

A Brief History of Modulation Theory



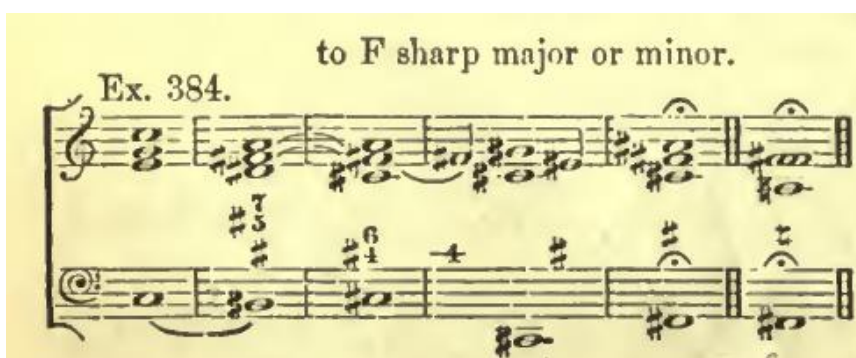
Introduction

If you are a tonal composer, you probably did your harmony and counterpoint up to a certain point, then stopped. And you might have been tempted (as I'm afraid I was) to skip over some of the exercises on modulation. There are so many keys to modulate to (23 if you count some as enharmonically equivalent), and the abstract nature of such exercises, divorced as they are from any real musical context, always feels so unexciting compared to the amazing key changes you find in Schubert. Hindemith thought it was absurd to isolate modulation from real music, but conceded it as being a necessary evil for analysis. This blog looks a little into the way modulation is taught, the history behind it and some different theoretical underpinnings.

The way it's taught

Most harmonic treatises talk about the mechanics of shifting from one tonal centre to another; effectively changing one set of notes to a second set with a fresh centre of gravity – the new tonic. This usually involves getting to the dominant of the second key by way of chords common to both tonalities (if not too distant) or chromatic chords, such as diminished sevenths or augmented sixths.

Kirnberger, Albrechtsberger, Sechter, Durand, Reger, Schoenberg, Higgs: all these gents (and many more) outline amazingly unexciting but 'correct' approaches to a second key. It's useful to know a bit about these fairly boring harmonic progressions, because they do manage to arrive solidly at all possible new keys. And they're only boring because they are abstracted from any meaningful musical context, using a four-part chorale texture with none of the practised artistry of J.S. Bach. Here's an early example by Beethoven's teacher Johann Georg Albrechtsberger (1736–1809), from his *Methods of Harmony, Figured Bass and Composition* (1790):



And for a British update of that, with some snappier turnover times (if not hugely convincing), here's James Higgs' *Modulation* of 1890:

C TO F# (Gb).

The image shows two musical staves illustrating a modulation from C major to F# major (Gb major). The left staff shows the flat 2nd (Neapolitan 6th) chord of the new key, and the right staff shows the dominant triad of the new key. The notation includes various accidentals and clefs.

Flat 2nd (Neapolitan 6th) quitted as dominant of new key.

Dominant triad quitted as that on flat 2nd of new key.

Simon Sechter (1788–1867), the most important Viennese theorist of the nineteenth century (and erstwhile student of Salieri), wrote *Die Grundsätze der musikalischen Komposition* around 1853. It was a major influence on his student Bruckner, who built on it in his own teaching. That in turn influenced Arnold Schoenberg, whose teaching spread into the USA when he was domiciled there.

You can see from the following example of modulation how Sechter would use intermediate keys, favouring root progressions by fifths and fourths:



This is an example of *Stufentheorie* (theory of degrees), where each note of the scale has an independent function and uses roman numerals. Descending fifth progressions are commonplace. The origin of this lies in Rameau's fundamental bass theory, which emphasised root movements by fifths, fourths and thirds (but did not recognise seconds, which led to some strange compensating convolutions). This eighteenth-century attitude ultimately restricted Sechter, who tried to interpret chromatic relations as extensions of diatonic procedures.

Max Reger (1873–1916), on the other hand, was not so restricted and seemed to prefer shorter routes in his book *Modulation*:



In fact, some so short, that he never really left, in the following example, C major to B $\sharp$ major!



Very Buddhist! (Not stepping into the same river twice, or that you cannot truly leave home?)

Two philosophies

There are two different ways of thinking that emerge from some of the examples above. One is the theory of fundamental bass progression pioneered by Rameau. This essentially takes the chord as the starting point and regards root position chords and their inversions as functionally equivalent. The other is the older figured bass theory, a more linear and contrapuntal approach that the Austrian Albrechtsberger espoused, which isolated Vienna a bit longer from the more chord-oriented developments of France and Germany. If you look at the Albrechtsberger example above, you can perhaps see how it is more contrapuntal in concept and less 'chordal' than the others. It's a subtle distinction which is not easy to grasp at first, but the figured bass concept is essentially intervallic and linear, not chordal, even though chords do emerge from the movement of voices! It's important to remember that the figures (such as 7 or 4, or #4) do imply linear movement to resolution, not just vertical entities, and there's the subtlety. But it is very cumbersome when it comes to modulating to remote tonalities – the figures have to take on many accidentals, and it wasn't designed for that.

A slightly earlier theorist based in Germany, Johann Kirnberger (1721–83), had studied directly with J.S. Bach but was also aware of Rameau's theories. Bach was firmly against Rameau's oversimplification of harmony. But Kirnberger's theory started moving towards a fusion of the two strands of thought, chordal primacy and figured-bass theory. Rameau's thinking was propagated in Germany much more by Friedrich Wilhelm Marpurg (1718–95) and the controversial but very interesting Abbé Georg Joseph Vogler (1749–1814), who lived in Vienna.

Abbé Vogler

Vogler was unusual, because he saw the chromatic scale as a sort of master scale, unlike other theorists who only recognised the diatonic scale as their starting point. He was one of the first to use roman numerals, recognising discords of the seventh, ninth, eleventh and thirteenth chords on all degrees. This put him way ahead of his time, theoretically, but his system was ignored until many years later. Although Vogler was much derided by Mozart, Beethoven took him seriously enough to write two pieces inspired by the modulation theories (Two Preludes, Op. 39). These pieces modulate through all 12 major keys through the entire circle of fifths. Vogler's *Kürpfälzische Tonschule* (1776/8), a book of musical patterns, would have been the inspiration behind this. The example below shows Vogler doing brief modulations (Ausweichungen) from C major (vom harten C):

Ausweichungen
vom harten C

Tab. XXIII

ins harte Des. ins weiche Cis. h. D. w. D. Es. w. Es. h. E.

1 w. E. 2 h. F. 3 w. F. 4 h. Fis. 5 w. Fis. 6 h. G. 7 w. G.

8 h. As. 9 w. As. 10 h. A. 11 w. A. 12 h. B. 13 w. B.

15 h. H. 16 w. H. 17 h. H. 18 w. H. 19 h. B. 20 w. B.

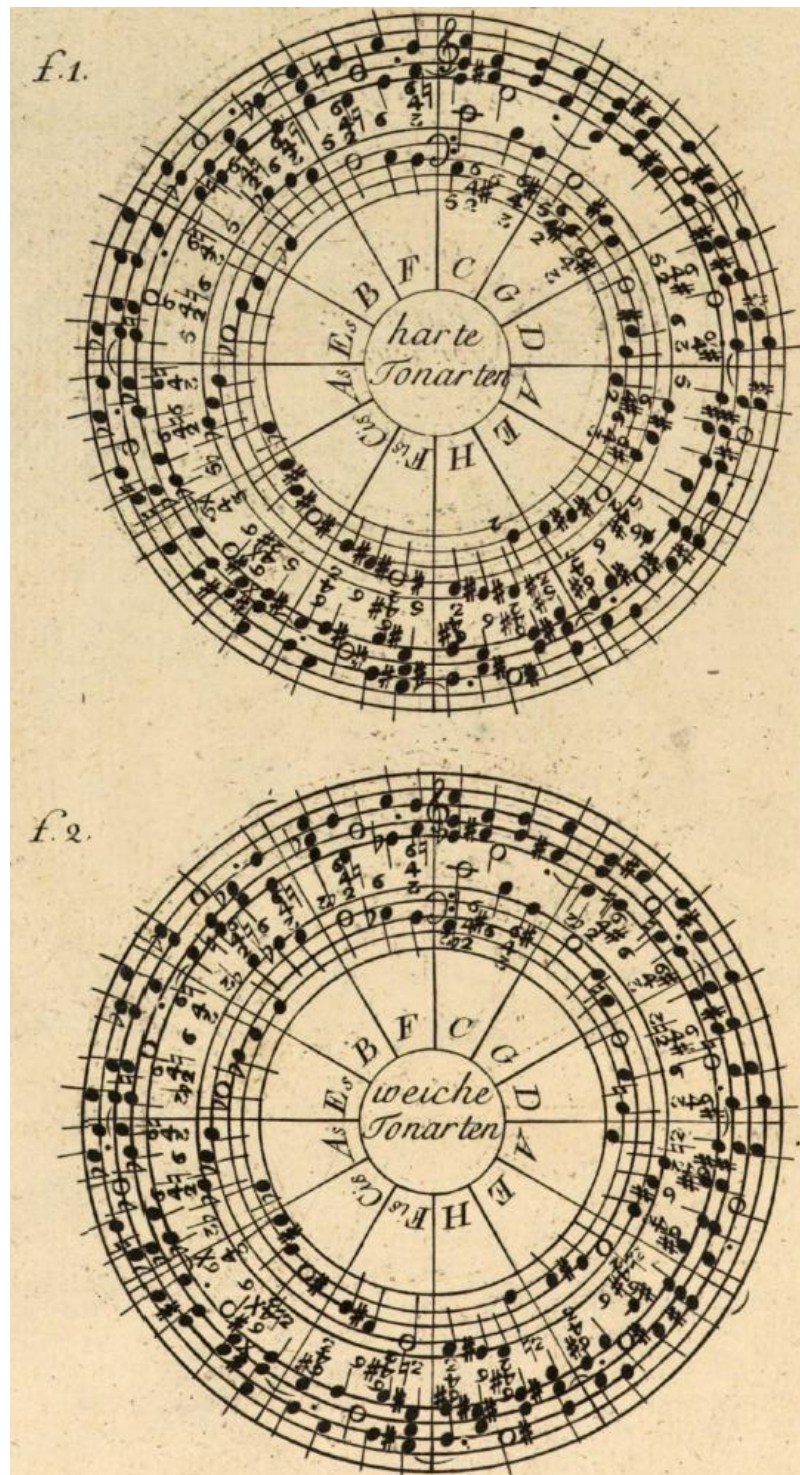
21 h. D. 22 w. D. 23 h. Es. 24 w. Es. 25 h. E. 26 w. E.

27 h. F. 28 w. F. 29 h. Fis. 30 w. Fis. 31 h. G. 32 w. G.

33 h. As. 34 w. As. 35 h. A. 36 w. A. 37 h. B. 38 w. B.

39 h. B. 40 w. B. 41 h. H. 42 w. H. 43 h. A. 44 w. A.

and using actual circle diagrams to go round all the fifths (but don't strain your neck looking at this):



Semitonal voice-leading

Another intriguing theorist was Johann Bernhard Logier (1777–1846), a German based in Ireland, whose work *System of the Science of Music, Harmony and Practical Composition* of 1827 was dedicated to George IV. The English monarch may not have found it all that useful. But someone who certainly did find it useful was the teenage Wagner. Logier seems to be more linear in some of his approaches to modulation, and it's not hard to see how Wagner would have absorbed this semitonal thinking from the get-go:

Equivocal Modulation by the Compounded Sharp Sixth $\frac{6}{5}$.

This chord is another powerful agent, which may be employed with great effect in producing an equivocal modulation.

If we lower the bass of any inversion of the chord of the minor 9th a *minor semitone*, the chord of the $\frac{6}{5}$ will be produced, after which we can modulate as already explained in Examples 202 to 204.

N.B. We must be careful not to mistake *this* chord for one of those just described in Example 291 ; because the note which was there lowered became a *dominant* ; whereas, in the present case, it becomes a false 5th, and (being the bass) is the second inversion of the dominant chord.

In the following Example (at bar 2), is the first inversion of the minor 9th. The bass being thus lowered (at 3) a semitone, the $\frac{6}{5}$ is produced, and thus instead of modulating to *A minor*, we modulate (at 4) to *F# major*.

293.

Notice how Logier's starting point for modulation looks very like voice-leading (read his second paragraph), rather than Sechter's root progressions by fifths or the later Reger's somewhat abrupt and sickening lurches into the new (or same!) key. The use of the augmented sixth chord brings Logier closer to Schubert's methods of modulation, which I will look into in the next blog. But for now, it is interesting to notice how movement by a semitone from the diminished seventh leads to an augmented sixth chord, itself only a semitone away from F# major, give or take some nifty avoidance of parallel fifths! (Strictly speaking, I

think that's really chord V of B major if you accept that augmented 6ths should resolve onto dominants, but don't say anything...)

Here's another example of Logier's semitonal voice-leading, which looks like a longer version of Reger's journey back to the starting point:

PROTRACTED MODULATION. 229

The following Example shews another kind of protracted modulation, by which the inverted bass is enabled to descend by semitones through the whole octave.

The musical score consists of two systems of staves. The first system contains measures 1 through 6, and the second system contains measures 7 through 12. Each measure features a treble staff with a continuous sixteenth-note pattern and a bass staff with a single note. The bass notes descend by semitones from G4 in measure 1 to C3 in measure 12. Fingering numbers (1-5) are provided for the treble staff, and figured bass notation (e.g., 6, 4, 2, b7, b5, 6, b6, 7, 5, 4, 7, 4, 3) is provided for the bass staff. A circled 'a' appears under the bass staff in measures 6 and 9.

But this is more like a prolongation of C than a protracted modulation. More on that in the next blog.

Enharmonic equivalence

Enharmonic equivalence is the useful device for respelling an accidental to nudge closer to the new key. Organist and Royal College of Music harmony professor James Higgs (1829–1902) shows augmented sixths being re-spelt as dominant sevenths in his *Modulation* of 1890:

It remains to notice the enharmonic change of the augmented 6th into the minor 7th, or conversely, the change of a minor 7th into an augmented 6th. The seat of the augmented 6th is upon the sixth degree of a minor key, or on the flattened 6th of the major key, or upon the flat 2nd of the scale; when changed into a 7th, such 7th may be either dominant, supertonic, or tonic of the new key:—

Ex. 56.

The example shows three short musical phrases, each with a treble and bass staff. (a) shows an augmented 6th (F#4-Bb4) changing to a dominant 7th (F#4-Gb4). (b) shows an augmented 6th (F#4-Bb4) changing to a supertonic 7th (F#4-Gb4). (c) shows an augmented 6th (F#4-Bb4) changing to a tonic 7th (F#4-Gb4).

- (a) Augmented 6th becomes dominant 7th of new key.
- (b) Augmented 6th becomes supertonic 7th of new key.
- (c) Augmented 6th becomes tonic 7th of new key.

He then somewhat lavishly treats us to a highly detailed breakdown of different spellings and functions of the same diminished seventh chord:

It is worthy of notice that there are only three essential varieties of this chord on a pianoforte or other keyed instrument, as the following example will make plain :—

Ex. 47. 

It will be seen that the chords written in semibreves ascend semitonically, and that the first inversions of each of these chords continue the ascent, and the second inversions still carry through the process, which may be prolonged through the whole compass of the keyboard.

The three chords given above may be expressed in no less than sixty varieties of notation, having regard to the variety of accidental required, according to key, position, and mode.

The first of the above chords, as :—

Ex. 48. DOMINANT. SUPERTONIC. TONIC.



It will be observed the above table contains twenty-four varieties of notation, but the third and sixth of each set are identical, so there are twenty varied notations of the first chord. There will, of course, be the same for each of the other original chords, making sixty varieties of notation for the three chords. These, may, under suitable circumstances, be interchangeable one for the other. The combination taken, say as a diminished 7th on the leading note of C major, may be quitted as either of the other twenty-three chords.

The immense power of the diminished 7th, as a modulating chord, is due to the fact that every possible dominant, supertonic or tonic, is either already a note present in the chord, or, at most, may be reached by upward or downward semitonic movement of one or other of its notes.

Higgs later furnishes many examples of modulation in action from actual music, an enlightened approach that Hindemith would surely have approved of. (Walter Piston does the same in his excellent *Harmony* of 1941.)

Moving on into the twentieth century to Schoenberg's gargantuan and very wordy *Harmonielehre* (1911), you can see how this Viennese pedagogue embraced and extended the harmonic approach passed on by Bruckner. He uses the circle of fifths to activate his modulation schemes using intermediate keys. In the example below Schoenberg

progresses from C via the third circle of fifths to A (f# minor) then to the third circle of A, F# major:



And if you thought that journey was long enough, witness this extraordinary peregrination between C and C#:



There's more than a hint of *Gurrelieder* and Wagner there!

But why not just do what Schubert does in the third of his *Drei Klavierstücke*, D. 946?



I think that took him two chords (moving up by semitones), as opposed to Schoenberg's 39 or so?

In the next blog, I will be looking at different ways of applying the idea of changing keys, which don't necessarily use the theoretical elaborations of modulation to such ends.

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