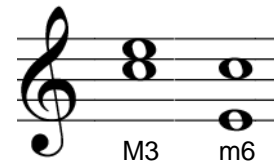*Example showing how the inversion of a major 3rd is a minor 6th*

M3   m6

Figure 4

Inversion Table

Inversions			Example
minor 2nd	<->	major 7th	C up to Db (m2) inverted is Db up to C (M7)
major 2nd	<->	minor 7th	C up to D (M2) inverted is D up to C (m7)
minor 3rd	<->	major 6th	C up to Eb (m3) inverted is Eb up to C (M6)
major 3rd	<->	minor 6th	C up to E (M3) inverted is E up to C (m3)
perfect 4th	<->	perfect 5th	C up to F (P4) inverted is F up to C (P5)
tritone	<->	tritone (A4 <-> D5)	C up to F# (A4) inverted is F# up to C (D5)

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been inverted from the root position chord. To understand inversions, think of the root position chord as the most "compact" form of the chord; however, in music, any one of the chord tones can be the lowest pitch.

Again, the lowest sounding pitch determines the chord's inversion. At times, it may not be easy to recognize the root of the chord due to how the chord is voiced [see figure 6]. The best way to determine the root, which will then allow you to spell the chord and determine its inversion, is to begin with the lowest note and try to spell notes above it in thirds. In figure 6, the notes on the staff, spelling upward, is **D**, **B**, and **G**. By starting on **D** (the lowest note), we know that a 3rd above the note will be some type of **F** (**F-natural** for m3 above **D**, or **F#** for a M3 above **D**).

Figure 6

Therefore, we can deduce that **D** is not the root of this chord since there is no **F**, sharp or natural, present. We can then move to the given **B**. A 3rd above **B** will be some type of **D**. In this case, if **B** is the root and **D** is the third, then the fifth of the chord will be both a 5th (perfect, diminished, or augmented) above **B**, and a 3rd (major or minor) above **D**. As you can see, **B** cannot be the root of this chord simply because we know that that a 3rd above **D** is some type of **F**, and a 5th above **B** is some type of **F**. Therefore through the process of elimination, we know that the root must be **G**. A 3rd above **G** is **B**, and a 3rd above **B** is **D**. The only thing to determine is the quality of 3rds used. Since **G** to **B** is a M3,and **B** to **D** is a m3, we know that the quality of this chord is Major. Since **D** is the lowest sounding pitch, we also know that this chord is voiced in 2nd inversion. Therefore, this chord is a **G6-4 chord**.

Conclusion:

Chords are simply structures of sound events that contain more than one note. Two notes constitute a chord (called dyads). Our main focus for this lecture, and from here to the end or the course, will be on triads, or chords with three notes. In traditional harmony, triads are built by placing major and minor 3^{rds} together. We have dissected the intervallic structure of the four most common triads found in traditional music in this lesson.

The material in this lecture can be confusing since there are terms that are cross-referenced between topics. Continue to review this material until you fully understand all of the terms and examples. Finally, begin working with the chord module.

In the next lecture, we will further discuss the notation and common doubling practices of chords.