THE MODULATION REFERENCE CHART

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Introduction

The aim of this book is to find and present a complete and satisfactory explanation to all of the instances of modulation that can be found in tonal music and for this information to be presented in the form of a modulation reference chart. The modulation reference chart can then function by guiding a musician through the full exploration and utilization of such harmonic possibilities in either a compositional or improvisational setting. The inspiration for this study has come from an apparent inconsistency that is found in the explanations given by various notable sources in regards to modulation. For example, the well-established system of secondary dominants continues to appear in these sources but only fully explains around 30% of the possible non-diatonic chords. This book aims to complete this picture by providing an equally satisfying explanation for the remaining instances.

1.1.Terminology, symbols and format of illustrations

For ease of understanding, throughout this book information has been presented using terms and expressions that are universally understood by all types of musicians. As a result, various traditional terms have not been used. For example, terms such as ‘Neapolitan Sixth chord’ and ‘Augmented Sixth chord’ are not always familiar to Jazz musicians, and terms such as ‘back door modulation’ and ‘tri-tone substitution’ are not always familiar to classical musicians. In addition to this, it is often the

case that more than one term describes the same phenomenon. For example, the ‘Augmented sixth’ and the ‘tri-tone substitution’ describe a chord whose intervallic structure is equivalent to that of the dominant 7th chord built on the $\flat VI^{th}$ degree of the principle key. As a remedy for these ambiguities, the following terms and expressions will be used instead.

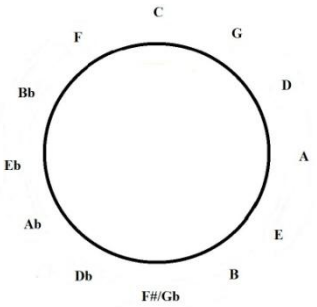
1. Numerical scale degrees e.g. 1, 2, 3 etc
2. letter names e.g. A, B, C, D, etc
3. Greek scale degrees e.g. Tonic, supertonic, mediant etc
4. Greek modal names e.g. Ionian, Dorian, Phrygian etc and variants of these
5. Roman numerals e.g. I, II, III, IV etc uppercase = major, lowercase = minor

Throughout the book, the following style of chord symbols will be used:

Chord Type	Roman Numeral	Description
CMaj	**IMaj**	**C major triad (root, 3, 5)**
Cmin	**imin**	**C minor triad (root, b3, 5)**
Cdim	**io7**	**C diminished triad (root, b3, b5)**
Caug	**IMaj(#5)**	**C augmented triad (root, 3, #5)**
CMaj7	**IMaj7**	**C major 7 (root, 3, 5, 7)**
C7	**I7**	**C dominant 7 (root, 3, 5, b7)**
Cmin/Maj7	**imin/Maj7**	**C minor/major 7 (root, b3, 5, 7)**
Cmin7	**imin7**	**C minor 7 (root, b3, 5, b7)**
Cmin7(b5)	**iØ7**	**C minor 7 flat 5 (root, b3, b5, b7)**
Cdim7	**idim7**	**C diminished 7 (root, b3, b5, bb7)**
CMaj7(#5)	**IMaj7(#5)**	**C major 7 sharp 5 (root, 3, #5, 7)**

In addition to the ‘modulation reference chart’, information will also be illustrated in both a ‘chord check list’ and the familiar ‘circle of fifths’ as different chords and keys are assessed. In order to help illustrate the categories that chords are placed in, colours will be used throughout.

Pitch	Degree	8 MAIN CHORD TYPES (check list)							
C	ROOT	Maj7	7	min7	min7(b5)	min/Maj7	Maj7(#5)	7(#5)	dim7
C#/Db	b2	Maj7	7	min7	min7(b5)	min/Maj7	Maj7(#5)	7(#5)	dim7
D	2	Maj7	7	min7	min7(b5)	min/Maj7	Maj7(#5)	7(#5)	dim7
D#/Eb	b3	Maj7	7	min7	min7(b5)	min/Maj7	Maj7(#5)	7(#5)	
E	3	Maj7	7	min7	min7(b5)	min/Maj7	Maj7(#5)	7(#5)	
F	4	Maj7	7	min7	min7(b5)	min/Maj7	Maj7(#5)	7(#5)	
F#/Gb	b5	Maj7	7	min7	min7(b5)	min/Maj7	Maj7(#5)	7(#5)	
G	5	Maj7	7	min7	min7(b5)	min/Maj7	Maj7(#5)	7(#5)	
G#/Ab	b6	Maj7	7	min7	min7(b5)	min/Maj7	Maj7(#5)	7(#5)	
A	6	Maj7	7	min7	min7(b5)	min/Maj7	Maj7(#5)	7(#5)	
A#/Bb	b7	Maj7	7	min7	min7(b5)	min/Maj7	Maj7(#5)	7(#5)	
B	7	Maj7	7	min7	min7(b5)	min/Maj7	Maj7(#5)	7(#5)	



The ‘chord check list’ presents the 8 main types of chords on each chromatic scale degree. As will be explained below, these chords can be extended with intervals such as 9^{ths}, 11^{ths} and 13^{ths} or reduced to just triads, depending on the composer’s choice. Therefore, the chord check list by no means represents all possible chords in regards to their extensions, or by how these extensions can be arranged, but is intended to encompass these possibilities. The choice of chords in the list is

based on the four main triads in tonal music, major, minor, diminished and augmented and the combinations of either a major or minor 7th added to them. These 7th chords, of which there are 87 in total, will be separated into five categories throughout this book.

The circle of fifths helps to illustrate the movements and locations of various keys of modulation in relation to the principle key. This means that a large proportion of non-diatonic chords will be related to a particular major scale on the circle of fifths while some will require the use of melodic, harmonic, diminished and whole tone scale to indicate where they can be derived. The idea of relating chords to major keys rather than deriving them from both major and minor keys may seem reductive but it has a long tradition in the theory of harmony and has been adopted by some of the leading musicians and music theorists. One of the most prominent among them was Arnold Schoenberg, who illustrates the benefits of relating harmonies back to their relative major scales by pointing out that 'the relative minor keys are… only special forms within the major keys' (1948, p. 154).

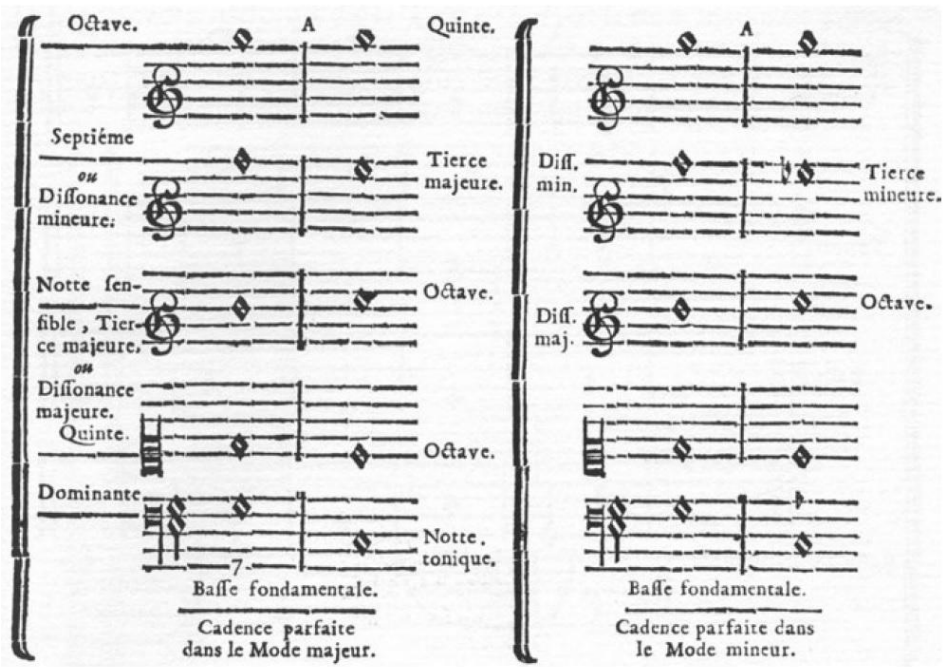
1.2. Perfect Cadence

It is apparent that particular chord progressions, and sometimes the paring of just two chords, have overwhelming popularity among composers. These progressions are often described as having strong tendencies to resolve. Undoubtedly, the most prominent chord

progression of tonal music is the perfect cadence. The perfect cadence consists of the Dominant (V chord) in a given key resolving to the Tonic, (I chord) and contains the interval, or movement, of a fifth between their roots, which when inverted, can be regarded as a fourth. In terms of root movement within in the bass, this interval has been recognised for centuries by theorists such as Jean-Philippe Rameau as playing an integral part in harmonic resolution and is, therefore, of fundamental importance for this book. Rameau emphasises the importance of the fifth for creating the sense of closure when he states: 'we need only consult on this point those who are at all sensitive to harmony. They can never hear the conclusion of any piece what so ever without feeling compelled to make the bass proceed by this interval' (1971, p. 60). Rameau's *Treatise on Harmony*, written in 1722, is one of the most influential writings in the history of western music theory and, from it, Rameau helped to establish the importance of the interval of a fifth through his research into the harmonic series. Here, he found that this interval was the first distinct interval generated through string division and reasoned that progression by a descending fifth (or ascending fourth) is the most natural progression (Chandler, 2007).

Harmonically, the perfect cadence also includes the leading tone (major third of the V chord) which has a tendency to resolve up a semitone to the root note of the Tonic chord, the fourth (♭7th of the Dominant chord) which has a tendency to resolve downwards to the 3rd of the Tonic

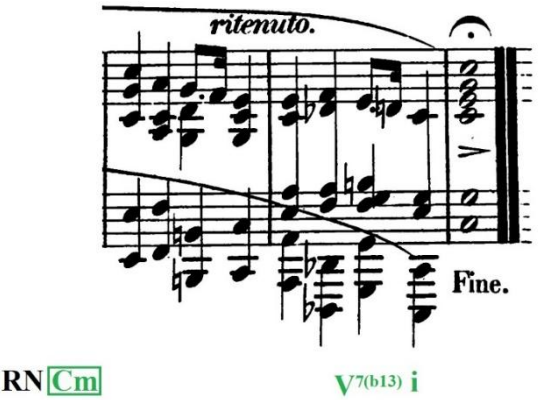
chord and the second (5th of the Dominant chord) which is often regarded as less essential, may resolve up or down a tone depending on how the cadence is voiced. The significance of these resolutions is outlined by Rameau (1722) as cited by Christensen (2008 p. 761) where he states: 'the progression is a dominant seventh progressing to the tonic by the fundamental motion of a perfect fifth… One of the dissonances is the seventh, which Rameau calls the minor dissonance… the other dissonance for Rameau is the leading tone, dubbed the major dissonance'. Example 1 shows Rameau's diagram of the perfect cadence.



Example 1. Perfect cadences in both the major and minor modes (Rameau, 1722, p. 66)

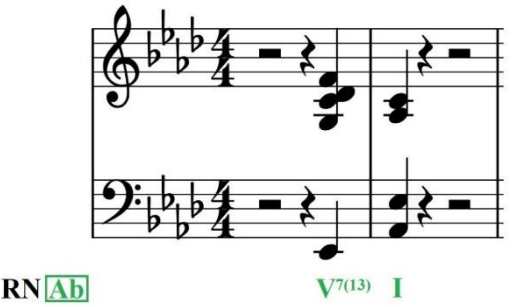
While the simplicity and economy of the voice leading that Rameau shows in his diagram is recognised, musical styles that deviate from his arrangement of the perfect cadence must also be considered in this book. This is because, as time has moved forward and new styles of music have emerged, new types of modulations have become accepted, modulations that will require a comparison to the perfect cadence for their explanations. This moves the emphasis of study on the identification of progressions, such as the perfect cadence, in whatever particular voicing they happen to occur.

Example 2, which is taken from Chopin's Prelude No. 20 in C minor, was composed around a century after Rameau. The descending bass movement by a 5th occurs in the same way as in Rameau's illustration but is doubled with an octave below it. Other differences are found in the V7 chord which contains a ♭13th in the top voice that descends to the root of the Tonic chord. The V7 chord also contains a root and a ♭7th which sit in close voicing under its 3rd, not a feature found in Rameau's cadence.



Example 2. Prelude Op. 28 No. 20 (Chopin, 1839)

Example 3 is taken from the score to the Jazz song ‘Fly me to the moon’ and is a reduced version. It shows not only more alterations in terms of arrangement, but also in terms of extension as it consists of E♭13 resolving to A♭maj.



Example 3. Fly me to the Moon, reduced. (Howard, 1954)

The tendency of chords will be discussed frequently throughout this book and as new chords are identified, the perfect cadence will always be used as a basis for justifying their proposed functions.

While considering the perfect cadence, the concept of ‘fragments’ will be introduced whose function is similar to ‘re-harmonisation’ and ‘chord substitution’. As the term suggests, a fragment is simply part of a chord but it contains enough information to perform the same function. A prime example of this would be the diminished 7th chord (dim7) and the half diminished 7th chord (min7(♭5)). In the progression G7 – C, the G7 may be replaced, or substituted with either Bdim7 or Bmin7(♭5). This is because the chord of G7 is only altered with the addition of either a 9th or ♭9th interval, meaning that Bdim7 would be functioning as a fragment of a G7(♭9) situation and Bmin7(♭5) would be functioning as a fragment of a G9 situation. As the role of the perfect cadence, chord substitution has long since been recognised by music theorists and it was advanced by Hugo Riemann. Riemann’s book, entitled *Harmony Simplified*, was written in 1896 and introduces a system of explaining both diatonic and non-diatonic chords. In this system, all chords are related to, substitutions of, either the Tonic (T), Subdominant (S) and the Dominant (D) of a given key (1896). In the next section, some comparisons are made between the categorisations of both the fragments just mentioned and examples of Riemann’s substitutions, but for now, it can be said that due to mainly stylistic reasons, his system arrives at a different model to the one proposed in this book. The reasons for this, which will become more apparent in the next section are because firstly, Riemann very rarely considers extensions beyond

the interval of a 7th which means that the majority of non-diatonic chords cannot be explained through majorization as there is not enough information to assign them to a major scale. Secondly, certain chord progressions such as CMaj7 – F#min7 for example are not considered by Riemann as they would simply not occur within the music of his time. This particular progression is discussed in chapter 2.

From the preceding discussion it follows that the perfect cadence can occur in many different ways: how it can be varied through its arrangement, how it may be extended diatonically and chromatically and how it may be implied through substitution. This leads to the inevitable question which is central to this book: How far can the perfect cadence be altered in comparison with Rameau's ideal model in order for it to still function as a cadence? This question has led to several propositions throughout this book which attempt to find this boundary.

1.3. Modulation

As this book will focus primarily on modulation, it is essential at this point to clarify its definition. Among the many text books available on this subject, the definition of modulation has been phrased in many ways and by many theorists. The following two statements have been used as examples as they consider both the duration of a modulation and the cadence of which a modulation requires. The first statement

gives a classical perspective while the second gives a more Jazz orientated one:

> A digression to another key is usually described as a modulation, but the word is used with different shades of meaning, and this can cause misunderstanding. It is better to think of modulation as a process by which one key may lead to another (Taylor, 1989, pp. 140-141).

> Modulations are changes of key. They may be as subtle as the brief suggestion of a new tonal centre, or as significant as the permanent established of a new key... To be considered a true modulation, the new key has to be verified by a cadence, typically involving I-V chord motion (Rawlins, R., Bahha, N. E. 2005, p. 90).

So, the agreed view seems to be that the term ‘modulation’ refers to, and is defined by, a change of key.