Chord Theory

The following is a study of every single type of chord possible up to 4 notes at a time. We will start by identifying intervals and triads and then list all 4-part chords, or tetrads, while categorizing them into different groups and investigating how they can function. The purpose of this is to be able to classify every different type of chord so you can better understand how all of the many different options can be used. There is a lot of information here that can be extensively explored but it can also be skimmed over in one sitting. If you just want to know all of the different types of chords then you can skip ahead and it is all color coded to read through easier. There are also a lot of different examples of interesting chords and some conclusions I have put together about chords at the end of this document.

Nomenclature -

First off, there's a lot of different symbols and different nomenclature used when it comes to describing chords. There are many different ways to write out certain chords so I will clarify some of the symbols that will be used in this paper.

C-	**=**	**C minor**
Cº	**=**	**C diminished**
C+	**=**	**C augmented**
C∆7	**=**	**C major triad with an added major seventh**
C(b5)	**=**	**C major triad with a flat 5**

C(b5) is written with parentheses so you don't confuse it with a C flat or B5 chord. It makes more sense with a chord like A and Ab because Cb is hardly used. Parentheses are also used in another way, triads with an added note can be written as “Caddx” or “C(x)”, x being the added note. For the purposes of the chords included here, 2, 4, and 6 can be interchanged with 9, 11, and 13 respectively. For example, Cadd4 and C(11) are the same chord. Parentheses are usually used for b9, #9, #11, and b13 chords, while 9, 11, and 13 chords are written as add2, add4, and 6 chords. Except the major b5 chord, if a note is in parentheses it means that only that note is added to the chord. For example, C(13) is a C6 chord, but C13 chord without parentheses implies that there is also an 11, 9 and 7 included in the chord. Parentheses are used to specify the difference between those two chords and also sometimes to clean up the chord and make it a little easier to read.

Scales -

Here is the order of scales that will be referred to throughout the paper. These aren’t super important to memorize or anything but I find it interesting to know which chords fit into which scales. For our purposes, the root of the scale won’t really matter, so the major scale would virtually be the same thing as the minor scale as they are both one of the 7 church modes. Each of the chords discussed later on will be categorized by what scales they fit into. Most of them fit into the major scale, but if they don’t, the next scale that we will look at is harmonic minor and its modes. There’s no real reason I chose that scale other than it is probably the most popular scale outside of the church modes. If the chord can’t be found within the first two scales, we will look at the melodic minor scale which is usually talked about along with the harmonic minor scale. There are seven tetrads that have three consecutive semitones in which we will have to look at the minor blues scale and the neapolitan minor scale to describe them. There is one tetrad that can only be found in the diminished scale, and one tetrad with four semitones in a row that can only be found in the enigmatic scale.

Major - C, D, E, F, G, A, B (1, 2, 3, 4, 5, 6, 7)

The major scale includes the minor scale plus all other church modes. This scale is made up of only half steps and whole steps. Most of the chords used in modern music come from this scale.

Harmonic Minor - C, D, Eb, F, G, Ab, B (1, 2, b3, 4, 5, b6, 7)

One of the modes of harmonic minor is the ionian #5 mode which is like a major scale with an augmented 5th degree. The significant difference with the harmonic minor scale is the minor third interval between the b6 and 7th degree allowing for some interesting chords that can’t be made with the major scale.

Melodic Minor - C, D, Eb, F, G, A, B (1, 2, b3, 4, 5, 6, 7)

The melodic minor scale goes back to just using half steps and whole steps. It isn't as popular as the first two scales and there are only a couple chords that we find in this scale that can't be found in the first two. Another way to look at this scale is like a major scale with a flat 3rd.

Minor Blues - C, Eb, F, F#, G, Bb (1, b3, 4, #4, 5, b7)

The reason we introduce the minor blues scale is because it has 3 semitones in a row which fits some of the more dissonant chords on this list. This scale only has 6 notes and one of the modes is the major blues scale which isn't quite as popular as the minor blues scale.

Neapolitan Minor - C, Db, Eb, F, G, Ab, B (1, b2, b3, 4, 5, b6, 7)

The neapolitan minor scale also has 3 semitones in a row and covers the chords that the minor blues scale misses. I've never seen this scale actually be used before but we need it to categorize a few chords. One of the modes of this scale is like a major scale with an augmented 2.

Whole/Half Diminished - C, D, Eb, F, Gb, Ab, A, B (1, 2, b3, 4, b5, b6, 6, 7)

This 8 note scale is made by alternating whole steps and half steps, there is only one mode of this scale, the half/whole diminished scale. We only need this scale to describe one chord on this list but it is a decent scale to know when playing diminished chords.

Enigmatic - C, Db, E, F#, G#, A#, B (1, b2, 3, #4, #5, #6, 7)

The only reason we need this scale is because it has 4 semitones in a row. I have never actually seen this scale used in any situation.

Dyads -

Dyads, or two-note chords, are usually just called intervals, although the term intervals usually includes a unison interval and an octave, and the naming of intervals can span two octaves. There are also a lot more intervals outside of 12-tone equal temperament tuning. Here we are only concerned with two separate notes, in 12-TET tuning, regardless of where they are at on the octave. Within the octave there are 11 different intervals not including the unison or octave. These are the **minor second**, **major second**, **minor third**, **major third**, **perfect fourth**, **tritone**, **perfect fifth**, **minor sixth**, **major sixth**, **minor seventh**, and **major seventh**. Each interval corresponds to its inverse interval except for the symmetrical tritone. The minor second is an inverted major seventh and vice versa. Other inverse pairs are the major second and

minor seventh, minor third and major sixth, major third and minor sixth, and then the perfect fourth and perfect fifth. There are a lot of different ways to phrase two notes, especially within multiple octaves. Including the 11 intervals I named earlier, naming also commonly continues up to the 13th interval, adding 9 more commonly distinguished intervals. These plus the octave and unison make 22 distinct intervals, but again the list could be endless with different tuning systems and higher/lower octaves.

Triads -

Within one octave, there are 55 total 3-note combinations from a single root. Out of these 55 combinations, 1 of them, the augmented triad, is symmetrical, meaning all of its inversions are the same type of chord. The remaining 54 combinations can be divided by the number of notes in the chord, 3, to create 18 unique triads not regarding order of notes. This makes it easier to categorize all combinations, with each of the 18 triads standing for 3 inversions. These 18 triads plus the augmented triad makes 19 unique triads that can all be named. We will start with listing common triads to see how many of the 19 we can name. Each unique triad is in red, so there are 19 red triads. If a triad is in purple it is because it is an inversion of a red triad but still worth mentioning.

Every example is written in respect to the root C. This specific root has no significance to the nature of the chords. When we're talking about each chord, it can be transposed to any other root. The only reason everything is in respect to one root is so we can convert the notes to inversions more clearly. So just because it is written with C as the root, doesn't mean we are talking about C chords specifically. We are most concerned with the type of chord. C is just our common placeholder.

C is the first triad that comes to mind, plain and simple with no additions. There are three major triads in a major key, the I, IV, and V. Most of the time, inversions of this chord are written as 'slash chords'. For example, the first inversion would be written C/E and the second as C/G, however it is also interesting to think of these chords in respect to their new root, where C/G might be thought of as a G6sus4 chord with no 5. We will get more into inversions with 4-part chords later on, but right now we mostly want to classify the categories of triads before we can look at tetrads.

C- is the second most popular triad. Just like major chords, there are also three minor chords in a major key. These are the II-, III-, and VI-.

C^{o} is seldom used on its own as a triad and more often used with an additional note such as C^{o}7 or C^{o}/Ab which is an Ab7 chord. The VII^{o} chord is the only diminished triad in a major key.

These three triads make up all of the 7 main triads in a major key.

C+ is the only symmetrical triad meaning all inversions of this chord are the same type of chord. C+ could also be spelled as E+ or G#+. There aren't any augmented triads within a major scale, however there is one augmented chord (really three in one) in harmonic minor. The bIII+, V+, and VII+ are all the same chord with different roots.

The first three plus the augmented triad makeup all of the main triads in harmonic minor. When people talk about triads, most of the time they are talking about these four. The triads below are mostly considered as variations of the four above triads.

C(b5) is not a super popular triad especially by itself. Technically it can be found as the IVb5 chord in a major key although the IV chord of the major scale is always assumed to be a major chord not a b5 chord. C(b5) might also be interpreted as a Cadd#4 just without the 5th. This ambiguity is probably why it is not written more often. As you will see later on, this triad comes in handy when talking about 4-note chords.

Csus4 is a very versatile triad as there are 5 different possible sus4 chords in every major key. These are the Isus4, IIsus4, IIIsus4, Vsus4, and VIsus4 chords. As you can see, the roots of the diatonic sus4 triads include those typical of major and minor chords, showing that this chord can be perceived as major or minor in quality depending on the context of the music. The first inversion of this chord would be an Fsus2 chord, which although essentially has the same notes as a sus4 chord, does seem to be a more stable chord than Csus4. Csus4 sounds like it needs to resolve somewhere while Fsus2 could serve as a better tonic chord. All of this is to say that sus4 chords have a wide variety of uses. It can be perceived as a major or minor chord, as well as a tonic, subdominant, or dominant chord depending on the context. One more thing to point out is that suspended chords specifically mean that the 3rd is being suspended.

Csus2 shares the same notes as Gsus4 which was just talked about above. Even though as triads, sus2 and sus4 chords are the same, it helps to distinguish these as two separate triads, especially later on when they are categorized with the tetrads. You will see later that all sus2 tetrads can be expressed as other chords, however sus2 chords are still written down plenty on their own. It is easier to write down Csus2 than it is to write Gsus4/C.

Csus#4 is a lesser known suspended chord but still a useful triad to know. Every major key has one possible sus#4 chord, the IVsus#4 chord. Generally when people talk about suspended chords, this chord is not included although it is still used and sometimes written down.

Csusb2 is a chord I definitely haven't seen written down or even used at all. Because of its sharp bite, it is hard to justify the use of this chord. Even if it were played, it might be better thought of as a Db∆7sus#4 chord without a 5th. Nevertheless, a susb2 chord could be diatonic to a major key as the IIIsusb2 chord. Since it isn't very practical

and often better represented as a different chord, we will not be using susb2 to describe any more chords from here on out.

These are all of the main triads, so far it equals up to 8 because Csus2 is an inverted Csus4 chord so it doesn't count as a unique triad even though it is written down and used plenty. Csusb2 can always be better represented as a different chord so it will not be used again. After these 8 unique triads, there are still 11 triads to name. The last 11 can be named by using 'no 5' chords, or extended triads without a 5th.

This tactic only works for major, minor, and suspended chords because they are the only ones with the 5. All of the suspended no 5 chords can be represented as other chords except for one which we will see later. Theoretically these chords could also stand for diminished, augmented, or major b5 chords. All of the no 5 triads here will be explored later on with the 5 included in the tetrad chapter. There isn't much use to know these unless you are restricted to only playing three notes. Again some of these chords could be spelled in other ways but we will get into all of the inversions later on. Mostly this is just to show all of the 3 note possibilities and how they could be categorized. One way to do this is to go through all major and minor chords with an added note in place of the 5 since the 5 isn't super important to the function of the chord and hopefully we will cover most of the possibilities.

I have seen some chords written down as 'no 3' chords, however all 'no 3' chords can be classified as inverted 'no 5' chords. For example C∆7 no 3 can be seen as an inverted Gadd4 no 5. 'No 3' chords are tricky because it is hard to tell if the chord has major or minor function. Because a perfect 5th is strongly implied by the root, when the 5th is removed it hardly affects the function of the chord. To avoid confusion, I won't add any 'no 3' chords to the list although some of the following chords might be better expressed as 'no 3' chords.

No 5 chords

Major no 5

C∆7no5 can be found as the I∆7no5 and IV∆7no5 chords in the major key.

C7no5 is the V7no5 chord in the major key.

C6no5 is A-

C(b13)no5 is C+

Cadd4no5 can be used as the Iadd4no5 and Vadd4no5 in the major key.

C(#9)no5 is found as the bVI(#9)no5 and VII(#9)no5 in harmonic minor.

Cadd2no5 can be used as the Iadd2no5, IVadd2no5, or Vadd2no5 in a major key.

C(b9)no5 is Db-Δ7no5

Minor no 5

C-Δ7no5 can be the I-Δ7no5 and bVI-Δ7no5 in harmonic minor.

C-7no5 can be used as the II-7no5, III-7no5, VI-7no5, or even VII-7no5 in the major key.

C-6no5 is A°

C-add4no5 is possible as the II-add4no5, III-add4no5, IV-add4no5, or VII-add4no5 in the major key.

C-add2no5 can be used as the II-add2no5 or VI-add2no5 in the major key.

C-(b9)no5 is possible as the III-(b9)no5 or VII-(b9)no5 in the major key. It is a pretty tense chord and probably wouldn't be used often. It might have a better use as a DbΔ7sus2no5 chord.

So far we have all but one of the 19 triads named. The last one is 3 semitones in a row so it is the hardest to name and also can't be found in the major scale, harmonic minor or melodic minor scale. For this last chord we will use a Csus2 chord and trade a note for the 5th to help name it.

Csus2(b9)no5 is a fancy way to say three semitones in a row. The best use for this chord diatonically would probably be as a #IVΔ7susb2no5 chord in the minor blues scale.

There are probably other ways to name some triads but the above gets the job done well enough to move on to tetrads.

Tetrads -

For the following examples of tetrads, try not to think of the notes of the chord as higher or lower than any other note. Imagine each note expands in octaves upward and downward infinitely so it is relatively above and below each of the other 3 notes. In other words, imagine a sequence of frequencies that starts with 4 different notes, Bb, C, Eb and G. Each of these 4 frequencies can be doubled or halved infinitely. In the end you get an endless sequence of frequencies that repeats infinitely upward and downward like this: 1/∞…….Bb, C, Eb, G, Bb, C,

Eb, G, Bb, C, Eb, G……∞. From this sequence, we can make a C-7 chord, and Eb6 chord, a C-/Bb chord, or a C-7/G chord depending on what note we choose as the root. This is true for every sequence of 4 different notes though some are more complicated to analyze than others.

Below, the chords are split into chord groups based on identical 4 note sequences. With 12 different notes in an octave, there are 165 total 4 note combinations that all contain one fixed note, C. There is 1 fully symmetrical Cº7 chord, meaning all 4 inversions are also diminished seventh chords (Ebº7, Gbº7 and Aº7). There are 2 pairs of partly symmetrical chords, meaning each partly symmetrical chord has 1 other inversion that is also the same chord. These two pairs are C7b5 (F#7b5) and Csus#4(b9) (F#sus#4(b9)). This leaves 160 combinations that can be divided by 4 to simplify them into 40 'chord groups'. These 40 groups plus the 3 different symmetrical chords give us 43 unique tetrads not regarding the order of the notes.

Even though I said to picture the chords with no beginning or end, in real life, the way the chord is voiced can have a major impact on how the function of the chord is perceived. The root is important because it persuades the ear to hear the upper notes in relation to the root. There are many different ways to voice a tetrad that can highlight or reduce certain qualities that the intervals involved carry. Each tetrad has 6 different interval relationships involved, and each of those relationships is really 2 intervals in 1 except for the tritone. Each interval in a chord can be inverted or separated by multiple octaves to vary the effects of the harmony. There are some tetrads, such as Cadd#4, where it's possible for any interval to be used (but only 6 at a time) depending on how you voice the chord. On the other hand, there are some tetrads, such as Cº7, that only have a few different intervals involved. If a chord contains a tritone interval it is most likely an unstable chord, and most chords without a tritone interval are pretty stable. This certainly isn't the case all of the time and is all dependent on the musical context. The velocity or volume of each note involved also plays a huge part in the overall energy of the chord. There are many possibilities when it comes to changing a chord around without changing the notes as we will explore below.

One way to search for all of the 43 unique combinations is to start with the triads we mentioned earlier and add every other available note to that triad. This method will end up with many repeated chords, but hopefully by the end we will have written out every single combination. The chords in **red** each represent a single chord group, so there are 43 chords in red. The **purple** chords are inversions of chords that have been mentioned in red but also are worth writing out. All purple and red chords are from the perspective of the root C. The chords in **orange** are also inversions of red chords but from the perspective of other roots. There are as many orange chords as there are purple chords, regardless of roots they match up one to one. Most of the chords or their inversions can be expressed as slash chords which are written in **blue**. Slash chords can be used to simplify tetrads like E/C representing C+Δ7, or they can be used to specify an inversion of a chord like an inverted C-add2 chord being written as C-/D. Lastly, the chords in **green** represent the roman numeral relationship of the chord to its respective key. The reason the chords are color coordinated is so it is easy to skip through and identify them without having to read everything in depth if you don't want to.

To start naming the tetrads, we will start with the main triads we named earlier and add every other available note one by one. There are a few things to note about adding notes to triads. All triads can add the Δ7, 7, or 6 although most 6th chords could be viewed as inverted seventh chords, for example C6 is Am7/C. Chords with an added b6(b13) are usually better expressed as inversions of more popular chords but they are still possible with all triads except for augmented chords. For example, C-b6 would usually be written out as AbΔ7/C. The 5 of a chord is usually implied therefore not added. The #4 can be added to all triads except for diminished triads, major b5 chords, and of course sus#4. The 4 can be added to all chords except sus4 chords obviously. The 3 is implied with major chords, and can't be added to other chords without confusing the function of the chord. The #9 can be added to major chords only and the b9 can be added to any triad.

Major

CΔ7 is sometimes written as E-/C but not often because major seventh chords are pretty popular. This chord can also be written as C/B but all of these configurations would probably be interpreted as an inverted CΔ7 chord. In a major key, this chord is diatonic as an IΔ7 or IVΔ7 chord. Because major seventh chords are so versatile, the bIIIΔ7 and bVIΔ7 are sometimes borrowed from the minor key as well as bVIIΔ7 from mixolydian and bIIΔ7 from phrygian minor.

C7, the dominant seventh chord, is a chord that can be used in so many different ways and would take too long to explore here. More information on dominant chords and how they can be used can be found here. A dominant seventh chord would usually be used as the diatonic V7 chord, but a lot of times it is used as another secondary V7 chord. This chord could also be written as C/Bb which could also be seen as a Bb(9,#11,13) with no 3 or 5, and can even be used as a Bb tonic chord. It is also possible it could be written as E°(b13) but probably not very often as it would most likely be written as a dominant seventh chord.

C6 is interesting because it is sometimes analyzed as an Am7 chord bridging the worlds of major and minor. In a major key the three possible major sixth chords are I6, IV6, and V6, but similar to the G dominant 7th chords, major sixth chords can be borrowed from many different places. The sixth chord is a popular chord but its minor 7th inversion is more popular so this particular configuration of four notes is explored under the 'C-7' example further below.

C(b13) is not a super popular chord and would most likely be interpreted as an inverted Ab+Δ7 which will be explored under 'C+Δ7' further below.

Cadd#4 is not as popular but still has a nice sound especially if the notes are voiced in a suitable way. This could be written as C/F# but that might interpreted as a F#7b5(b9,no3). It could also be written as C(b5)/G which might be interpreted as GΔ7sus4(13,no3). In a major key this chord would only be diatonic as a IVadd#4 chord.

Cadd4 can be written as C/F which might be interpreted as an F∆7sus2 chord. It could also be spelled Fsus2/E or Csus4/E. In a major key, an add4 chord is only diatonic as a Iadd4 or Vadd4.

C(#9) is not a popular chord usually because of the conflicting #9 and major 3rd confusing the major/minor function of the chord. C#7(#9), also known as the 'hendrix chord', is a somewhat popular however, so C(#9) with no 7th could maybe stand for the dominant chord if voiced suitably. Depending on where the 3 and the #9 are placed in the chord can change the major or minor feel of the chord. For example if the #9 is voiced above the major 3 then it feels more like a C(#9) chord, but if the 3 is voiced above the #9 then it might start to sound like a minor chord with an added 10th above it. Both are very interesting ways to use these 4 notes which we will explore a little more later on. These notes could also be written C/Eb and used as an Eb6(b9,no5), or it could be written C-/E which is close to an E-∆7 but with a raised 5th. This chord is not ditonic to the major scale, but can be found in the harmonic minor scale as a bVI(#9) chord.

Cadd2 is a versatile chord that might be interpreted as G6sus4. This could be written as Gsus4/E or Csus2/E, similar to Em7 but with a raised 5th, or it could be written as C/D and used as D7sus4(9,no5). In a major key the diatonic chords would be Iadd2, IVadd2 and Vadd2.

C(b9) is a somewhat popular chord but more so when the dominant 7th note is included. These four notes are more popularly interpreted as an inverted Db°∆7 and will be explored under 'C°∆7' further below.

Minor

C-∆7 is the tonic chord of C harmonic/melodic minor. It could be written as C-/B which would be interpreted as an inverted C-∆7, or maybe as a B+(b9). It could also be written Eb+(G+,B+)/C which is just another way to write C-∆7. It could also be written G+add4 or Eb+(b13) This chord is diatonic to the harmonic minor scale as the I-∆7 or bVI-∆7.

C-7 is a very popular chord and there are three minor seventh chords found in a major key: II-7, II-7 and IV-7. Minor seventh chords could also be analyzed as inverted major 6th chords. For example, C-7 could be seen as an inverted Eb6 chord. C-7 can also be written as Eb/C, another way to write C-7, or possibly C-/Bb, an inverted C-7 chord that might be used as a Bb6sus4(9,no5) chord.

C-6 can also be interpreted as A-7b5. Although minor sixth chords are popular, these 4 notes will be explored under the C-7b5 chord below to highlight that most add6 chords are seventh chords in disguise.

C-(b13) would never be seen because it is an inverted Ab∆7 chord which has already been looked at.

C-add#4 is not a popular chord but could still have its own unique uses. This chord could be written C-/F#, which would probably be analyzed as F#º7(b9) with no 3. Or it could be written Cº/G which might sound closer to a diminished chord than a minor chord. C-add#4 is not diatonic to the major scale but can be found as the IV-add#4 in harmonic minor. It could also be found within the C minor blues scale.

C-add4 is a versatile chord that is diatonic to the major scale as II-add4, III-add4, and VI-add4. It can also be written as C-/F which would most likely be interpreted as F7sus2. This chord can also be written Fsus2/Eb or Csus4/Eb which might be interpreted as Eb6add2 with no 5 and sometimes written Eb6/9.

C-add2 is a very nice sounding chord, especially when used as a tonic chord. This group of notes could also be spelled C-/D, which could be used as a D7sus4(b9,no5), or it could be spelled Csus2/Eb or Gsus4/Eb, which could be used as an Eb∆7(13,no 5). In a major key there are only 2 diatonic minor add2 chords, the II-add2 and the VI-add2.

C-(b9) is a less popular chord but definitely not unused. There is one diatonic minor b9 chord in a major key, the III-(b9). This chord is seldom written like this because most of the time when it is used, it is written as a regular III- chord while the melody passes through the b9 note briefly. This chord could also be interpreted as an Eb7(13, no5) although it probably wouldn't be written C-(b9)/Eb. Lastly this chord could be written C-/Db, a sort of Db∆9(#11) chord with no 3 or 5, which might actually be the most practical use of this chord.

Diminished

Cº∆7, sometimes written B/C, is only diatonic as the bVIº∆7 in harmonic minor. It is an interesting chord that has the tritone interval between C and Gb against the major seventh interval between C and B giving the chord a mystical dominant quality. This group of notes could also be spelled Cº/B which might be interpreted as B(b9). When spread out this way, the major seventh interval becomes a minor second interval giving it a new but similar sound.

C-7b5, sometimes written Cø7(C half diminished 7) or possibly Eb-/C, is a very useful chord that can be found as the VII-7b5 in the major key. This chord can also be spelled Cº/Bb which would most likely be analyzed as an inverted C-7b5 chord. These 4 notes could also be turned into an Eb-6 chord which might be spelled Gb(b5)/Eb. Minor sixth chords are popular when used as the IV-6 chord in a minor key. Lastly, it is possible that these notes could be interpreted as F#6b5, however this is rarely written that way and might just be analyzed as an inverted C-7b5 or Eb-6 chord.

C°7 is a fully symmetrical chord meaning all inversions are the same type of chord. The other three inversions are Eb°7, Gb°7, and A°7. This chord cannot be found in a major key but can be found as the II°7 in harmonic minor. This chord could be looked at as Eb°/C but would probably never be spelled that way. Don't let the naming of the last two chords confuse you. The '°7' in C°7 is actually a diminished flat seventh which is enharmonic to the major sixth. If it were up to me, C°7 would be the spelling for what is now C-7b5 and C°6 would replace the spelling for C°7.

C°(b13) would most likely just be referred to as an inverted Ab7 chord which was explored earlier.

C°add4 is diatonic to the major key as a VII°add4 chord. It could be rewritten as C°/F which might be analyzed as an F7b9 chord with no 3. The most practical use of this chord might be as an Eb-6(9) chord with no 5. Other inversions of this chord would probably just be analyzed as an inverted C°add4 chord.

C°add2 is not diatonic to the major scale, but it can be found as the IV°add2 in harmonic minor. This chord could be written C°/D which might be interpreted as a D7b9(no5) chord Again, other inversions of this chord would probably just be analyzed as an inverted C°add2 chord.

C°(b9) is a somewhat popular chord as it can be found as the VII°(b9) in a major key. It can also be interpreted as F#6sus#4, so this particular chord will be explored later on under 'C6sus#4'.

Augmented

C+Δ7, sometimes written E/C, is diatonic to harmonic minor as the bIII+Δ7 chord. This chord might be written as C+/B which could also be interpreted as B6sus4(b9) with no 5. Additionally, these notes could be analyzed as an E(b13) or Ab+(#9) chord. Because augmented triads are symmetrical, each of the augmented tetrads are inverses of each other.

C+7 is the V+7 chord from the harmonic minor scale. It's possible that this chord might be spelled E(b5)/C although it would more likely be spelled C+7. Some people might analyze this as a C7(b13) chord with no 5. These notes could also be arranged as C+/Bb which could be used as a Bb7sus4(9, no5), or they could be arranged into an Ab+add2 chord or an E+add#4 chord.

C+6 is an inverted A-Δ7 chord which was explored earlier.

C+add#4 is an inverted Ab+7.

C+add4 is an inverted Ab+6 or F-Δ7.

C+(#9) is an inverted E+Δ7 chord.

C+add2 is an inverted E+7.

C+(b9) is an inverted E+6 or Db-Δ7.

Major b5

CΔ7b5 is a handy chord but not regularly seen written down. Some people might analyze it as a CΔ7(#11) chord with no 5. This chord is diatonic to the major scale as the IVΔ7b5 chord. It could also be spelled Esus2/C or Bsus4/C. The tritone interval mixed with the major seventh interval provides an interesting dynamic to the chord. The notes could also be arranged as C(b5)/B which might be interpreted as a Bsus4(b9) chord. It's also possible this chord might be written as Esus2(b13).

C7b5 is a partly symmetrical chord meaning only one of its inversions, F#7b5, is the same type of chord. These chords can be found in melodic minor as the IV7b5 and VII7b5 chords. C7b5 is somewhat similar to the fully symmetrical C°7 chord in that it contains two different tritone intervals, however, unlike C°7, the two separate tritone intervals are not spaced evenly between each other. This is what makes the chord partly symmetrical rather than fully symmetrical. Similar to the previous chord, this one may be analyzed as a C7(#11) chord with no 5. The other two inversions of this chord could be written as C(b5)/Bb and F#(b5)/E.

C6b5 would most likely be written as F#-7b5 or A-6, both of which have been explored already.

C(b5,b13) would be C+add#4 which was shown before to be an inverted Ab+7 chord.

Cadd4(b5) is quite the dissonant chord as it contains three semitones in a row. Because of this it is hard to imagine this chord being written down let alone used. It's possible this chord could be written as C(b5)/F and analyzed as FΔ7(b9, no3), but again not probable that it would be written at all. Not many traditional scales have three semitones in a row except for the blues scale which does not include this type of chord. This chord can however be found as the Vadd4(b5) chord in neapolitan mInor. .

C(b5,#9) is another strange chord that could be analyzed in many other ways. It has both a C° triad and a C(b5) triad so it could also be interpreted as C°add10 (10 being the major 3).This wasn't included earlier under the diminished chords because the concept of add10 chords usually confuses the major/minor function of the chord. This could exist as the VII(b5,#9) and bVI(b5,#9) chord in harmonic minor. It could also be

written C°/E which might be used as an E+Δ7(9,no3), or it could be written C(b5)/Eb which feels most like an Eb°7(b9) with no b5.

Cadd2(b5) would most likely be interpreted as D9(no5) which will be explored later on.

C(b5,b9) is an inverted F#7sus#4 chord although neither chords are very popular. This particular pattern of 4 notes will be explored later on with the other sus#4 chords.

Sus4

CΔ7sus4 is a nice sounding chord that mixes the sound of a tritone against the sound of a major seventh. This chord is only diatonic to the major key as the IΔ7sus4. This chord could be written Csus4/B or Fsus2/B. It also might be interpreted as an Fsus2(#11) chord or possibly a G7(11) chord with no 5, which could be spelled Fsus#4/G.

C7sus4 is a cool chord because it can be disguised as a major chord or a minor chord. There are 4 7sus4 chords in a major key, II7sus4, III7sus4, V7sus4, and VI7sus4. The V7sus4 chord would still be interpreted as a dominant chord, but the other three chords might be interpreted as minor seventh chords because of their presumed functions. This is an interesting way to highlight how our brain tricks us into assuming major/minor quality depending on how that chord relates to the other chords in context. This group of notes could also be used as what I like to call an F ”double sus” chord. F “double sus” is a cool way of saying Fsus4add2 or Fsus2add4. This could also be written Fsus4/G, which might be seen as G-7(11,no5) and could be built by stacking four perfect fourths from G. It could also be written Csus4/Bb which would be seen as a Bb6sus2 chord and can be built by stacking four perfect fifths from Bb. This might just be the most versatile chord on this list.

C6sus4 is neat enough that it might be written this way, however this chord is probably more popularly written as Fadd2 which was explored above.

Csus4(b13) is probably not written this way often. It would more likely be written as an inverted F-add2 chord which was explored above.

Csus4(#11) is a pretty dissonant chord because of the group of three semitones in a row. I can’t imagine there would be much use for this chord, however it is found within the C minor blues scale so it could be played as an interesting Isus4(#11) cluster chord. Because of the three semitones in a row, this chord is not found in most other scales. It could be written as Csus4/F# or Fsus2/Gb although I would doubt that it ever has or will. If this chord happened to be used it might also be interpreted as an Fsus2(b9) chord, which could be spelled Csus#4/F.

Csus4add2, or C “double sus” would more likely be seen as an inverted G7sus4 chord.

Csus4(b9) is an inverted DbΔ7b5 which was explored earlier.

Sus2

CΔ7sus2 is a really nice sounding chord although it would probably be written as G/C and might just be interpreted as an incomplete CΔ9 chord. This chord is also an inverted Gadd4 chord and was explored earlier under the major chords.

C7sus2 is a similar story to the previous chord in that it would probably be written as G-/C and might just be interpreted as an incomplete C9 chord. These notes also make up a G-add4 chord and were explored earlier under the minor chords.

C6sus2 is a less commonly seen chord although it does sound nice, it is more likely to be interpreted as an inverted D7sus4 chord which was explored just before.

Csus2(b13) has a very unique sound but it would probably never be written out like this. It would more likely be read as an inverted AbΔ7b5 chord which was explored earlier under b5 chords.

Csus2add#4 has a really cool suspended sound. I have seen it used before but I haven't seen it written down like this. I’m not sure how else it would be written with the C as the root, but it could be written as an inverted GΔ7sus4 chord which was explored just before.

Csus2add4 would probably be written as Csus4add2 before it would be written this way but they are both the same. As we saw before, this chord, or C “double sus”, would more likely be seen as an inverted G7sus4 chord.

Csus2(b9) is very dissonant and would probably not be written down let alone used. Inverted it is a Gsus4(#11) which was explored just before.

Sus#4

CΔ7sus#4 is a useful chord that is diatonic to the major scale as the IVΔ7sus#4 chord. This chord could be spelled Csus#4/B which could be interpreted as a sort of B phrygian minor chord. These notes could also be arranged into a GΔ7add4 chord without the 5.

C7sus#4 cannot be found in the major scale but it can be found as the IV7sus#4 in harmonic minor. Most people would probably write or analyze this chord as a C7(#11) with no 3. This is a very unique sounding dominant chord that can be used in a number

of ways. It is possible that this chord might be written as Csus#4/Bb but would probably still be seen as an inverted C7sus#4 chord. This group of notes could also be interpreted as an F#(b5,b9) chord which was skimmed over before under the b5 chords. Lastly, this chord could be spelled as F#(b5)/G which is like a G-Δ7add4 chord with no 5.

C6sus#4 is found within the major scale as the IV6sus#4 chord. It can be inverted into an F#°(b9) chord which was briefly mentioned above under the diminished chords. This might be spelled F#°/G and could be interpreted somewhat as a GΔ7sus4(9) chord with no 5. The last inversion could be spelled Csus#4/A which might be used as an A-7(13) chord with no 5. This chord might seem irrelevant but I have seen it come in handy a few times when voicing some upper structure chords.

Csus#4(b13) is the only unique b13 chord on this list because every other b13 chord is more likely interpreted as an inversion of a different chord. It doesn't really matter though because this chord would probably never be written down or used due to the three subsequent semitone intervals. It is possible this group of notes could be spelled Csus#4/Ab but all other inversions and their analyses are hard to justify writing out. This chord can only be found as the IVsus#4(b13) chord in neapolitan minor.

Csus#4(b9) is the second partly symmetrical chord on this list. Again, this means that only one of it's inversions, F#sus#4(b9), is the same type of chord. This is a pretty tense chord because of the pair of tritone intervals. The only scale that this chord exists in is the whole/half diminished scale where it exists four times with the roots II, IV, bVI, and VII. The other two inversions of this chord could be written Csus#4/Db or F#sus#4/G. Any of these four inversions, if voiced satisfyingly, could be used as a mystical sounding diminished chord, although the number of satisfying voicings for this chord are probably few.

Extended 9th no 5 chords

So far we have named 32 unique tetrads out of 43. To name the last 11 tetrads, we will use some of the 'no 5' triads that were named earlier. Since there are quite a few 'no 5' triads that we named, we will start with the 4 most common ones and see how many tetrads that covers and go from there.

Because the 5 is the first fundamental overtone of the root, it is the easiest note to take out without altering the function of the chord. Because of this, it is not necessary to write 'no5' when writing a chord without the 5 unless you are trying to be ultra specific about the chord. The reason I have specified the no5 chords is to highlight the fact that it is strictly a four note chord. Technically you could swap the 5 for 11 or 13 chords as well but in order not to complicate things further we will stop at add 9 chords.

Major seventh no 5

CΔ7(#9)no5 is not a popular chord but still has a unique sound of its own. It can be found in harmonic minor as the bVIΔ7(#9) chord. When voiced with C as the root there is obviously a bit of dissonance between the #9 and major 3 which can confuse the function of the chord. It could be thought of or played as a C-Δ7no5 chord with an added 10 on the top. I personally really appreciate the sound of this chord, although minor add 10 chords are never really written down in that way. The major 3rd(10) would probably come before the minor third(#9) when it comes to the analysis of the chord. The only other chord this could pass as is possibly an EΔ7(b13) no3 although that might be pushing it.

CΔ7(9)no5 would most likely just be spelled as CΔ9. This is a very pretty chord that could serve as a nice tonic chord in a major key. Other than IΔ7(9), this chord could be used as the IVΔ7(9) chord. Other than CΔ9, there really isn't another way to write out these 4 notes. With that being said, these notes could be passed off as an E7(b13)no3 chord, which might be used as an E7 chord or an E-7 chord.

CΔ7(b9)no5 could be found in the minor blues scale as the #IVΔ7(b9) chord. With the three semitones in a row, It might be used as a cluster chord in a blues tune but it probably wouldn't be written down often if at all. It is tricky to spell this chord from the perspective of any other root than C. It is also seemingly impossible to represent these notes as some sort of slash chord.

Dominant seventh no 5

C7(#9)no5 is a little bit of a tense chord but not too terribly when voiced in suitable ways. Dominant seventh chords with a #9 (the 'hendrix chord') are fairly popular chords mostly used in jazz music. These four notes together can be found in the melodic minor scale as the VII7(#9) chord. The only other way I could see this chord being utilized is as an E+Δ7(#11)no3 chord.

C7add2no5, or Bb(b5)/C, would most likely just be written as C9. This chord exists in the major scale as the V9 chord. These four notes can also form a Bb(b5)add2 chord. This chord could also be analyzed as a D+7(9,no3) or maybe an E-7b5(b13,no3). Because of the tritone in the chord, either way you look at it this chord mostly functions like a dominant chord.

C7(b9)no5 is a somewhat popular chord mostly used in jazz music. These notes can also be arranged as a Bºadd2 chord which was explored earlier under diminished chords.

Minor major seventh no 5

C-Δ7(9)no5 would most likely just be written as C-Δ9. This chord can be used as a very pretty tonic I-Δ7(9) chord in harmonic minor. It could also possibly be thought of as a B(b9,#9) chord without a 5, or maybe an Eb+Δ7(13)no3 chord.

C-Δ7(b9)no5 is a very dissonant chord and would probably not be used in most circumstances. These notes could fit as the I-Δ7(b9) in neapolitan minor. It is tough to spell these notes as a chord with a root other than C.

Minor seventh no 5

C-7(9)no5 would most likely be written as a C-9 which is a popular chord and can be found as a II-7(9) or VI-7(9) in a major key. These four notes could be used as a Bb(9,11) chord with no 5. These notes could also possibly be seen as an EbΔ7(13) with no 3 or a D+7(b9) with no 3.

C-7(b9)no5 is a nice sounding chord that can be found in the major scale as the III-7(b9) chord. This is probably the easiest way to spell out these four notes, however, these notes could also be thought of as a Bb-(9,11) chord with no 5, or an Eb7(13) chord with no 3.

At this point we have named 40 unique chords which means there are only 3 left. C6no5 is an inverted A- chord and C-6no5 is an inverted Aº chord so they have been discussed already under their respective inversions. Augmented, diminished and major b5 chords don't have a 5 in the first place so they are excluded. Extended sus4 and sus#4 chords with no 5 are also better expressed as other inverted chords which leaves us with sus2no5 chords. Obviously, sus2 chords can't have an added 9 because it already has the 2, and they can't have the #9 because it would be considered a minor add2 chord. So with all of that being said, the last 3 unique chords are all sus2(b9)no5 chords.

Sus2(b9) no5

CΔ7sus2(b9)no5 is basically just a fancy way of saying four semitones in a row. I'm not sure if it has ever been written out in this way, it's possible it might have been written as something like 'four semitones in a row from B' or 'make a fist with your hand and strike the piano'. The only scale other than the chromatic scale that can suit this chord is the enigmatic scale, where this chord fits in as the VIIΔ7sus2(b9). Other than possibly B-add2(b9)no5, I'm not sure if there is another way to neatly spell out this chord.

C7sus2(b9)no5 is another tense chord that could be useful with the right voicing and right context. This particular chord could be used as a IV7sus2(b9) chord from the minor blues scale. The only other way to neatly spell this chord would be Bbadd2(#9)no5, but that is probably pushing against the line.

C6sus2(b9)no5 is also a fairly dissonant chord with three semitones in a row. It can be found as the VIIsus2(b9) chord in neapolitan minor. It is not likely that this chord would ever need to be written down, however these notes could also spell out an Aadd4(#9)no5 chord or possibly a Db+Δ7(b9)no3 chord.

List of all tetrads -

Below is the list of all tetrads categorized by which scale they fit into. Keep in mind that a lot of these chords exist in multiple scales but they are only listed once under the more popular scale. That is why there are only two chords listed under the melodic minor scale. There are four columns for each of the four inversions of a tetrad, however all chords have been transposed to the root C to highlight each individual inversion from the perspective of a single root. This means that each of the four chords in a row are not direct inversions of each other rather they share the same pattern of notes. For example, C-7 and C6 are in the same row because minor 7th chords and add 6 chords can both be made from the same four notes.

The color of the chords is copied from above but they aren't as important here. Each red chord is listed as the 'main chord' for that group, but this doesn't make the red chords any more or less important than the purple chords. Most of the time, the chords in red are the most practical in that group but there are a handful of chords in purple that are practical and even somewhat popular.

Major -

There are 20 possible unique tetrads in a major key with each tetrad having 4 different inversions except for the two partly symmetrical chords and the fully symmetrical diminished seventh chord. Some inversions can't really be named and others that can be named aren't necessarily very practical. The order of the tetrads is copied from above and has nothing to do with the importance or practicality of the chords.

CΔ7	-	-	Db/C
C7	C°(b13)	-	D/C
Cadd#4	-	F#/C	F(b5)/C
Cadd4	Absus4/C	CΔ7sus2 G/C	-
Cadd2	Bb/C	Ebsus4/C	C6sus4
C-7	C6	-	D-/C
C-add4	C6/9(no5) Asus4/C	C7sus2 G-/C	-

C-add2	Bb-/C	Esus4/C	-
C-(b9)	B-/C	-	-
C°add4	C-6/9(no5)	G°/C	-
C-7b5 Eb-/C	C-6	C6b5	D°/C
CΔ7b5 Bsus4/C	Csus2(b13)	-	Csus4(b9) Db(b5)/C

CΔ7sus4	Csus2(#11)	Bbsus#4/C	Dbsus4/C
C7sus4	Csus4add2	Bbsus4/C	C6sus2 Dsus4/C
CΔ7sus#4	-	-	Dbsus#4/C
C6sus#4	C°(b9)	B°/C	Ebsus#4/C
CΔ7(9)no5	-	-	-
C7(9)no5	-	-	Cadd2(b5)
C-7(9)no5	-	-	-
C-7(b9)no5	-	-	-

Harmonic Minor -

There are 12 unique tetrads in the harmonic minor scale that can't be found in the major scale. These chords all have a unique quality about them that is distinctive of the harmonic minor scale.

C(#9)	A/C	Ab-/C	-
C-Δ7	C+(b13)	C+add4	C+(b9) Db-/C
C-add#4	-	F#-/C	F°/C
C°Δ7 B/C	-	-	C(b9) Db°/C

C°7 Eb°/C		fully symmetrical	
C°add2	C7b9(no5) Bb°/C	-	-
C+Δ7 E/C	C(b13)	C+(#9)	Db+/C
C+7 E(b5)/C	C+add#4	C+add2	D+/C
C(b5,#9)	A(b5)/C	Ab°/C	-
C7sus#4	C(b5,b9)	Db(b5)/C	Dsus#4/C
CΔ7(#9)no5	-	-	-
C-Δ7(9)no5	-	-	-

Melodic Minor -

There are only two chords from the melodic minor scale that can't be found in the major or harmonic minor scale. These 2 chords each have a very distinct sound that can't be found with other chords. The first one being an interesting symmetrical dominant chord and the second one being the famous 'hendrix chord' without the 5.

C7b5	D(b5)/C	partly symmetrical	
C7(#9)no5	-	-	-

The following chords are less practical than the ones that have already been listed. In my opinion it is worth learning how to play or use most of the chords listed above, but it probably isn't worth learning how to use the chords listed from here on out except for maybe the chord from the diminished scale.

Minor Blues -

These three chords all have three semitones in a row which can be hard to pull off in a chord. They could be used as a sort of cluster chord in a minor blues tune.

Csus4(#11)	Csus2(b9) Gsus#4/C	F#sus4/C	-
CΔ7(b9)no5	-	-	-
C7sus2(b9)no5	-	-	-

Neapolitan Minor -

The use of this scale is not very popular in music. These four chords also all have three semitones in a row and they fill in the gaps where the minor blues scale can't. Again they could be used as a sort of cluster chord but probably don't have much harmonic value to offer.

Cadd4(b5)	-	G(b5)/C	-
Csus#4(b13)	-	-	Esus#4/C
C-Δ7(b9)no5	-	-	-
C6sus2(b9)no5	-	-	-

Diminished -

This single chord from the diminished scale could have some use as a diminished chord. It has a unique and puzzling sound, the two pairs of adjacent tritones carries a good amount of tension that you wouldn't want to overuse.

Csus#4(b9)	Bsus#4/C	partly symmetrical

Enigmatic -

The last chord is four semitones in a row which can only be accommodated by the enigmatic scale. I've never actually seen or heard of anyone using this scale, and the chord itself probably can't really be considered a chord. It is more of a sound effect.

CΔ7sus2(b9)no5	-	-	-

Pentads and Above -

Pentads (Extended 9th Chords) -

There are 330 different 5-note chord combinations and none of them are symmetrical, therefore all 330 combinations can be divided by 5 to make 66 unique pentad groups. I won't get into all of the different ones because a lot of them have multiple notes close together and are hard to make sense of. One way to think of pentads is as extended 9th chords. All of the 'no5' tetrads mentioned above can add the 5 back in to give you a list of some of the more popular extended 9th chords. Most of the time these are written as something like C9, CΔ9, or C-9 and usually imply that the 7 is involved. However, 9th chords can also apply to the #9 and the b9. To refresh, the possible extended 9th chords mentioned earlier as no 5 chords are CΔ7(#9), CΔ7(9), CΔ7(b9), C7(#9), C7(9), C7(b9), C-Δ7(9), C-Δ7(b9), C-7(9), and C-7(b9). 9ths can also be added to any other seventh chord that has the room for that particular 9th.

As well as adding 9ths to seventh chords, the 11, #11, b13, and 13 can also be added to seventh chords or any other tetrad to give us different pentads. Again it is also possible to trade the 3 or 5 for an additional upper structure tone to give us other usable pentads. Once you get to this point the different pentads start blending into each other as each chord has 5 different inversions. One last way to think of pentats is to think of a tetrad played over an additional bass note. For me, this is the easiest way to think of 5-note chords because it makes it easier to remember what notes to play. Examples of this can be found in the next chapter.

Chords with more than 5 notes -

Chords with more than 5 notes start getting harder and harder to analyze. Chords with 6 notes or 7 notes are still used but the overall quality or feeling of every different chord can mostly be accomplished with 5 notes at the most. Extended 11th chords have 6 notes in them and extended 13th chords have 7 notes in them assuming that all the notes in the chords are included, which means that most extended 13th chords can be matched with their respective 7-note scale. There are a lot of different combinations of extended chords because of the many different triads themselves, and the Δ7, 7, b9, 9, #9, 11, #11, b13, and 13 to choose from to add to the chord. I won't get into all of the different combinations of upper structure chords here but they are worth exploring on your own time if you are interested. Once again, the main feeling of most chords can be explained with the chords we have already discussed.

Sometimes, chords with 6 or 7 notes are written as ‘polychords’ which look like slash chords but are a bit different. For example, an extended C13 chord could be written as Dm/CΔ7 which means a D minor chord in the right hand and a C7 chord in the left hand. Chords with more than 7 distinct notes are hard to analyze harmonically because they require using a scale with more than 7 different notes. An 8 note chord could exist in the diminished scale but chords with too many notes risk sounding like more of a cluster of sound than anything harmonic.

Examples of interesting chords used in songs -

From all of the chords that have been mentioned so far, I have seen most of them written down or being used in some way or another. Here are a few examples of some of the more interesting and rarer chords found in some popular songs.

The first example is from the song “Sincerity is Scary” by The 1975. This loop repeats basically the entire song. The E/F chord, or F°Δ7, works as a diminished chord leading into the F#m7 chord. It is usually easier for me to calculate how to play an E/F chord rather than an F°Δ7 chord so that is why it is written that way. It is a matter of preference though so write it whichever way makes most sense to you.

| *Dmaj9* | *E/F* | *F#m7* | *G9* |

This example comes from the song "Cinderella" by Mac Miller. The F/Db is really a Db+Δ7 chord borrowed from the harmonic minor scale, and works as an embellishment chord to the Dbmaj7 chord. Just like the last example, this chord is usually easier to read as a slash chord rather than an augmented major seventh chord which is why I chose to write it as F/Db. In this part of the song the guitar adds a 13 to the first Dbmaj7 and a 9 to the last one.

Dbmaj7 F/Db Dbmaj7
It's only right that right after love, I write my name

These three chords from Queen's "We are the Champions" are a combination of interesting dominant chords used to modulate to the chorus. The first chord, Ab/Bb functions as a B9sus4 chord with no 5. The next chord Ab+/Bb is really just an inverted C+7 chord in disguise. Of course with augmented chords there are many different ways to spell out the chord depending on how you want to think of it, but the simplest way to think of this chord is as an augmented seventh chord. Because the previous chord is an Ab/Bb chord, I wrote this chord as Ab+/Bb instead of C+/Bb to make it easier to think about. Fm/Bb could be written as Bb7sus2 but again it is easier to picture moving from Ab+/Bb to Fm/Bb rather than C+7 to Bb7sus2. Either way it is helpful to understand what type of chord you are playing.

Ab/Bb Ab+/Bb Fm/Bb C7
And we mean to go on and on and on and on

This is one of the weirder examples on the list from the song " Unluck" by James Blake. Gm/F# could be called an F+(b9) chord but the b9 is pretty subtle in the chord. This could also be thought of as an inverted G-Δ7 chord. Either way, this chord carries a bit of tension which dissolves into the next Eb chord.

Dm Gm/F# Eb Bb Am Gm
Only child take good care I wouldn't like you playing, falling there

Unfortunately I wasn't able to find an example of a major b5 triad being used in any popular songs. Above is an example of how one could be used in a progression of chords. In this example, the B(b5) chord is similar to an Abm6 chord which is why it works well in this particular progression in the key of Eb. It's rare to see a major b5 triad used on its own, they are most common in dominant seventh chords like the following example or sometimes in major seventh chords which you will see later on.

| *Ab* | *B(b5)* | *Eb* | *Bb* |

This example from "She Works Out Too Much " by MGMT is a good example of a few more interesting slash chords. F/Bb sounds most like a Bb∆7sus2, Gb/Bb is an inverted Gb triad, and Ab/Bb is like a Bb9sus4 chord with no 5 or an inverted Abadd2 chord. In this song the Bb note is used as a pedal point in the bass so the triads could be analyzed on their own without the Bb in mind, but the root note does have its own effect on the chord. The chords are interesting on their own but the way they are used in context with the tonic is what makes these chords even more interesting.

F/Bb Gb/Bb Ab/Bb F/Bb
Don't take it the wrong way… I can never keep up

This example from the cover of "Fly Me to the Moon" played by Charles Cornell has an A7b5 chord which resolves down a fifth to the Dm7 chord. Again this could be analyzed as an A7(#11) with no 5 depending on different theories.

Fmaj7 Fmaj7/G G7(13) Cmaj7 A7b5 Dm7 G7(13) Cmaj7
With music and words I've been playing… For you I've written a song

This is a great example of what a sus#4 chord sounds like. Technically, this chord from "Lullabye (Goodnight, My Angel)" by Billy Joel could be thought of as a Csus#4(9,13) chord or a Csus2(#11,13) chord, but the melody sings the #4 note which makes the chord sound more like a sus#4 chord. This chord can be accomplished just as a D/C which is interesting because that is an inverted D7 chord whereas in this context it doesn't sound like a regular dominant chord would. This shows that two identical chords can sound completely different depending on the context of the surrounding chords.

G Cm6/G G Cm/G G
Goodnight my angel time to close your eyes

D7sus4 D7 Em Dadd4/C C
And save these questions for another day

This example comes from the piano interlude in the song "God is Fair, Sexy Nasty" by Mac Miller. This chord is sometimes referred to as the 'Hendrix chord'. It can be thought of or voiced as a G°∆7/D#. This isn't the greatest example of how this chord would normally be used, but it is an interesting sounding chord in this specific example.

| Bm7 | Dmaj7 | Amaj7 | Emaj7 | A6 D#7(#9) | A6 | Amaj7 | Bmaj7 |

The first chord in the song "Too Late" by Mat Zo is not only an interesting voicing for a dominant seventh chord, but also a unique way of using that chord in context with the song. The chord is played on the guitar with the B and C (3 and 11) played right next to each other creating some dissonance. This chord is similar to a C∆9sus4 chord and could be spelled as a Bº(b9)/G or an F6sus#4/G.

G7add11 Ab6 Ebsus2 F G7add11
Look out the window… All I see is rain

This example and the next one are both from the song "I Can't Help It" by Michael Jackson. This progression was actually written by Stevie Wonder who is a great person to study if you want to learn practical uses of interesting chords. The A13(#11) chord in this song is played with the A and E (1 and 5) in the left hand with a G, B, C#, D#, and F# (7, 9, 3, #11, and 13) in the right hand. The easiest way for me to think of this chord is as a G∆7b5/A which doesn't actually include the D# note.

A13(#11) Abmaj9 A13(#11) Abmaj9
Looking in my mirror… Took me by surprise

The Eb+7(#9) chord from the same song is a very similar chord to A13(#11). In fact the only difference is that they have different bass notes. While A13(#11) could be thought of as G∆7b5/A, Eb+7(#9) could be spelled G∆7b5/E. As I mentioned earlier, some tetrads, like the major seventh b5 chord, that are rare on their own can come in handy when playing upper structure chords.

Db7sus2 Eb+7(#9) Emaj7 F#m7 G#m7 Amaj7
Running often through my mind

Similar to the previous example, these two chords from Kanye West's "Violent Crimes" can be thought of as G∆7b5/A and G6b5/D# respectively. Thinking about the chords in this way makes them easier to play, two chords that seem distant now only look like slightly different chords. The A7(9,13) is a very popular voicing that Stevie Wonder uses a lot for dominant chords. The D#+7(b9) chord is a less popular voicing but still used.

A7(9,13) D#+7(b9) G#-7
Even the scary nights

This example comes from an actual Stevie Wonder song, "All in Love is Fair". This voicing for the Am6(9) chord is easiest to think about as a C∆7(b5)/A chord. This is another example of the power of unpopular tetrads being used for upper structure chords. In this case it

is used as a minor chord which then moves to D13 or really C∆7b5/D. Even though C∆7b5/D is technically a D7(9,13,no5) chord, it is easier to write it as D13 because in essence it is a D13 chord. This also gives each musician the room to use their own favorite 13th chord voicings.

G#7/C C#m C#m/B A#m7b5 Am6(9)
But all is fair in love…. I had to go away
D13 E/B C#9 F#13 B7sus2 E
A writer takes his pen to write the words again, that all in love is fair

The last few examples are from songs that I haven't written an analysis for, partly because they get pretty complicated at certain parts and I haven't yet felt like digging into all of that. With that being said the few lines that I have analyzed below each provide a lot of interesting chords to unpack and analyze.

This first example comes from the ending of "New York State of Mind" by Billy Joel. The second chord in this phrase is another example of the 'Hendrix Chord'. Again it might be easier to think of as a G#º∆7/E chord when voicing the chord. The last three chords of the song are the more interesting chords in this section. The piano actually plays them as D-7, Db∆7(13), and then C∆7(9,#11,13). The violin plays a G note over the last three chords giving the D-7 chord it's 11 and the Db∆7 chord its #11. The b9 in the Db∆7 chord actually comes from the saxophone so the separation of instruments eases some tension between the C, Db and D notes. The last chord can be thought of as a B-7/C polychord with a C triad in the left hand and a B-7 in the right. When the last chord is played it almost feels as if we've shifted the tonic up a whole step.

| *C* | *E7(#9)* | *Am7* | *Bb9* | *Eb6 Ab∆7* | *D-7(11) Db∆7(b9,#11,13)* | *C∆7(9,#11,13)* |

This progression comes from the song "Too High" by Stevie Wonder and it is all played on one keyboard. It might look complicated at first glance but the first 6 chords follow a simple pattern of descending ∆7b5 chords down the whole tone scale, all with an E in the bass. With that being said, these chords can all be analyzed on their own without the bass note in mind, or they can all be analyzed in respect to the E in the bass. The first 6 chords could be analyzed just as one weird E chord that eventually resolves down to Am9. In this case the upper part of the one big E chord follows a 'constant structure' which is a type of progression that moves the same type of chord either up or down by the same number of semitones. Each of the 6 E chords analyzed on their own are all interesting in their own way. The first chord can be analyzed as a weird sort of Esus2(b5,b9,b13) chord. This one is definitely the hardest one to analyze in respect to E because it has an E, F, and F# note. The second chord is just E∆7b5 but it could also be analyzed as an E∆7(#11) chord with no 5. The third chord is the E13 voicing we talked about earlier. The fourth chord could be thought of as Esus2(b13). The fifth could be seen as an E7sus4(b5) chord and the last chord is E+7(#9) which resolves perfectly into an Am9 chord. Am9 might be easier to think of as C∆7/A.

Gb∆7b5/E E∆7b5 D∆7b5/E C∆7b5/E Bb∆7b5/E Ab∆7b5/E Am9
I'm too high, I'm too high, but I ain't touched the sky

This example is one of the more unconventional ones on the list. Usually I would try to avoid spelling a chord with an added 10 (major 3), one because major chords already have it included and minor chords usually specifically don't include that note for a reason, and two because it's just not that popular and could end up confusing people. If we were spelling this chord regardless of the order of notes I would probably call it a C∆7(#9) chord, but because of how the chord works in this context, it is probably best understood as C-∆7(10). The original song that this comes from is "As The World Caves In" by Matt Maltese which has a less complicated harmony than the one listed above. This particular harmony that I wrote down actually comes from a video that stirred up some discourse on Tik Tok. Adam Neely does a pretty in depth video about it which can be watched here: *https://www.youtube.com/watch?v=mqsnqIw--RU&t=528s*. Some of the reasons I named it a C-∆7(10) chord instead of C∆7(#9) is because the original progression plays it as a minor chord and in the Tik Tok video the major 3 is sung in the harmony. The harmony actually sings an E(10) a semitone above the Eb(b3) that the piano is playing, creating some more spice in the harmony. As Adam Neely explains it in his video, although the added 10 creates tension with the b3, the 10 harmonizes well with the ∆7 sung in the melody which is why this chord could work. The melody is singing the B(∆7) a fifth above the harmony. The piano just plays a C to Cm while the strings play an Eb an octave higher than the harmony. Personally I really like this chord especially when used in this way. Analyzed on its own it's hard to classify as a major or minor chord, it seems most like a mixture of both to me but it could be guided in any direction. Chords or harmony like this blur the lines between the concepts of major and minor which is why there are many different schools of thought when it comes to defining major chords and minor chords. We will explore this concept a little more later on in the conclusions.

C∆7 C-∆7(10) C-6/9 G6 B+ B7
Oh girl it's you that I lie with as the atom bomb locks in

This last progression is a cadence I came across while messing around on the piano. It is somewhat similar to the last 3 chords of "New York State of Mind" that we looked at earlier only with a few added notes. Because it is a little difficult to read, I included 4 different ways of analyzing the two 7-note chords and one 8-note chord. The first shows the chords written out normally, just below that is the notes used in each chord in order, below that is the chords expressed as polychords, and lastly what scale each chord fits into. The last chord is really the main chord I wanted to highlight because it is a pretty strange chord especially when written down. The obvious note that sticks out is the C#, especially since there is already a C note and a D note. Because of this I can only think to call the C# a #8 because the 1 and 2 are already involved in the chord. Similarly to the previous example, the C# note harmonizes with the F# a

fifth below which harmonizes with the B another 5th below. These harmonies conflict with the root chord, but they still provide some interesting and even satisfying harmonies that resonate against the other main harmonies of the chord. Like the example from “New York State of Mind” the tonic note is a little more fragile with the last chord as it almost seems to shift up a whole step.

| Dm7(9,11,13) | G7(b9,11,13) | C∆7(9,#11,13) +#8 |

(D,A,F,C,E,G,B) (G,D,F,B,E,Ab,C) (C,G,E,B,D,F#,A,C#)

C∆7/Dm E+/G7 D∆7/C∆7

C major scale C harmonic major C Lydian with added #8

More song analyses can be found here.

Conclusions -

- There is still a lot more to explore when it comes to chords and how they can be used. There were a lot of tangents I wanted to go down, but didn’t to avoid things becoming overwhelming. Hopefully this sparks your interest in different chords and you continue exploring them on your own and make your own theories. This is by no means a one size fits all theory and may not be helpful for you to think about music in this way. For me, it has always been easiest to analyze music from the perspective of chord theory, but for some it might be easier to think about it differently. Whatever theory helps you to understand your favorite music is the theory you should explore. With that being said, at the very least I hope you were able to learn a few different things about the nature of chords. I definitely learned a lot from taking the time to write out all of the different combinations. Knowing which chords are inversions of each other can be really helpful in writing or reharmonizing chord progressions. Also being able to know all of the different possibilities or types of major chords, minor chords, etc., and how they can be used can really add color to your chord progressions and keep them in the sweet spot between being too mundane and being overcomplicated.

- One of the reasons I focused so much on tetrads is because I play the ukulele which only has four strings. I wanted to see if each type of chord can be expressed with only four notes and it ended up with me trying to find every single possible 4-part chord. In the end I ended up writing out the positions of 30 different tetrads, out of the 43 possible tetrads, for all of the 12 roots in the chromatic scale. This comes out to 360 different unique tetrads (with no repeating notes) on the ukulele that in my opinion are definitely worth looking into, and that doesn’t count the tetrads that have multiple ways of fingering the chord. Because the ukulele is limited with the positions of each note, the

voicings of each type of tetrad are different with each root. Because there are many different voicings, it might be worth looking into all 360+ of them and finding which ones speak to you.

- In some cases changing the order of the notes can persuade the ear to perceive the chord as having a different function. For example, the notes G, Bb, D, and F# are perceived as a G-Δ7 chord while if you move the F# to the bottom it might sound more like a F#+(b9) chord. With this information you could find a way to replace a minor chord with an augmented chord. This shows how two chords that appear to have different functions could also be somewhat interchangeable. All chords are each other in disguise

- Chords that get really complicated or have a lot of notes can always be simplified into seventh chords or even triads if you had to. If you see an A9 chord for example and only had four notes to use, you could choose to remove any of the notes and still have a chord with a similar effect. Removing the 5 is easiest and we discussed this as the A9(no5). Removing the 7 gives you an Aadd2 and removes the dominant quality. Removing the 3 gives you an A9(no3) or E-add4 and also removes the dominant quality, removing the 1 shifts the perspective of the chord a little more but would give you a C#-7b5 chord. Obviously this gets more complex with 6 and 7 note chords but a tetrad can still be found that conveys the essence of most of these chords. One tetrad can represent multiple other chords with more notes in them which is another thing to think about if you get stuck with a particular progression.

- It can sometimes get overwhelming when deciding how to spell certain chords out, especially as the chords get more complicated. One of the more important aspects of spelling a chord is to be specific about the root. Decide whether the root is going to be written as the chord itself or as a slash chord. Think of the context of the surrounding chords and try to make the chord as readable as possible. For example E/C is probably easier for most people to think of rather than C+Δ7. Also keep in mind the type of voice leading you want to suggest in the chord, for example, CΔ7sus2 and G/C both suggest different voicings of the same chord, and you could even say CΔ9(no3) or Gadd4/C depending on what voicing you want to suggest. There are many different ways to write chords so pick whichever one best suits the song or whichever one is easiest to understand. When deciding to use add2 vs add9, again think of the context and what the voice leading is. Even though add2 and add9 are technically the same chord, they might suggest different voice leadings, and that should be kept in mind when writing them out. This is where learning sheet music comes in handy from being able to be specific about each note and inversion, however a lot of new artists are learning on their own and don’t have the practice of reading sheet music and are turning to learning chords instead. This is awesome and I myself prefer reading chords to sheet music however it does lack a lot

of the nuance of sheet music, not to mention the lack of dynamics. Regardless, it is for a lot of people a much easier way of picking up an instrument and actually playing songs without having to painstakingly read sheet music and then practice that sheet music. I think unfortunately more modern music suffers in musical diversity. To make up for the lack of diversity, it is worth learning all the extra little chords and then how to use each chord to add color and depth to songs.

- There are many different ways to categorize the quality of chords. The best way to understand the quality of a chord is to relate it to the root or tonic/key of the song. If there is no context other than the one chord playing then there are many different ways that chord could be interpreted. The way your brain interprets a chord comes down to what you are used to hearing, whatever music is stuck in your head, and/or the last piece of music you have listened to. Our brain seems to choose a tonic to relate the chord to based off of those three things, unless the song is atonal or the listener isn't processing the actual tones of the chord. Most people who actively listen to music tend to gravitate towards one tonic note in order to relate the rest of the song to one home base. Within a song or piece of music, the tonality can be expanded out into different regions as Arnold Schoenberg talks about in his book 'Structural Functions of Harmony'. The tonic can also be completely abandoned and shifted to a new tonality, although our ears will relate the new tonic to the previous tonic, it is unknown and different for each person how long the ear holds on to the old tonic. If a song or chord progression is playing, one listener might hear it from the perspective of one tonic while another listener could be listening from the perspective of a different tonic. The same progression can even be heard from two different perspectives of tonality by the same listener if they are able to shift their perspective. This auditory illusion is similar to the optical illusion of a 3-D cube drawn on paper and being able to picture the cube as facing two different directions. All this to say that tonality is an illusion that can be manipulated in a way to perform auditory magic tricks that enhance the listeners musical experience. You might be able to think of a song you know that sounds like it starts off in a certain key only to shift to a different key once more harmonic context is given.

In the Tao Te Ching, Lao Tzu said, *"From the Way comes One, from One comes Two, from Two comes Three, and from Three comes 10,000 things".* I like to think of harmony in a similar way especially when it comes to categorizing chords. The One could be thought of as the tonic, key, or root of the particular song or chord. The One could be split into Two categories by something like major/minor as a theorist such as Ernst Levy might argue, or it could be categorized based off of brightness and darkness, like the relationship of Lydian/Locrian, as a theorist such as George Russel might suggest. Hugo Riemann is famous for exploring the theory of harmonic dualism in depth which kickstarted the well explored ideas of "Neo-Riemannian Theory". Most songs today can be described as either in a major key or a minor key but there are a lot of discussions on what 'major' and 'minor' actually are. Jacob Collier has some interesting theories on what chords are 'major' in quality or 'minor' in quality as well as many other

theorists. One interesting thing that Jacob Collier has brought up is the relationship between fourths, which he describes as ‘minor’ in quality, and fifths, which he describes as ‘major’ in quality. Obviously this subject goes a lot deeper than what I have laid out here so if you are interested more in these ideas I encourage you to look into works of the theorists mentioned above.

Harmony split into Three categories might look like something similar to the relationship between Tonic, Subdominant, and Dominant chords. Another interesting way to categorize chords into Three is by relating them to one of the three fully diminished seventh chords of the chromatic scale. Each one of the three diminished seventh chords has its own relationship to the tonic and every chord could be related to one of the three diminished chords. I’m not sure if this is exactly what Barry Harris was talking about, but his theories of harmony persuaded me to sometimes picture chords in this way.

With all of this being said, there are 10,000 different ways to categorize chords (so to speak, not exactly 10,000), but at the end of the day they can all be simplified into at most 3 categories. The way you categorize chords is entirely up to you and as you search deeper into the quality of chords you’ll start to see how they all start to blend into each other. If you had to create a sort of harmony spectrum where every chord ever could be placed on this spectrum, what would be the poles or extremes of your harmony spectrum. For me it has been useful to try and categorize chords into major/minor chords or tonic/subdominant/dominant chords, although many people might prefer their own categorizations. I encourage you to explore whichever theory interests you the most, but not to get attached to any specific theory. Everyone seems to have their own feelings on what harmony even is so there really isn’t a set way to categorize or describe harmony.

- When a chord is played, depending on the timbre of the instrument, the overtone of a perfect 5th might also be created by the root note, regardless if it is included in the chord or not. This means that chords with a b5 or +5 in them have the risk of sounding more like an added #11 or b13 chord because the 5th is being generated by the root note. This would change C∆7b5 to C∆7(#11) or C+7 to C7(b13). The next note you might be able to hear is the major 3rd, but since it is the fifth overtone in the series it probably won’t be audible enough to affect the chord. The same goes for the higher overtones.

- Playing chords in a lower register might make them sound “muddy” while chords played in a higher register might sound more “tinny”. Because of this, there is a sort of sweet spot for certain chord voicings, which might just come down to personal preference. Some voicings suit certain roots over others even though the essence of the chord is still the same. You might find that a G∆7b5/A chord sounds nice while the same voicing with an E root, D∆7b5/E, is either too low and muddy at one octave or too high

and tinny at the next octave. Of course this also comes down to the context of the song that the chord is being used in and your preference.

- As you have seen by now and probably heard before, any note can go with any chord and there really aren't many if any exceptions. Although once you get to a certain point the chord becomes more of an atonal glob of sound rather than a discernible harmony. With that being said, there are many pairs of added notes that usually don't exist in the same chord together. I haven't really seen any chords with both a major seventh and a seventh but this is the only pair I can think of that I've never seen used before. One because it confuses the function of the chord, but probably mostly because the 7, ∆7, and 1 are all a semitone away from each other. All that to say, given the proper voicing, a C∆7(#13) and a C7(b8) can both be pulled off and made to sound like a pretty intriguing chord.

- We explored earlier in a few of the examples how two identical chords can sound completely different depending on the context of the surrounding chords. Because the 12TET tuning system that most instruments use today only approximates 'just' tones, and doesn't actually play the exact mathematical harmonics, each note on a piano actually represents more than one tone. There are actually over 50 tones within 1 octave that are recognized and can even be learned to sing. These tones are calculated with various tuning systems including pythagorean tuning, tuning from the overtone series, and equal tempered tuning. 12TET does an amazing job of representing all of these just tones but this means that one note on a piano can represent two different tones in the same key. This subject gets very deep and interesting so if you want to explore more you can read about it in the book "Harmonic Experience" by William A. Mathieu. My point for bringing this up is to briefly explain that different notes and chords can be used to represent many different tones or 'harmonic energies' that transcend the 12 note scale. There is more to the way we feel and interact with harmony than most people realize. The surroundings that a chord finds itself in affect that chord just as much as the individual notes in the chord do. These surroundings can provide melodic, harmonic, or even rhythmic context that can have a massive effect on the way we perceive that chord.

- The way we hear and process harmony is first based on the mathematical patterns of frequencies and overtones found in nature, and second based on our personal preferences that have been picked up from the music we have listened to. There are plenty of online resources that explain the nature of the overtone series so I won't go into it deeply here, but basically it is the mathematical pattern behind resonance or harmony. For example, two frequencies with a ratio of 2:3 will create a simple pattern that our brains will recognize as harmonious. This pattern is represented on the piano as a perfect fifth. 3:4 is a perfect fourth, 4:5 is a major third, 5:6 is a minor third, and there are an infinite amount of interval relationships. The tuning system that most music uses

today has 12 equally tempered notes in an octave which actually do a really good job at approximating the more simple and crucial interval relationships that exist. The down side to 12TET is that it sacrifices true resonance in order to simplify the number of interval relationships. However, the sacrifice is pretty small and our ears compensate for the difference so the 12 notes and their intervals still sound harmonious to us. The great thing about 12 TET tuning is that it gives us a fixed number of interval relationships to work with and allows us to move through different tonalities in a more precise way that doesn't get super complicated as it would with mathematically resonant intervals. Without 12TET tuning, every instrument would have to be tuned to one root note or tonic and changing keys would have a lot of issues. With 12TET we are able to pull off some interesting harmonic illusions that would be difficult with other tuning systems. With all of this being said, the 12 notes of the piano represent more than 12 pitches in just intonation, so there are actually more chords when you factor in enharmonic chords. For example the notes for Cadd#9 (C, D#, E, G) could also be used to invoke a C-add10 chord (C, Eb, E, G). These are two different chords with two different mathematical relationships between the notes, yet in equal temperament they are represented by the same four notes. There are even chords that share the same name that can have multiple ways to tune that chord mathematically.

- This may seem like a ton of information all slapped down in one place and it kinda is but hopefully it sparks your own interest in all the different possibilities of writing/playing chords. A lot of people shy away from music theory because it seems complicated or unnecessary. But the good thing about it is that there are many different theories and you can choose whichever one works best for you or just invent your own. Don't let people gatekeeping the rules of music theory get in the way of <u>your</u> understanding of <u>your</u> favorite music. Of course it is great to learn the theories of the masters who came before us, but take it all with a grain of salt and don't let theory keep you in a box. I'm sure you've heard it many times but really there aren't any rules of music theory that don't have any exceptions. The theory is only used as a guide to aid in our understanding of the music.