
Macro Analysis and the I - V - I Tonal Axis

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The I - V - I tonal axis—harmonic motion beginning on tonic, moving to the dominant, and returning to tonic—provides the basic tonal framework for much of the music composed during the common practice period. Helping performers recognize this framework through analysis is one of the most useful skills the study of music theory has to offer. It allows them to identify goals (cadences) and to gain insights into musical architecture (phrases, periods, small and large forms).

Traditional macro analysis is well suited to this type of structural analysis with two small but significant modifications (the following examples are in C major):

1. It is necessary to distinguish between those circle progressions leading toward the tonic and those leading toward the dominant. Only circle motion leading directly to the tonic is indicated with the traditional slur below the letter names: $G \underset{\curvearrowright}{C}$. All other circle progressions are regarded as motion toward the dominant and are indicated with slurs above the letter names: $a \frown d \frown G$.
2. Half and authentic cadences are labeled by adding arrowheads to the slurs at the point which they occur. Thus in C major, a half cadence would be notated: $d \frown G$, an authentic cadence: $G \underset{\curvearrowright}{C}$.

The following excerpt from Mozart's Piano Sonata, K. 545, III, is analyzed first using traditional macro techniques and then using the modified approach described above:

Traditional Macro Analysis

1 2 3 4
 C⁶ a d⁶ G C⁶ d⁶ G C⁶

5 6 7 8
 a d G a⁶ d⁶ G⁷ C

Modified Macro Analysis

1 2 3 4
 C⁶ a d⁶ G C⁶ d⁶ G C⁶

5 6 7 8
 a d G a⁶ d⁶ G⁷ C

Example 1. Mozart, Piano Sonata, K. 545, III, mm. 1–8.

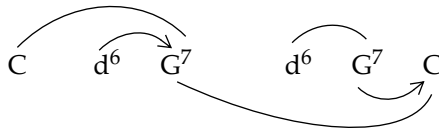
Both analytical approaches show Mozart's frequent use of circle progressions and the harmonic connections they create. Notice however that the modified version also makes the subtle distinction between the two types of circle progressions, and more importantly clearly indicates the half cadence which occurs in m. 4 and the authentic cadence which occurs in m. 8.

Cadence identification can sometimes be a challenge for less experienced music analysts. To assist in the process, I offer the following guidelines and suggestions:

1. An authentic cadence almost always consists of a root position dominant chord followed by a root position tonic chord. (A leading-tone chord will occasionally substitute for the dominant and either chord may be inverted, but it is rare). A half cadence consists of a root position dominant chord preceded by any one of several possible dominant preparation chords, which may occur in any inversion. The search for cadences should therefore begin with a search for root position tonic and dominant chords.
2. Cadences are arrival points in music, and other musical elements, in particular melody and rhythm, will reinforce (or deny) this sense of arrival. Determining if and when arrival occurs is the most subjective aspect of cadential analysis, and experience (and the guidance of an experienced analyst) will be your best guide. It is important to remember, however, that not every root position tonic or dominant chord is part of a cadence.
3. As a helpful hint—when a melody “starts over” (as with the pickups to m. 5 in the previous example), what immediately precedes the starting over is almost always a cadence.

Point three above is critical to understanding cadences and musical architecture. Cadences are points of arrival, not departure. That is why m. 4 in the above example is analyzed as having a half cadence on the beat one rather than an authentic cadence on beat two. The melody starting over on beat two is a point of departure and therefore what precedes it is the cadence. Note too that in the modified macro analysis above there is no slur between the G and C chords in m. 4, although a circle relationship would appear to exist between them. Including a slur in this situation would contradict and diminish the sense of arrival on beat one. More significantly, it would suggest a premature resolution to tonic of the motion toward the dominant which motivates the first phrase, a resolution which is actually withheld until the authentic cadence in m. 8, unifying the two phrases.

The following cadential framework diagram summarizes the architecture of mm. 1–8:



Cadential framework diagrams are created by extracting from an excerpt (or full piece): (1) the initial chord, (2) all cadential chords, (3) those chords connected to cadences by circle progression, and (4) the appropriate slurs connecting the extracted chords. The final step is to add two additional slurs—one above indicating the large-scale harmonic motion from tonic to dominant in the first portion of the I - V - I tonal axis, and one below showing the return to tonic in the second portion.

This particular diagram depicts a parallel period with a first phrase ending with a half cadence and second phrase ending with an authentic cadence. The second “large” slur indicates that the authentic cadence at the end of the excerpt provides closure not only to the second phrase, but also resolves the dominant chord which was left unresolved in m. 4, thereby unifying the two phrases into one clearly perceived period. Herein lies one of the most important benefits of this particular analytical approach. It not only highlights cadences and the sections they define, it also simply and clearly reveals how these sections are unified into a coherent and easily perceived whole based on the I - V - I tonal axis.

This second example, the theme from Mozart’s Piano Sonata in D major, K. 284, III, includes modulation, secondary dominant chords, and a more complex architecture:

The musical score for Example 2, Mozart's Piano Sonata, K. 284, III, mm. 1-17, is presented in two systems. The first system covers measures 1-4, and the second system covers measures 5-8. The key signature is D major (two sharps) and the time signature is 3/4. The score includes dynamic markings *p* (piano) and *f* (forte). Chord diagrams are provided below the bass staff, with slurs indicating harmonic structure. The first system shows a half cadence at the end of measure 4. The second system shows an authentic cadence at the end of measure 8. The chord diagrams are: D, b, e⁶, A⁷ (first system); D, e⁶, A⁴ _{6 5}, D⁶, b⁶ (second system).

Example 2. Mozart, Piano Sonata, K. 284, III, mm. 1–17.

6 *p* *p*

7

8

9 *p* *f* *p*

10 *f*

11 *p*

12 *f*

13 *f*

14 *f*

15 *p* *p* *f*

16 *f*

17

E⁷ $\frac{6}{5}$ A b^6 E₄ $\frac{7}{5}$ $\frac{6}{3}$ A₄ $\frac{9}{8}$ $\frac{8}{3}$

B⁷ E A⁷ D *b* e⁶ A₅⁶ D A⁶ g^{#06}

A₄ $\frac{6}{5}$ $\frac{5}{3}$ D *b*

e⁶ A⁷ D e⁶ A₄ $\frac{7}{5}$ $\frac{6}{3}$ D₄ $\frac{9}{8}$ $\frac{8}{3}$

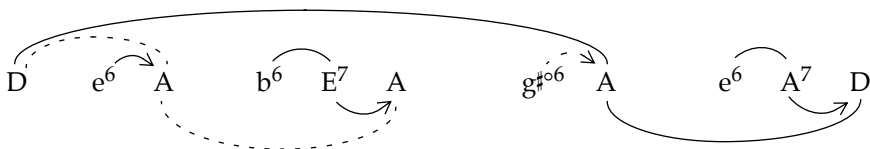
Example 2, continued.

This excerpt provides a “textbook” example of rounded binary form. It is in two sections, the first harmonically open, the second harmonically closed, and the final few measures mark the clear return of the thematic materials heard at the opening.

Notice that when the modulation from D major to A major occurs in mm. 5–8, the slurs are repositioned to reflect the new key. One of the advantages of this modified approach to macro analysis is that it is possible to look at a completed analysis and very quickly identify the prevailing tonic at any given moment. Note too that the secondary dominant chords in m. 9 and the secondary leading-tone chord connecting mm. 11 and 12 are each notated as dominant preparation chords with their slurs placed above the letters. In the modified macro approach this manner of notation applies to all secondary dominants, not just the V of V or vii° of V. As in traditional macro analysis, the “dashed” slur is used to denote the leading-tone chord substitution for the dominant. Finally, note again that the apparent circle progressions between chords in mm. 4–5 and mm. 12–14, occurring as they do at points of melodic restatement (“starting over”), do not receive slurs for the reasons stated earlier. As expected, each is immediately preceded by a cadence.

One additional suggestion: in an example such as this which includes modulation and chromatic chords, less experienced analysts may find it easier to first label each chord, next identify the cadences (and in so doing determine the key and any key changes), and then complete the analysis by adding the appropriate slurs and arrows.

As in the previous example, the creation of a cadential framework diagram highlights cadences and the sections they define, and reveals how these sections form a unified whole through the influence of the I - V - I tonal axis. The two “long-dashed” slurs in the first portion of the diagram represent the modulating parallel period which occurs in m. 1–8.



It is important to note that in music which includes modulation, the dominant chord of the I - V - I tonal axis will always be a dominant chord in the home key and not a tonic chord in the dominant key, for it is the perception of a large-scale I - V - I progression in a single overriding key which creates harmonic unity. For that reason, the authentic cadence in A major in m. 8 is structurally significant in delineating the rounded binary form, but harmonically subordinate to the half cadence which follows in m. 12 because it lies outside of the I - V - I tonal axis. That is not to say that the authentic cadence is unimportant or even less important than the half cadence, but rather it demonstrates the complex nature of tonal music and the frequent occurrence of simultaneous and sometimes unaligned organizational processes. It may be interesting for the reader to

consider if and how these subtle structural distinctions could be communicated in performance.

An additional parallel, alluded to earlier, exists between these two examples: each could be described as being organized on the principle of “resolution withheld/resolution achieved.”

In the first example, mm. 1–4 represent motion through an incomplete I - V - I tonal axis, reaching a moment of repose without resolution at the half cadence in m. 4. Measures 5–8 then retrace the steps of mm. 1–4 but this time complete the tonal axis and achieve a satisfying resolution with the authentic cadence in m. 8.

A similar pattern with elaborations occurs in the second example. Again, mm. 1–4 represent motion through an incomplete I - V - I tonal axis, reaching a moment of repose without resolution at the half cadence in m. 4. The next four measures mark a “detour,” if you will, to A major, which are then followed by the return of D major after the double bar and eventually the return of the half cadence in m. 12. As in the previous example, the final four measures retrace the steps of mm. 1–4 but this time complete the tonal axis and achieve resolution with the authentic cadence in m. 17.

This principle of resolution withheld/resolution achieved, derived from the I - V - I tonal axis, has a powerful and satisfying psychological effect. It lies at the heart of much of the music from the common practice era and is perhaps one of the reasons why music of this era remains so popular with performers and listeners. It exists not only in periods built on the antecedent/consequent model, but also in many binary and rounded binary form pieces (and sections), as well as sonatina and sonata form movements. Additional examples of this principle will be discussed in part two of this article in a future issue of *Musical Insights*.

Finally, it should be emphasized that none of the observations in this article are intended to suggest that a prescribed set of interpretive choices exists for these (or any) pieces. Rather, it is hoped that they will inform the performer’s intuition and pose questions to each individual musician which ultimately will be answered not through discourse but through performance itself.

