A COMPARISON OF THE HINDEMITH AND SCHENKER CONCEPTS OF TONALITY

THESIS

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by

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PREFACE

Tonality, in the conventional sense, may be defined as "a central key in which a work opens and closes, but which serves as the point from which to modulate to various other keys."[1] A somewhat broader definition than this, and one which may be more acceptable, is given by Schoenberg.[2] He defines tonality as "the art of combining tones in such successions and such harmonies or successions of harmonies, that the relation of all events to a fundamental tone is made possible."

The conventional concept of tonality may be considered as based on the following two principles:

I. The establishment of a "tonal center," or "fundamental tone," i. e., the principal key of a given composition, and

II. The relationship of other keys employed as subservient to the principal key (usually explained by the theory of modulation).

This concept is explained further by the following definition: "General Tonality is that principle by which a

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[1]A. T. Katz, Challenge to Musical Tradition, p. 1.

[2]Merle Armitage, Schoenberg, p. 280.

mental grasp of the musical texture is maintained through melodic and/or harmonic conventions relating all component tones to one of their number which is thus the tonal center and ordinarily the final."[3]

The chief function of tonality is to conjoin and to unify the different elements of a composition. Tonality serves as a unifying principle in that "all tonal successions, chords and chord-successions in a piece achieve a unified meaning through their definite relation to a tonal center and also through their mutual ties."[4]

The purpose of this thesis is to illustrate and compare, through a representative historical sampling of music, the concepts of tonality evolved by Paul Hindemith in his Craft of Musical Composition, Vol. I; and Heinrich Schenker in his Tonwille, Neue Musikalische Theorien und Fantasien, Das Meisterwerk in der Musik, and Der Freie Satz.[5] When feasible, these two concepts will be compared with the conventional concept.

The musical examples cited have been chosen as representative of the different historical periods. Each example

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[3]J. N. Vincent, The Diatonic Modes in Modern Music, p. 14.

[4]Armitage, Op. Cit., p. 285.

[5]None of these works, to the author's knowledge, have been translated into English.

represents, roughly, a fifty-year period in history from the late thirteenth century to the present day. In selecting these examples the following points were considered: (1) their ability to demonstrate certain important stylistic features of a particular period; (2) their ability to illustrate the styles of some of the most salient composers; and (3) their compactness. In general, these examples, for practical purposes, have been chosen from works for the piano.

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CHAPTER I

A BRIEF DESCRIPTION OF THE HINDEMITH AND SCHENKER CONCEPTS OF TONALITY

Part of the recent development in harmonic analysis has come about because of the inadequacy of the system previously in use. Concerning this system, Vincent[1] states:

> The fault lay in the narrow concept of key which regarded all but a few chromatic chords as violations of the key. The increasing complexity of the harmonic materials forced a progressively broader view of the limits of tonality.

The two systems of analysis in general use are given by Vincent:[2]

I. The traditional system founded on the original figured bass. Its objects are:

> (1) to explain the tonal fabric in terms of the dual modality of classical tonality,

and

> (2) to reveal the structure of the component chords (name, type, and inversion). The tonal functions (dominant and subdominant) are related only to the tonic and, as a consequence, an analysis must resort to frequent modulation in order to explain chromatically-formed dominant-seventh type chords.

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[1] J. N. Vincent, The Diatonic Modes in Modern Music, p. 8.

[2] Ibid., p. 148.

II. The parenthesis-chord system developed by Weidig and Piston. This analysis results in a system of secondary dominants and subdominants. Certain chords formerly considered modulatory are recognized as being dominant or subdominant functions. This system brought more chords into relationship to a single tonic.

The Hindemith Concept

Hindemith, in his Craft of Musical Composition, Vol. I, established the legitimacy of chords which have never been used in conventional harmony. The theory is primarily and exclusively a study of the nature of musical material. His purpose was "to find the common denominator for all Western music in a theory stated and developed in terms independent of esthetic judgments and stylistic preferences."[3]

Hindemith's system of analysis is based on the twelve tones of the chromatic scale. Each of the twelve tones can become a tonal center. Around this central tone the other eleven group themselves in a graded relationship, the order of relationship being expressed as Series 1 (Fig. 1). Hindemith[4] indicates this order as a "family relationship," an expression of the tones in relation to the progenitor tone. This order is based on the acoustical theory of

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[3]Bernard Heiden, "Hindemith's System--A New Approach," Modern Music, XIX (January-February, 1942), 102.

[4]Paul Hindemith, Craft of Musical Composition, I, 54.

relations between overtones, which is explained in detail in The Craft of Musical Composition, Vol. I. This series

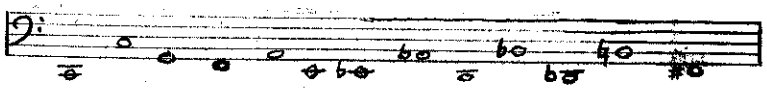

Fig. 1--Series 1

is a formula which governs the relation between individual "tonal masses" or chords. For instance, if we take C as a tonal center, the other eleven tones will appear in a decreasing order of relationship to the progenitor tone C, as indicated in Figure 1.

An interval, which is the smallest unit used as building material, may serve in one of two capacities: as a melodic interval, when the two tones are used successively, and as a harmonic interval, when used simultaneously. They respond differently to these two functions and therefore have varying harmonic and melodic values. Whereas Series 1 represents the decreasing order of relationship of tones to a progenitor tone (used to evaluate tones used successively), Series 2 (Fig. 2) shows their decreasing harmonic quality, worth, or lack of tension. It starts with the fifth, the

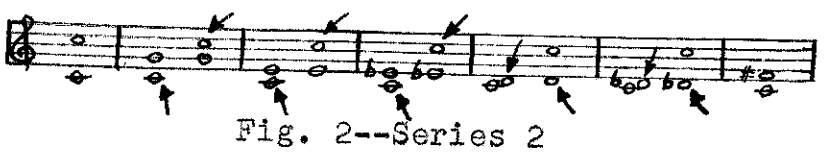

Fig. 2--Series 2

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[5]Heiden, Op. Cit., p. 103.

interval of greatest harmonic strength, which is followed by the fourth, major third, minor sixth, etc. This order is based on another acoustical phenomenon, i. e., the appearance of combination tones which influence the given interval in respect to its harmonic strength.[6]

All intervals have roots; one of the two tones dominates the other. The arrows found in Figure 2 indicate the root of each interval. The root of each interval is the tone that is reinforced by the combination tones. The tritone, because of its tonal uncertainty, actually has no root. It may, however, have a "root representative" which is the tone which proceeds by the smallest step to the root of the resolution interval.[7]

Hindemith[8] insists that the conventional theory of harmony is far too limited in its system for the determination and interpretation of chords. He maintains that chords are not built on superimposed thirds, but on any combination of intervals, and are not invertible. They submit themselves to one and only one interpretation.

Hindemith has created a system whereby chords may be ranked according to their quality, worth, or lack of tension.

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[6] Ibid.

[7] Hindemith, Op. Cit., p. 83.

[8] Ibid., p. 90.

The importance of the tritone as an unstable interval is the governing principle of this system. The tritone injects its character into every chord in which it appears. This fact gives Hindemith the first division within the chordal material: chords which do not contain a tritone are classified as Group A, chords which contain one or more tritones as Group B. Group A is subdivided into two groups: Group I, containing chords without seconds and sevenths, and Group III, containing chords with seconds and sevenths. A further subdivision is made according to the position of the root of the chord. If the root and bass note are identical, the chord is classified for instance as III_1, in contrast to a chord III_2 where the root would be located higher up in the chord.

Group B, containing chords with a tritone, may be subdivided into two groups: Group II, containing chords with minor sevenths and major seconds, and Group IV, containing chords with major sevenths and minor seconds. Again a subdivision is made according to the position of the root of the chord. Groups V (augmented triads and two superimposed fourths) and VI (diminished triads and diminished sevenths) do not have a definite root.

In determining the root of a chord, its strongest interval (according to Series 2) is selected; the root of the chord then becomes the root or the dominating tone of its

strongest interval. This root serves as the root of the entire tone-combination, regardless of how many members there are in the chord. By constructing a line that shows the roots of a successive number of chords, we arrive at what is termed a "degree-progression." Hindemith asserts that a satisfactory degree-progression serves as a backbone for a given composition.[9] The degree-progression lends itself to further grouping of tones which will often form broken triads. The roots of these groups, when extracted, become tonal spheres, and thus establish a tonality.

All chords usually employed in conventional harmony as well as any tone-combination a composer could dream of can be brought under one of these headings. But besides being a system of classification it is also a system of evaluation. A progression from Group I to another group (II, III, or IV, etc.) produces an ascending curve of harmonic stress, which is a new device for measuring harmonic tension. Chord successions are evaluated according to the ratio of tension to stability.[10]

Hindemith's system is intended to supply an analytical background for all types of music. The concept of "key" experiences a broad generalization. All tone-combinations

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[9]Heiden, Op. Cit., pp. 104-105.

[10]F. B. Muser, "The Recent Work of Paul Hindemith," Musical Quarterly, XXX (January, 1944), 34.

are possible as long as their use is justified by degree-progression. Tonality becomes not a starting-point but a goal.

Muser[11] states that "the setting up of an orderly disposition of the actual material of musical composition is . . . Hindemith's contribution to the solving of the many problems that confront today's composer."

The Schenker Concept

In contrast to the conventional concept which permits a succession of modulations, each of which defines a new key, the Schenker concept allows the establishment of only one key, the so-called modulations being interpreted as lying within the key. Schenker understands by tonality "the life of one tone as it governs the entire work."[12]

The Schenker method is not a theoretical one, but a means of expressing what we hear in music.[13] The approach is actually one of synthesis; whereas, other theorists are concerned with analysis, i. e., an examination of each chord as a specific harmony.[14] Schenker is concerned with

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[11] Ibid., p. 35.

[12] A. T. Katz, "Heinrich Schenker's Method of Analysis," Musical Quarterly, XXI (July, 1935), 313.

[13] A. T. Katz, Challenge to Musical Tradition, p. xxiv.

[14] A. T. Katz, "Heinrich Schenker's Method of Analysis," Musical Quarterly, XXI (July, 1935), 312.

chord function or significance as an expression of musical direction.

This concept is based on two principles: Structure and Prolongation. The term "structure" indicates the basic harmonic progression, or framework, of a composition, or section of a composition. The structural harmony defines the key or tonality of the work. It is the element which gives musical direction and motion to a work. This motion may be expanded by "prolongation." Passing chords, chords which support non-harmonic tones, etc., are used to extend or prolong the motion within a structural chord. These chords, in reality, have a contrapuntal function.[15]

Figure 3A illustrates this principle of structure vs. prolongation. These four measures represent the unfolding of a single tonic chord. The chords in measures two and three (interpreted as supertonic and dominant in conventional analysis) are used to prolong the motion within the tonic chord. Figure 3B is a graphic analysis of these four measures.[16] These chords (measures two and three) may now be interpreted as a connective or contrapuntal harmony.

This example shows how a musical phrase may be the unfolding of a single structural chord. In a composition, a

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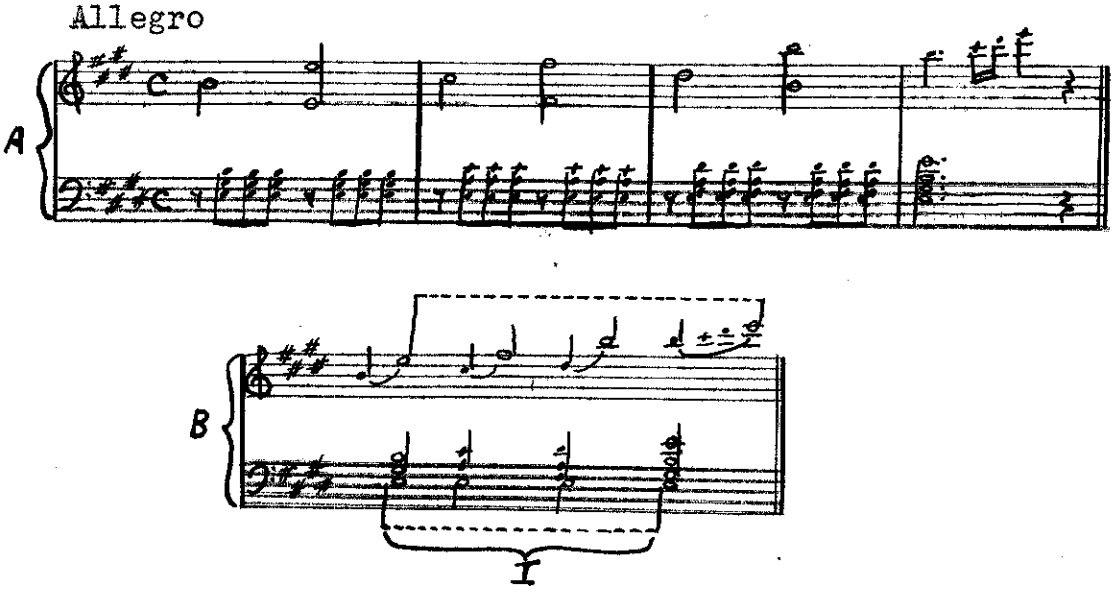
[15]A. T. Katz, Challenge to Musical Tradition, p. 15.

[16]The note values indicated in Figure 3B represent relative structural values only; they are not to be interpreted literally. This same method of graphing will be employed in succeeding chapters.

Fig. 3--Beethoven, Piano Sonata, Op. 14, No. 1



structural chord, when combined with other structural chords, will constitute what may be called a "basic structure" which will usually form a progression of I-V-I, I-II-V-I, or I-III-V-I (e. g., see Figure 15C, Chapter III). This basic structure will define the musical direction of a period or section of a composition. Thus, in any given composition, several basic structures may exist, each representing a different section of the work.

The single structural outline of a work is called the "primordial structure."[17] It is a synthesis of all basic structures and prolongations. Each of these basic structures, with its own harmonic framework, becomes subordinate to the primordial structure. The basic harmonic structures then assume a prolonging function and are used to expand

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[17]A. T. Katz, Challenge to Musical Tradition, p. 23.

the primordial structure, just as the contrapuntal prolonging chords are used to expand a single basic structure. The factors involved are basically the same; only the dimensions are larger. This primordial structure gives an over-all picture or graph of a work, and is an indication of its unity and musical direction.

The purpose of Schenker's theories was to prove that "the fundamental principles which govern the music of all great composers are the same."[18] He sensed that chord grammar failed to differentiate between the diverse functions which chords fulfill, and realized that to regard only the beginning and end of a work as indicative of its central key offered a similar lack of explanation of the status and function of so-called modulatory sections.[19] He realized the need for a broader concept of tonality--one which would differentiate between chord grammar and chord significance as a means of indicating musical direction and coherence.

The contrasting views of the theories evolved by Hindemith and Schenker, as well as of conventional theory, are listed in Table 1.

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[18]A. T. Katz, "Heinrich Schenker's Method of Analysis," Musical Quarterly, XXI (July, 1935), 312.

[19]Felix Salzer, Structural Hearing, I, 26.

TABLE 1

A COMPARISON OF THE HINDEMITH AND SCHENKER CONCEPTS WITH THE CONVENTIONAL CONCEPT

Subject	Concept		
	Conventional Theorists*	Schenker*	Hindemith
Harmony	Define "harmony as "any series of chords"; and "chords" as "any simultaneous combination of more than two tones."	Defines "harmony" as "a series of chords which makes clear the tonality of a musical span"; chords which are auxiliary to this function are "not harmonic."	Defines "harmony" as "a series of chords whose roots form a satisfactory 'degree-progression.'"
Counter-point	Define "counter-point" as "the art of combining musical lines in such fashion that more than one of them may seem melodically important at the same time."	Defines "counter-point" as "the art of connecting one 'harmonic' chord to another by means of some 'horizontal' technique." When chords are used for this purpose, they are called "contrapuntal chords."	Defines "counterpoint" as "an essential element of every composition." The "framework" of a composition, i. e., its upper voice and bass voice, constitutes two-part counterpoint which must be satisfactory two-part writing.
Chords	Deal in chords as units.	Treats chords mainly as parts in larger wholes.	Treats chords as separate entities incapable of inversion or of more than one interpretation.

TABLE 1--Continued

Subject	Concept		
	Conventional Theorists	Schenker	Hindemith
Modulation	Explain as "modulations" small groups of chords suggesting other key centers than the main key of the piece or section.	Refuses to admit modulation is "real"; insists that every piece "is in one key throughout."	Establishes, through analysis, one tonal center which governs the entire work.
Analysis	Analyze music in terms of "forms" which are first described, then illustrated from the literature. Tend to analyze mainly with words; use of non-verbal symbols limited to those which indicate chord grammar.	Analyzes music by means of graphs of spans, etc., leading to the feeling that each piece of music is "unique." As a part of the graphing process, uses a set of non-verbal symbols for showing relative values of different parts of a composition.	Analyzes music by means of "musical graphs" showing essential elements of the composition. Uses exclusively non-verbal symbols indicating chord classification, degree-progression, tonality, etc.

*W. Hoskins, "On General Semantics and Music," General Semantics Bulletin, VI-VII (Spring-Summer, 1951), 53.

CHAPTER II

ANALYSIS OF MUSIC BEFORE BACH

It is generally agreed by theorists that a large portion of the music prior to the introduction of the major-minor diatonic scale system cannot be made to conform to the laws of major-minor tonality as the term is usually understood. However, Vincent[1] suggests that music of any era possesses a tonal scheme, although its system may be different from the tonality of another musical era. He applies the term "tonality" to plain chant and gives the following definition:

> Tonality in Plain Chant is a system by which a mental grasp of the unaccompanied melodic line is maintained through a system of linear tonal combinations. . . . It thus only makes use of the melodic phase of the general principle of tonality.[2]

He states further:

> Tonality in Renaissance Polyphony is a system by which a mental grasp of the melodic and harmonic texture is maintained partly through the methods of unaccompanied plain chant which apply mainly to the cantus firmus, and partly through certain added harmonic conventions whose function is to relate the component triads to the triad of the final which has

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[1] J. N. Vincent, The Diatonic Modes in Modern Music, p. 14.

[2] Ibid., p. 15.

> taken the place of the simple final. . . . The whole outlook was still horizontal.[3]

Piston[4] says that a definition of tonality should include the diatonic modes. He adds: "The presence of a center of gravity, or tonic, being the sole requisite for the presence of a tonality, it will be seen that the same tonality may be given a large number of variations in the makeup of its scale."

An application of the Hindemith concept to an example of early polyphony reveals an easily perceptible tonality. Figure 4A, the rondeau "Tant con je vivrai" by Adam de la Halle (1230-1287), has the note F as its tonal center. This rondeau is an example of one of the characteristics peculiar to the music of this period, i. e., a descending step-wise root progression. After extracting the roots (according to Series 2 of the Hindemith system) of the chords, a grouping of these roots results in the tonal spheres of A, G, and F respectively. This scale-like progression takes for its root the final, or F.

A Schenker analysis of this rondeau produces approximately the same result. Measures 1-9 represent a prolongation of the chord on A (A-E-A) with the chords on G and C serving as embellishing functions (Fig. 4B). Measures

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[3] Ibid.

[4] Walter Piston, Principles of Harmonic Analysis, p. 60.

Fig. 4--Adam de la Halle, "Tant con je vivrai"

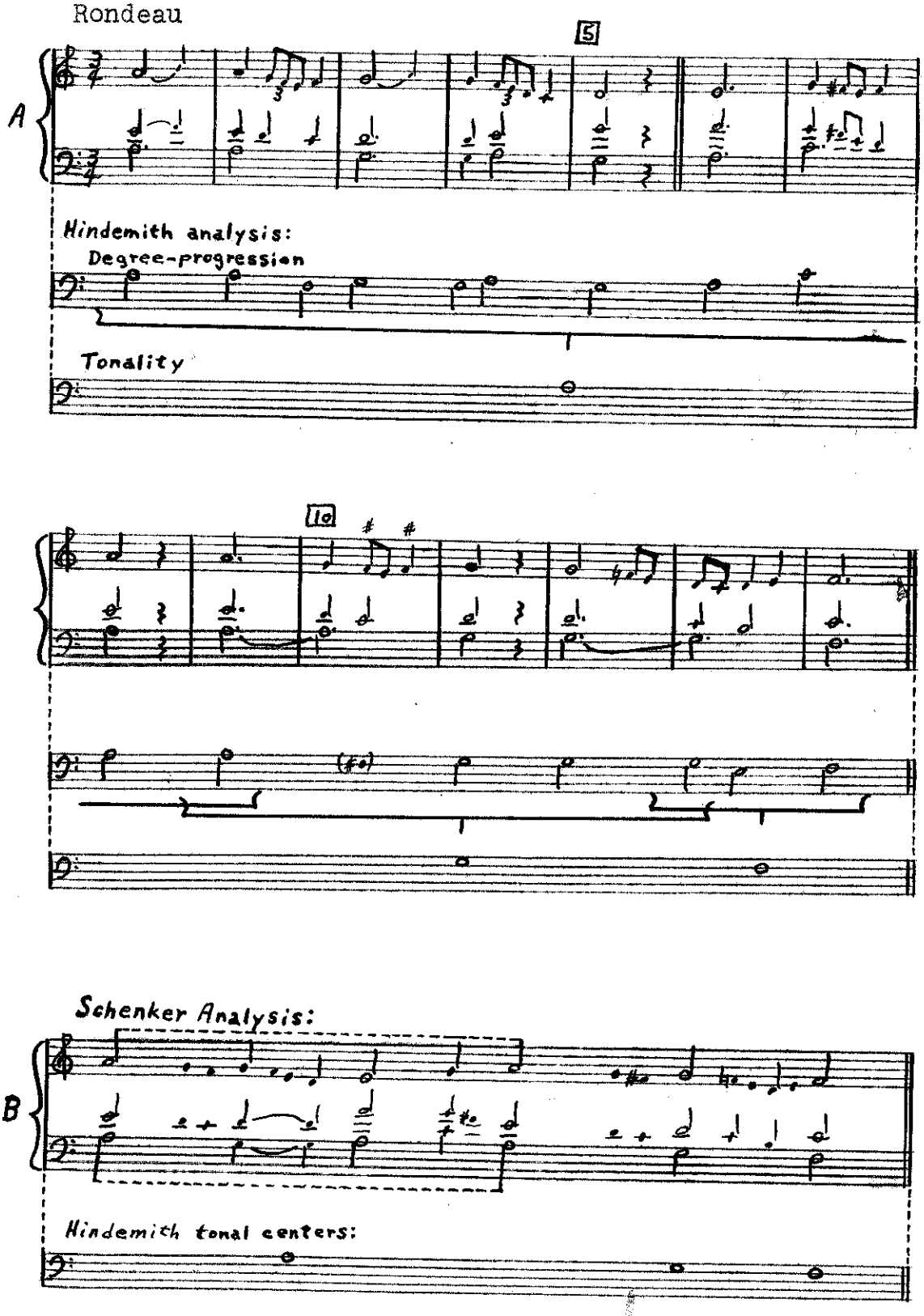
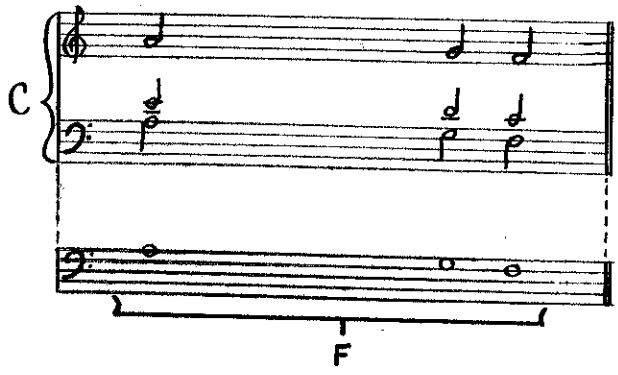


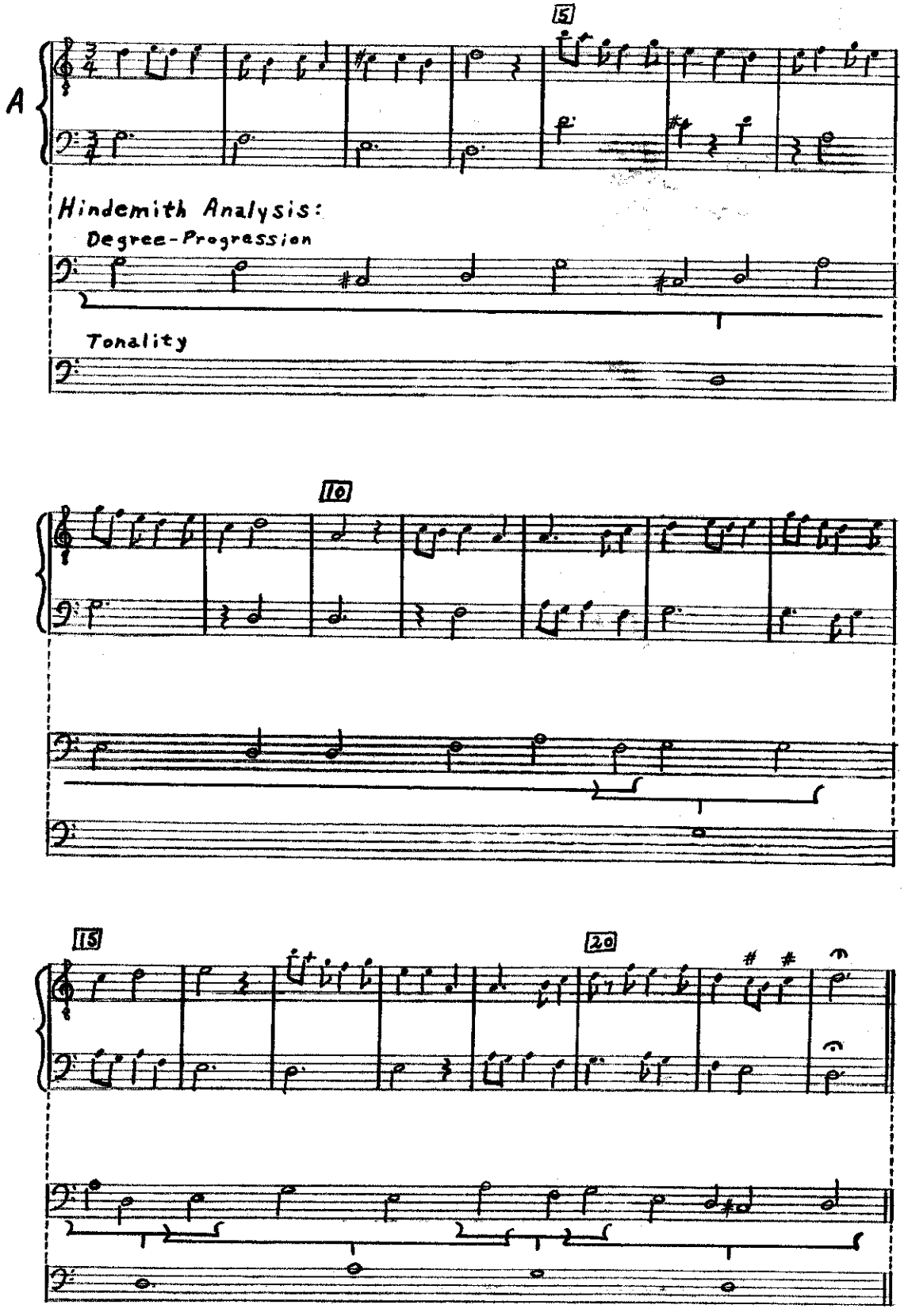
Fig. 4--Continued



11-13 are clearly an elaboration of the chord on G (G-D-G), and in measure 14 the final, or tonic, F is heard. The final analysis results in these three principal chords (Fig. 4C). No fundamental harmonic progression (e. g., I-V-I, I-III-V-I) exists here. There is no indication of dominant-tonic relationship as understood in major-minor tonality. In this respect, the Schenker concept seems to be inadequate. To say that the basic structure is III-II-I would be far-fetched and would not conform to the principle of a fundamental progression as conceived by Schenker.

An example of French secular music of the fourteenth century is the virelai "Plus dure" by Guillaume de Machaut (1300-1377) (Fig. 5A). This is an early example of the achievements of the Ars nova, as exemplified by the predominance of an elaborate melodic line over a simple accompaniment. Again, a definite tonality is produced by the Hindemith degree-progression. Even though the piece

Fig. 5--Guillaume de Machaut, "Plus dure"



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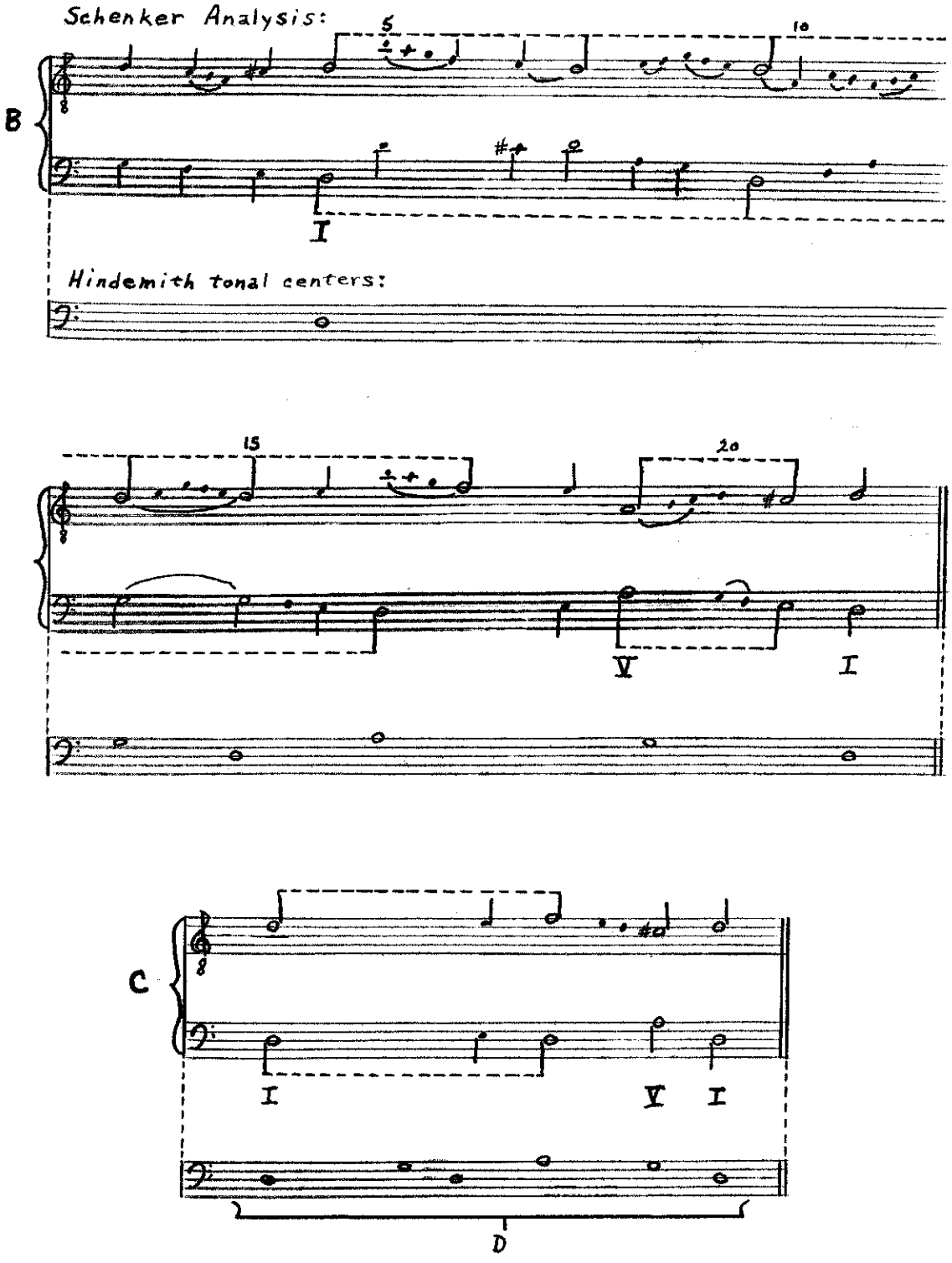

is unquestionably modal in character, an analysis reveals a tonal center of D.

An analysis according to the Schenker concept produces the fundamental harmonic progression I-V-I (Fig. 5B). The entry of the tonic is delayed by the cadential progression in measures 1-4. This progression serves to establish at the beginning the tonality of D. Figure 5C, which shows the basic structure of the work, consists of the three structural chords (tonic-dominant-tonic) which define the course of the work.

Another example of French secular music of this century is the virelai "Dame souvrayne" (Fig. 6A) by the Italian composer Matheus de Perusio. Perusio is considered by many historians to be one of the chief representatives of the Modern Style,[5] which was characterized by an abandonment of the complexities of the Ars nova for more simplicity of design. This example (only a chord-condensation is given here), like the preceeding one, begins on a chord other than the tonic with a cadential progression to the tonic in measure 4. From this point on, the tonal center C is clearly established. An analysis of the Hindemith degree-progression reveals, almost exclusively, the tonal spheres

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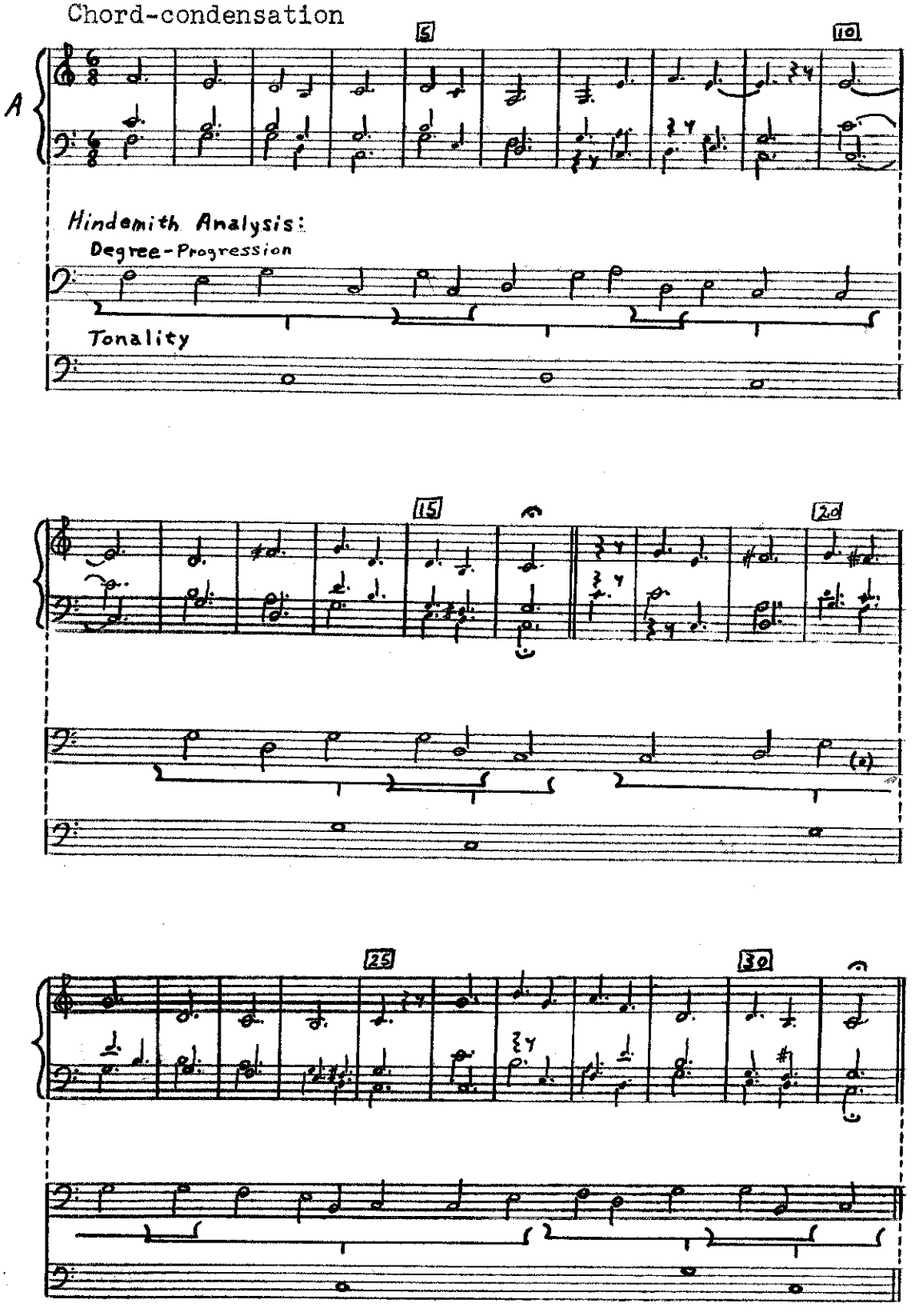
[5]The term "Modern Style" is used by W. Apel (French Secular Music of the Late Fourteenth Century) to denote the interlude between the Manneristic period and the Flemish school of the fifteenth century.

Fig. 6--Perusio, Virelai "Dame souvrayne"



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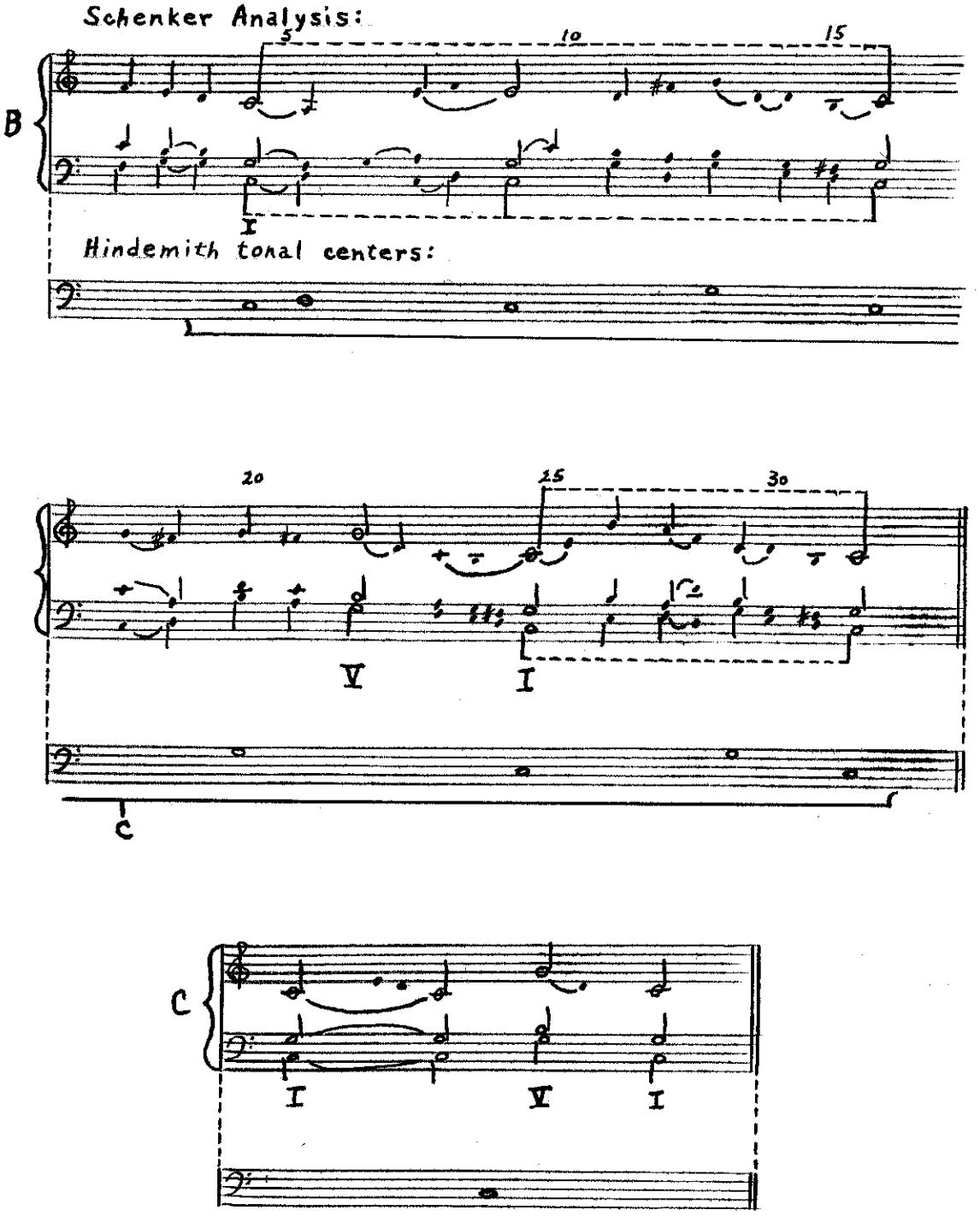


C and G, with C, because of its predominance, becoming the tonality of the work.

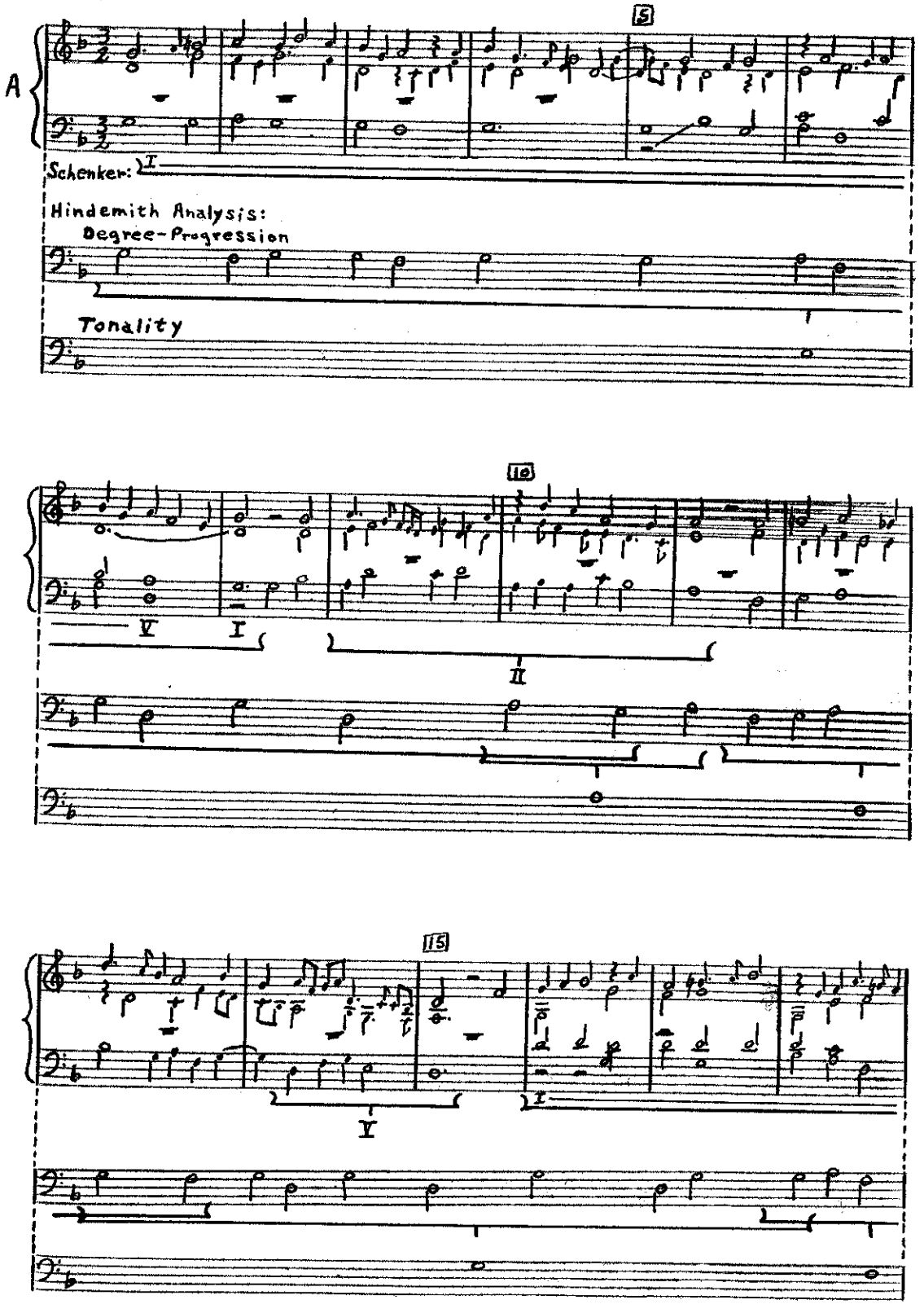
Figure 6B shows the structural framework of the piece. Measures 4-17 represent a prolongation of the tonic chord (C-G-C); the chords in measures 17-19 act as connecting chords between the tonic and the dominant (measure 20). Again in measures 25-31 the tonic chord is prolonged by a series of contrapuntal chords. It is interesting to note the agreement in root progression between the two concepts. In Figure 6C the three structural chords which define the course of the work are shown.

The Dufay "Missa L'Homme armé" (Fig. 7A) is an example of early fifteenth century secular music. The "Kyrie" only is cited here. Although the piece is modal in character, an application of the Hindemith analysis reveals a clear-cut tonality of G. There are very few dominant chords in this piece; the chord on the seventh degree (F-A-C) seems to take precedent over the dominant. This fact is illustrated in Figure 7B (third staff) which shows the importance of the seventh degree of the scale, this note being outranked only be the tonic.

An application of the Schenker concept to this example produces four basic harmonic structures (Fig. 7a). Measures 1-8 reveal a basic structure of I-V-I, measures 9-11 are a prolongation of the supertonic, measures 12-13 represent a

Fig. 7--Guillaume Dufay, "Missa L'Homme armé"

Kyrie



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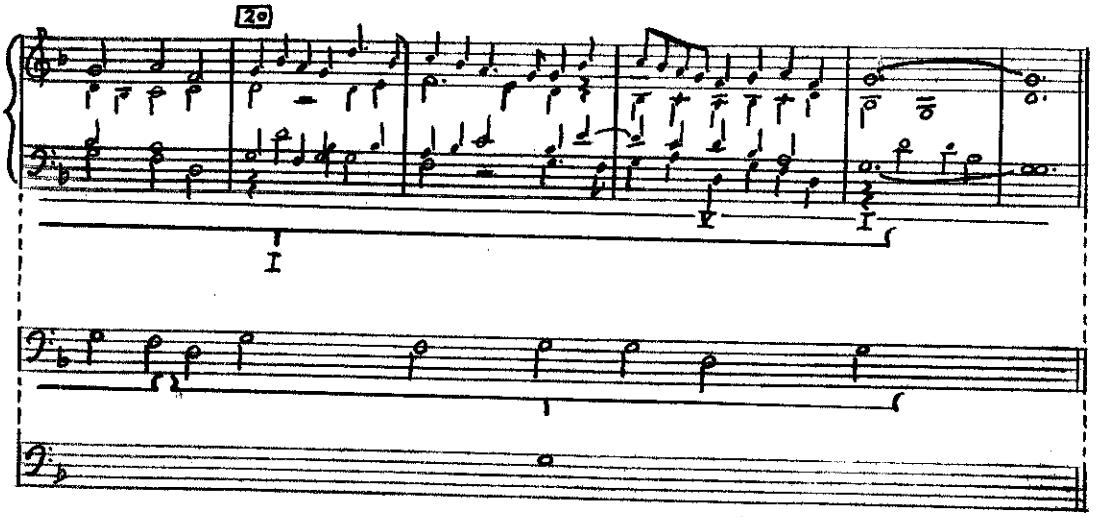
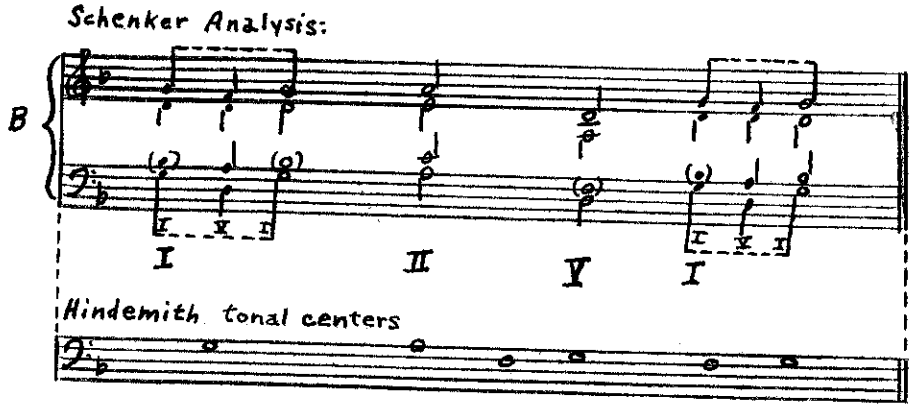
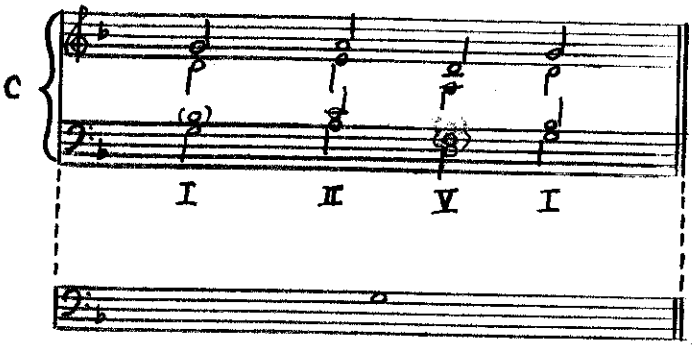






connecting link between the supertonic in measure eleven and the dominant in measures 14-15. The progression I-V-I is again found in measures 16-24. Figure 7B shows how these basic harmonic structures become subordinate to the primordial structure, resulting in the fundamental progression I-II-V-I (Fig. 7C). It should be noted that there is very little agreement between the Hindemith tonal spheres (Fig. 7B) and the primordial structure as revealed by a Schenker analysis. However, the resulting tonality in each analysis becomes the same.

In Figure 8A, the "Missa Sine Nomine" by Jacob Obrecht (1430-1505), a more elaborate contrapuntal texture may be found than in the previous examples. Only the "Kyrie" is cited here. A Hindemith analysis of the work produces tonal spheres which clearly indicate a tonality of G, with a "modulation" to D in measures 17-21 (Fig. 8B). A Schenker analysis indicates a basic structure of I-V-I. Measures 1-16 represent a prolongation of a single tonic chord, measures 17-19 are a prolongation of the dominant, and in measures 20-27 the tonic is again prolonged by contrapuntal chords. In this particular example the results of each type of analysis agree exactly. This agreement is illustrated in Figure 8C, where the three structural chords (Schenker) are found to correspond to the three tonal centers (Hindemith). The work actually has an A-B-A form as far as tonality is concerned (tonic-dominant-tonic).

Fig. 8--Jacob Obrecht, "Missa Sine Nomine"

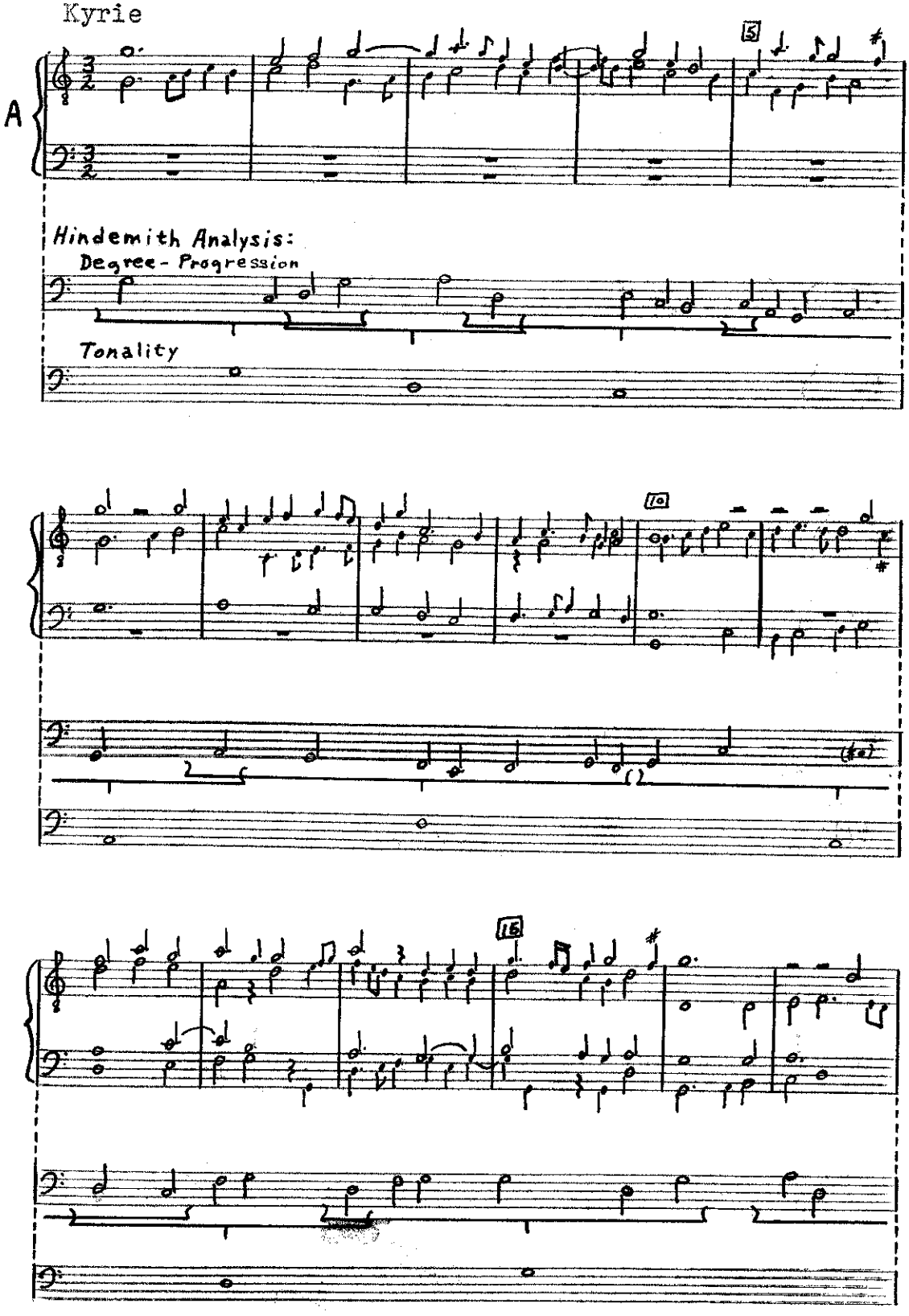
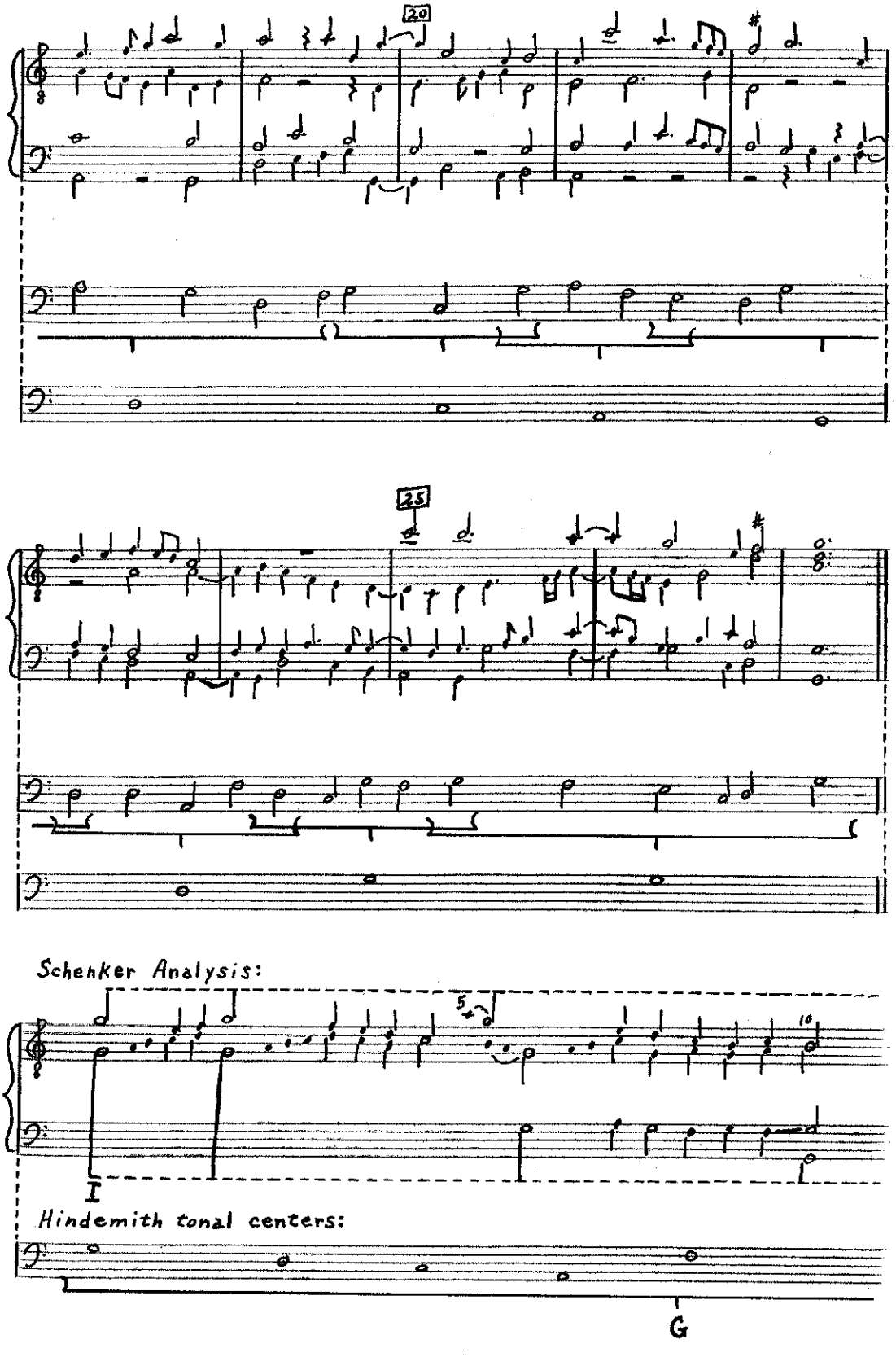


Fig. 8--Continued



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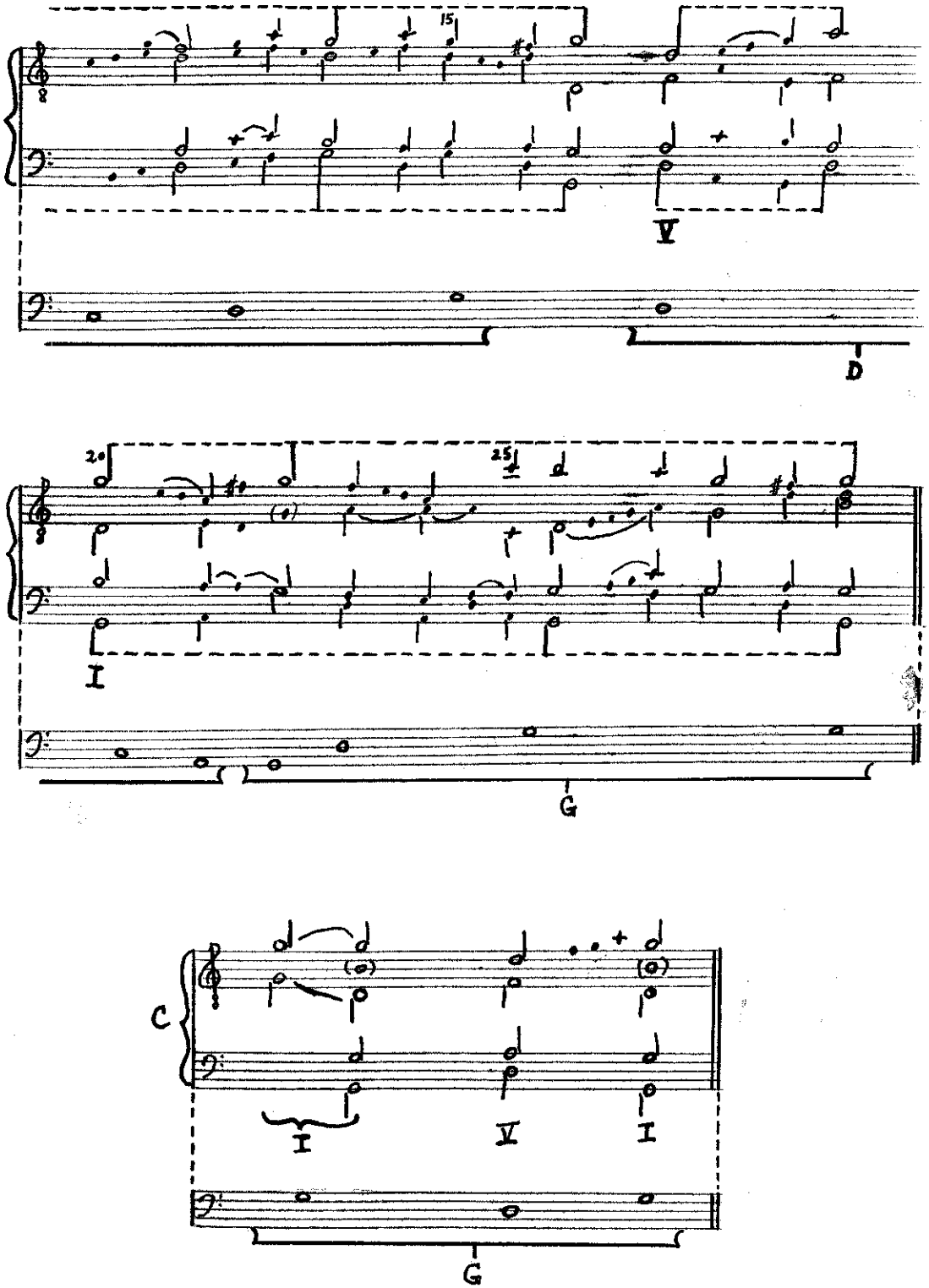


An example of sixteenth-century church music is the motet "Beata dei Genitrix--Et Beata" (Fig. 9A) by the Flemish composer Adrian Willaert (1480-1562). A Hindemith degree-progression produces a series of tonal spheres whose chief tonality becomes D. Again, the importance of other scale degrees other than the tonic and dominant is illustrated in this example. Chords on the sixth and seventh degrees are frequently used; however the Schenker analysis shows that these chords have only a contrapuntal or prolonging function. For instance, in measures 9-13 a series of contrapuntal chords are used to prolong the motion between the tonic chord in measure eight to the tonic in measure fourteen. This progression is a part of a single structural chord outlined (Fig. 9B) by the first fifteen measures. Measures 16-18 represent a prolongation or connecting link between the structural tonic chord (measures 1-15) and the structural dominant chord outlined in measures 19-30. This prolongation of the dominant chord contains a series of embellishing chords which serve a contrapuntal function only. Measures 31-39 again present a structural tonic chord, giving a structural framework of I-V-I. The entire example may be reduced to these three structural chords (Fig. 9C) with a tonality of D.

Figure 10A, a "Melange" by Orlando di Lasso (1532-1594), one of the chief representatives of the Flemish

Fig. 9--Willaert, Motet "Beata dei Genitrix--Et Beata"

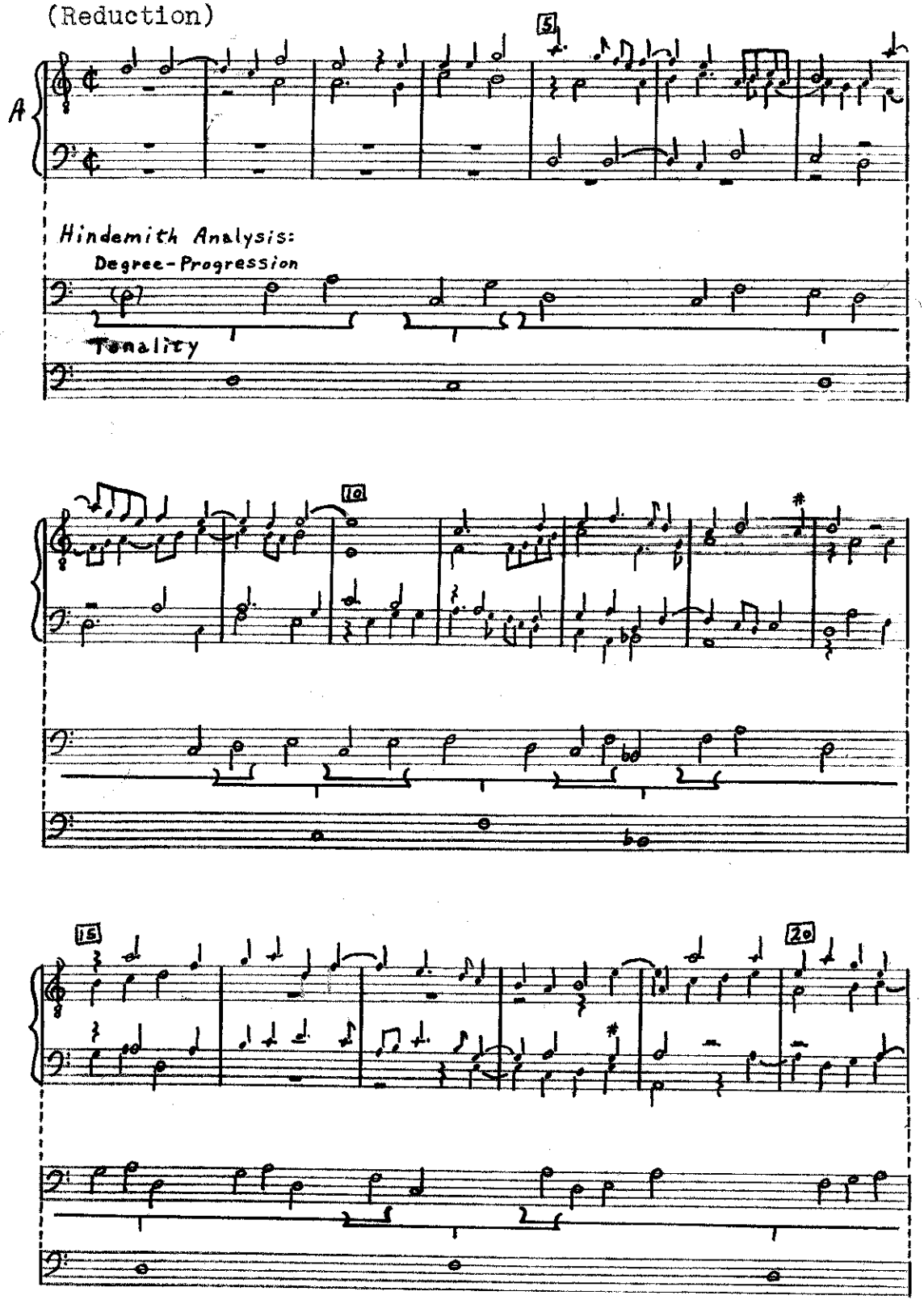


Fig. 9--Continued

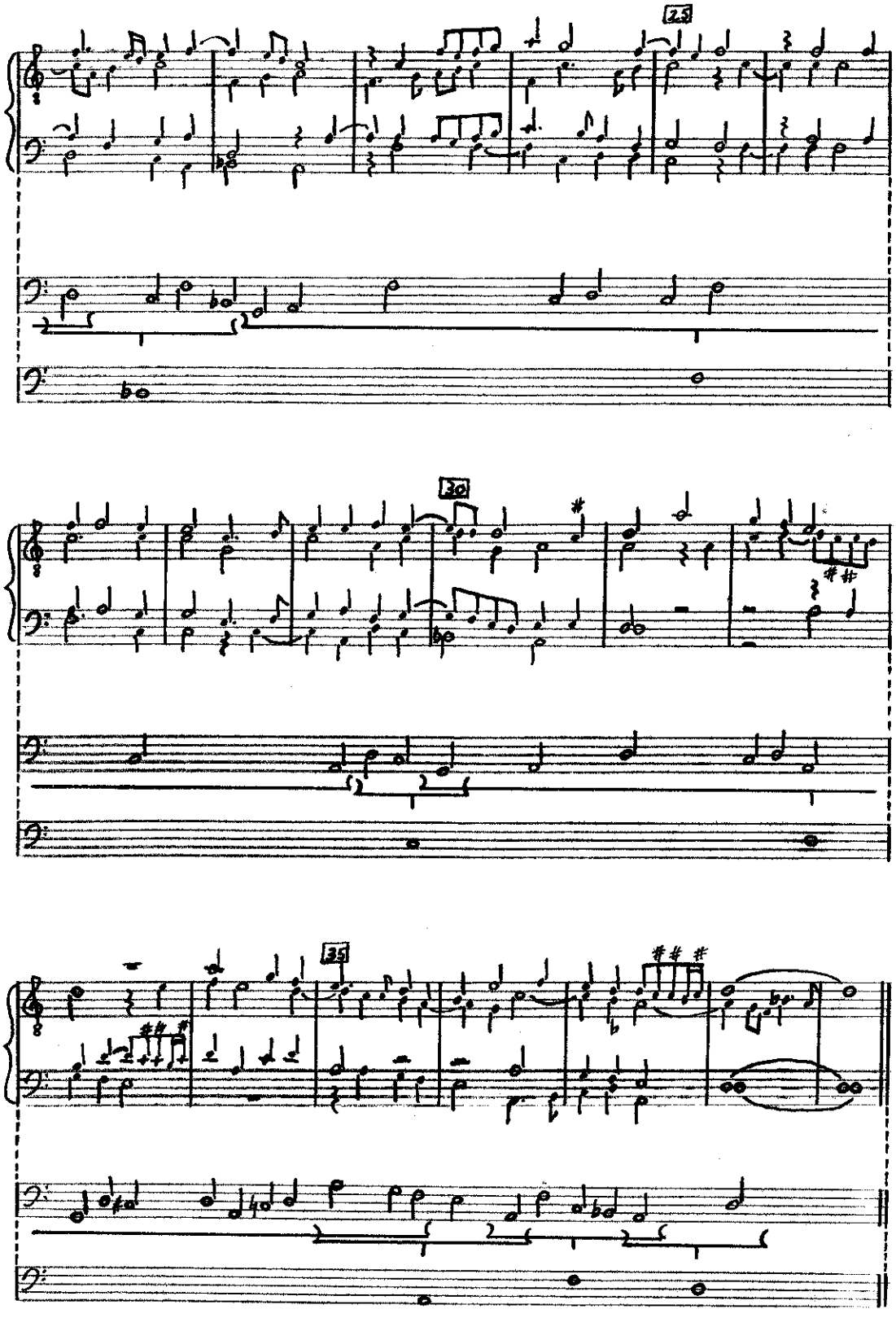
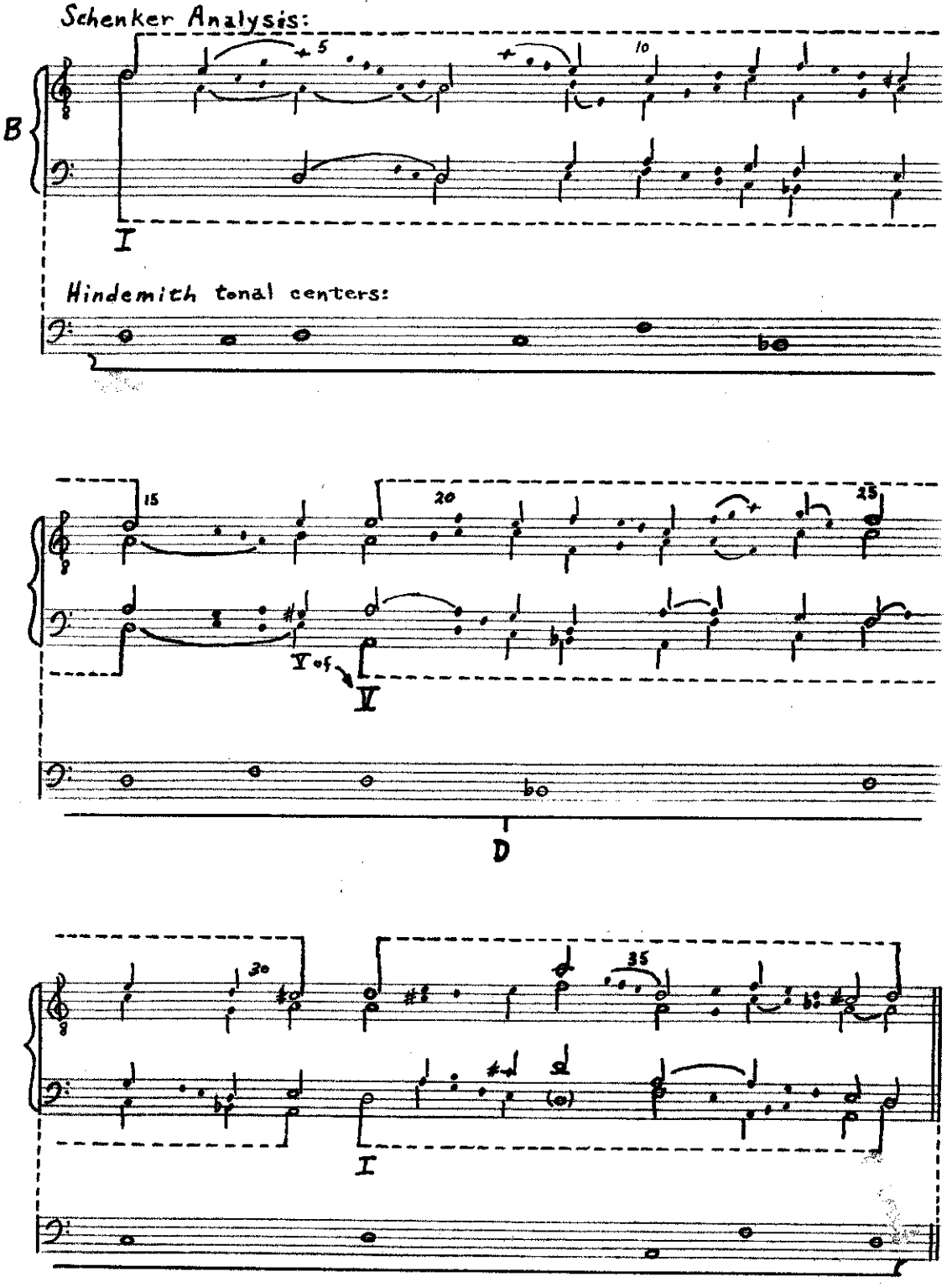


Fig. 9--Continued



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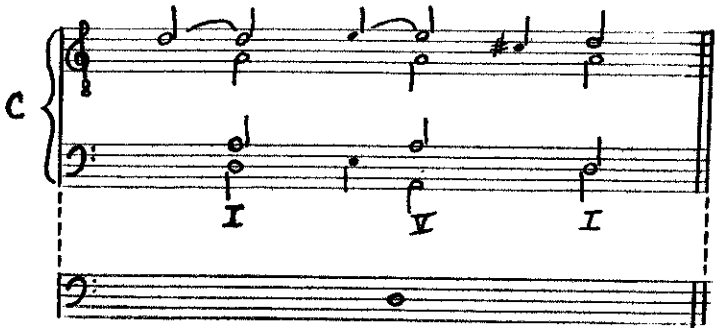


school, is an illustration of the gradual decay of the modal system and the emergence of the major and minor scale system. This shift from modality to tonality based upon the major and minor scale system may be observed in much of the music during the late sixteenth century. A Hindemith analysis of the work reveals a predominant tonality of A with a tonal sphere of C assuming a secondary role. This constant shift between A and C may justify an interpretation of the work as being in the key of A minor with frequent modulations to C Major, the related major. However, the piece is still quite modal in character, and it may be somewhat far-fetched to interpret it as lying within the major-minor tonal system.

The structural framework produced by a Schenker analysis shows a basic harmonic structure of I-III-V-I (Fig. 10B). The first eighteen measures are interpreted as a prolongation of a single tonic chord. The mediant chord assumes an important function here, as it governs approximately seven measures of the work (measures 20-26). This fact may be

Fig. 10--Orlando di Lasso, "Melange"

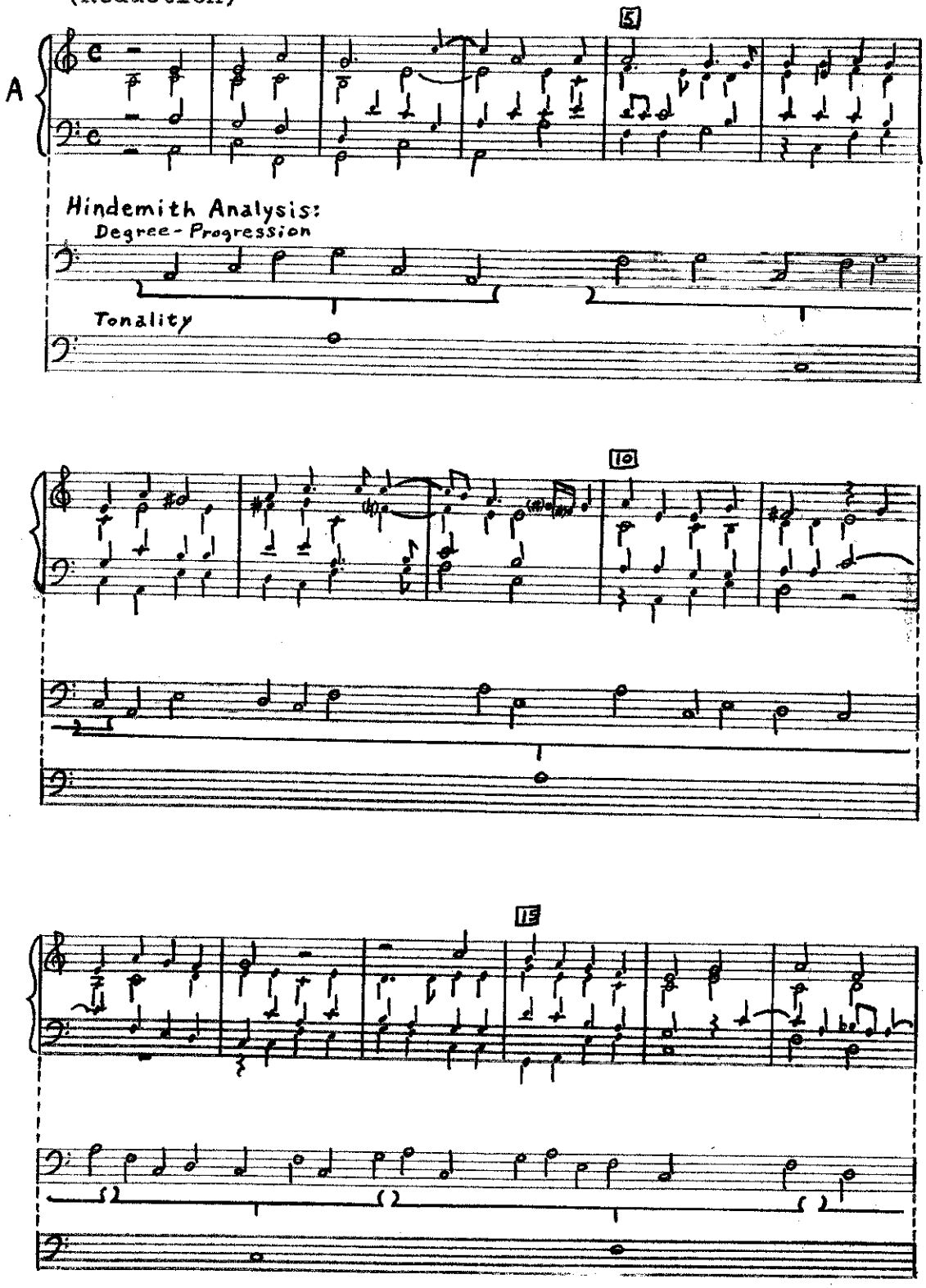
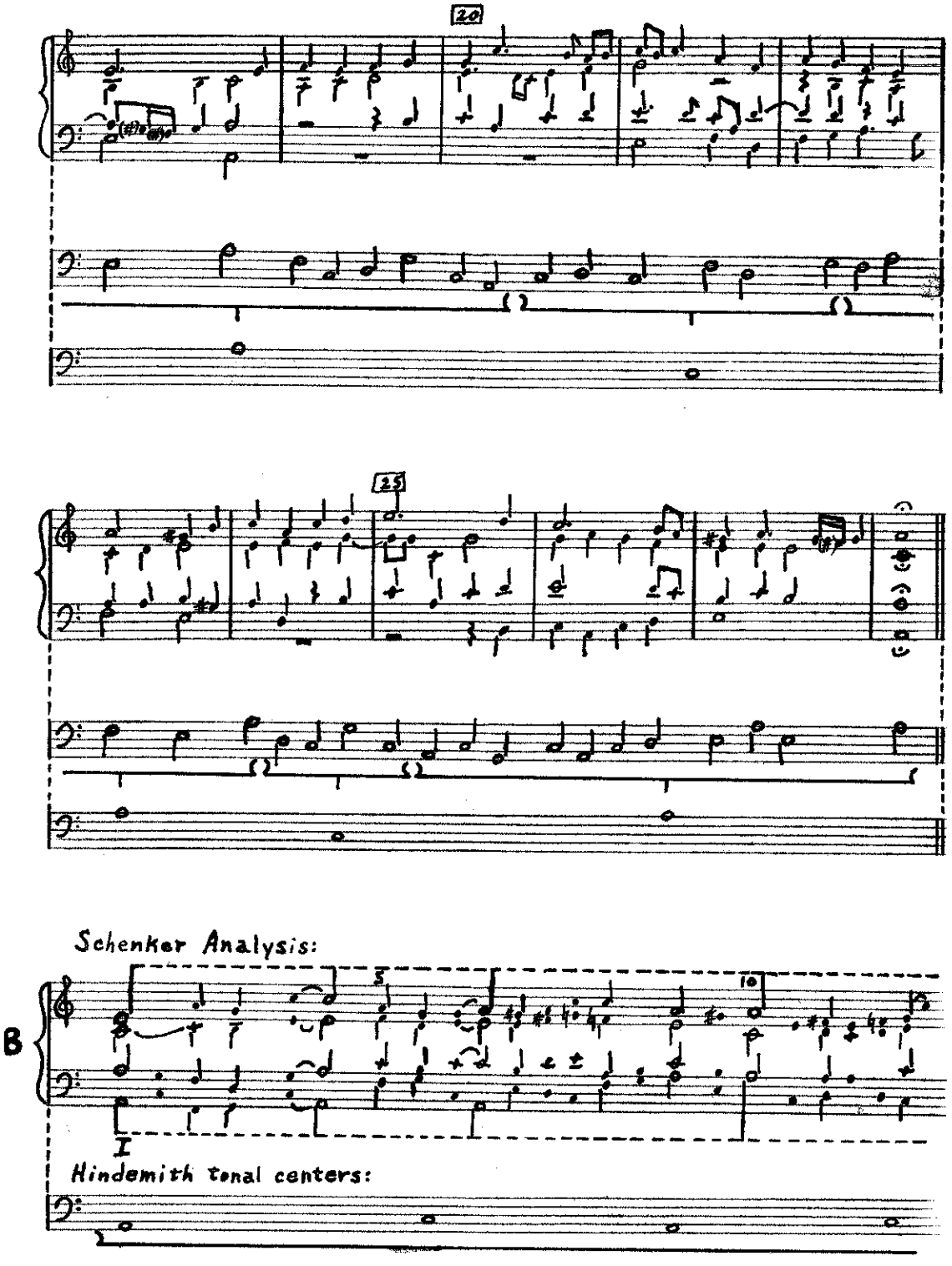


Fig. 10--Continued



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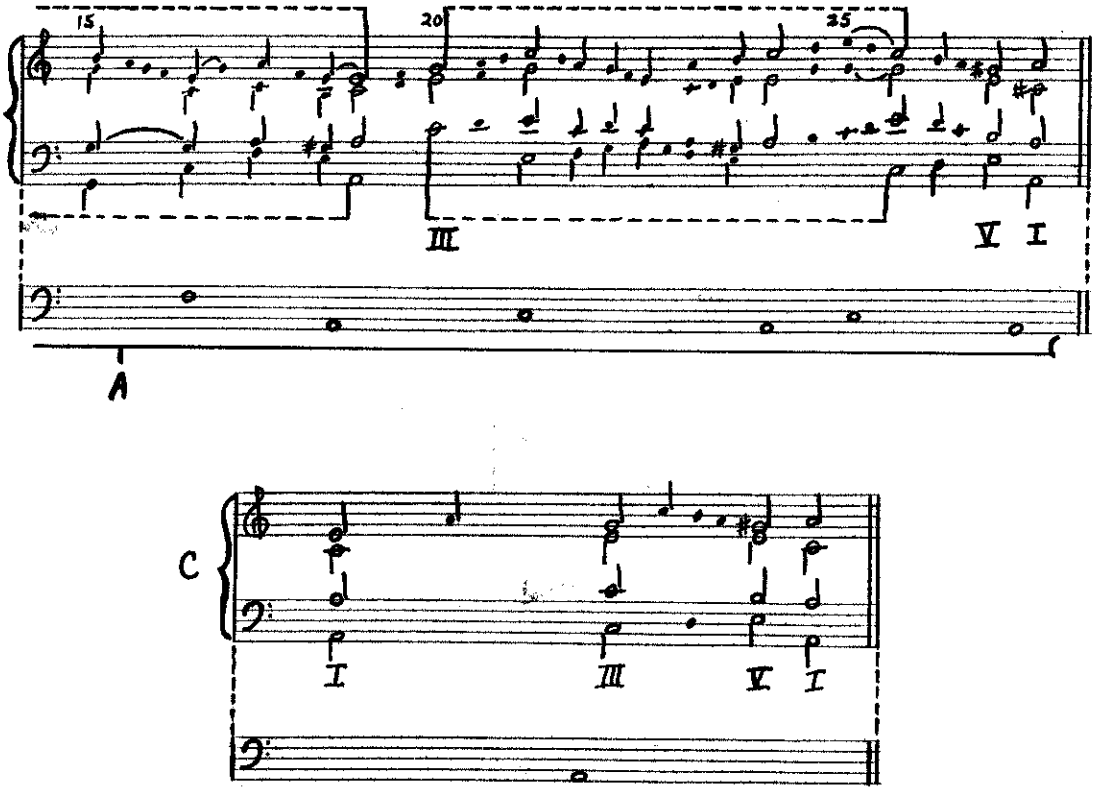


compared with the results of the Hindemith degree-progression where the tonal sphere of C ranked second only in importance to the tonality of A. Measures 27-28 provide the final cadence (V-I) which completes the basic structure of I-III-V-I (Fig. 10C).

The chorus "Vieni Imeneo" from Monteverdi's opera L'Orfeo (Fig. 11A) illustrates a definite shift to the major-minor tonal system, although not so complete a shift as is found a century later. In this work there remain but traces of the old modal system. The Hindemith degree-progression reveals a clear-cut tonality of G (conventional

Fig. 11--Monteverdi, Chorus "Vieni Imeneo" from L'Orfeo

(Reduction)

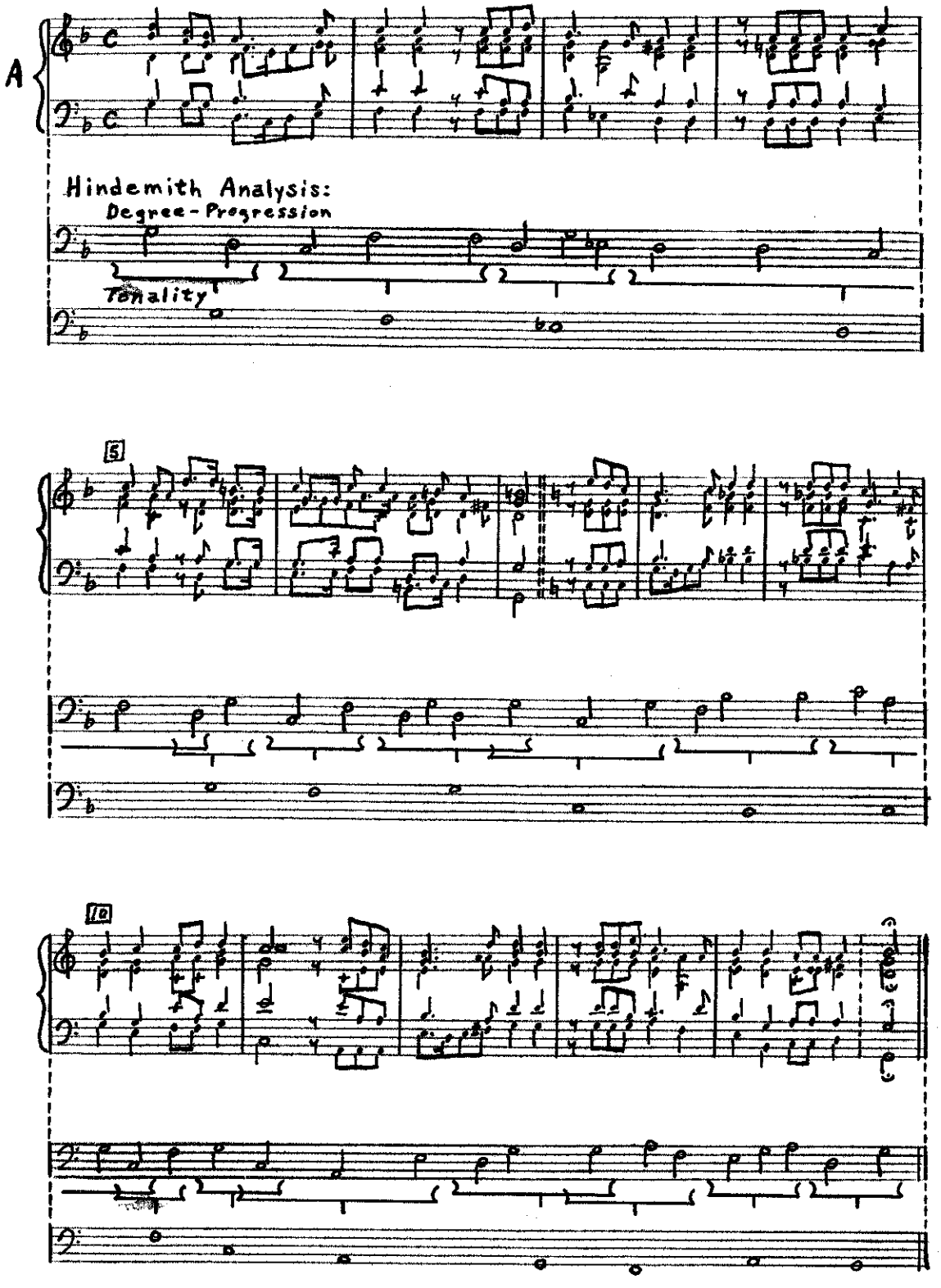
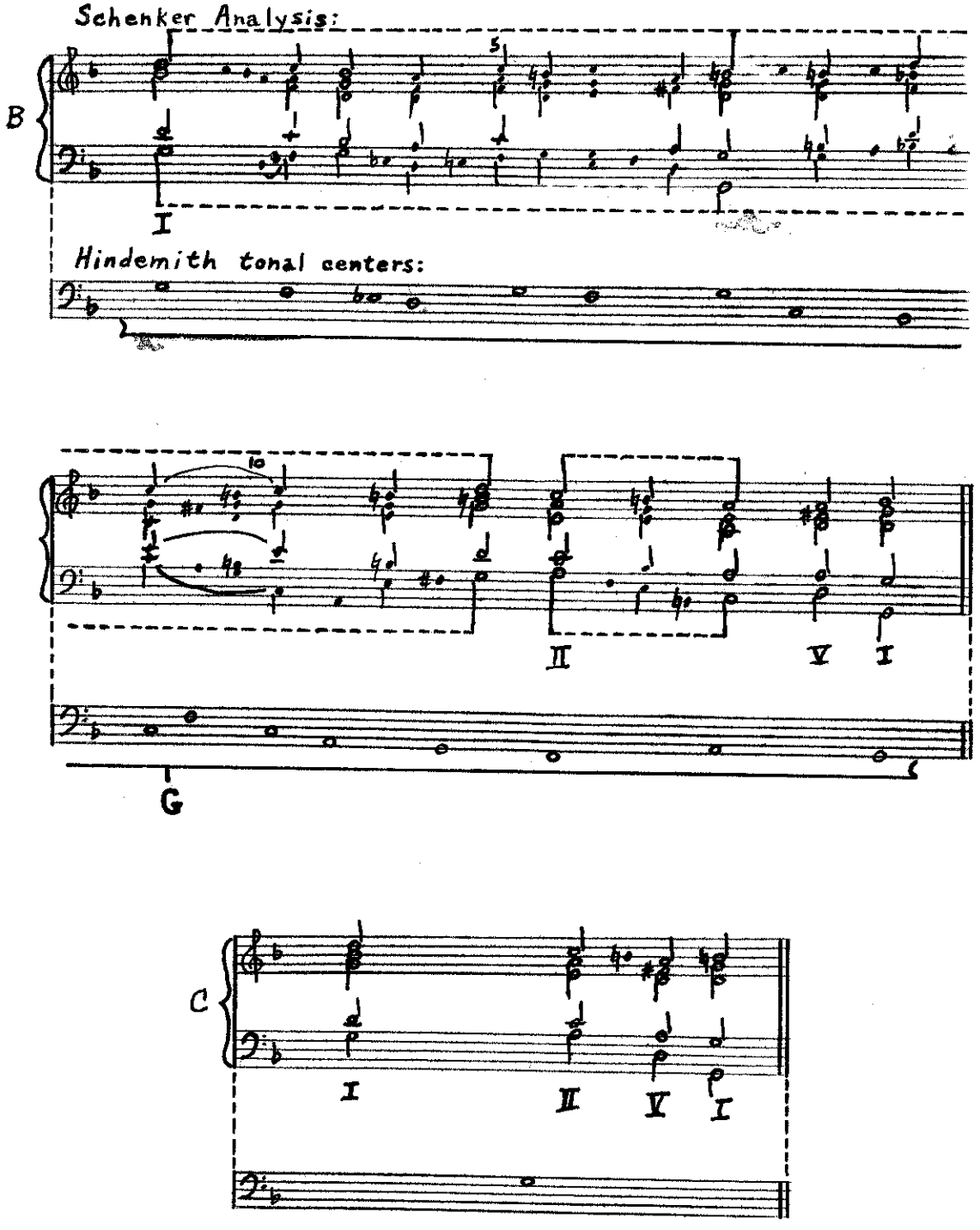


Fig. 11--Continued



theorists would call it G minor). A Schenker analysis produces a structural framework which interprets almost all of the work (first twelve measures) as a prolongation of one chord (Fig. 11B). Measures thirteen and fourteen contain the structural chords II, V, and I, thus giving the piece its basic harmonic structure, I-II-V-I (Fig. 11C). In this example the Hindemith tonal spheres agree, as is usually the case, with the Schenker structural framework with but little exception.

An example of the "choral-vorspiel" technique of the late seventeenth century is the "Auf meinen lieben Gott" by one of the important predecessors of Bach, Dietrich Buxtehude (1637-1707). Only the "Sarabande" is cited here (Fig. 12A). In this example it is evident that the modal system has gone out of existence. The Hindemith degree-progression reveals a tonality of E (E minor in conventional theory) which is determined by the predominance of the note E over the other tonal spheres as regards both position (first and final) and frequency (appearing five times as compared with four for G). As in Figure 10A (Lasso), this work may be interpreted as lying within the major-minor tonal system, with a tonality of E minor and a frequent "modulation" to G Major, the relative major. In fact, it seems more logical to interpret this example in this way, since it lies without question in the major-minor

Fig. 12--Buxtehude, "Auf meinen lieben Gott"

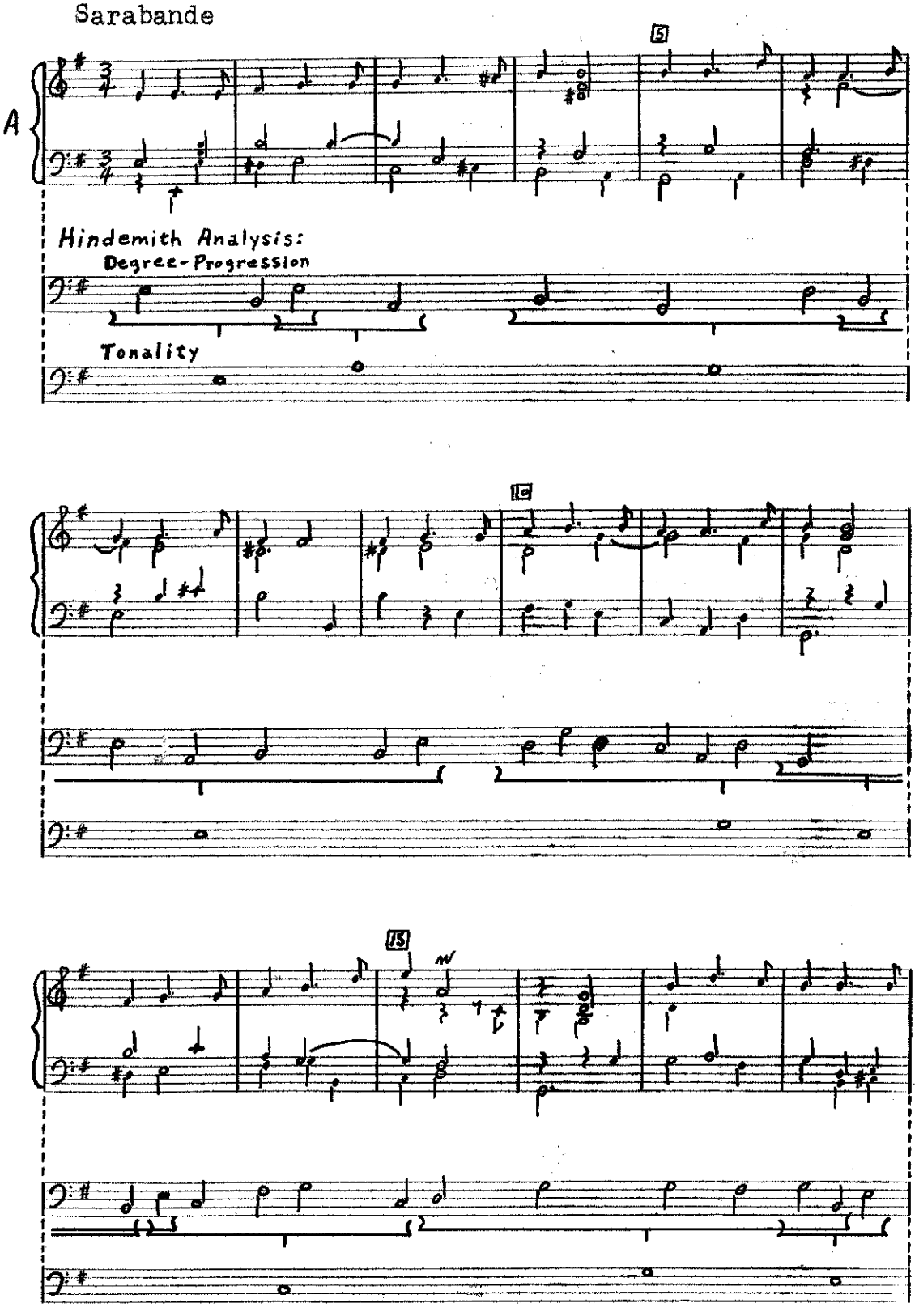
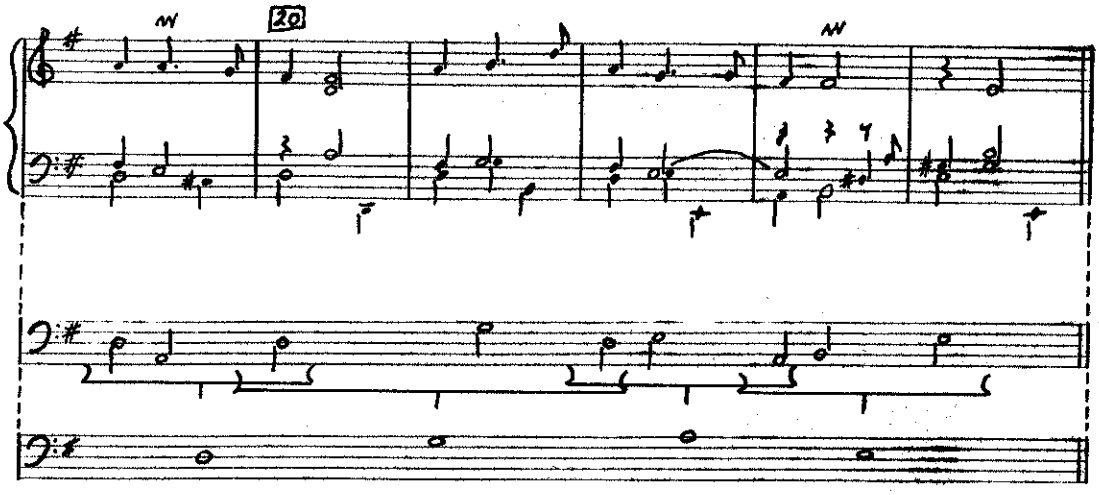
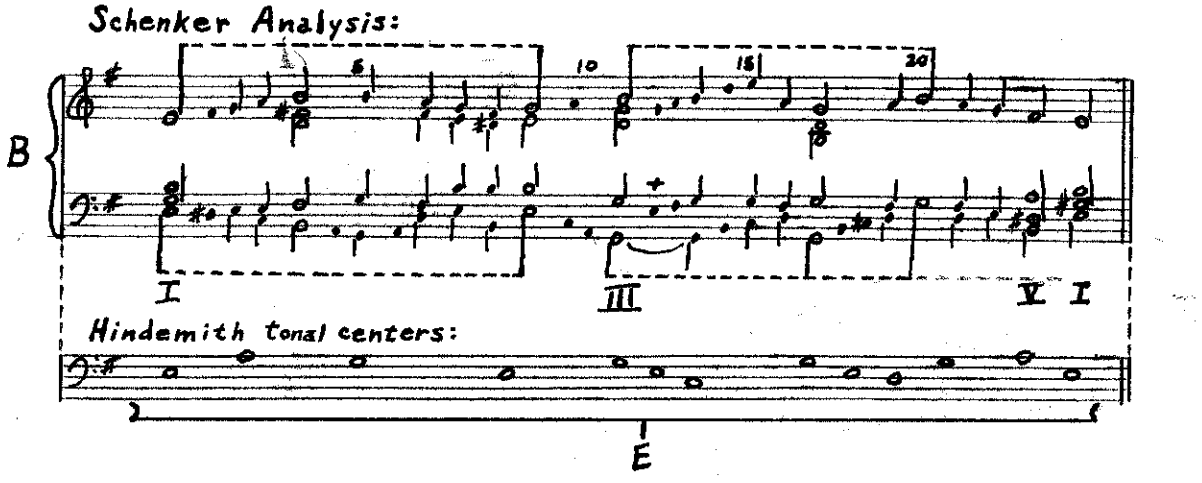
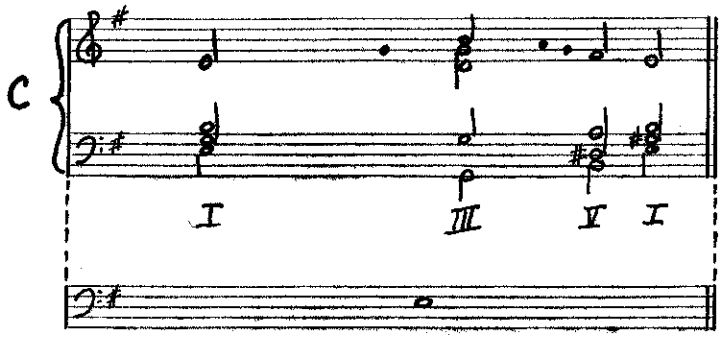


Fig. 12--Continued







tonal system. This E minor-G Major interpretation agrees, as a whole, with the Hindemith tonal spheres, with their predominance of E's and G's.

The Schenker analysis produces a similar result (Fig. 12B). The first ten measures indicate a prolongation of the tonic chord by a series of contrapuntal embellishing chords. Measures 12-21 are a prolongation of a structural mediant chord (corresponding to the conventional G Major tonality). In measures 23-24 the final two structural chords are heard (V-I), giving the piece its basic harmonic structure, I-III-V-I (Fig. 12C).

The examples cited in this chapter have portrayed the gradual decay of the modal system and the evolution of the major-minor tonal system. In only one example (Fig. 4) was it impossible to arrive at a basic harmonic progression according to the Schenker concept, although the piece was

TABLE 2

BASIC HARMONIC PROGRESSIONS (SCHENKER) USED IN CHAPTER II

Progression	Figure in Which Used
I-V-I	5, 6, 8, 9
I-II-V-I	7, 11
I-III-V-I	10, 12
Indeterminate	4

shown to possess a definite tonality through an application of the Hindemith tonal concept. The basic harmonic progressions which outline the structure of each example are listed in Table 2.

It has been shown, in this chapter, how the Hindemith and Schenker concepts may be applied to medieval and Renaissance polyphony. It has been illustrated how music of these historical periods, although chiefly modal in character, may possess a definite tonality or tonal center. The following chapters will illustrate how the two concepts may be applied to music of later periods.

CHAPTER III

ANALYSIS OF MUSIC OF THE EIGHTEENTH AND NINETEENTH CENTURIES

In the preceding chapter, it was illustrated how music of the seventeenth century gradually abandoned the modal system in favor of the major-minor tonal system. Regarding this system, Vincent[1] gives the following definition: "Major-minor Tonality is a system by which a mental grasp of the musical texture is maintained through a very circumscribed and highly characteristic harmonic (vertical) means of relating all melodic and harmonic elements to the tonic or its triad."

Although the decay of the modal system was a gradual process and not the achievement of any one composer, the credit for demonstrating the advantages of the tonal over the older modal system, and for laying the foundation for future music, is given to Johann Sebastian Bach. The music of Bach not only forms a climax of one historical period, but marks the beginning of another.[2]

---

[1] J. N. Vincent, The Diatonic Modes in Modern Music, p. 15.

[2] A. T. Katz, Challenge to Musical Tradition, p. 65.

The Bach example cited here is the Prelude No. 2 from the "Well-Tempered Clavier," Book I (Fig. 13A). For compactness, only a chord-condensation is given. The work is clearly in C minor. A study of the Hindemith degree-progression reveals tonal spheres of C, E♭, F, and C, giving an over-all tonal center of C, because of the predominance of this note due to its position (initial and final) as well as its being the root of the tonal group. Measures 9-11 represent a modulation to Eb Major (according to conventional theory), the work remaining in Eb through measure fourteen. This segment is interpreted according to the Hindemith analysis as having a tonal center of Eb, corresponding exactly to the conventional theory, but with no major-minor connotation.

A Schenker analysis produces a structural framework with four structural chords outlined: I, IV^7, V, and I (Fig. 13B). The first eighteen measures represent a prolongation of a single tonic chord. This prolongation may be more fully realized if an examination is made of the structural melodic line. The upper voice in measures 5-18 descends step-wise for an octave (e"-e'), outlining the space of a tonic chord. This type of prolongation is only one means by which to extend a structural chord. Measures 1-4 illustrate the use of contrapuntal chords as a connecting link between structural chords (the tonic chords in

Fig. 13--J. S. Bach, Prelude No. 2 from the "Well-Tempered Clavier," Book I.

(Chord-condensation)

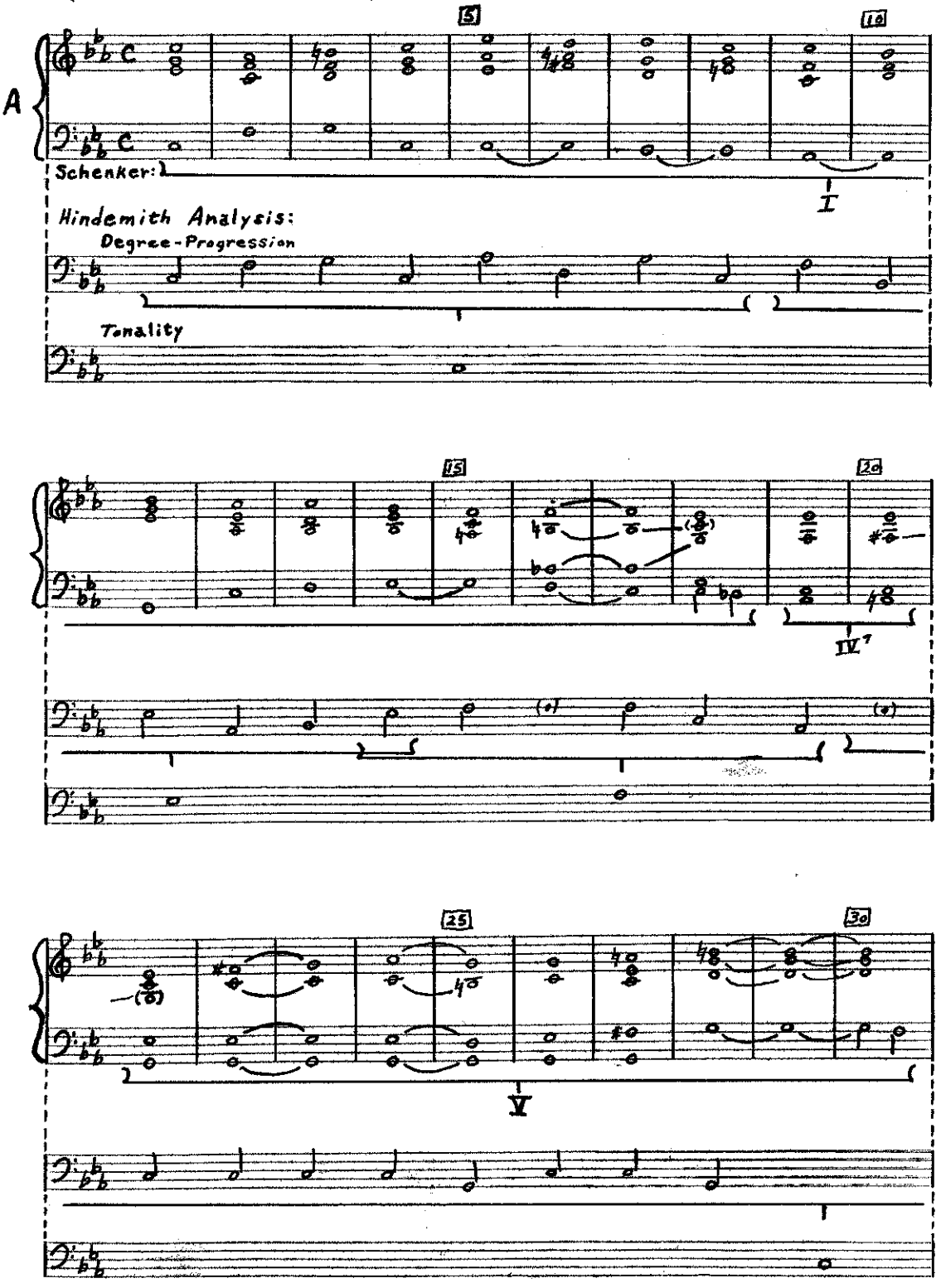


Fig. 13--Continued

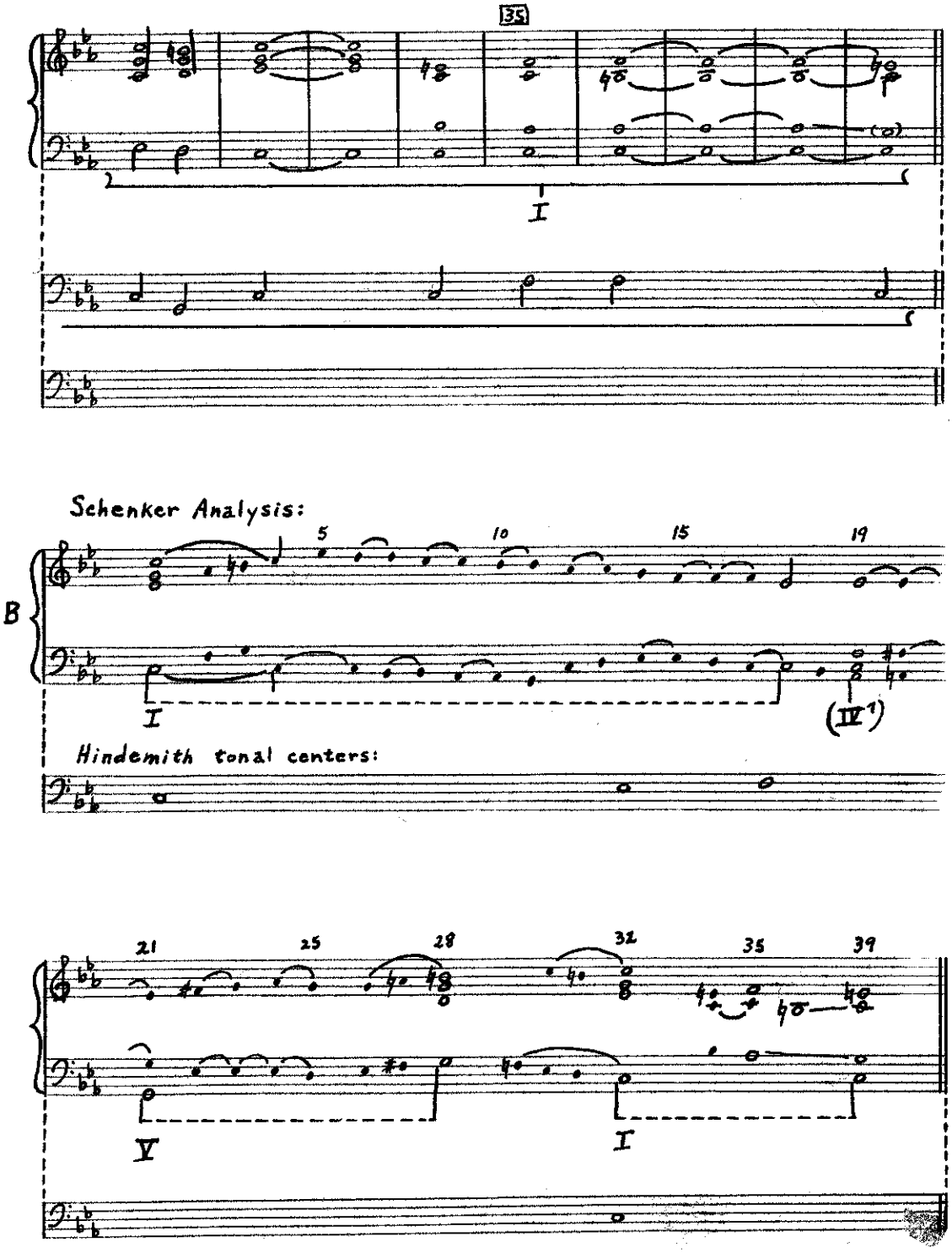
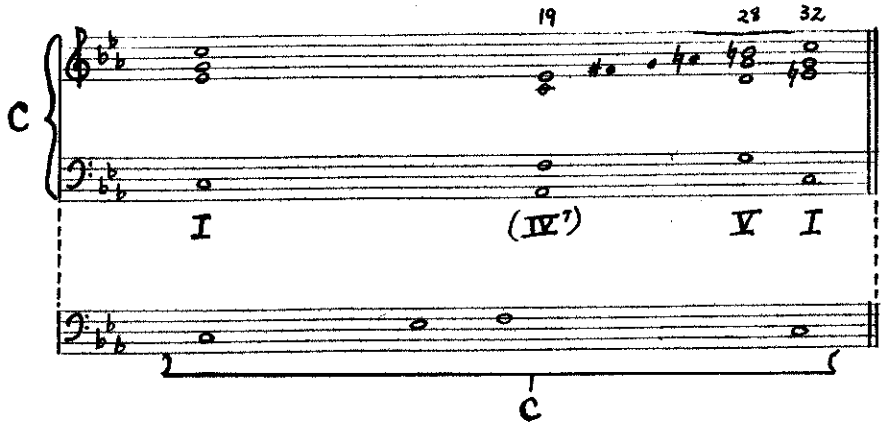


Fig. 13--Continued



measures one and four). The IV^7 chord in measure nineteen may be interpreted as a structural chord with the following chord (the diminished-seventh chord in measure twenty) considered as a passing chord to the next structural chord (the dominant beginning in measure twenty-one), or the two measures (19-20) may both be interpreted as passing chords from the structural tonic (measure eighteen) to the structural dominant (measure twenty-one). Measures 21-30 clearly represent a prolongation of a single dominant chord by means of contrapuntal chords which serve an embellishing function. Measures 31-39 illustrate the prolongation of the final tonic chord in much the same manner. Figure 13C gives an over-all structural graph of the work, showing the basic harmonic structure, I-(IV^7)-V-I. The Hindemith tonal spheres are not in complete agreement with this final analysis. The tonal sphere of Eb should indicate a structural mediant chord in the Schenker analysis; however this

is not the case. The portion of the work corresponding to the Eb tonal sphere (measures 9-14 in Fig. 13A), and in conventional theory to the key of Eb Major, is considered according to the Schenker concept as a portion of the prolongation of the initial tonic chord. Again, there is a disagreement in measures 21-30, where an extended dominant pedal with contrapuntal harmony above indicates, according to the Schenker concept, a prolongation of a structural dominant chord, but which is interpreted according to the Hindemith concept as having C (the tonic) as its tonal center. This latter interpretation may be explained by an analysis of the chords in this portion of the work. It may be observed that, as a rule, the roots of these chords lie above the bass note, resulting in a succession of C's which gives the note G a secondary significance and the note C a predominating one.

An example from music of the late eighteenth century is the Haydn Piano Sonata in D (No. 7 in Vol. I of the Peters Edition). Only the exposition is cited here (Fig. 14A), and this has been reduced to a structural framework according to the Schenker concept. The basic structural chords are indicated in this example; Figure 14B indicates two distinct basic structures forming a primordial structure, which in this case is incomplete (I-V). Figure 14C gives a final analysis of the work, illustrating how the first basic

Fig. 14--Haydn, Piano Sonata, Vol. I, No. 7 (Peters Edition)

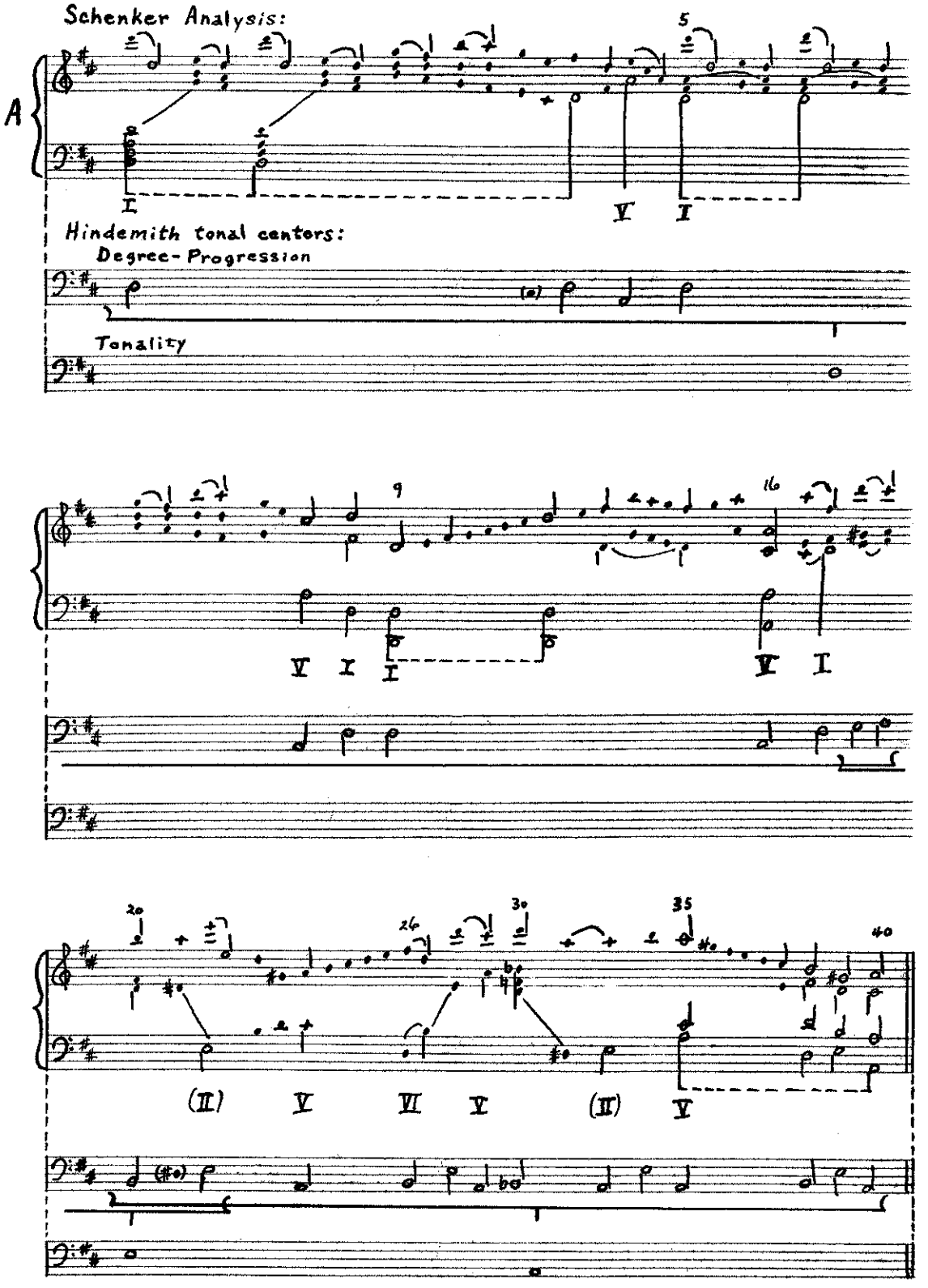
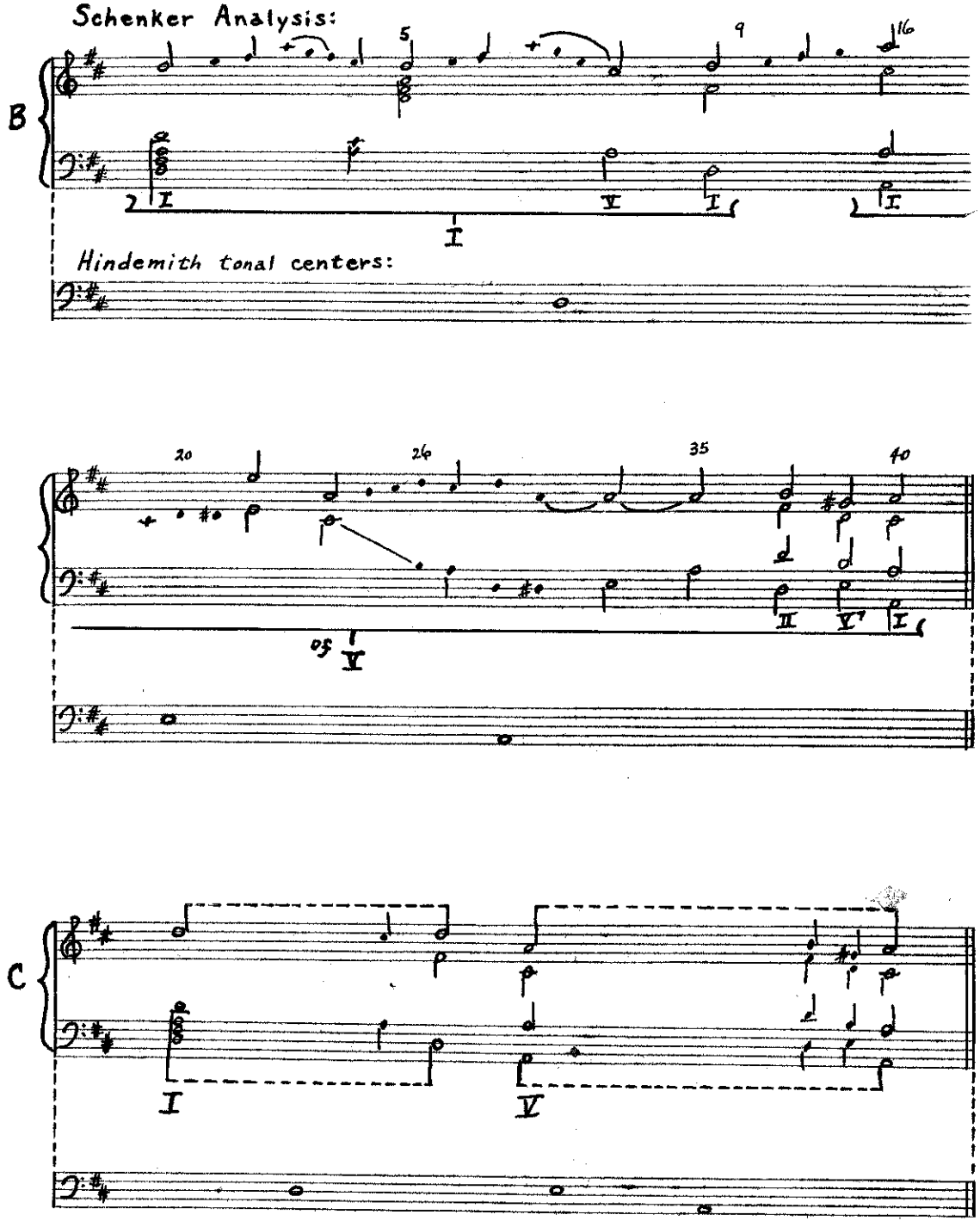


Fig. 14--Continued



harmonic structure (I-V-I in the tonic) plus the second structure (I-II-V^7-I in the dominant) reduce to a primordial structure of I-V.

An analysis of the Hindemith degree-progression produces the tonal spheres D, E, A, indicating an incomplete progression, or "half-cadence," from the tonic to the dominant. In this particular example, an application of the two concepts produces results which agree very closely.

An example illustrating the harmonic idiom of the early nineteenth century is the Beethoven "Bagatelle," Op. 119, No. 8 (Fig. 15A). It is interesting to compare the harmony of the work with that of the preceding example. Whereas the harmonic principles involved in the Haydn Sonata follow, to a large extent, those established by Bach, the present example involves a freer concept of tonality which borders on chromaticism. This chromaticism is evident not only in the melodic line but also in the chordal material. However, there is little basis on which to classify the work as "chromatic"; alteration is not used to the extent of affecting its tonal course.

A study of the Hindemith degree-progression reveals an establishment of five tonal spheres: C, E, G, F, and C. This analysis corresponds to the conventional one: measures 1-5 are in the key of C, measure six in E, measures 7-8 in G, measures 9-12 in F, and measures 13-20 in C. The Schenker

Fig. 15--Beethoven, "Bagatelle," Op. 119, No. 8

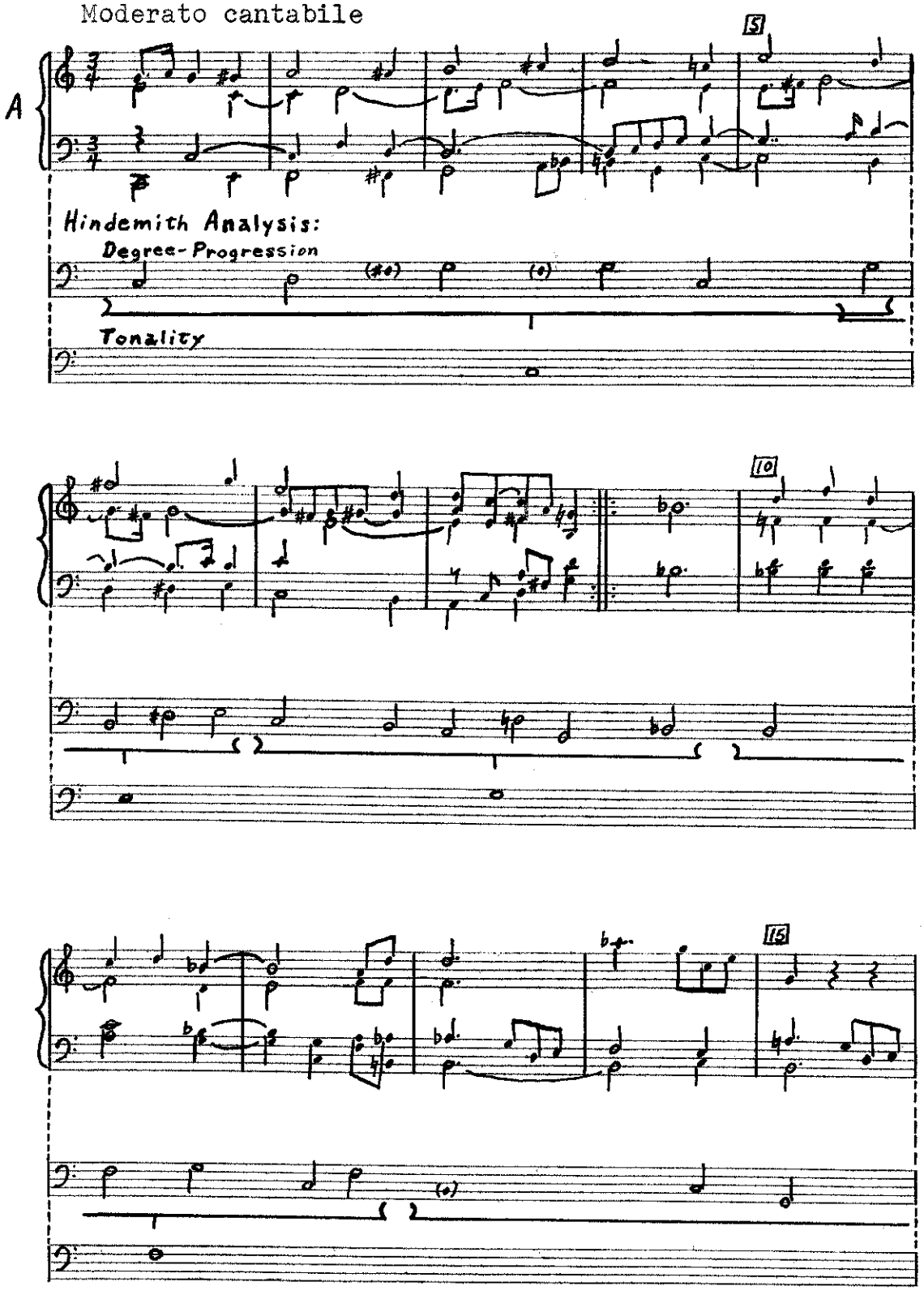
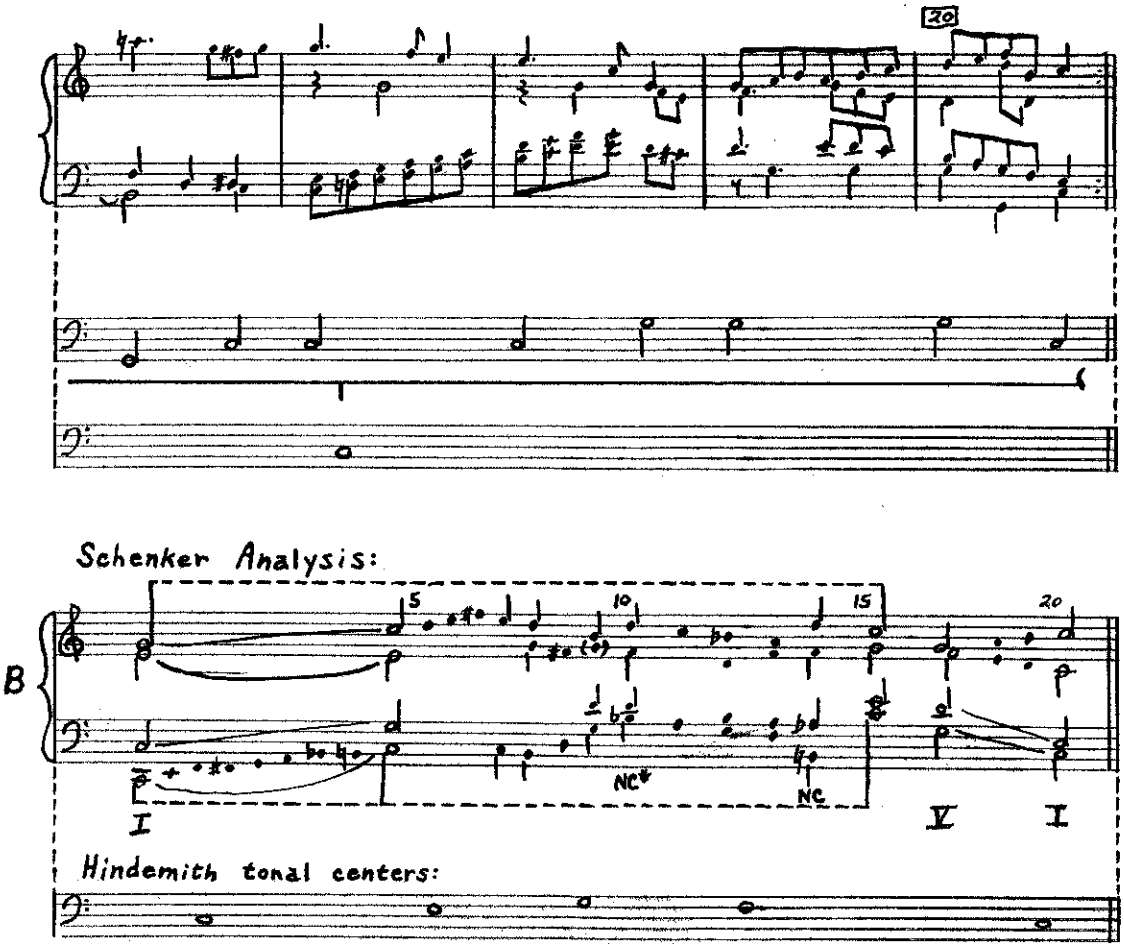


Fig. 15--Continued



*Neighbor-Chord

concept, admitting no such chain of modulations, interprets the first eighteen measures as a prolongation of one structural tonic chord, with the chromatic chords involved being interpreted as neighbor-chords used as embellishing functions (Fig. 15B). The V-I cadence in measures 19-20 completes the basic harmonic structure (I-V-I). The entire structural framework reduces itself to the three basic structural chords as shown in Figure 15C. By comparing the results of an analysis according to the two concepts, it may be seen that some disagreement exists (Fig. 15C). The Hindemith analysis may be reduced to a tonal scheme of I-III-V-(IV)-I; whereas the basic structure according to a Schenker analysis becomes I-V-I.

The excerpt from Wagner's opera Tristan and Isolde, "Descend upon us, Night of Love," is an example of the extreme chromaticism of the late nineteenth century (Fig. 16A). Wagner, who, along with other romanticists, was responsible for an almost complete negation of established harmonic principles, has been credited with extending the limits of tonality, if not causing its complete dissolution.

The example cited here has been reduced, for the sake of compactness, to its structural framework according to the Schenker concept. It is interesting to note the extreme chromaticism in the melodic line; the entire thirty-three measures represent one chromatically ascending melodic

Fig. 16--Wagner, "Descend upon us, Night of Love" from Tristan and Isolde.

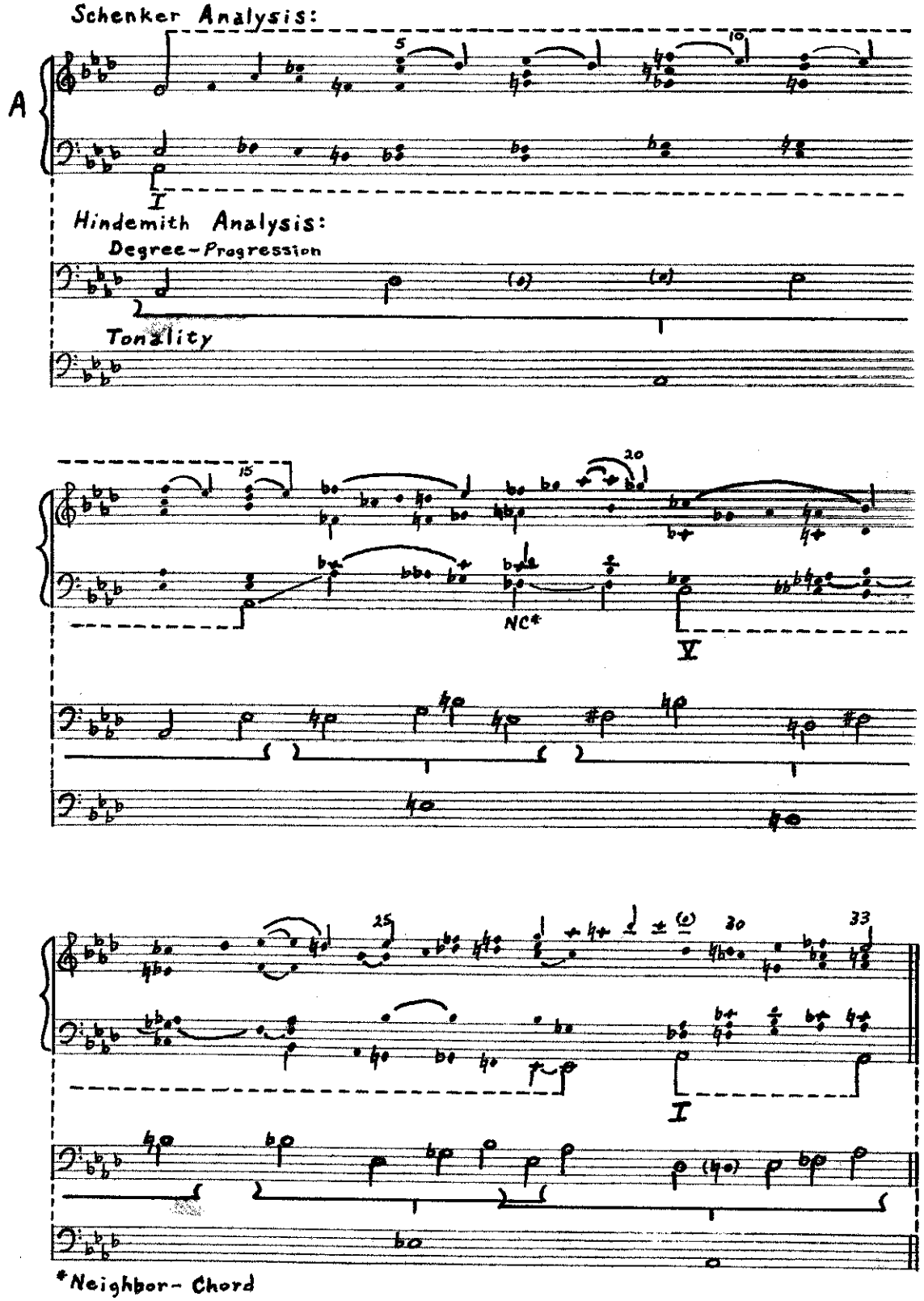
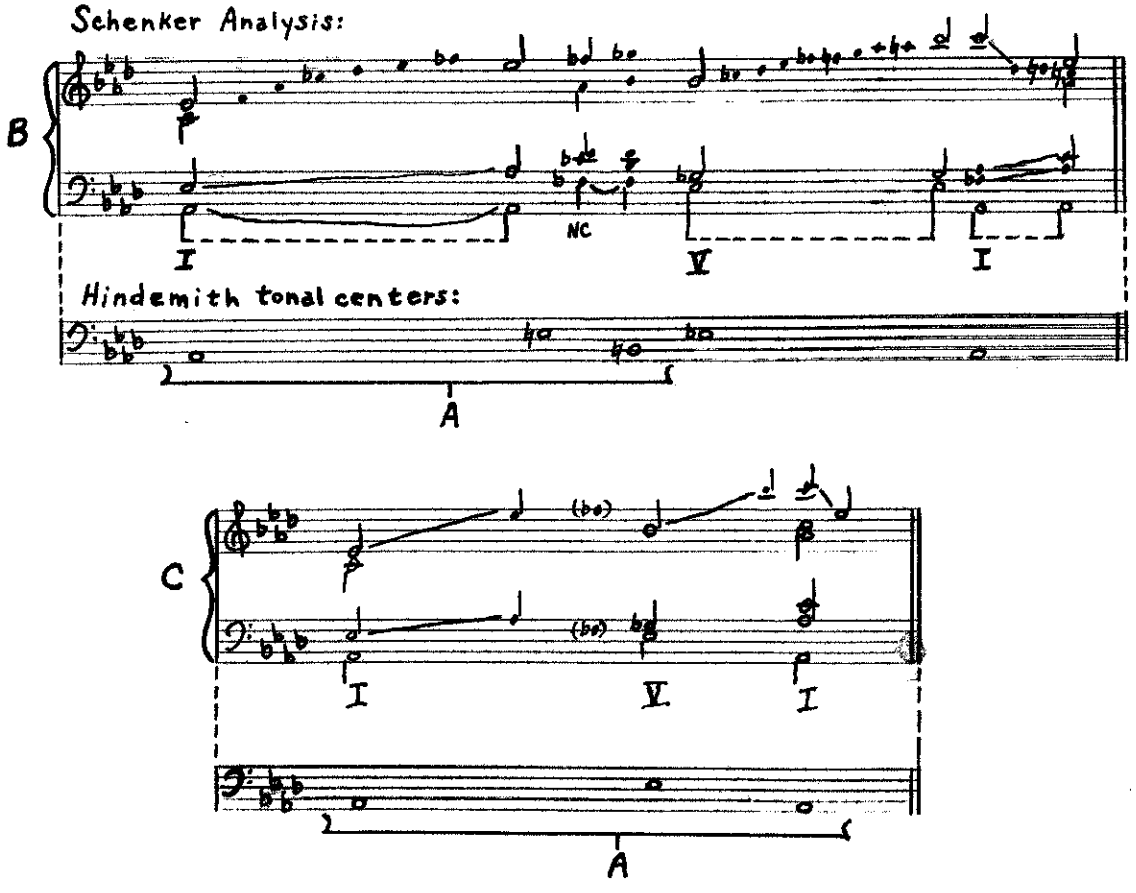


Fig. 16--Continued



line (Fig. 16B). The entire example may be conceived as containing three structural chords, resulting in a basic harmonic structure of I-V-I (Fig.'s 16B and 16C). Many types of prolongation are used here. Some chords are used non-harmonically, i. e., they support non-harmonic tones in the melody; others are used as passing chords or neighbor-chords.

A study of the Hindemith degree-progression produces the tonal spheres Ab, E♮ (enharmonic with Fb), B♮ (enharmonic with Cb), Eb, and Ab, which reduce further to Ab-Eb-Ab resulting in a tonality of Ab (Fig. 16C). Thus, in this

example there is a complete agreement between the results obtained by applying the two concepts.

This analysis reveals one important fact: chromaticism, however extreme, may obscure but does not alter the tonal course of the work--a fact which may often be disputed by conventional theorists.

The final example of music of the late nineteenth century is the Prelude "Danseuses de Delphes" by Claude Debussy (Fig. 17A). This example illustrates the impressionistic device of using chords in similar motion to support a melodic line (measures 4-5).

An analysis according to the Schenker concept reveals a basic harmonic structure of I-V-I (Fig. 17B). In the structural graphs of this example, octave transposition is used freely in order to simplify the analysis as well as to facilitate reading. The first nine measures represent a prolongation of a structural dominant chord prolonged by means of passing chords (secondary dominants, etc.) as well as contrapuntal chords which are used to support the melodic line. Measures 21-31 represent a prolongation of the final tonic chord, resulting in a basic harmonic structure of I-V-I.

An analysis of the Hindemith degree-progression produces a series of tonal spheres which, when grouped further, result in the tonal centers of Bb, F, and Bb, giving a tonality of Bb. These tonal centers compare favorably with

Fig. 17--Debussy, Prelude "Danseuses de Delphes"

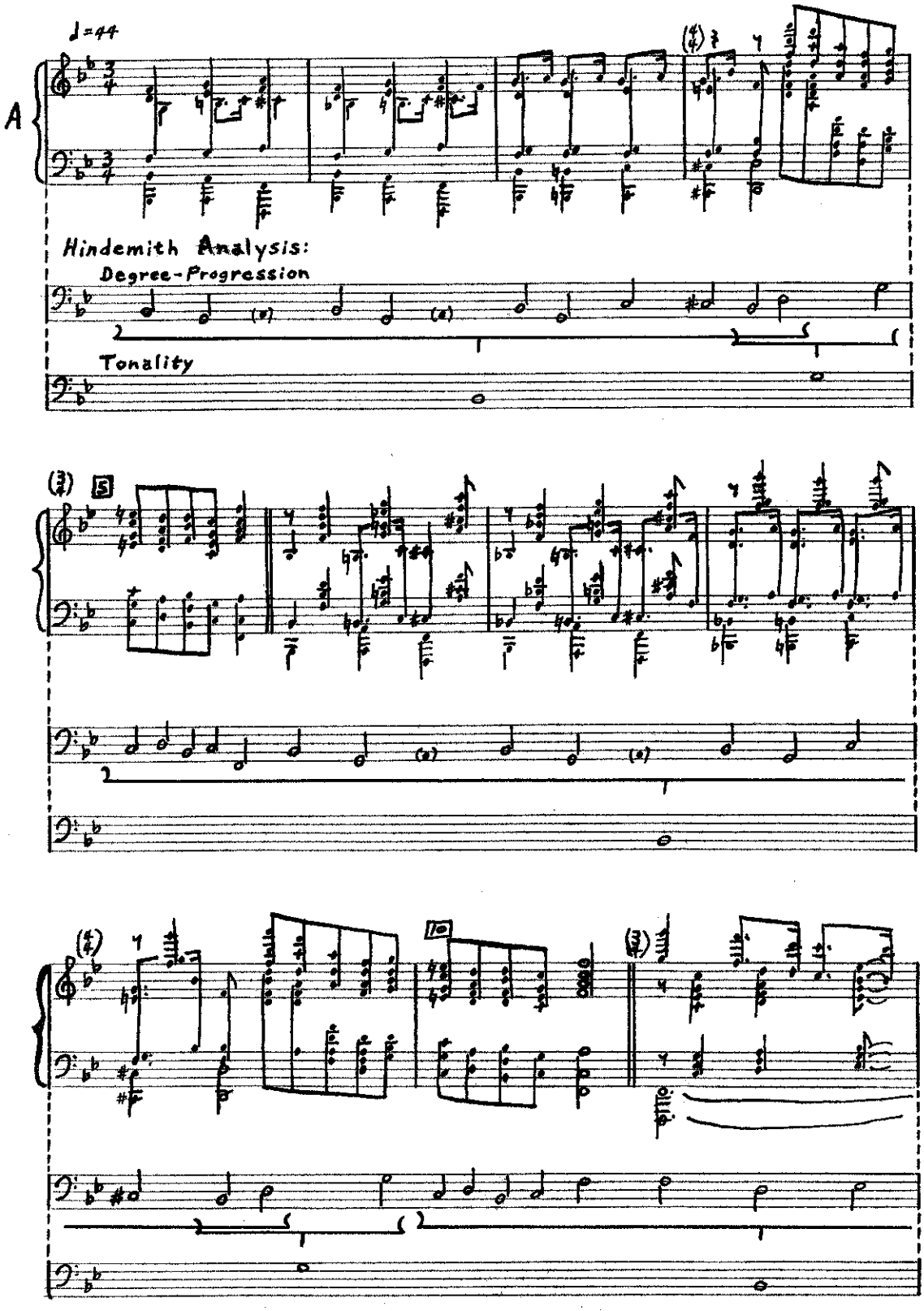
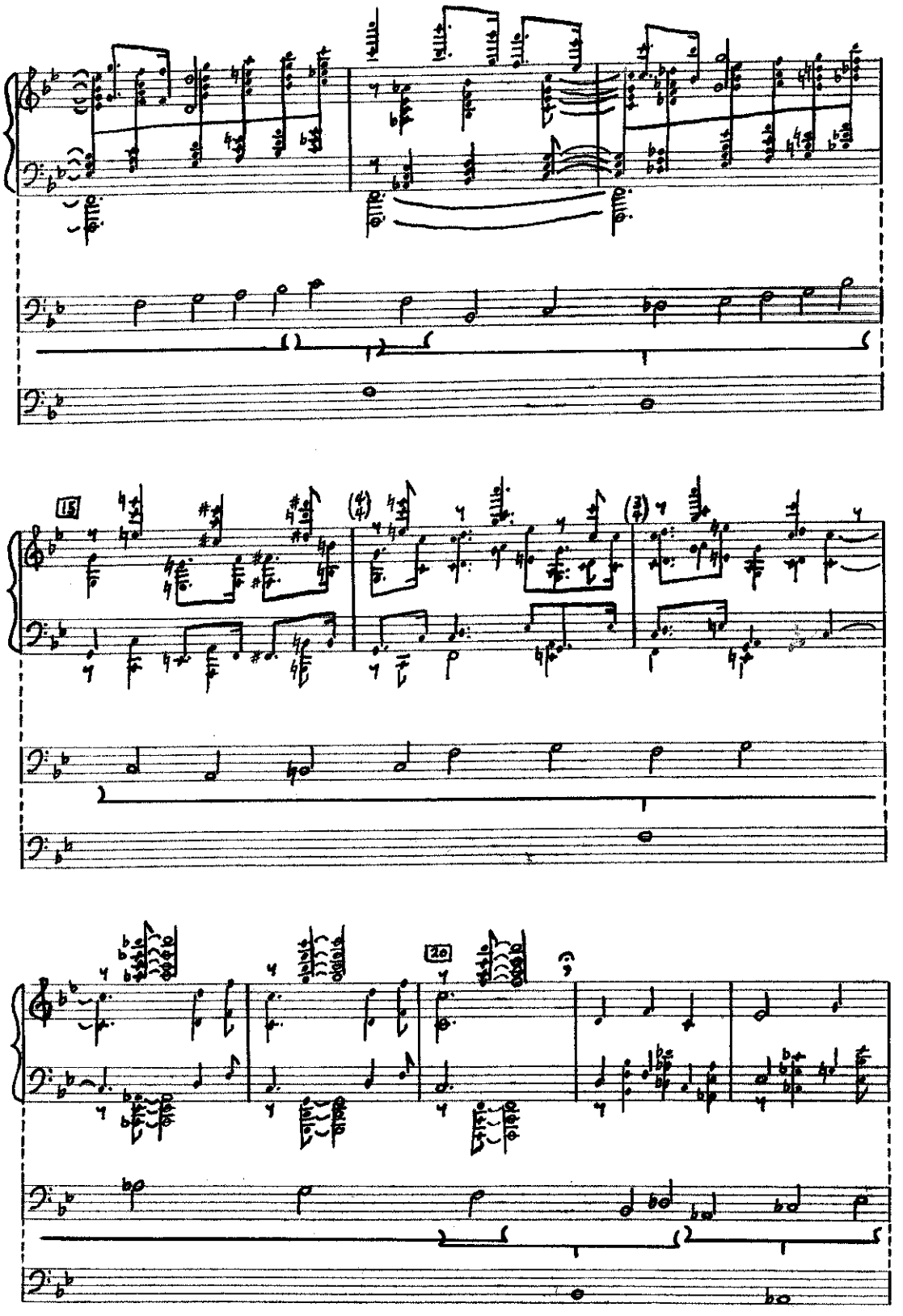


Fig. 17--Continued



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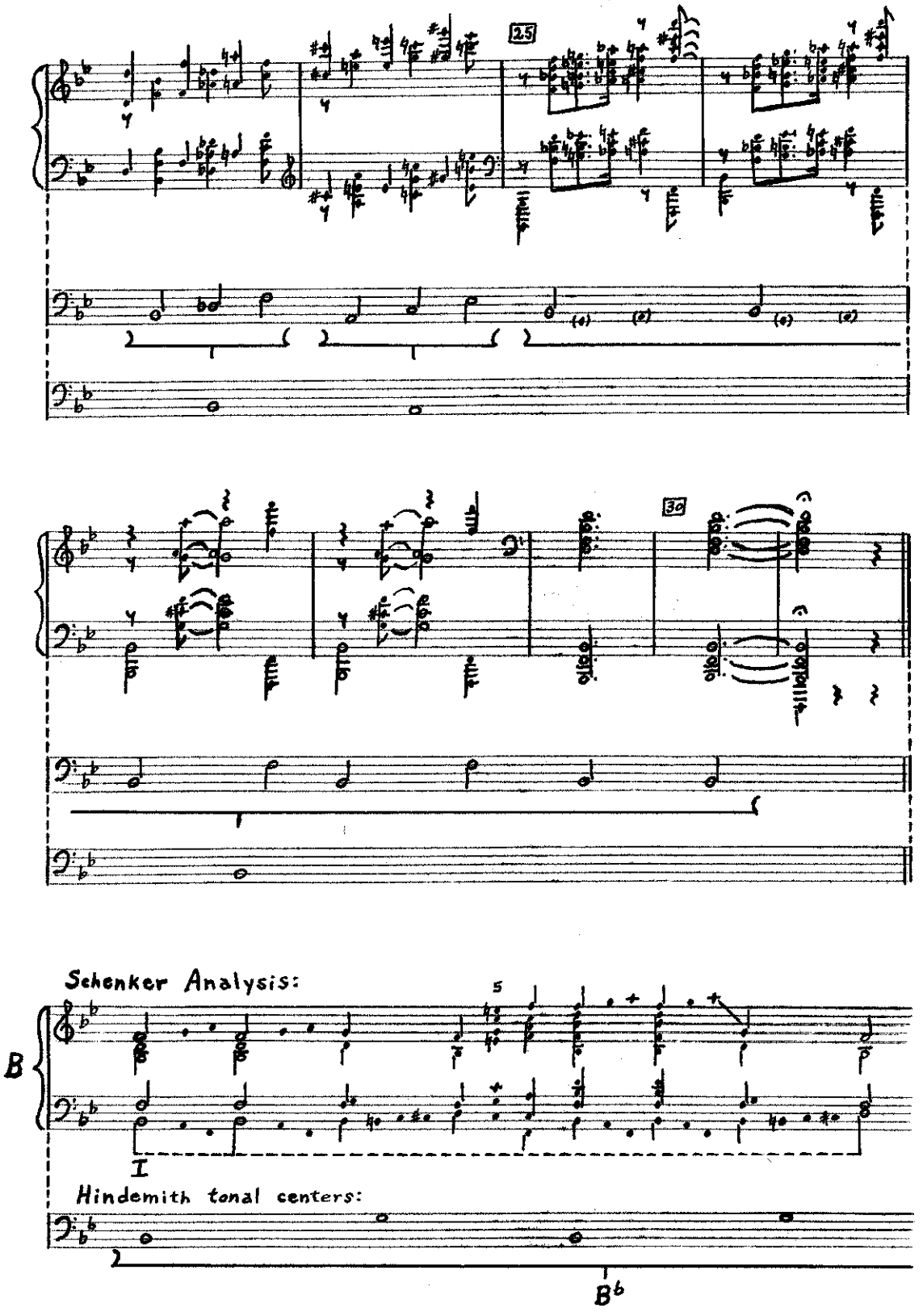
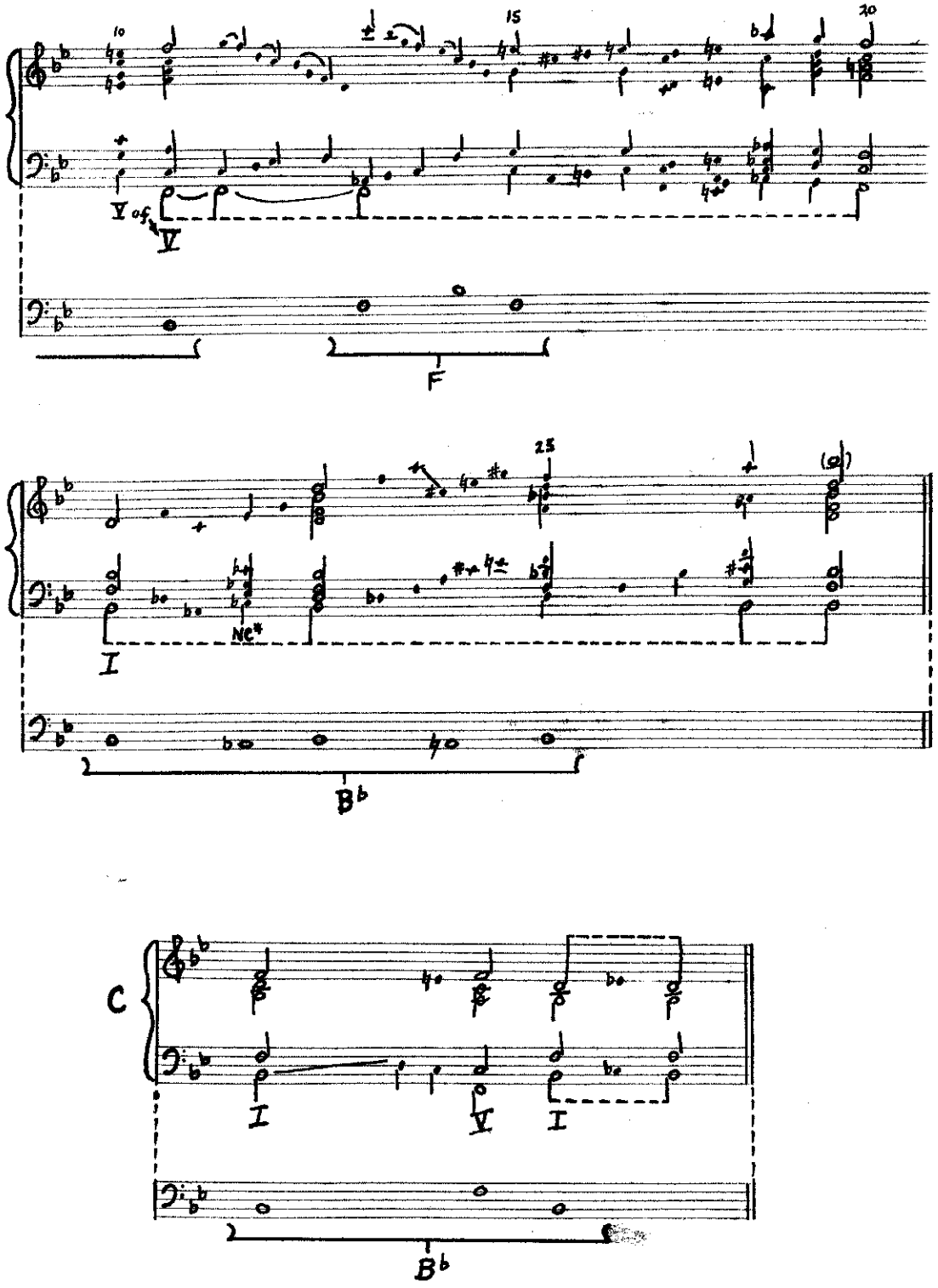


Fig. 17--Continued



*Neighbor-Chord

the final Schenker analysis (Fig. 17C), resulting in the three elements (structural chords vs. tonal centers) which give the work musical direction.

This example illustrates a broadening of the concept of tonality as far as non-harmonic material is concerned. But, as in the Wagner example, in spite of the use of chordal material considered foreign to the established tonality, the basic harmonic structure or the basic tonal scheme as revealed by analysis remains as concrete as in earlier examples.

A list of the basic harmonic progressions used in this chapter is found in Table 3. It may be observed that, in

TABLE 3

BASIC HARMONIC PROGRESSIONS (SCHENKER) USED IN CHAPTER III

Progression	Figure in Which Used
I-V-I	13, 15, 16, 17
I-V	14

this chapter, as well as in Chapter II, the progression I-V-I is by far the most frequent.

The examples in this chapter have illustrated the introduction of elements (chromaticism, impressionism, etc.) which tended to weaken the tonal fiber of each composition. A further dissolution of tonality is presented in the next

chapter, where some of the problems involved in analyzing the tonal structure of contemporary music will be discussed.

CHAPTER IV

ANALYSIS OF MUSIC SINCE 1900

In general, the music of the late nineteenth century tends to abandon many of the established laws of the major-minor tonal system for a freer type of musical expression characterized by extreme chromaticism, impressionistic devices, and other stylistic features which served to establish the need for a broader concept of tonality. Concerning this trend in harmonic development, Schoenberg[1] makes the following statement:

> From the beginning major and minor tonalities were interspersed with non-diatonic elements tending to form opposition to the fundamental tone yet compelling the application of strong means in order to verify the tonality, to paralyze eccentric effects. . . . The art of music was never really in possession of a tonality wholly limited to the seven diatonic tones of the scale.

Recent developments in harmony have resulted in a further use of "non-diatonic elements," tending to weaken the tonal fiber to an even greater extent. In many instances, a complete dissolution of tonality has been the result. During recent years, the great number of "atonal" works produced, as well as many which approach "atonality," suggest that tonality, in its conventional sense, may no longer be

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[1]Merle Armitage, Schoenberg, pp. 284-285.

essential to the unity of a composition. Regarding the question of whether tonality must be preserved, Schoenberg[2] states:

> Tonality . . . [is] no postulate of natural conditions, but . . . [is] the utilization of natural possibilities; it is a product of art, a product of the technique of art. Since tonality is no condition imposed by nature, it is meaningless to insist on preserving it because of natural law. Whether, for artistic reasons, tonality must be retained depends on whether it can be replaced.

Schoenberg[3] further asserts that, although tonality is, without question, one of the chief means by which a work may be unified, it is not the only means. He believes that a work which lacks a unification of harmonic material may have meaning through a logical development of motive and thematic material.

Figure 18A, a piano piece from the Mikrokosmos (Vol. 6, No. 150) by Béla Bartók, is an example of a "tonal" work of the twentieth century. This example illustrates a principle which Bartok frequently used to extend or disguise the tonality of a work, i. e., beginning or ending a piece in some key other than the tonic. The work is almost entirely in the dominant key (E Major). According to the Schenker concept the entire piece, with the exception of the final measure, represents a prolongation of a single dominant chord (Fig. 18B), resulting in what might be considered an

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[2] Ibid., pp. 299-300.

[3] Ibid., pp. 289-291.

Fig. 18--Bartók, Piano Piece from Mikrokosmos (Vol. 6, No. 150) (First section).

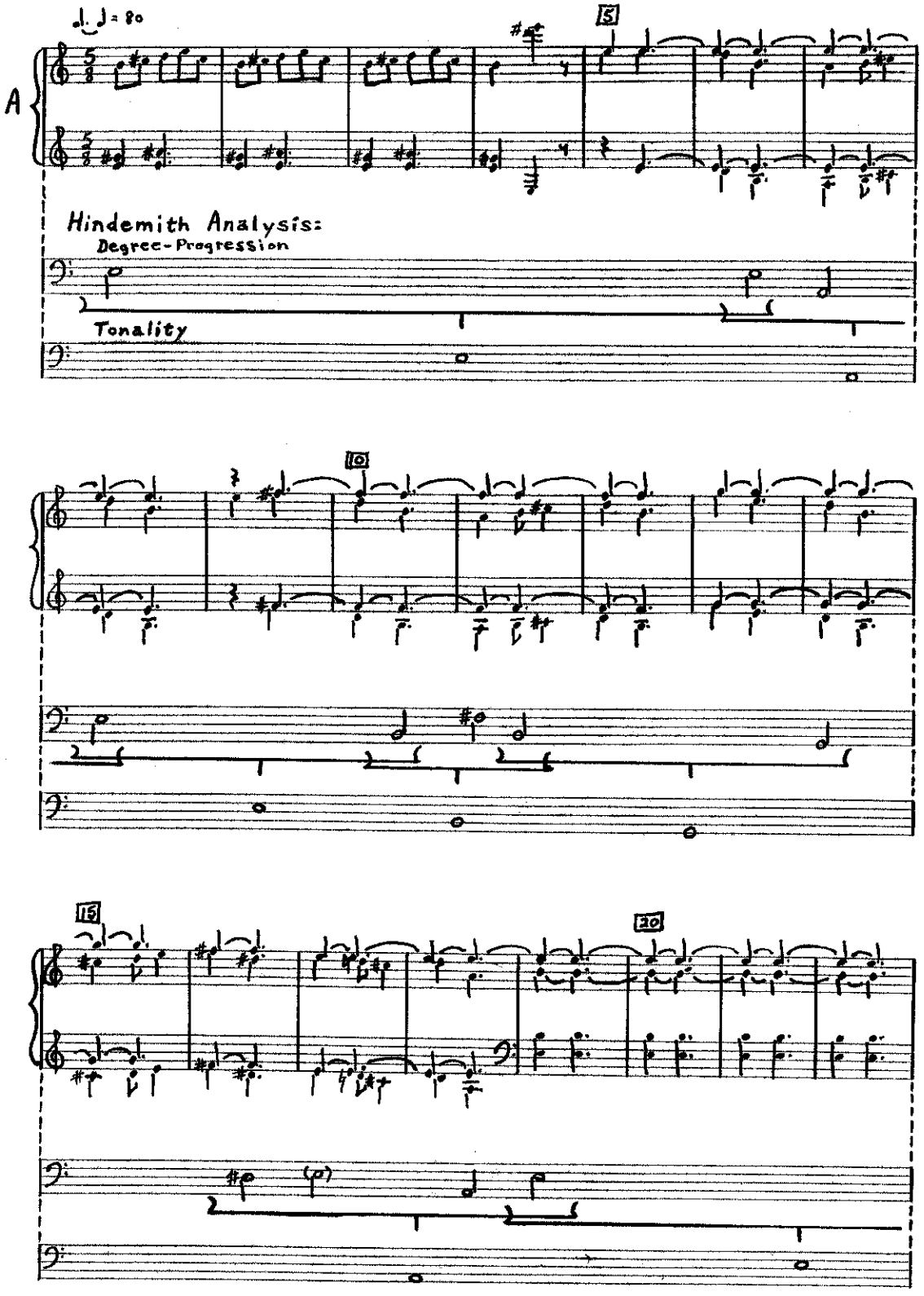
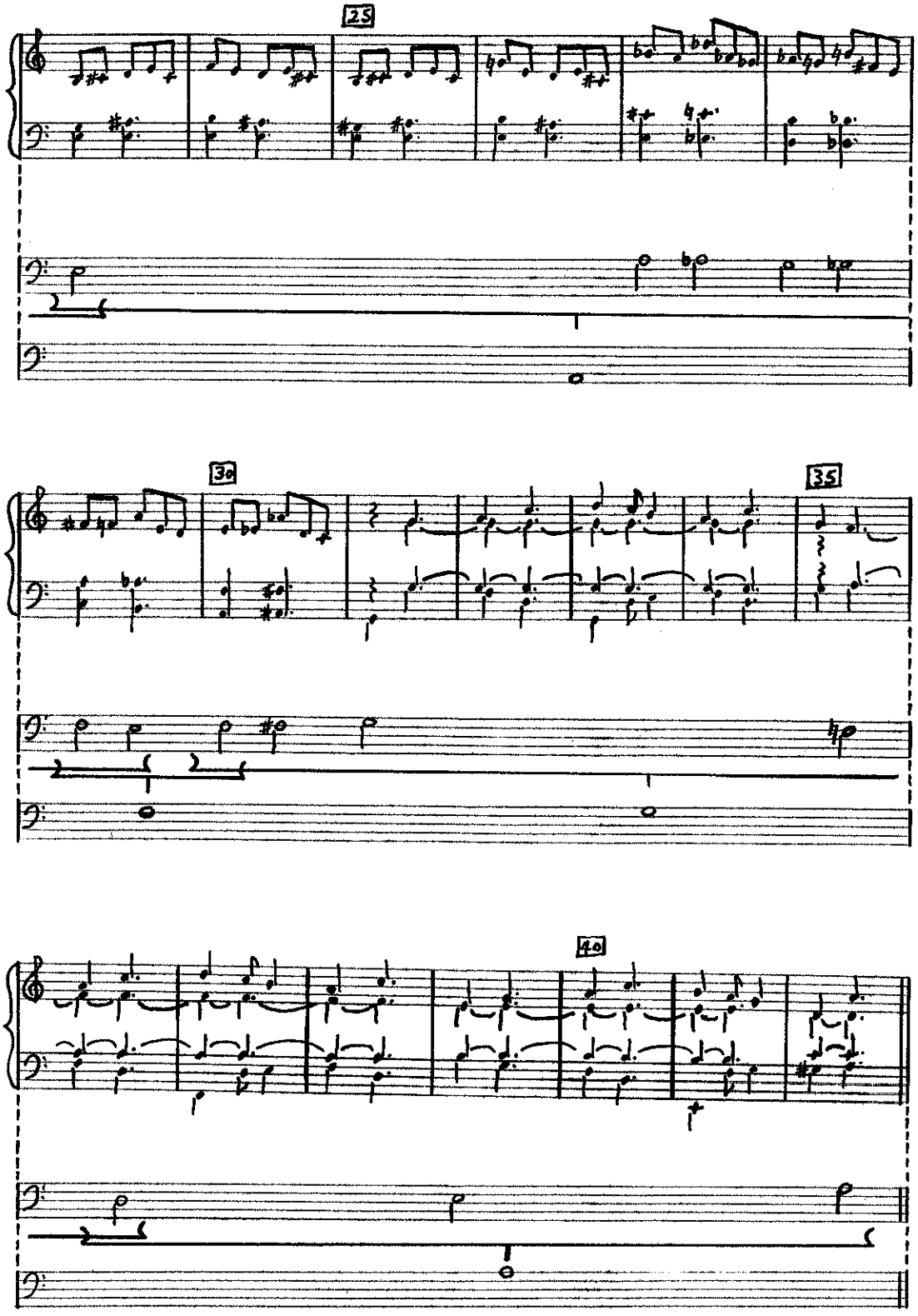


Fig. 18--Continued



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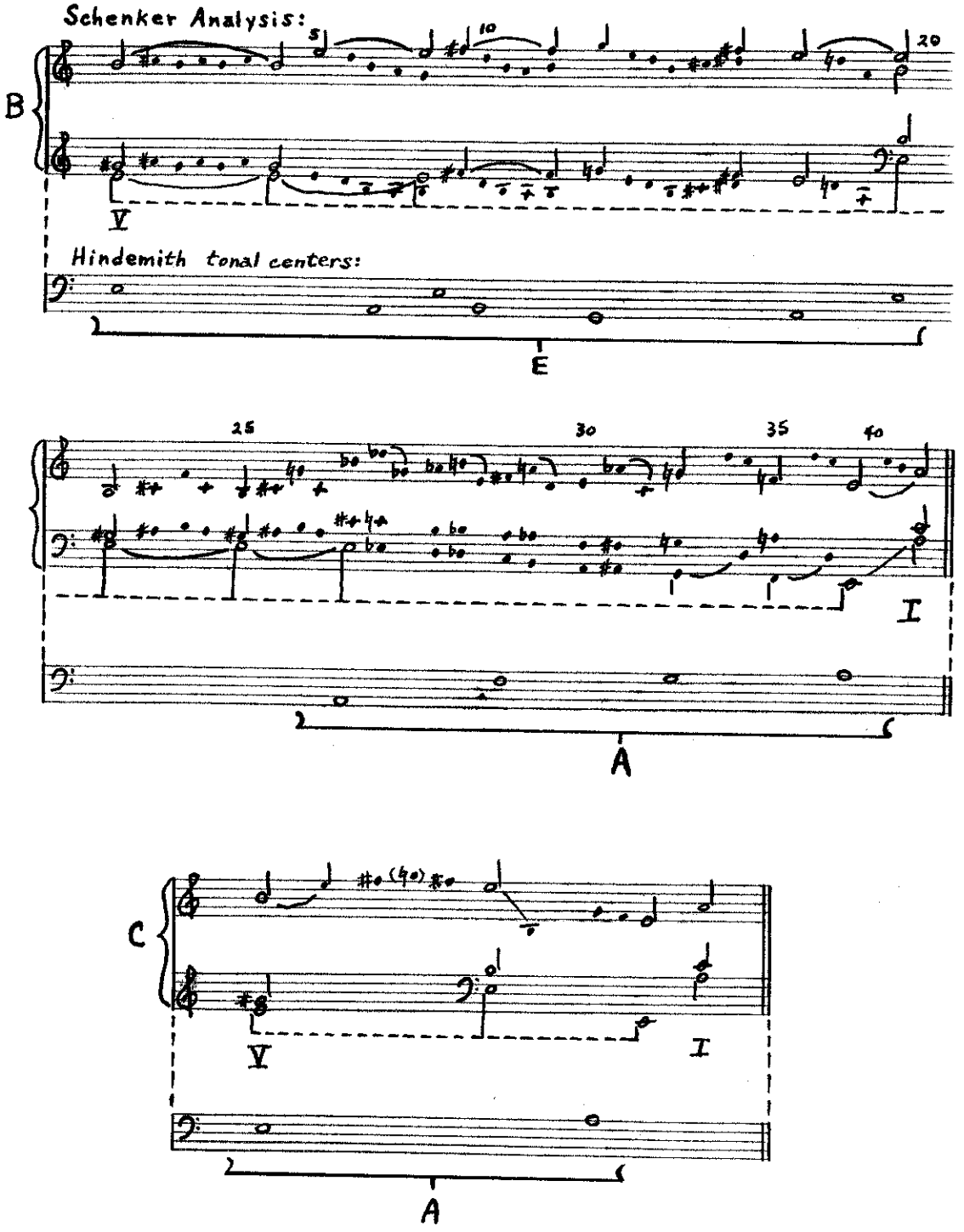

incomplete basic structure (V-I). The style of the work is more contrapuntal than harmonic. Measures 5-18 illustrate a melodic line which is doubled and accompanied only by an upper note which acts as a pedal. A similar contrapuntal treatment is found in measures 31-42 where the outer voices move in two-part counterpoint against sustained notes in the inner voices. However, the melodic lines involved in both of these excerpts as a rule delineate a chord, giving the piece a somewhat chordal basis, thus facilitating the analysis.

Measures 27-41 illustrate a chromatically descending bass-line (from e to E) which serves to prolong the motion within the structural dominant chord. The chords in these measures become subordinate to the structural framework and are treated as passing chords. Figure 18C is a graph of the basic harmonic structure of the work, resulting in the incomplete progression V-I.

A study of the degree-progression (according to Hindemith) produces a series of tonal spheres which, when grouped further, produce tonal centers of E and A resulting in an over-all tonality of A. This analysis is in complete agreement with the Schenker analysis: the tonal center of E corresponds to the structural dominant chord and the tonal center of A corresponds to the structural tonic chord (Fig. 18C).

An example of an "atonal" work of the twentieth century is the Piano Piece, Op. 19 No. 3, by Schoenberg (Fig. 19A). This piece is representative of Schoenberg's second, or "atonal" period.

Whether the application of the term "atonal" to music is justifiable is a problem about which few theorists are in agreement. Schoenberg, who in reaction to the chromaticism of the post-Wagnerian school created a new style of composition (beginning with the Three Piano Pieces, Op. 11) branded by theorists as "atonal," has emphatically rejected the use of the term and suggests that the term "pan-tonal" is more descriptive of the harmonic style.[4]

Hindemith,[5] also rejecting the use of the term "atonal," admits that there are two types of composition which, although they cannot be called atonal, yet by their harmonic content make it difficult for the listener to follow their tonal course. These are (1) chromaticism which, although using material of the diatonic system, employs continuous modulation and enharmonic changes and (2) the continuous use of chords of groups III and IV (Hindemith classification) in the effort to avoid triad formations indicative of the old diatonic system. Both of these types of composition

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[4]Armitage, Op. Cit., pp. 298-299.

[5]Paul Hindemith, Craft of Musical Composition, I, 153.

Fig. 19--Schoenberg, Piano Piece, Op. 19, No. 3

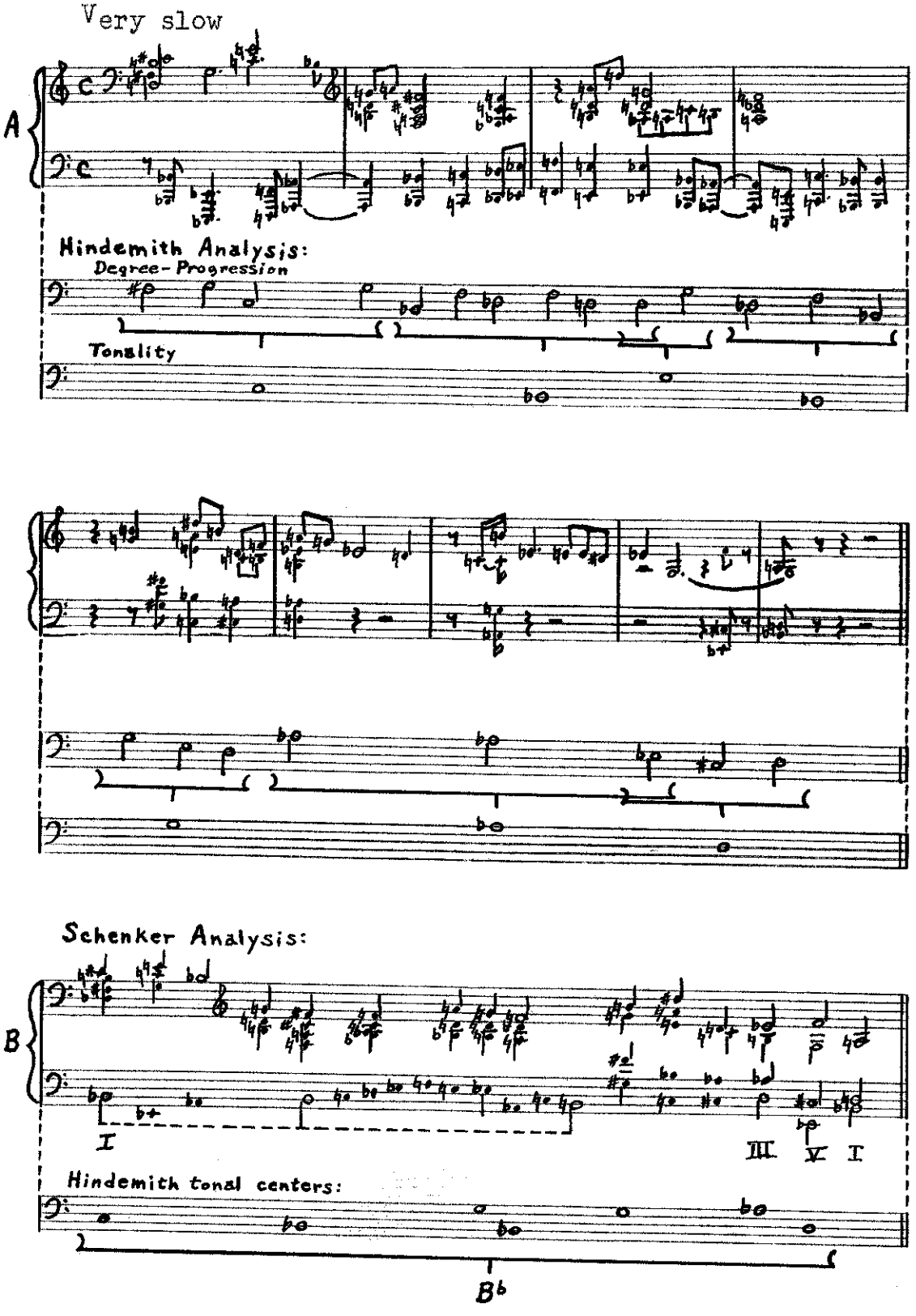
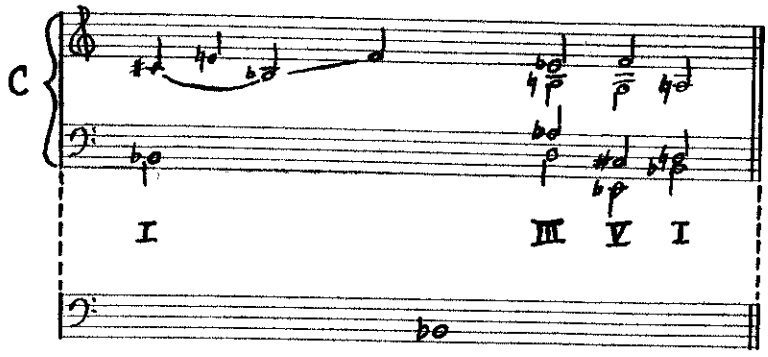


Fig. 19--Continued



are characterized by tonal ambiguity, making their analysis difficult to explain within the conventional concept of tonality.

Figure 19A may be classified as belonging to the second type of composition. An examination of the chordal material involved produces a succession of chords of groups III and IV, representing chords of highest tension and lowest stability (containing seconds and sevenths). In only two instances is there a relief from this tension (measures five and eight) by chords of group I (triad formation). The roots of these chords group themselves into tonal spheres of C, Bb, G, Bb, G, Ab, and D respectively, of which Bb becomes the tonal center (Fig. 19B).

Figure 19B shows a graph of the structural framework. In spite of the extreme complexity of chord material in this example, the bass, which for the first four measures moves in octaves, delineates intervals and scale-like

passages which suggest a tonality of Bb. Thus the first four measures may be considered a prolongation of the tonic chord. Measure five contains chords which act to prolong the motion between the structural tonic chord (measures 1-4) and the structural mediant chord (measure six). This mediant chord, although altered, assumes the role of a mediant and may even be interpreted in conventional theory as a III^9 with lowered fifth and seventh (B♭ enharmonic with Cb, the seventh of the chord). The next structural chord (the dominant in measure eight) is also altered. This chord may be interpreted as a V^9 in third inversion with a raised fifth and with the third omitted (F-(A)-C♯-Eb). The third of the dominant chord appears simultaneously with the final tonic chord. Figure 19C gives a final structural graph showing the basic harmonic structure, I-III-V-I.

The final example cited from music of the twentieth century is the Stravinsky "Dodo Wiegenlied" from the Berceuses du Chat (Fig. 20A). The group of short pieces which comprise the Berceuses du Chat were written in 1915-1916 as a study for the dramatic work "Renard" which followed them. The score of this work ("Dodo Wiegenlied") for voice and three clarinets has been reduced with the vocal part written as the top voice and the clarinets as the three lower voices. This example is a very interesting one from a stylistic point of view. The two lower voices

Fig. 20--Stravinsky, "Dodo Wiegenlied" from Berceuses du Chat for Voice and Three Clarinets.

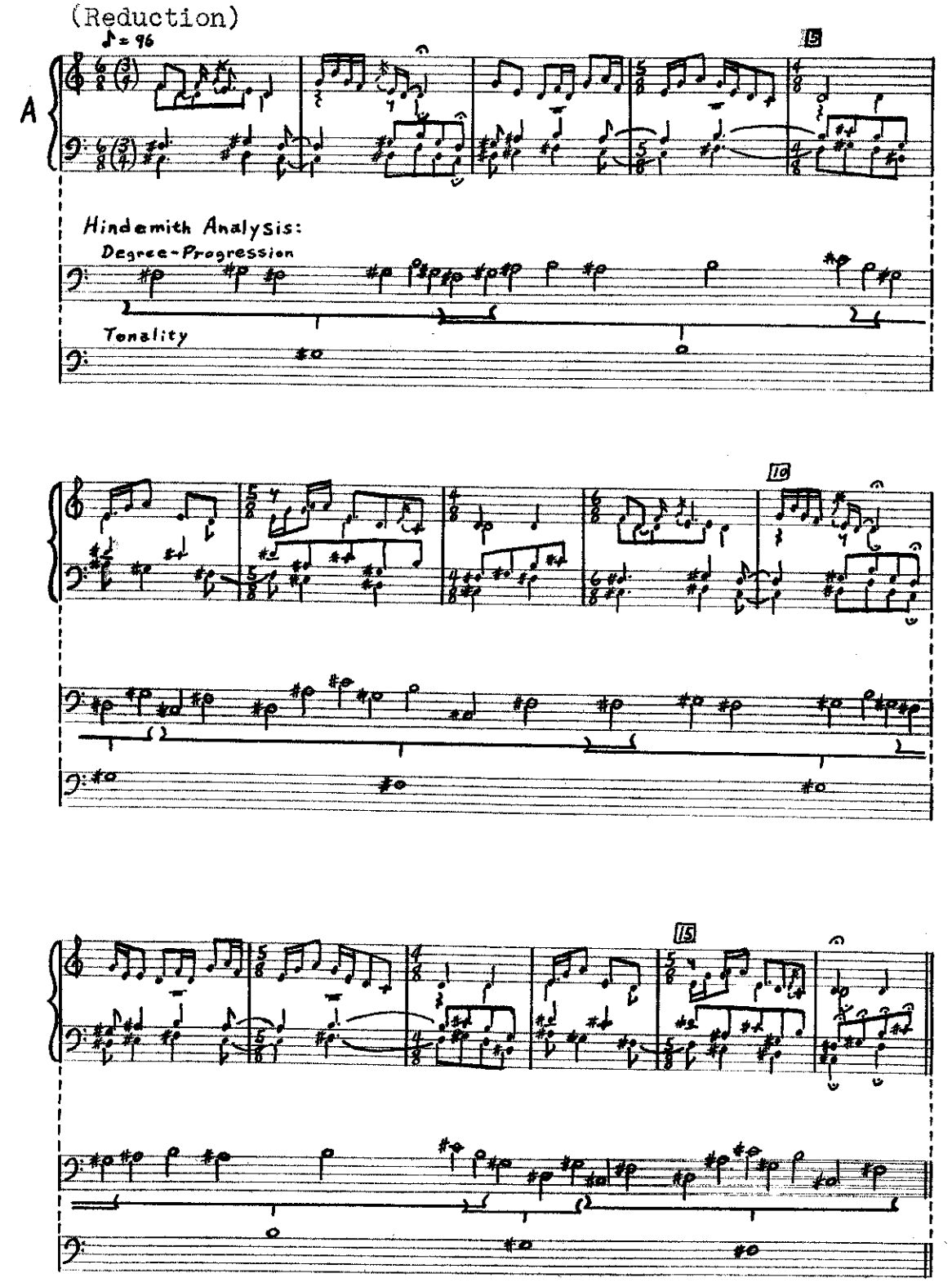
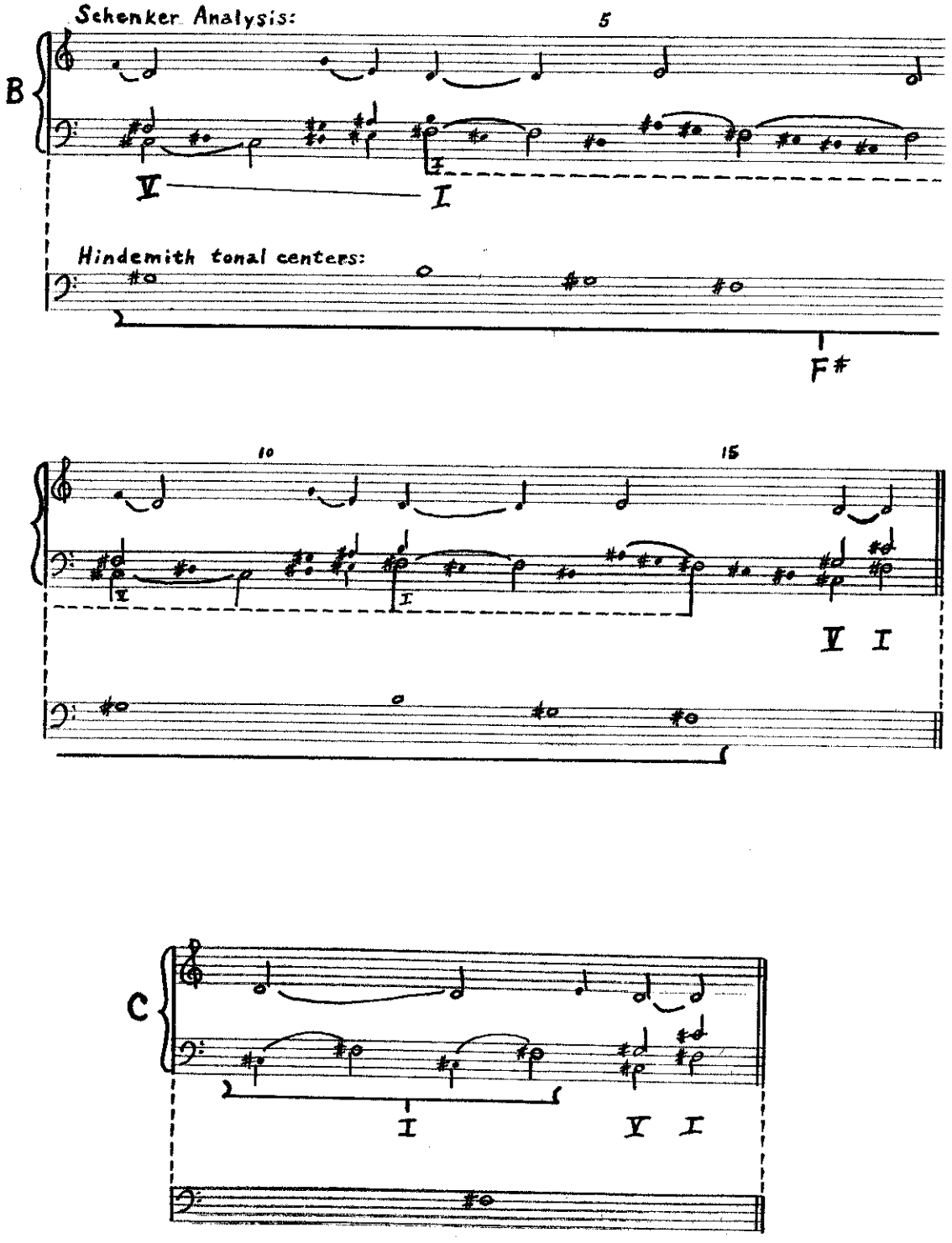


Fig. 20--Continued



move in organum a fourth apart while the two upper voices suggest the Dorian mode. Throughout the entire work the first clarinet, when heard, is merely a simplification of the vocal part. Or, on the other hand, the vocal part could be considered an elaboration or embellishment of the first clarinet. Thus the piece becomes, to a large extent, three-part counterpoint with the two lower voices moving in parallel fourths.

The difficulty in analyzing this piece lies in its "bitonality." According to the Hindemith tonal concept, the degree-progression produces a tonality of F#. A Schenker analysis produces approximately the same results. The first fifteen measures represent a prolongation of a chord on F# (the tonic) with the exception of the first 2½ measures. The piece actually begins on the dominant (C#), going to the tonic in measure three. Measure sixteen includes the structural dominant and tonic chords which complete the basic harmonic structure of I-V-I (Fig. 20C).

TABLE 4

BASIC HARMONIC PROGRESSIONS (SCHENKER) USED IN CHAPTER IV

Progression	Figure in Which Used
V-I	18
I-III-V-I	19
I-V-I	20

A summary of the basic harmonic progressions according to the Schenker concept may be found in Table 4. Although only a small sampling of twentieth-century music was analyzed, it is the author's belief that, as in previous examples, the progression I-V-I would prove to be used most frequently in contemporary music.

In this chapter the three examples presented were chosen to illustrate some of the most outstanding stylistic features peculiar to the music of the twentieth century. Many of the problems involved in the analysis have been discussed and in some instances more than one interpretation was given.

CHAPTER V

SUMMARY AND CONCLUSIONS

The preceding chapters have presented analyses of representative examples chosen from music beginning with the late thirteenth century and ending with the twentieth century. An application of the Hindemith and Schenker concepts to these examples has resulted in one important finding: in spite of the entirely different approaches of the two systems of analysis, the resulting tonality in each example has been the same.

Each of the two concepts of tonality has been found to contain certain faults as well as merits. First, the results of analysis according to the Schenker concept will be examined. Table 5 lists the basic (in some cases, primordial) harmonic structures resulting from the Schenker analysis and their frequency of use in the seventeen examples cited. The chief significance resulting from this table is the discovery that the majority of the examples possess a basic harmonic structure of I-V-I. It is the author's belief that, as a result of an examination of perhaps hundreds of examples chosen from the different schools or historical periods, the basic structure of I-V-I could easily prove to be more common than the others listed. This I-V-I progression

TABLE 5

FREQUENCY OF USE OF THE SCHENKER BASIC HARMONIC PROGRESSIONS

Basic (or Primordial) Harmonic Progression	Frequency
I-V-I	9
I-III-V-I	3
I-II-V-I	2
I-V	1
V-I	1
Indeterminate	1

actually outlines an A-B-A form which is probably the most important form, not only because of its use in such a large portion of music of different historical periods, but also because of its being used as a basis for larger and more complex forms.

It may be argued that the majority of musical compositions do not naturally fall into a basic or primordial structure of I-V-I. Mann[1] implies that Schenker, instead of adapting his method to follow the tonal course of a composition, makes the composition follow a prescribed tonal course. This seems to be the situation in some of the examples which were analyzed. The music does not always follow a prescribed course (e. g., I-V-I or I-III-V-I), but

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[1]Michael Mann, "Schenker's Contribution to Music Theory," The Music Review, X (February, 1949), 26.

may have an individual tonal course as seen by an analysis of the Halle example in Chapter II.

According to Mann,[2] Schenker sees in the major and minor tonality that characterizes the period beginning with Bach and ending with Brahms the final achievement of musical art. He condemns all music that transcends the technique of that era and regards all musical styles which preceded it as preliminary steps. Mann states further:

> When Schenker can no longer find in the present that shadow of the past to which he would forever bind music, he simply stands bewildered. The present then seems like a sudden breaking away from the past, a breaking of the "laws of the genius."[3]

It follows that Schenker's analytical system appears to be applicable to the fugue and sonata style of the eighteenth and nineteenth centuries. However, in the analysis presented in Chapters II and IV the Schenker system has been successfully applied to music of other centuries. But this does not indicate that every piece of music from these periods will lend itself to this method of analysis. The example by Adam de la Halle (Chapter II, Figure 4A), with a tonality of F (tonal spheres of A, G, and F), does not possess a basic harmonic structure which conforms to the principle of a fundamental progression as conceived by

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[2] Ibid., p. 6.

[3] Ibid., p. 24.

Schenker. Similar situations may arise in the analysis of music from the medieval and Renaissance periods.

The three examples cited from music of the twentieth century were analyzed without difficulty by the Schenker method. However, since these examples are only a small sampling of the music of this century and certainly do not represent all of the stylistic features of present-day music, we are not justified in assuming that the Schenker analytical system may be applied to every piece of music of this era.

Two chief merits of the Schenker concept are: (1) it deals with chord function and significance instead of chord grammar, and (2) it is an analysis of what we hear in music which, in reality, should be the final criterion.

Sessions[4] lists two main objections to the Schenker concept: (1) "it is far too primitive as a description of the actual events which constitute a musical work, or the sensations and apperceptions that constitute the ultimate comprehension of that work," and (2) "it leaves the domain of exact description and enters that of dogmatic and speculative analysis." Other theorists have condemned the Schenker concept as being dogmatic. It may be evident from examining some of the analyses presented in preceding chapters

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[4]Roger Sessions, "Heinrich Schenker's Contribution," Modern Music, XII (May-June, 1935), 176-177.

that to arrive at a prescribed fundamental progression, while at the same time ignoring many important stylistic features which do not directly contribute to this progression, constitutes a type of dogmatic analysis.

The Hindemith concept, because of its objective and non-aesthetic approach, may be criticized as being too "artificial" a system. In contrast to the Schenker system of analysis according to what we hear in music, the Hindemith system is an analysis according to a prescribed method based on the overtone series, and as a consequence is almost entirely devoid of aesthetic judgment. Although this system may be applied to any piece of music no matter how complex, it may be argued that a tonality which is derived from an "atonal" or "tone-row" composition has, in reality, little significance if the ear does not perceive it.

Some of the merits of the Hindemith concept are: (1) it is applicable to music of any era; (2) it establishes the legitimacy of chords which were never used in conventional analysis and which are subject to only one interpretation; and (3) it establishes a system of chord-classification, whereby chords may be ranked according to tension or stability.

Two main objections to the Hindemith concept are: (1) it arrives at a tonality by means of an objective and

non-aesthetic approach; and (2) it often arrives at a tonality which, if it is not perceived by the ear, may not actually exist.

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