II. TRIADS (ROOT POSITION) AND TONALITY

Triad-Forms

The term "triad", properly speaking, ought to refer to any 3-member collection of pitches; in the theory of contemporary music it does, as "dyad" means any 2-pitch "chord", "tetrad" any four-pitch chord, etc. But in tonal theory "triad" means one of just four kinds of 3-pitch chords, built from superposed major and minor thirds:

> 1. mn 3rd + mn 3rd = diminished triad: the outer interval is a diminished 5th
> 2. mn 3rd + mj 3rd = minor triad: the outer interval is a perfect fifth
> 3. mj 3rd + mn 3rd = major triad: the outer interval is a perfect fifth
> 4. mj 3rd + mj 3rd = augmented triad: the outer interval is an augmented 5th
>
> These four types are illustrated in EX l.

The three pitches of a triad are referred to as root, third, and fifth, beginning with the lowest pitch when the triad is in its most compact arrangement. The designations do not change if we vertically re-arrange the chord in any way; they depend exclusively on the triad's pitch-content. If the bass of the chord changes, so that the 3rd is in the bass, we have a "6-3 chord", or "sixth chord"; if the 5th is in the bass, a "6-4 chord", but the root is still the root, the fifth is still the fifth. The numerical names derive from figured bass (Bc) notation, and we will discuss them later. What we study now are "root-position" triads, also known, from Bc practice, as "5-3 chords".

Major and minor triads are sometimes classed as "consonant", augmented and diminished as "dissonant". While it's true that augmented and diminished triads contain intervals that are dissonant in traditional counterpoint, it can occur that they are used like consonant chords (especially the diminished triad) without special restrictions on the voice leading. In addition, pitches in "consonant" chords will at times be treated like dissonances. It is recommended, then, that we retain the concept of consonant and dissonant intervals, especially with respect to the bass, but consonant and dissonant triads, as such, will not concern us much.

The fact that the first three pitches (neglecting octave multiples) of the overtone series form a major triad has inspired many attempts to "derive", in some sense, the major and minor triads from the series, along with the scales, the intervals, etc., in common use in European music. This was basically an attempt to show that Western tonal music is somehow "natural", i.e., flows in some way directly from mathematical acoustics. These attempts have not met with notable success: it's difficult, for example, to locate a minor scale or a minor triad conveniently in the overtone series, or to explain why a perfect fourth is treated at times as a contrapuntal dissonance.

> The German theorist Hugo Riemann (inspired by Giuseppe Tartini) "derived" the minor triad from an "undertone" series, that is, the integral division of a frequency, equivalent to the integral multiplication of a string or air-column length. The intervals produced are a mirror image of those in the overtone series: while a major triad has (in pure tuning) frequency ratios of 4:5:6, produced by strings of lengths proportional to 15:12:10 (= 1/4, 1/5, 1/6); the minor triad has frequency ratios 10:12:15, produced by

strings in proportions 6:5:4. This bit of arithmetic led Riemann to claim that the "real root" of a minor triad was its uppermost note.

Triads on the Scale-Degrees

A triad can obviously be built upon any pitch. The basic chords within a tonal piece will generally be triads built on the various scale-degrees, and they vary in sonority. In the major mode, the triads whose roots are the various degrees of the scale have these sonorities:

I	ii	iii	IV	V	vi	$_o$vii
(major)	(minor)	(minor)	(major)	(major)	(minor)	(diminished)

These are illustrated in EX 2.

Note the Roman numeral designation for triads, varying with the sonority:
     major triads: capital Roman number
     minor triads: small Roman number
     dimininished triads: small Roman, with $_o$ preceding
     augmented triads: capital Roman, with $_+$ preceding (see below in minor-key triads)

(There exist many ways of labeling chords, and not all of them indicate sonority.)

The triads on the scale-degrees using the <u>harmonic</u> minor pitches are:

i	$_o$ii	$_+$III	iv	V	VI	$_o$vii
(major)	(diminished)	(augmented)	(minor)	(major)	(major)	(diminished)

These are illustrated in EX 3; note the diminished triads on the 2° and the 7°, and the augmented triad on the 3°. These are basically the chords used in minor <u>where</u> <u>possible</u>; i.e., when the voice-leading does not demand otherwise.

If, for voice-leading purposes, we also use the raised 6° and lowered 7° from <u>melodic</u> minor, additional chords will occur:

	ii	III	IV	v	$_o$↑vi	↓VII
	(minor)	(major)	(major)	(minor)	(diminished)	(major)

These can be seen in EX 4.

Once again, notice the notation: in the minor mode, the pitches of the harmonic minor are taken as the norm; the raised 6° and lowered 7° are considered "altered tones", thus the ↑ in the $_o$↑vi and the ↓ in the ↓VII. Similarly in major, when chords are built on the lowered 6°, 7°, or 3°, they will be marked ↓VI, ↓VII, and ↓III.

     There are many other alterations possible in chords, and there exist several ways to notate them in harmonic analysis. The subdominant in minor using the raised 6°, a major triad, is often marked IV♯, IV♯3,

IV+3, IV♭, etc. These signs again derive from Bc practice, which marks alterations in terms of degrees above the bass note (♯ means sharp the third above the bass, 6 means sharp the 6th above the bass). Similarly, a supertonic triad using the raised 6° would be marked ii♯5 or ii♮5.   But this kind of notation is redundant, if we are indicating chord sonority by other means: if the subdominant in a minor context is marked with a capital Roman number, the triad is major, and so the 6° is *necessarily* raised. Of course, if the root-notation does not indicate sonority, then the alterations should be shown by number. To repeat, this is the system used in many harmonic analyses; but in the notation system being used here, you must attend to the Roman numeral forms.

Most of the chords in minor using the raised 6° or lowered 7° are employed, in the 18th century, only when the voice-leading in one of the outer parts requires it; that is, when the soprano or bass uses one of the melodic-minor variants of the upper scalar tetrachord. The minor dominant, for example, occurs as a voice-leading chord in EX 7. (When composers began to avoid the leading tone, in the late 19th century, the v-chord began to appear as a dominant: EXX 5-6.)

The III chord, however, is an exception: it is more commonly used than its counterpart, the augmented +III. The latter chord is almost always treated as a dissonance, and can usually be considered an incidental chord formed by non-harmonic tones: EX 8. The major III, on the other hand, is used quite carefully in minor, because it forms a very strong secondary tonal center - it has a way of taking over the other chords in the key, sounding itself like the real tonic. Many of the chords in minor can also be heard as chords in the key of the relative major, and frequently passages with III are interpretable either in the relative minor, or relative major: EX 9. The III can also be used as a result of melodic-minor voice-leading: EX 10.

As in EX 9, ↓VII is usually found preceding the III, acting as its dominant, a "secondary dominant" with respect to the original minor key. But it too can be used otherwise, when the voice-leading requires it: EX 11.

To summarize: the most characteristic triads of the minor mode are:
           i   ₀ii   (III)   iv   V   VI   ₀vii

Primary and Secondary Triads

In both major and minor, the tonic, subdominant, and dominant (I, IV, and V; or i, iv, and V) are known as the *primary* triads; the others as secondary. This is because much tonal music, of the Classic period in particular, relies heavily on these three chords for harmonizing a melody, and when other chords occur they are frequently explainable as passing chords or incidental harmonies, and feel (in some undefined way) like "substitutes" for the primary chords. The supertonic often occurs in the same context as IV, the submediant frequently substitutes for I, and the ₀vii (and less often the iii) for the dominant. (Notice that these "substitutes" share two pitches with the primary triads with which they are associated.)

I, IV, and V have roots a 5th apart, enclosing the tonic on the circle of fifths, and among them these three chords contain all the notes of the scale with minimum overlap, and so unambiguously define the key. These facts probably have something to do with their predominance and prominence in common-practice tonal music. Another important aspect of this is the salient use of the V-I cadence, a progression that allows a stepwise approach to the

tonic from both directions: EX 12. (Other ways of harmonizing this tonic approach, shown in EX 13, were common at various times prior to the common-practice period.)

There are some systems of harmonic analysis (again, stemming from H. Riemann) that analyze every chord as some kind of "substitute" tonic, subdominant, or dominant chord. These are said to be the three main "functions" in "functional" tonality, but I feel the word "function" is abused in such a usage. One can ask of a carburetor, or a pancreas, "what is its function?", because they are elements in a system of differentiated components with a clearly-specifiable aim, locomotion in the one case and digestion in the other. But chords do not form such a system. One might be able to ask of melody, or a meter, or harmony as a whole, "what is its function", but even then the question could be answered only be reference to some single overriding musical purpose, something usually quite difficult to identify. The sensible question to ask of chords is not "what is their function", but rather "where do which chords occur, and where do they not?"

It should be obvious that any use of the word "function" in its rigorous mathematical sense in this context is yet further off the mark.

Examples, Chapter II

EX 1

diminished   minor   major   augmented

EX 2

major triads

I   ii   iii   IV   V   vi   ₒvii

minor triads   diminished

EX 3

i   ₒii   ₊III   iv   V   VI   ₒvii

augmented   major triads

EX 4

ii   III   IV   v   ₒ↑vi   ↓VII

minor triads   diminished

EX 5 — Vaughan-Williams, Mass in G

EX 6 — Ravel, Menuet antique

EX 7 — Bach, "Jesu meine Freude" (BH 196)

In citations of Bach chorales in these examples, the "BH" numeral refers to the collection of 389 chorales edited by B.F. Richter and first published (Breitkopf und Härtel) in 1898, and often since reprinted.

e: i v⁶ iv⁶ VI⁶₄ øii⁶₅ V⁷ i

EX 8 — BH 6

g: V ₊III⁶ ⁶₄ V⁴₂ i⁶ i V⁶

EX 9 — BH 11

a: i V⁶ i i i ↓VII III III
C: vi vi V I I

EX 10

d: i III iv V

EX 11

d: i⁶ ↓VII⁶ VI⁶ V⁶ i

EX 12

EX 13