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Harmonic Syntax and Vocabulary in Tonal Music

ABSTRACT

Background

One of the most important principles of tonal theory is that of harmonic syntax. This principle contains the norms of precise logical order in the succession of harmonic functions or chords in any harmonic progression in tonal music (Riemann 1893; Caplin 1998; Schenker 1954; Cadwallader and Gagne 1998; Aldwell, Schachter, and Cadwallader 2011). Such norms are shaped and determined by the frequency of specific harmonic progressions, which generate expectations in the listener acquainted with Western Classical tonal music; if the progression of chords tonic-dominant, for instance, is more common than the progressions tonic-subdominant and tonic-submediant, every occurrence of the tonic chord will generate the expectation of dominant rather than subdominant or submediant harmony. Tonal harmonic syntax is characterised by the distinct syntactical tendencies of each chord, determined principally by fifth and ascending-step (or half-step) root progressions.

Aims and Repertoire Studied

This work here presented aims at the construction of the concept of chordal syntax in non-modulatory harmonic phrases and at the recognition of both the essential harmonic relationships and basic chordal vocabulary that shape tonality.

Being that Bach's 371 four-part chorales (Bach 1966) are the archetype repertoire usually used to teach tonal harmony to young musicians, the analysis of this repertoire becomes relevant. For this purpose, a selection of 254 non-modulatory harmonic phrases — that started, remained, and closed with an Authentic or Half cadence in the same key — from chorales 1–9, 12–15, 18–42, 44, 45, 47–50, 52–55, 57, 59, and 60, was analysed. 153 phrases expressed some major key while the other 101 phrases expressed some minor key.

Methods

The work consists of two stages that required each a specific methodology. The first stage consisted of the realisation of the harmonic analyses and the subsequent production of the information while the second stage consisted of the organization and analysis of data.

For the realization of the harmonic analysis the following theoretical principles were considered: assumption that ninths, elevenths, and thirteenths have no harmonic significance in this repertoire (Aldwell, Schachter, and Cadwallader 2011); recognition of essential and non-essential dissonances (Kirnberger 1982; Caplin 1984b); the existence of only Authentic and Half cadences (Caplin 1998; Caplin 2004); recognition of the relationship between harmony and metre (Hauptmann 1888; Caplin 1980; Caplin 1984a; Caplin 2002); acceptance of the cadential six-four chord as one form of dominant chord (Schenker 1954; Aldwell, Schachter, and Cadwallader 2011; Beach 1990; Cadwallader 1992); recognition of the three possible scales in minor keys and all their possible diatonic chords; and assuming chordal repetition as a syntactical option when moving the bass and/or adding a seventh.

For the compilation and organisation of the information produced by the harmonic analysis of the repertoire, the mathematical model Markov chain was applied (Shannon 1948). In this model the probabilities of each future event in a chain of events depends only on its immediate previous event, limiting thus the role of indeterminacy and ignoring the events that occurred in the past, previous to the present state. The result of applying this model is a list of pairs of events, the 'present' and the 'possible future', that constitute the entire chain. In our specific case, the harmonic progression of each harmonic phrase is considered to be a chain of events, made up of chords or harmonies from which the information about the probability distribution was extracted, in order to have the statistical ground on which the process has to base on. Thus the model produces a list of two-chord progressions correlated with the number of times it occurred all along the harmonic progressions.

Implications

The results of this work suggest that despite each chord has its own particular syntactical distribution of harmonic goals and root progressions, some general syntactical tendencies can be acknowledged; although the harmonic grammar used can be highly varied in this repertoire, the core of the tonality is constituted by the harmonic interrelation between the functions of tonic and dominant; and notwithstanding all chords may occur in all their possible chordal configurations, the essence of tonal vocabulary is the simple triad, in root position or in first inversion.

First. Most diatonic chords present a prominent syntactical tendency although every chord has a distinct syntactical distribution. The level of prominence of such tendency varies depending on the chord being analysed. At one extreme there are those chords that present one syntactical goal as its only meaningful harmonic progression; such are the cases of dominant and leading tone chords in both major and minor keys. For dominant chords, the tonic chord is by far the most important goal while, for leading tone chords, the tonic is not just the most important but signifies practically the only goal. The other two similar cases are the diminished supertonic and the subtonic in minor keys; both chords present the dominant and the major mediant chords respectively as almost their only goals since other chords are syntactically scarce. At the other extreme there are those chords that present not one but two prominent tendencies, such as the tonic chord in mayor keys; this chord has the dominant and subdominant chords as its most important tendencies, followed by its own repetition and the

progression to the supertonic chord. In between we find all the rest of the chords in which the most important harmonic tendency is not far from the other tendencies, however the main tendency is clear. Thus in major keys, supertonic and subdominant chords tend to progress to dominant while the mediant tends to subdominant harmony. In minor keys, the minor subdominant tends to dominant while the major subdominant tends to the leading tone; the submediant tends to the diminished supertonic while the diminished superdominant presents the dominant as its principal tendency.

Exceptions are the submediant chord in major keys, the major mediant and the minor dominant in minor keys. These three cases present an even syntactical distribution with no one clear syntactical tendency. For instance, the submediant chord can equally progress to the supertonic, the subdominant, the dominant, or the leading tone. In minor the major mediant presents a wide variety of options as it can indistinctly repeat itself or progress to the submediant, both minor and major subdominants, and to the subtonic; other possible tendencies are the tonic and the leading tone chords.

If root progressions are observed, the analysis shows that descending-fifth progressions is not only the most common type of progression in this repertoire, but it also represents the most important progression for most chords. Of the total root progressions beginning on a diatonic chord (2,104), descending-fifth progressions represent 32.36 %. In minor keys, the diminished supertonic, the major subdominant, the dominant, the submediant, and the subtonic, tend to progress mainly by descending fifth while the supertonic, the dominant, and the submediant do so in major keys. Ascending-step is the second most frequent progression, amounting to almost 20 % of the total above mentioned; six chords (major mediant, minor subdominant, and leading tone in minor, and mediant, subdominant, and leading tone in major) feature ascending-step as their most important progression. The third most frequent progression is the ascending-fifth, meaning only 10.21 % of the total. The only chord that presents this type of progression as its most important tendency is the tonic chord (both in major and minor keys). Contrary to what traditional theories claim, descending-third progressions are not prominent at all in this repertoire, occurring only seven times of every hundred progressions. Unexpectedly, the repetition of the harmony (keeping the chord but moving the bass note) is an important choice, amounting to 14.49 %.

Further analysis of the results are needed to answer the question if the prominence of ascending-step progressions can be explained, at least in part, in the context of harmonic expansions (Aldwell, Schachter, and Cadwallader 2011) or prolongational progressions (Caplin 1998), while the role of chordal repetition as a syntactical option needs to be explored deeper.

Second. Despite the use of a wide harmonic vocabulary (diatonic and chromatic), the essence of tonality rests on the interrelation between tonic and dominant functions. This importance is reflected in the prominence of occurrences of both tonic and dominant chords, the almost reciprocal syntactical relation between them, and the leading tone's overwhelming syntactical tendency to tonic harmony. Firstly, tonic and dominant chords in major and minor keys are by far the most common and prominent chords in this repertoire, adding up to 1,347 out of 2,358 diatonic chords, meaning 57.12 %. Secondly, the dominant chord is the most common harmonic goal of the tonic, and vice versa the tonic chord is almost the only syntactical goal for the dominant, strengthening their harmonic interdependence. Thirdly, the harmonic relation between the leading tone chord (the other dominant function chord) and the tonic chord must be added, as the latter is the only meaningful syntactical goal of the former. Adding the occurrences of the leading tone to the equation above stated, the three chords signify the 62.72 % of the total number of diatonic chords, becoming thus the pillars of tonality. These chords are so important for the praxis of tonality that Bach sometimes limits the harmonic vocabulary in entire clauses to only these three chords, as occurring in Chorales No. 3, mm. 1–2, and No. 15, mm. 3–4, just to mention two instances.

In this context, the rest of diatonic chords have a complementary function in the construction of tonality; moreover, the analysis suggests that such chords as the augmented mediant and the minor supertonic occur accidentally and could be considered inexistent in the repertoire while the minor dominant and the diminished superdominant are very infrequent chords and have a very insignificant role in the development of the key. Something similar occurs in major keys with the mediant chord, which is the least frequent chord and fulfils a very secondary harmonic role.

Third. Simple diatonic triads in root position and in first inversion are the most important chordal structures in this repertoire. From the 2,358 registered diatonic chords, 1,813 are simple triads (1,075 in mayor and 738 in minor), representing 76.88 % of the total of diatonic chords. However, of the 1,813 triads, the number of those in second inversion is almost insignificant, adding up to 37 occurrences, representing only 1.56 % of the total number of diatonic chords registered (2,358). On the contrary, triads in root position add up to 1,319 while triads in first inversion equal 457; both quantities together correspond to 75.31 % of the total of registered diatonic chords. Thus, these numbers support the argument that the harmonic vocabulary in Bach's chorale style rests on the use of diatonic triads in root position and in first inversion, leaving the diatonic seventh chords with a complementary role.

Keywords

Tonal Theory, Harmonic Syntax, Harmonic Vocabulary, Chord Function, Harmonic Function, J. S. Bach, Four-Part Chorales.

REFERENCES

Aldwell, Edward, Schachter, Carl, and Cadwallader, Allen, 2011. *Harmony and Voice Leading*. New York (NY): Schirmer.

Bach, Johann Sebastian, 1966. *The 371 Chorales of Johann Sebastian Bach With English Texts and Twenty-Three Instrumental Obbligatos*, ed. Frank D. Mainous and Robert W. Ottman. New York (NY): Holt, Rinehart, and Winston.

Beach, David, 1990. 'The Cadential Six-Four as Support for Scale Degree Three in the Fundamental Line', *Journal of Music Theory* 34/1: 81–99.

Cadwallader, Allen, 1992. 'More on Scale Degree Three and the Cadential Six-Four', *Journal of Music Theory* 36/1: 187–98.

Caplin, William E., 1980. 'Harmony and Meter in the Theories of Simon Sechter', *Music Theory Spectrum* 2: 74–89.

———, 1984. 'Moritz Hauptmann and the Theory of Suspensions', *Journal of Music Theory* 28/2: 251–69.

———, 1984. Review of Johann Philipp Kirnberger, *The Art of Strict Musical Composition* (New Haven (CT)/London: Yale University Press, 1982), *Journal of Music Theory* 28/1: 124–28.

———, 1998. *Classical Form: A Theory of Formal Functions for the Instrumental Music of Haydn, Mozart, and Beethoven*. Oxford/New York: Oxford University Press.

———, 2002. 'Theories of Musical Rhythm in the Eighteenth and Nineteenth Centuries', in Thomas Christensen (ed.), *The Cambridge History of Western Music Theory*. Cambridge: Cambridge University Press, 657–94.

———, 2004. 'The Classical Cadence: Conceptions and Misconceptions', *Journal of the American Musicological Society* 57/1: 51–118.

Hauptmann, Moritz, 1888. *The Nature of Harmony and Metre*, trans. ed. William E. Heathcote. London: Swan Sonnenschein & Co. (1st ed. 1853.)

Kirnberger, Johann Philipp, 1982. *Music Theory Translation Series*, vol. 4 (*The Art of Strict Musical Composition*), trans. ed. Jürgen Thym and David W. Beach. New Haven (CT): Yale University Press. (1st ed. 1776–1779.)

Rameau, Jean Philippe, 1722. *Traité de l'harmonie*. Paris: Ballard.

Riemann, Hugo, 1893. *Harmony Simplified or the Theory of Tonal Functions of Chords*, trans. ed. Henry Bewerunge. London: Augener.

Schenker, Heinrich, 1954. *Harmony*, trans. E. Mann Borguese, ed. O. Jonas. Chicago (IL): Chicago University Press.

Shannon, Claude E., 1948. 'A Mathematical Theory of Communication', *The Bell System Technical Journal* 27: 379–423, 623–656.