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THEORIES OF RHYTHM IN THE NINETEENTH AND TWENTIETH CENTURIES WITH A CONTRIBUTION TO THE THEORY OF RHYTHM FOR THE STUDY OF TWENTIETH-CENTURY MUSIC

A Thesis

Presented to the Faculty of the Graduate School

of Cornell University for the Degree of

Doctor of Philosophy

by

Howard Elbert Smither

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BIOGRAPHICAL SKETCH

The author, the son of Mr. and Mrs. Elbert S. Smither, was born in Pittsburg, Kansas on November 15, 1925. He attended public schools in Wichita, Kansas and studied at the University of Wichita during the academic year 1944-45. He served in the Army Air Force as a bandsman during the year 1946. In 1947 he became a student at Hamline University in St. Paul, Minnesota where he received the degree of Bachelor of Arts in 1950. He registered as a candidate for the degree of Master of Arts at Cornell University in 1950, and he received the degree in September, 1952. During the academic years 1952-53 and 1954-55 he was in residence at Cornell University as a candidate for the degree of Doctor of Philosophy. In 1953-54 he studied musicology at the University of Munich, Germany as the recipient of a Cornell University Senior Graduate Fellowship. Since 1955 he has been a member of the faculty of Oberlin Conservatory.

ACKNOWLEDGMENTS

I should like to express my appreciation to Professors William W. Austin, Donald J. Grout, and Robert M. Palmer for their interest and advice in this study. I am indebted to Professor Grout, under whose guidance Part I was written, for his criticism of that part of the dissertation, and I am equally indebted to Professors Austin and Palmer for their criticism of Part II. The approach to analysis presented in Chapter VIII has been influenced by numerous discussions of analytical questions with Professors Austin and Palmer as well as by concepts presented in Professor Palmer's course "Analytic Technique."

To my wife I owe a particular debt of gratitude for her constant encouragement and her untold hours of labor in typing the preliminary drafts.

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PART II

INTRODUCTION

The roots of the present study extend to 1951 when the author began to seek an approach to the analysis of rhythm in twentieth-century music. One of the first difficulties encountered was the confusion of terminology found in dictionaries of musical terms and in treatises on the theory and history of music; the author's master's thesis constitutes an effort toward the clarification of basic terminology.[1] That study also points out the need for a more detailed investigation of the basic assumptions of rhythmic theory. An attempt to formulate a clear and useful theory for the study of rhythm in twentieth-century music must take full cognizance of the theories of the past, particularly of the immediate past from which current concepts have grown, so as to avoid the pitfalls and conserve the values of those theories. The only history of rhythmic theory is Carl Alette's dissertation Theories of Rhythm;[2] but the breadth of Alette's

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1. "A Critical Survey of Basic Terminology Relating to Rhythm and Meter for Use in the Study of 20th-Century Music" (Unpublished, Cornell University, 1952).

2. Rochester, N. Y., 1954. Curt Sachs' Rhythm and Tempo (New York, 1953) contains useful theoretical material although it is not a history of rhythmic theory.

work, a survey of theories from ancient Greece to the present, did not permit him as detailed a presentation of the theories of the nineteenth and twentieth centuries as would be desirable for our purpose. Thus, we have found it necessary, once again, to provide further groundwork for a theory of rhythm for the study of twentieth-century music.

An enormous amount of writing has been done in the nineteenth and twentieth centuries on the subject of rhythm in its various manifestations. C. A. Ruckmich's bibliography of rhythm, published between 1913 and 1924, includes 714 titles of writings about rhythm in the fields of music, literature, aesthetics, biology, physiology, and psychology.[3] His bibliography could, of course, be extended to a much greater length were it brought up to date. Within the field of music alone, the number of writings on rhythm is vast, as rhythm is an element that must be dealt with in treatises on theory, composition, performance, aesthetics, and the psychology of music.

Rather than to attempt a study of all of the literature in the field, a nearly impossible task of questionable value, we have restricted the major portion of Part I of this dissertation to a detailed examination of seven of the most influential treatises written in the nineteenth and twentieth centuries dealing with the analysis of rhythm in music of the eighteenth and nineteenth centuries. This restriction

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3. "A Bibliography of Rhythm," American Journal of Psychology, XXIV (1913), 508-19; XXVI (1915), 457-59; XXIX (1918), 214-18; XXXV (1924), 407-13.

excludes such writings as that of Karl Bücher whose treatise is a study of the rhythm of manual work as a shaping force in the rhythm of primitive music;[4] also excluded are such works as those by Dom André Mocquereau[5] and William G. Waite[6] which deal with rhythm in early music. The writings of Emil Jaques-Dalcroze and his followers are excluded, as their purpose is to set forth an educational viewpoint rather than a theory for the analysis of musical rhythm.[7] Certain well-known works of the twentieth century are not treated here because of their heavy dependence upon the theories dealt with in the treatises examined in Chapters II-VI.[8]

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4. Arbeit und Rhythmus (Leipzig, 1896).

5. Le nombre musical grégorien (2 vols.; Rome, 1908-1927).

6. The Rhythm of Twelfth-Century Polyphony (New Haven, 1954).

7. An explanation of the theory, approach, and values of the Jaques-Dalcroze method of instruction known as eurhythmics is presented in a collection of essays written between 1898 and 1911, published as Le rhythme, la musique et l'éducation (Lausanne, [1919?]). This collection appeared in an English translation by Harold F. Rubenstein as Rhythm, Music and Education (New York, 1921). Details of a practical nature may be found in Jaques-Dalcroze's series of exercise books published under the title Méthode Jaques-Dalcroze (5 pts. in 8 vols.; Lausanne, 1906-1917). Papers and abstracts of papers dealing with eurhythmics may be found in: Institute Jaques-Dalcrose, Compte rendu du Ier congrès du rythme, ed. Albert Pfrimmer (Geneva, 1926). Edgar Willems' Le rhythme musical (Paris, 1954) is a psychological study favoring the eurhythmic viewpoint.

8. The best-known of these treatises are: Gustav Becking, Der musikalische Rhythmus als Erkentnisquelle (Augsburg, 1928). Philippe Biton, Le rythme musical (Paris, 1948). René Dumesnil, Le rythme musical (Paris, 1921). C. F. Abdy Williams, The Aristoxenian Theory of Musical Rhythm (Cambridge, 1911), The Rhythm of Modern Music (London, 1909), The Rhythm of Song (London, 1925).

Chapter I is a study of two works that represent a kind of lowest common denominator in the treatment of rhythm at a popular, elementary level in the early and mid-nineteenth century. This beginning makes possible the determination of the extent to which the more specialized treatises on rhythm, studied in Chapters II-VI, merely restate such theory, develop it further, or reject it. Part II begins with a comparison and criticism of the treatises examined in Part I. The final chapter constitutes an approach to the analysis of musical rhythm and a classification of twentieth-century music according to rhythmic organization.

None of the treatises studied in Part I originally appeared in English. There are published translations into English of those dealt with in Chapters I and II, and of the first treatise of Chapter III. All quotations cited from those works are from the English translations, which have been checked for accuracy with the original texts; when necessary to prevent confusion in translated quotations, original terms are placed in brackets following translated terms. Quotations from the treatises studied in Chapters IV to VI are English translations by the present author; the original texts appear in footnotes.

Some of the authors whose treatises are studied in Part I did not identify all of their musical examples. Certain of the unidentified ones were written by the authors of the treatises expressly to serve as illustrations of theoretical points. Wherever this was not the case, the present author has verified the theorists' identifica-

tions, and, insofar as possible, he has supplied identifications for the originally unidentified ones.

PART I

CHAPTER I

THE TREATMENT OF RHYTHM IN BASIC THEORY AND COMPOSITION TREATISES OF THE NINETEENTH CENTURY

The sections on rhythm in two representative theory and composition treatises of the nineteenth century have been selected for study in this chapter. The first work to be examined, Adolf Bernhard Marx's Allgemeine Musiklehre,[1] is a typical elementary instruction book in music theory; the second, Gottfried Weber's four volume work Versuch einer geordneten Theorie der Tonsetzkunst,[2] is representative of the more advanced composition treatise. These two works present the kind of rhythmic theory found in most nineteenth-century writings for similar purposes.[3]

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1. Leipzig, 1832.

2. 4 vols.; Mainz, 1817-1821.

3. For other nineteenth-century theory and composition treatises in which the sections on rhythm are similar to those studied in the present chapter, see: Henri-Montan Berton, Traité d'harmonie (Paris, [1815]). J.-F. Fétis, Traité complet de la théorie et de la pratique de l'harmonie (4th ed.; Paris, 1849). Johann Christian Lobe, Katechismus der Kompositionslehre (Leipzig, 1862). [Johann Bernhard] Logier, Logier's System of the Science of Music, Harmony, and Practical Composition (London, [1843]). Jerôme J. de Momigny, Cours complet d'harmonie et de composition (3 vols.; Paris, 1803-1806). Conservatoire national de musique et declamation, Principes élémentaires de musique (Paris, [1800]). Anton Reicha, Cours de composition musicale (Paris, 1818).

Adolf Bernhard Marx (1795-1866) was a student of Daniel Gottlob Türk and Karl Friedrich Zelter. From 1824 to 1830 he was editor of the Berliner allgemeine musikalische Zeitung. In 1830 he became a professor of music at the University of Berlin, and from 1850 to 1856 he also taught theory at the Sternsche Konservatorium in Berlin. Thereafter he occupied himself with private students and university duties.[4]

Marx was the author of numerous widely read books and articles about music. His most detailed statements on the subject of musical rhythm are found in Die Lehre von der musikalischen Komposition[5] and Allgemeine Musiklehre, mentioned above. The former work appeared in numerous editions, some by Hugo Riemann; the third edition was translated into English and the treatise was published in several subsequent English editions.[6] Allgemeine Musiklehre contains much of the same material concerning musical rhythm as does the other treatise but is more concise; it appeared in ten German editions between 1839 and

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4. Baker's Biographical Dictionary of Musicians, ed. Nicholas Slonimsky (5th ed.; New York, 1958), pp. 1039-40. Robert Eitner in Allgemeine deutsche Biographie (Leipzig, 1875-1912), XX, 533-39. Hans J. Moser, Musik Lexikon (4th ed.; Hamburg, 1955), II, 476. Hugo Riemann, Musik Lexikon, ed. Alfred Einstein (11th ed.; Berlin, 1929), II, 1124-25. Hans Rutz in Grove's Dictionary of Music and Musicians, ed. Eric Blom (5th ed., London, 1954), V, 603-04.

5. 4 vols.; Mainz, 1837-1847.

6. Theory and Practice of Musical Composition, translated from 3rd German edition by Hermann S. Sarone (5th American ed.; New York, 1851).

1884 and was published in an English translation.[7] The present study is based on the sixth German edition.[8]

The entire "Second Division" of the Allgemeine Musiklehre deals with rhythm. The first four sections of this division treat the most elementary aspects of notation.

Marx begins the fifth section, "The Order of Measures" ("Die Taktordnung"), by pointing out the necessity of measures:

> A long line of . . . notes or parts [as in Example 1a] taken in its whole length would be nearly inappreciable (as to number) to the eye. But let us cut the line into smaller portions and then we can inspect and count it. Each portion must be of equal size, and then the whole will not only be divided, but also assume the appearance of order.[9]

He says that the smallest number for this purpose is two, as illustrated in Example 1b; he calls this two-part order. The next larger division, three-part order, is shown in Example 1c.

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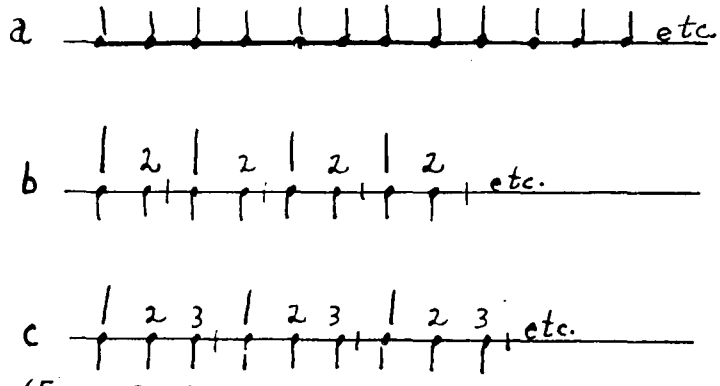
7. General Musical Instruction, trans. George Macirone (Boston, [1854?]).

8. Leipzig, 1857.

9. Eng., p. 33; Ger., p. 103. Page references in footnotes and musical examples are given for both the English translation by Macirone (see above, footnote 7) and the sixth German edition (see above, footnote 8).

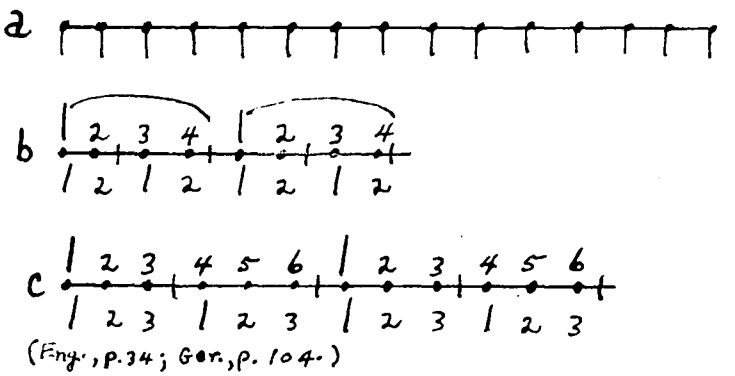
Example 1



(Eng., p.33; Ger., pp. 103-104.)

Marx says that a very long row of these duple or triple groups, as shown in Example 2a, again presents the original difficulty of comprehending so many identical units. It is therefore necessary to group these units into still larger ones for the entire line to become intelligible. The grouping together of two or three units is called combined order (zusammengesetzte Ordnung). From two-part arises four-part order as in Example 2b; eight-part order may be formed by the combination of two four-part sections. From three-part arises six-part order as in Example 2c, and from the latter may be formed twelve-part order. Three three-part divisions combine to form nine-part order.

Example 2



(Eng., p. 34; Ger., p. 104.)

Marx calls the part that begins a section the "chief part"; it is distinguished by a larger figure in Examples 1 and 2. Every part in the combined arrangements that had originally been a chief part in the simple arrangements is termed an "ex-chief part." All others are "secondary parts." Thus, in four-part order the part numbered 3 is an ex-chief part while those numbered 2 and 4 are secondary parts.

Marx continues by pointing out that, besides the two simple orders (two- and three-part), it is possible to make other simple arrangements like orders of five and seven parts and combinations of these resulting in ten and fourteen parts. But he says they are so seldom used that it is unnecessary to discuss them further. This is not to imply, however, that he thinks them unnatural or impossible, as he cites instances of their use in both art music and folk songs.

The sixth section, "The Kinds of Measures" ("Die Taktarten"),[10] treats time signatures. Marx divides them into two- and four-part, then three-, six-, and twelve-part orders, and he also mentions the possibility of five-part order. He states that the individual notes in Examples 1-2 (see pp. 9-10), called measure-parts, may be divided into various values of shorter notes which he terms "measure-members."

In the seventh section, "Arrangement and Division of Measures" ("Takteinrichtung und Takteintheilung"),[11] Marx says that most compositions are written in the same kind of measure (Taktart) throughout. If there is a change in the kind of measure, it usually occurs at the end of an extended section of music. But occasionally a change is found in the midst of a phrase; when this happens, a new time signature is usually indicated. Sometimes, however, the kind of measure is changed without any indication in the signature, only the arrangement of the notes within the notated measure being altered, as in the following example.

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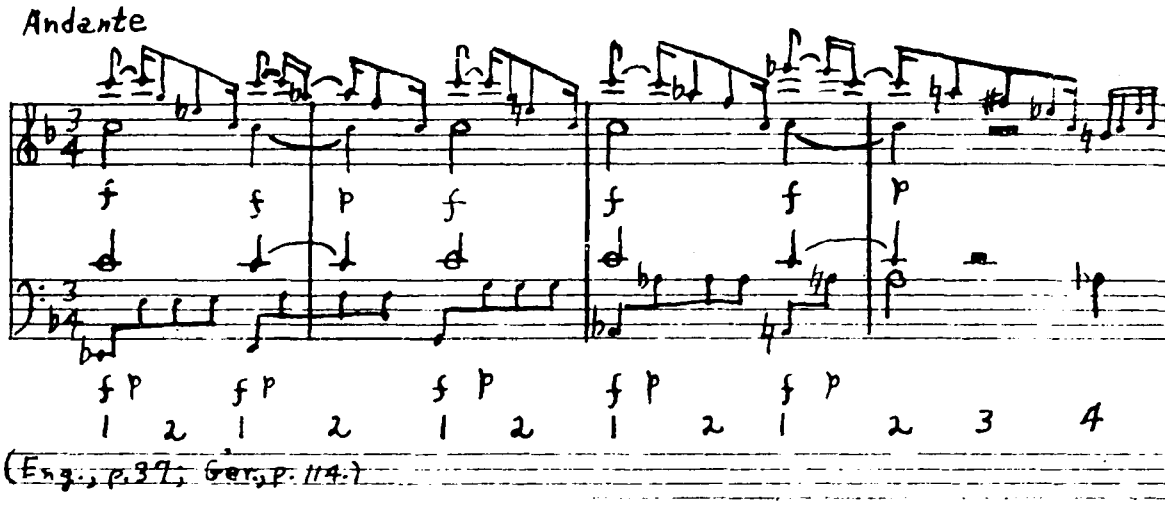
10. Eng., pp. 34 ff.; Ger., pp. 107 ff.

11. Eng., pp. 36 ff.; Ger., pp. 113 ff.

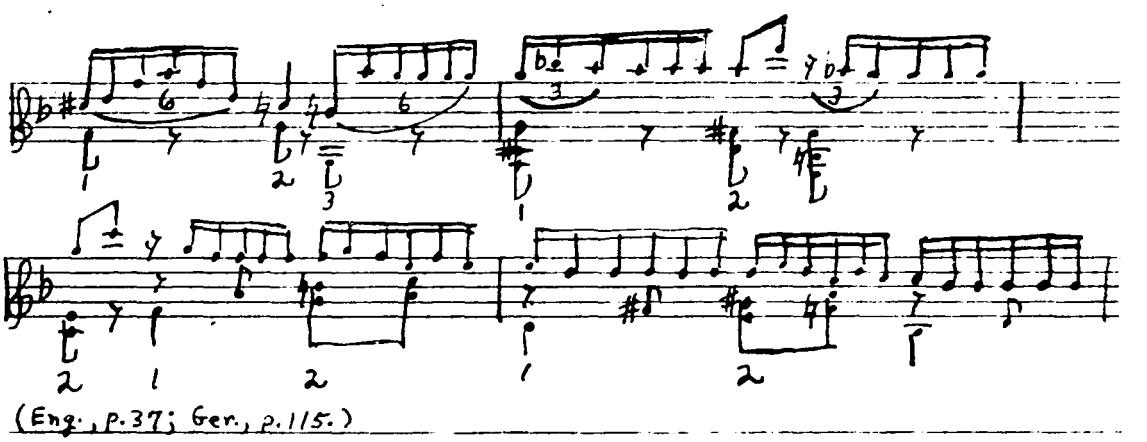
Example 3
Mozart: Symphony No. 41, Movt. 2.



Marx comments that this entire movement is notated in 3/4, but the melody, accompaniment, phrase marks, and dynamics of Example 3 indicate a 2/4 arrangement; the kind of measure has changed, but the time signature has not. After four measures of 2/4, there is one measure of 4/4 followed by a change back to 3/4.

A little later in the same movement a similar change in the kind of measure occurs, as shown in Example 4 (see p. 13). But Marx considers it less important and less easily recognized.

Example 4



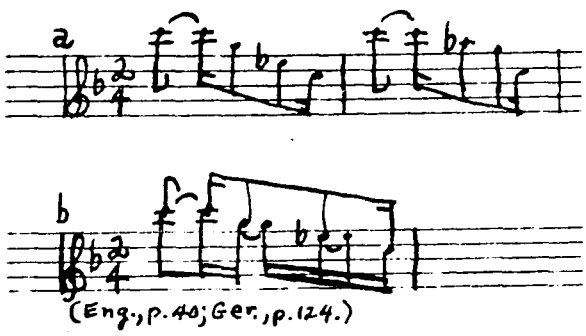
He says that an undercurrent of 2/4 is made evident here by the duple grouping of melodic and harmonic progressions. The figures placed under the staves in Examples 3 and 4 indicate the duple organization.

Turning to further analysis of Example 3 (see p. 12), Marx says that the melody of the first two measures would appear as it does in Example 5a (see p. 14) if it were notated according to its proper kind of measure. This passage, he says, is an instance of syncopation.

> But this passage still leaves a little uneasiness [i.e., even after the notation of the measures has been changed]. Neither the parts of the bar [Takt], nor the members, strike the eye; the second, third, and fourth quavers are in like manner split asunder [see Example 5b] and the halves drawn to the following note, until the last half (the last semi-quaver) remains by itself. Such notes are called Syncopated, and such a rhythmic form a Syncopation.[12]

12. Eng., p. 40; Ger., p. 124.

Example 5



The first point discussed in the eigth section, "Exceptional Forms" ("Ausnahmsweise Gestaltungen"), is the upbeat.

> By this expression we understand the few notes at the beginning of a piece of music, which do not form a perfect bar [Takt], or in other words, which form a bar deficient in quantity.[13]

The following examples are Marx's illustrations of the upbeat.

Example 6

Marx says that whatever the first measure lacks must appear at the end of the composition, unless the work is a long one, in which case the concluding measure may be complete. He says further that the upbeat

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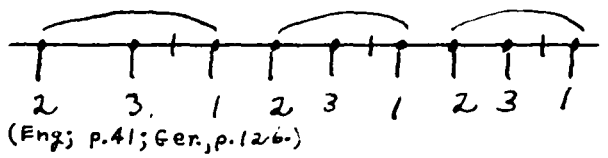
13. Eng., p. 41; Ger., p. 126.

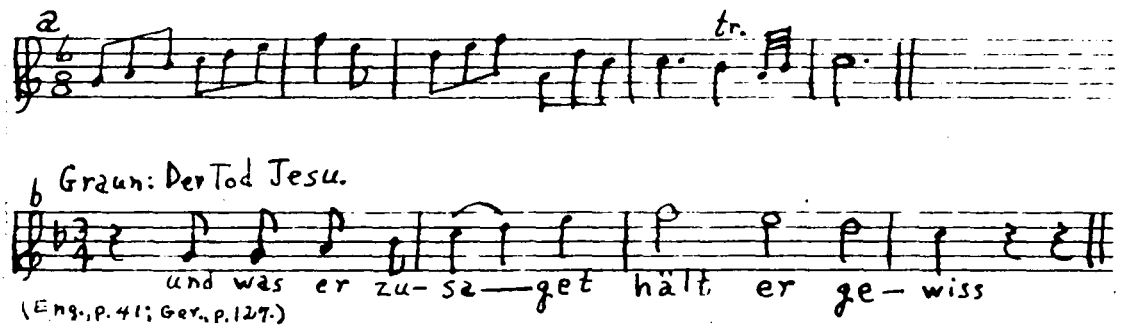
could be explained in another manner. Rather than considering the initial measure incomplete, it is possible to begin counting measures from the first measure-part of the composition as in Example 7, where there are three complete three-part measures.

Example 7



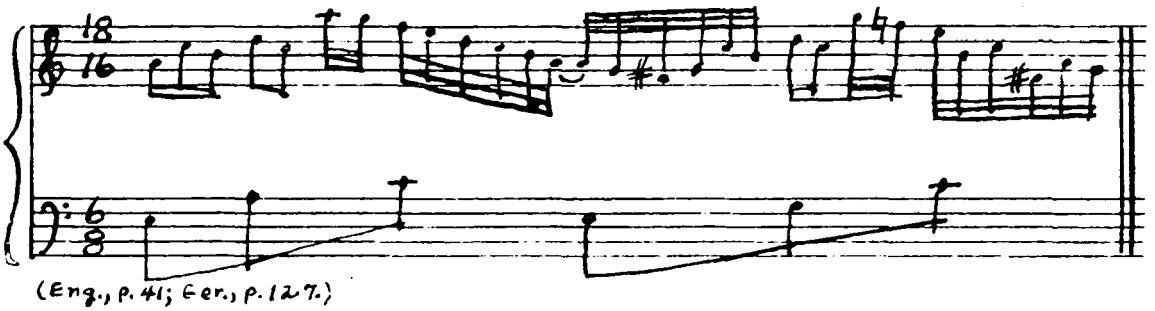
Marx applies the term "irregular measures" (unregelmässige Takte) to measures differing in length from those normally used in a given passage of music, as shown in measure 2 of Example 8a and measure 3 of Example 8b.

Example 8



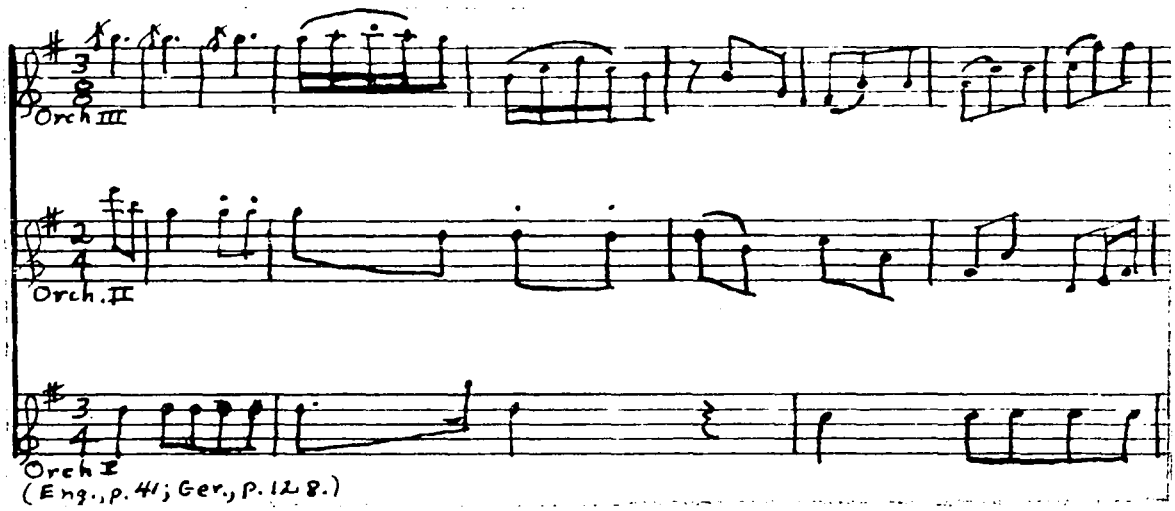
Occasionally two or more kinds of measures are used simultaneously, as in Examples 9 and 10. Marx calls such formations "mixed measures" (gemischte Taktarten).

Example 9



Marx says that Example 10 (see p. 17) is a famous passage by Mozart which combines a minuet in 3/4, an anglaise in 2/4, and a waltz in 3/8 time. Each dance is performed by a separate orchestra, marked I, II and III in the example. But, Marx explains, in spite of the apparent disorder of that passage, it is really quite clear: For every quarter note of the minuet there is a measure of the waltz, like a triplet of eighth notes; for every two measures of the minuet there are three measures of the anglaise; and for every quarter note of the anglaise there is a measure of the waltz.

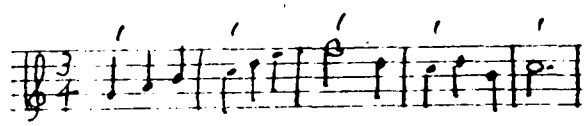
Example 10
Mozart: Don Giovanni, Act. I.



Marx begins the tenth section, "The Accent" ("Die Accente") with a consideration of accentuation of the parts of a measure.

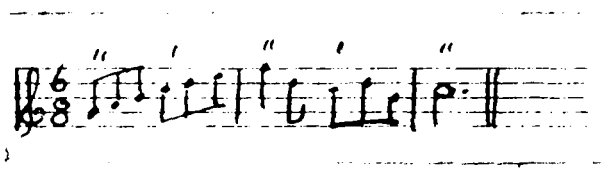
> We have now learned the fundamental lines of musical rhythm in the dividing of a bar [Takt]. We know which are the Chief Parts, Secondary Parts, etc., and how to divide the bar in conformity with them. But what signification, what value, have these parts in the performance?
>
> The chief part is distinguished before all others. We give it an accent, whereby it is produced with greater force, and is made impressive on the ear, as it has hitherto been conspicuous to the eye. Its recurrence, therefore, must always be perceptible. In this passage in 3/4 ... [see Example 11] all the tones with an accent must be produced with greater loudness than the others.

Example 11



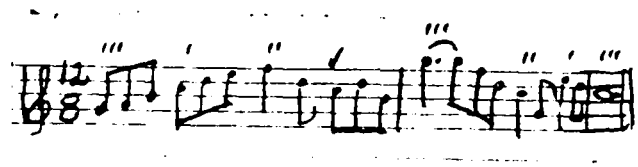
The ex-chief parts are preferable to the secondary parts, and are therefore made to sound louder than these latter, but not so loud as the present chief parts. Here [see Example 12], we have repeated the foregoing passage in combined measure. The notes to be produced the loudest, the chief parts, are marked with two accents; the ex-chief parts, less loud, with one accent; and the secondary parts, least sounding, with no accent at all.

Example 12



In doubly combined measure, for example the 12/8 [see Example 13], we can distinguish three accents. Such a measure, we know, consists of two smaller measures, each 6/8, which latter again are similarly formed of two still smaller measures, each of 3/8. Here then, we have in the first place, actual chief parts (marked with three accents); then ex-chief parts which had been chief parts in the 6/8 measure (marked with two accents); and lastly ex-chief parts of the 3/8 measure (marked with one accent). After these, come the unaccented secondary parts.[14]

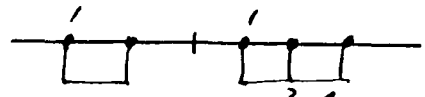
Example 13



14. Eng., pp. 43-43; Ger., pp. 133-34.

In considering the accentuation of the members of a measure, Marx says that each part of a measure must be dissected to determine the accentuation of its members. For example, a quarter note expressed in two or three eighth notes would receive the accentuation shown in the following example.

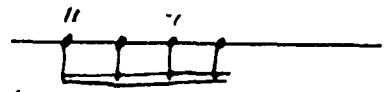
Example 14



(Eng., p. 43; Ger. p. 134.)

If a quarter note is expressed in four sixteenth notes, the first sixteenth would be the chief member of the part, the third the ex-chief, and the second and fourth would be secondary members as indicated in the following example.

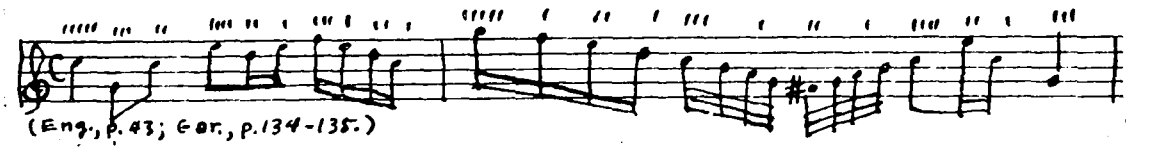
Example 15



(Eng., p. 43; Ger., p. 134.)

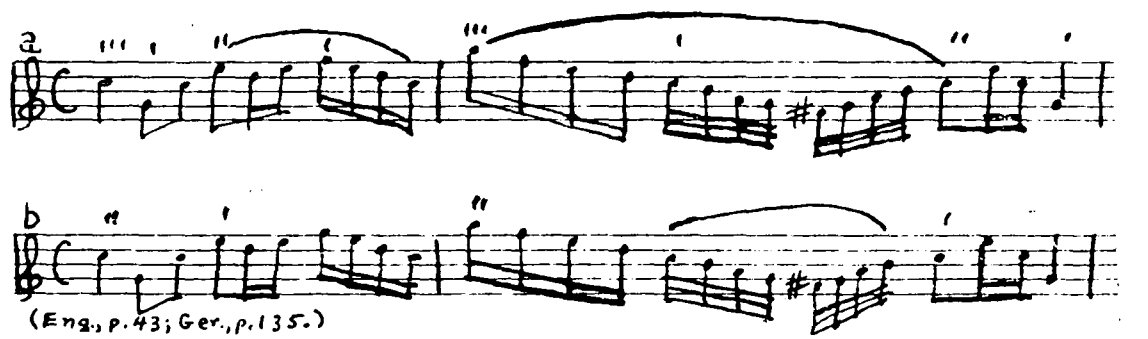
If all of these gradations of accentuation are expressed in a measure of music, there will be numerous varieties of intensity among the chief parts, ex-chief parts, chief members, ex-chief members, secondary members, etc. Example 16 (see p. 20) is Marx's indication of proper accentuation according to his theory.

Example 16



In this example five gradations of accentuation have been marked. Marx makes it clear, however, that the law of accentuation is not to be carried out to such an extreme in actual practice. In a quick tempo, to achieve a flowing performance, the melodic line of Example 16 might be played as in Example 17a or b.

Example 17

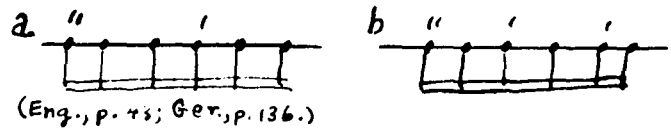


But in spite of the freedom that is possible, Marx asserts the necessity of knowing the rules with all their consequences in order to observe them so far as may seem appropriate.

Marx says that the sextuplet may sometimes be considered a double triplet, and sometimes a two-part dissection of a triplet. In the former case it must be accented as in Example 18a, in the latter as in

Example 18b.

Example 18



The fourth division of the treatise, "Elementary Forms" ("Die Elementarformen"),[15] contains a considerable amount of material that Marx classifies as within the province of rhythm. In the first section, "The Foundations of Melody" ("Die Grundlagen der Melodie"), Marx says that the rhythmic arrangement of a melody proceeds from one or more fundamental conceptions called rhythmic motives. The motive may be repeated exactly or approximately, or it may be altered by augmentation or diminution.

In the second section, "Fundamental Forms" ("Die Grundformen") Marx says that all melodies can be traced to three fundamental forms, called the passage (Gang), phrase (Satz), and period (Periode).

Concerning the first of these, he says "Every melodiously organized succession of sounds, without a satisfactory close, is called a passage."[16] Examples 19a-c are Marx's illustrations of passages.

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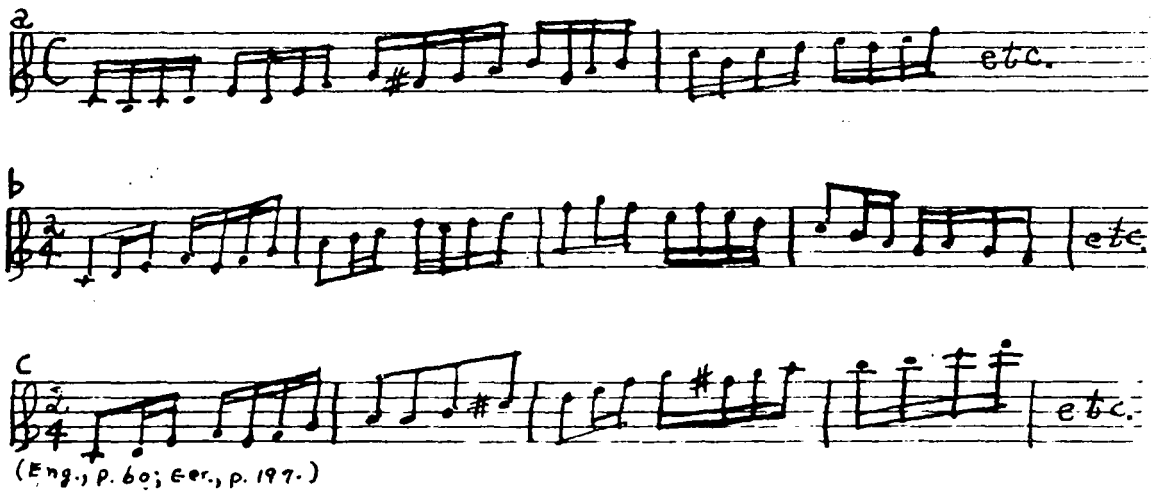
15. Eng., pp. 58 ff; Ger., pp. 193 ff.

16. Eng., p. 60; Ger., p. 197.

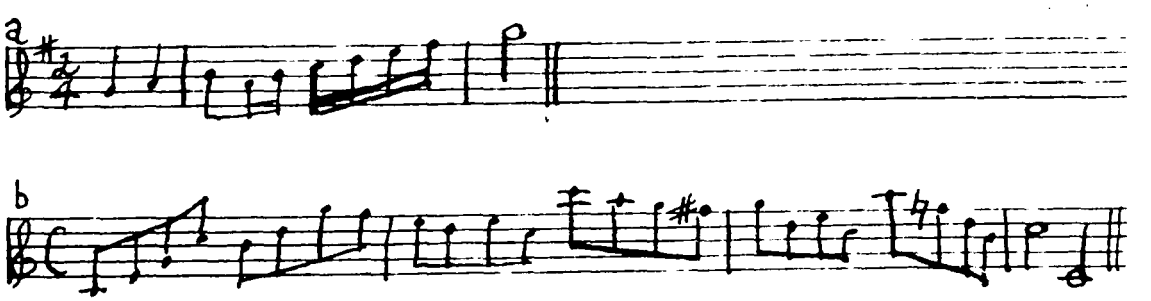
Example 19



Marx's definition of the phrase is as follows:

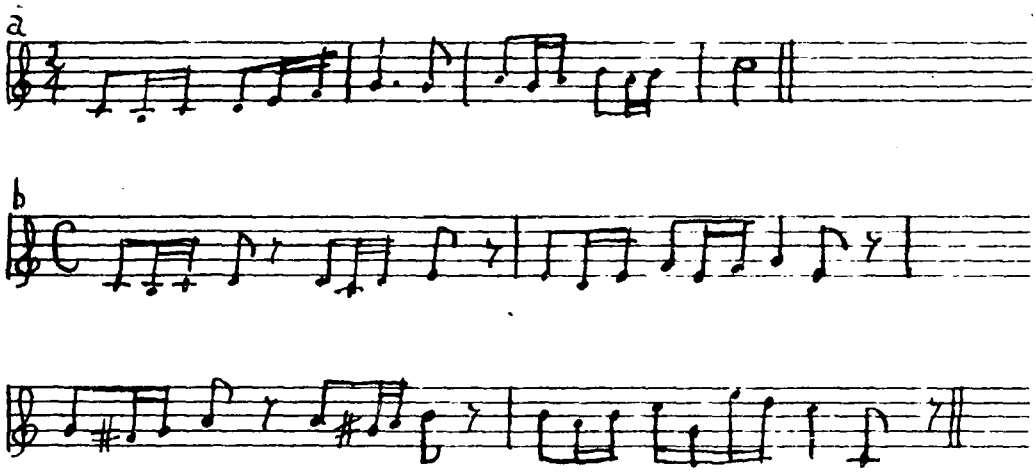
> A melody which is constituted into a whole, by having a determined beginning and end, is called a phrase.
>
> By what means is that conclusion effected?
>
> In respect of tone, by the melody's beginning with a tone which becomes important throughout, and closing with the same. In respect of rhythm, by its beginning on a chief part (of a bar) or an ex-chief part, and closing exclusively on a similar part. For these reasons the foregoing successions of tones [Examples 19a-c] are only passages, and not phrases, because they are deficient of that decisive rhythmic-tonic conclusion. [Examples 20a and b are satisfactory phrases.]

Example 20



> Every phrase, as every melody, consists of regulated motives, which are connected together either uninterruptedly, or are formed into separate divisions. Thus here [see Example 21a] we have a phrase of four bars, which in its second bar makes a well-marked rhythmic separation. We call such divisions Sections. A section, again, may be divided into smaller parts, which we call Members. Here, for example [see Example 21b] we have a phrase in two sections ..., and each separates into members of different dimensions; first, into two members, each of two crotchets (the rest included), then into a member of four crotchets.

Example 21



The period, according to Marx, consists of "a phrase and counter-phrase, or of several united phrases." He says, further, that the period comprises "two or more small unities more or less closed, under one larger unity. This can take place according to rule, only when the second and following phrases are similar in contents to the first, or at least, are of the same derivation."[17] Marx considers Examples 22a and b to be satisfactory subjects.

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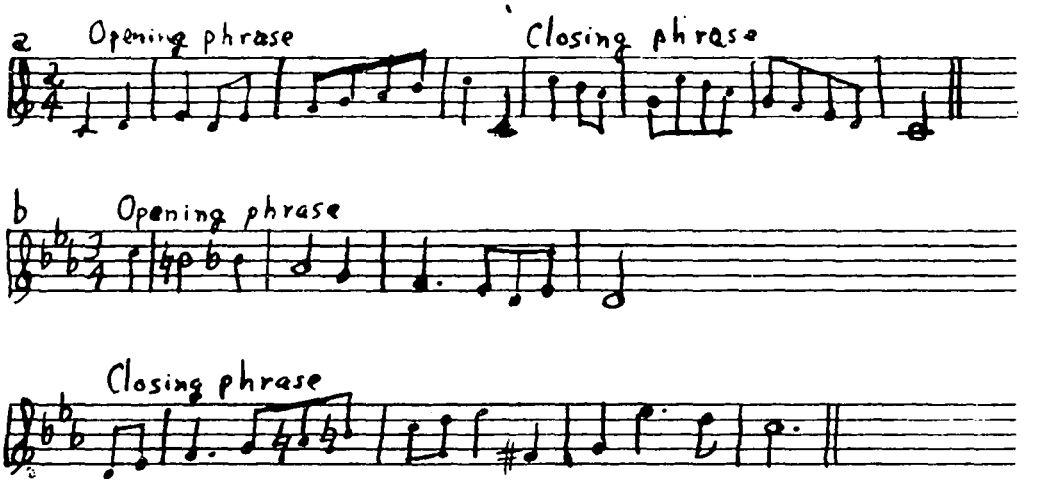
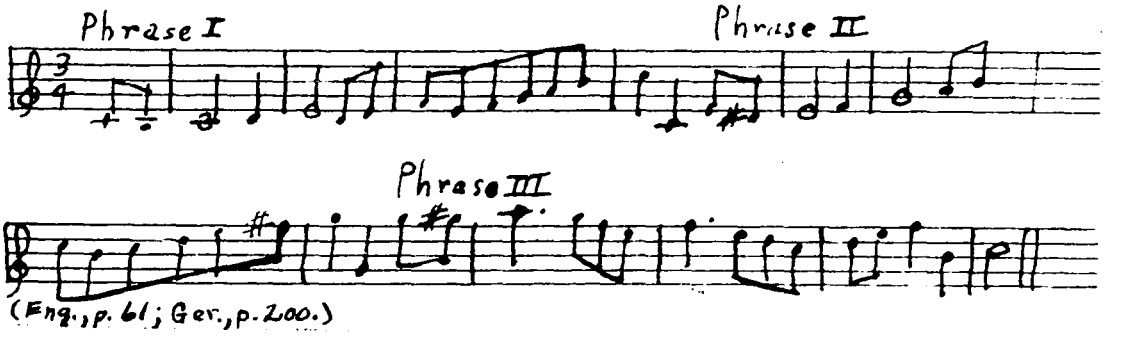
17. Eng., pp. 60-61; Ger., pp. 199-200.

Example 22



Periods may be composed of more than two phrases. When this happens the relation between opening and closing phrases will be less obvious. Example 23, according to Marx, is a satisfactory three-phrase period.

Example 23



Marx indicates with several examples that it is possible to extend periods by adding measures at the beginning, within the body of the

period, or at the end. The period that he uses to illustrate extensions is Example 22a (see p. 24). In all cases his extensions of that period are four measures long, because he is interested in retaining the four-measure balance of phrases.

In the third section, "Greater Rhythmic Arrangement" ("Grössere rhythmische Anordnung"), Marx emphasizes that rhythm is the primary element of larger formal structures. The arrangement of tonal centers and thematic material is of secondary importance.

> It is rhythm, chiefly, which gives order, comprehensibility and signification to our compositions, and renders them capable of producing an unfailing and determined effect.... Now, we know from daily experience ... that there are much larger compositions ... which consist of many passages, phrases, and subjects [i.e., "periods," Periode], combined together. What preserves order among them? In the first place again--rhythm. Then, or next in authority or governing influence, ... the arrangements of modulation and the several chief subjects of the composition.
>
> For the study and performance of a composition, it is highly profitable to understand clearly its entire construction and arrangement. We must not therefore remain satisfied with our development so far, but must pursue these rhythmic combinations into their most comprehensive formations....[18]

The combination of equal members throughout a composition produces what Marx terms "equal rhythm." Example 24 (see p. 26) is an opening phrase composed of members of two measures each and is, therefore, an instance of equal rhythm.

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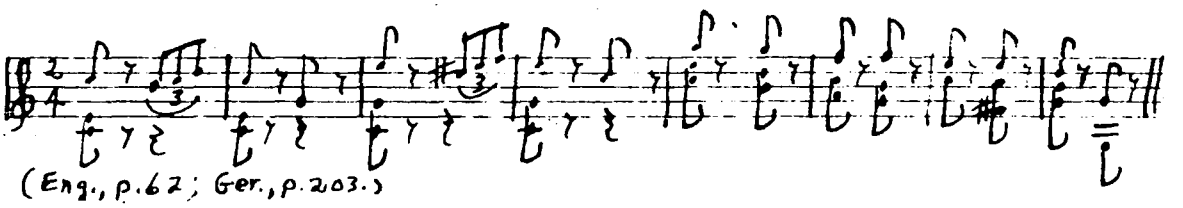
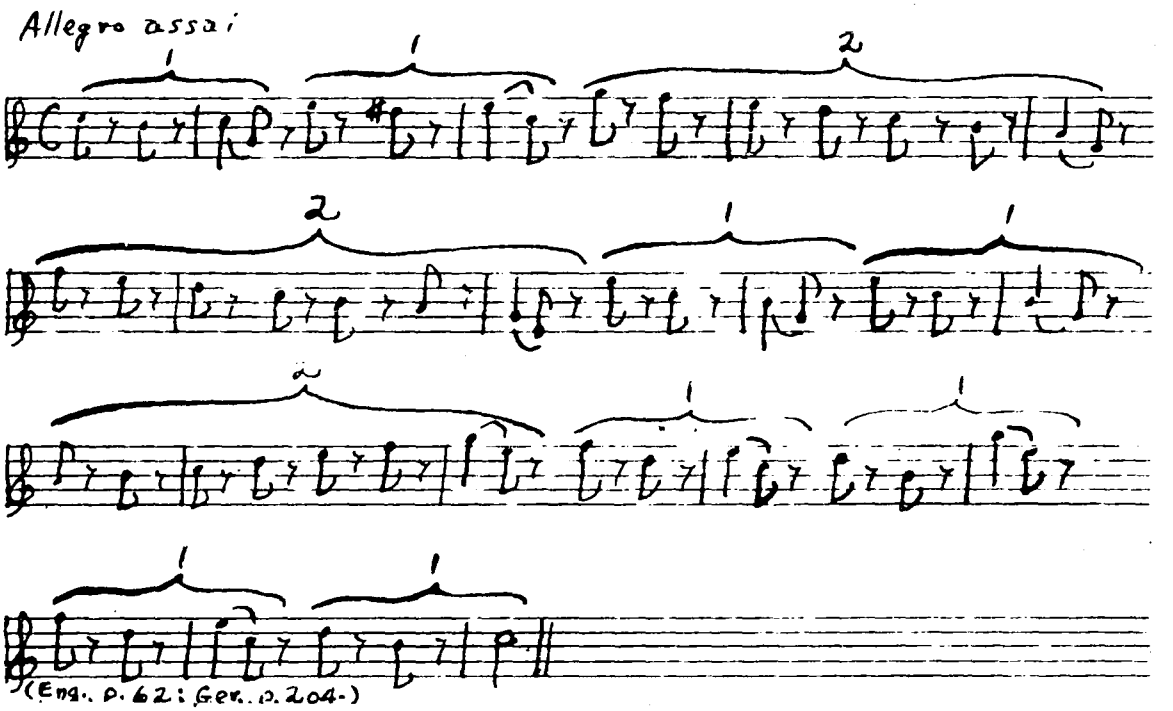
18. Eng., pp. 61-62; Ger., p. 202.

Example 24



Not only does the author combine equal rhythms, but also "rhythms of the same kind." For example, a section of two measures may follow two sections of one measure each, and vice versa. Example 25 illustrates a period that combines rhythms of the same kind.

Example 25



Marx states that groups of two, four, and eight measures are most common; rarely does one find groups of three measures throughout a whole composition, and groups of five are even less frequent. But occasionally, in a large composition, groups of three, five, or six measures might be found in the midst of the more normal groups of two and four. Such construction, called irregular rhythm, he considers to be particularly appropriate for the expression of passionate or vehement feelings.

Gottfried Weber (1779-1838)[19] practiced law and held various government appointments in Mannheim, Mainz, and Darmstadt in addition to his numerous musical activities. He was a pianist, flutist, cellist, composer, founder and conductor of an amateur orchestra and chorus in Mannheim, founder of the Mannheim Conservatory, and supervisor of court and church music in the same city. He was also editor of the musical periodical Cäcilia, published by Schott in Mainz, from its beginning in 1824 until his death. The most important of his several writings on musical subjects is his Versuch einer geordneten Theorie der Tonsetzkunst (1817-1821). It appeared in several revised editions in German and was also translated into French, Danish, and English. Chapter II in the first volume of the treatise contains the salient features of Weber's theory of rhythm. There are numerous points in which his theory is similar to Marx's, but there are also significant differences. The following study of Weber's Versuch is based on the third German edition.[20]

Weber begins with the following general statement about musical rhythm under the heading "Idea of Rhythm and Measure" ("Begriff von Rhythmus and Takt").

> The musical art requires, in addition to the connection of different tones, still another property, which, though it is not

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19. Baker, pp. 1763-64. v. Eisenhart in Allgem. deut. Biog., XLI, 303-05. Louise Middleton in Grove, IX, 224. Moser, op. cit., II, 1413. Riemann, op. cit., II, 1996.

20. Mainz, 1830-1832. English quotations will be cited from the English translation of the third German edition: The Theory of Musical Composition, trans. James F. Warner, ed. John Bishop (London, 1851).

absolutely essential to the nature of music, has nevertheless the power of very much enhancing its beauty. This is rhythm or measured movement [Taktmässigkeit], and consists in the circumstance that the times in which the tones and combinations of tones sound, are exactly measured [abgemessen] in relation to each other by quotas or proportional parts, and that the times thus measured out are also accurately adjusted in relation to the stress of voice respectively appropriate to each, and are symmetrically accented.

I say that rhythm does not belong necessarily to the nature of music; because it is a matter of fact, that not all music is rhythmic or measured [taktmässig]. In the usual choral singing of the church congregations, e.g., the longer or shorter duration of the tones in relation to one another is not at all adjusted to measure [taktmässig gegeneinander], but each tone is held out at pleasure, one about as long as another; and the most that is done is sometimes to accent this or that tone more or less, according to the greater or less stress of voice due to the syllable of the text. But, after all, this is not a measured movement [Taktmässigkeit]--it is not rhythm; there is in the case no such measuring [Abmessung] and accentual adjusting of the times as we find in rhythmical music; one can beat no time to such a performance.

If, on the contrary, a symmetrical measured division [abgemessene Eintheilung] of the times is found in a piece of music, i.e., the time is distributed into exactly equal general divisions, and these are again divided into equal parts, and the latter are further separated into equal smaller quotas or proportional parts, &c. and the duration of the tones in relation to one another is exactly measured [abgemessen] according to such divisions of time, so that a general division always appears as a symmetrically arranged group of several smaller portions of time, and these taken together as a smaller subordinate group of yet smaller parts, and the accent is also symmetrically apportioned amongst all these divisions of time--then the music is measured [taktmässig] and rhythmical, and sustains the same relation to unrhythmical music, as poetry does to prose. This is the music by far the most in use at the present day.

Its essential nature, accordingly, consists in a perfect symmetry, as it respects the duration and the accent of the tones. This symmetry is designated by the terms rhythm, measure [Takt], and also metre [Metrum].

> The doctrine of rhythm is called rhythmics, and also rhythmopoeia, and metrics.[21]

The author then proceeds to an explanation of elementary rhythmic notation before turning to a discussion of the kinds and divisions of measures, a section similar to the corresponding part of Marx's treatise.

Weber's theory of the accentuation of measure-parts is not unlike Marx's with regard to the strong and weak parts of the measure, but it is somewhat different in another respect. Whereas Marx specifies that the accented portions of the measure should be consciously and methodically performed with more force, Weber attributes the weights of the measure-parts to our "internal feeling."

> It is not alone the symmetry of the exactly measured lengths of the times, that constitutes the essential nature and the peculiar charm of the rhythmical arrangement; but our internal feeling superadds still a certain other property. That is to say, we, as it were involuntarily (and instinctively), lay more stress on the first time (or part) of each smaller or larger group, than on the following time, or on the two following times (or parts); so that a symmetrical alternation of a heavier and a lighter impulse of voice on the successive rhythmical times corresponds to the symmetrical succession of like lengths of time, which fact gives definiteness, life, and meaning to the whole performance.
>
> The rhythmical times which in this way receive a greater or less stress of voice, are called heavy and light times. We also use, as designations in this case, the terms good and bad, strong and weak, and indeed long and short times (derived from the intrinsically long and short syllables in poetic metrics); and also, in certain connections, the names down-beat [Niederschlag] and up-beat [Aufschlag].

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21. Eng., I, 61-62; Ger., I, 80-81.

. . . . . .

> What is here said of heavy and light parts of the measure is not to be so understood as that a so-called heavy or light part of the measure must really in all cases be delivered more heavily and strongly (more forte) than the so-called light or weak part; we here speak rather of an internal weight [von einer inneren Gewichtigkeit] which our rhythmical feeling spontaneously gives to every heavy time....[22]

Grouping measures into phrases and these into still larger structural units is considered within the scope of rhythmic theory by both Marx and Weber. The latter, however, does not employ the terms phrase, period, etc., but speaks simply of rhythms of a higher order. He further differs from Marx in that he applies the internal-weight theory to the component parts of the larger structures. These ideas he expresses as follows:

> Thus far we have seen how parts of measures group themselves together by pairs, or by three, into measures [Takten] as wholes, and how they divide themselves down into smaller portions of time, and how there thus arises a symmetrical structure of members among the times of a measure, even down to the smallest subdivisions.
>
> But there is still a higher symmetry than this. That is to say, as parts of times taken together form small groups, so also can several groups taken together be presented as parts of a larger group, of a greater or a higher rhythm, of a rhythm of a higher order.
>
> We may go still farther, and to such a greater rhythm we may annex moreover a second and a third, so that these two or three together constitute again a still higher rhythm. Thus, e.g., in the following passage,

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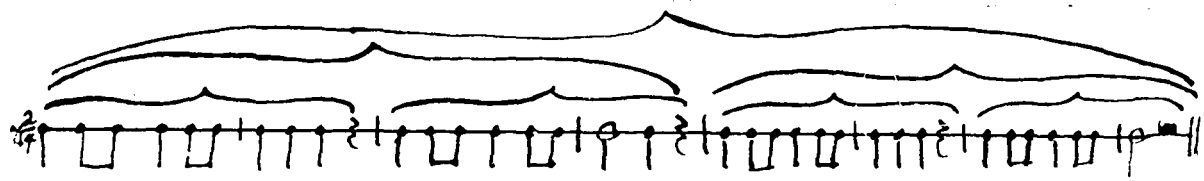
22. Eng., I, 82-83; Ger., I, 106-08.

Example 26



> two measures taken together constitute a small rhythm; two of these taken together constitute again a rhythm of a higher species; and again two of the latter taken together constitute a capital or principal rhythm. Such a combination is, in the language of music, about the same thing as a sense (Sensus) in the language of speech, or the same as a verse, or a strophe, in metrics.
>
> . . . . . .
>
> The construction of the members of the larger rhythms is a symmetry proceeding more by the gross; it is perfectly similar to that involved in the structure of measures [Taktbau], except simply that it is all on a larger scale. As a measure consists of two or three parts, so two or three measures form the parts of a greater rhythm, and several such rhythms are again parts of a still higher group.
>
> Hence the measures are distinguished from one another in such higher rhythms, in respect to their greater or less internal weight or accentuation, in the same way as the parts of measure are distinguished among themselves; i.e., the heavy or accented measures assume a prominence above the lighter, as do the heavier parts of the measure above the lighter.[23]

With regard to compound measures (zusammengesetzte Taktarten) such as 6/8, 9/8, 12/8, etc., Weber's theory is like Marx's. But the strange and disagreeable quality of five- and seven-part measures is emphasized more by Weber. He gives reasons for their being "wearisome to the ear" and "unrhythmical," but he does admit their value for a particular kind of effect:

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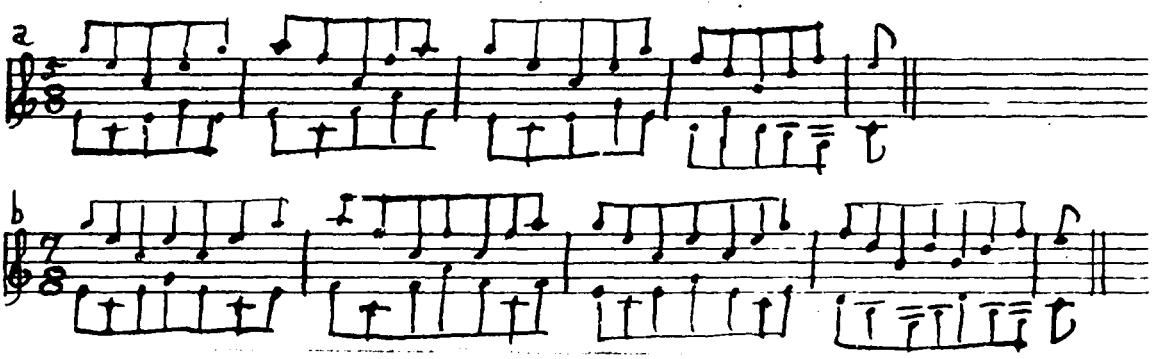
23. Eng., I, 85-87; Ger., I, 109-10.

Other combinations or groupings as, e.g., those of five or of seven parts, and the like, are far less agreeable to our ear, as may easily be seen by trying the experiment upon the examples of five-fold and seven-fold measure.... [See Examples 27a and b.][24]

Example 27



The origin of this fact it seems sufficiently easy to explain. In the first place it is very natural that our rhythmic sense should not be able easily to apprehend groupings or combinations which do not admit of being divided and subdivided by those simplest primary numbers.

In the second place, such a rhythm has an especially halting and dragging character, arising from the fact that a grouping of this kind has too little of emphasis, that is to say, too many light parts of the measure for one that is strong. In five-fold measure, e.g., only the first part would be heavy, while all the following four would be light; and in seven-fold measure there would be even six light parts to one heavy one, &c. Such a scantiness of accented parts of the measure cannot be otherwise than wearisome to the ear.

If it be proposed to avoid this inconvenience by making more than one of the five or seven parts heavy or accented, and hence by considering the measure a compound one, there would arise the new evil that the measure would always in this case have the appearance of being compounded of dissimilar, heterogeneous parts, that is to say, of one even part and one uneven

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24. Eng., I, 98; Ger., I, 123.

> part; thus, e.g., the 5/4 measure would appear to be composed of a 2/4 measure and of a 3/4 measure. Such a union of dissimilar elements is unrhythmical; for, the accentuation, in the case of five parts of the measure, cannot possibly be symmetrically divided, inasmuch as it must at one time recur after the second part of the measure, and the next time after the third part....
>
> . . . . . .
>
> It must not be understood, however, from what has been said, that such five-fold, seven-fold, and other similar divisions of time, are never to be used in music.
>
> In the first place, such a species of measure, on the very ground of its singularity, may sometimes be successfully employed for the production of some particular effect. For, even its peculiar oddness, irregularity, and strangeness, find, in music, at one time or another, their appropriate place; and hence, whenever one finds it in his power to produce a particular intended effect by the use of such a species of measure, he is always at liberty to employ it.[25]

Weber's treatment of the terms downbeat and upbeat is slightly different from Marx's because he uses them to designate only the first and last beats, respectively, of a measure. All other parts of a measure he calls "side beats," and he laments the fact that these are often improperly termed.

Masculine and feminine phrase-endings, not considered at all by Marx, are treated briefly by Weber:

> According as the terminating point of a rhythmical form falls on a heavy or on a light division of the time, on an accented or on an unaccented part of the measure, it is usual to denominate the cesura a masculine (strong) or a feminine (weak) cesura: i.e., when the measure or part of the measure on which the last note of a rhythmical form falls is heavier than the foregoing, the cesura is called masculine; whereas in the reverse case it is called feminine....[26]

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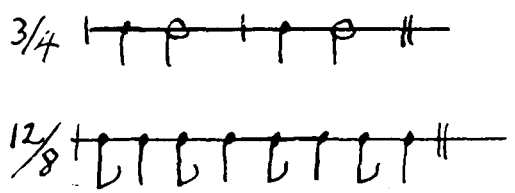
25. Eng., I, 98-101; Ger., I, 123-26.

26. Eng., I, 106; Ger., I, 152.

Syncopation is treated more thoroughly by Weber than by Marx. Weber considers two kinds of formations that are termed syncopation by most authors, but the first he terms "rhythmical displacement."

> In addition to what has already been observed of the rhythmical delineation and arrangement of a musical structure or form, there still remain some things which are worthy of remark in respect to certain particular modes of placing a note in the rhythmical arrangement.
>
> The first case of this kind which we will consider, is that which is usually termed a rhythmical displacement [rhythmische Verrückung]; namely, where, in an uneven division of time, an internally light note follows a heavy part of the measure, which light note has a longer duration than the foregoing internally heavy portion of the measure.... [Example 28 illustrates displacement.]
>
> . . . . . .

Example 28



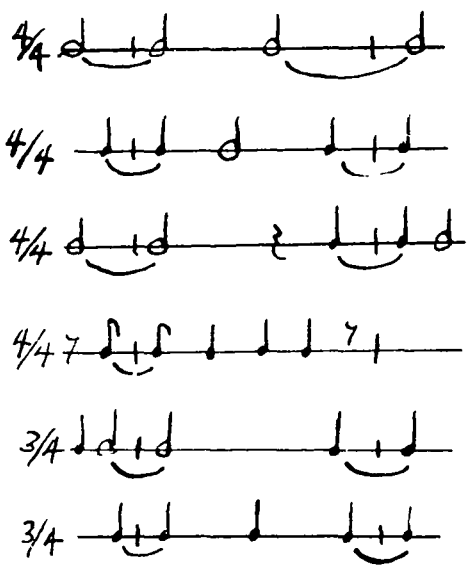
> It is easy to perceive that inversions of this character take place only in the case of uneven divisions of time, i.e., where two light portions of the measure follow one another in immediate succession....
>
> In the case of such inversions, the note which is lighter in respect to accent, though longer in duration, obtains, in virtue of this its longer duration, as it were, a superiority, a preponderance over the internally heavier portion of the measure which is shorter in duration; in comparison with the internally heavier portion of the measure, it, so to speak, becomes especially favored and exalted, and the regular symmetry of the rhythm is thereby in a manner reversed, displaced, or inverted.[27]

27. Eng., I, 107-09; Ger., I, 154-55.

Syncopation proper, according to Weber, occurs under the following circumstances:

> ... When, namely, a musical sound commences with a light part of the measure or with a light subdivision of a part of the measure, and continues on without interruption through the following heavier portion of the measure, so that the last half of this note falls on a heavier portion of the measure than the first half, as in the following example, we call this sound a syncopated one, an instance of syncopation.[28]

Example 29



Weber concludes his chapter on rhythm with a section entitled "Interruptions of Rhythmic Uniformity" ("Unterbrechungen der rhythmischen Gleichförmigkeit") which is similar to Marx's discussion of irregular measures.

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28. Eng., I, 110; Ger., I, 156.

Summary

Both Marx and Weber take strict measurement, regularity, and symmetry as a point of departure for their treatment of musical rhythm. Weber goes so far as to call asymmetrical structures non-rhythmical. Naturally, both authors make little allowance for a freer kind of rhythm of the sort which was to become common in the music of the twentieth century, although both recognize the value of exceptional use of asymmetrical structures for special effects.

Their discussions devote a considerable amount of space to the abstract construction of measures. Marx's main purpose in doing this is to provide his reader with a practical knowledge of the accentuation of the measure-parts for purposes of correct performance. Weber's conception is vague with respect to the heavy and light parts of the measure, as he speaks only of an "internal feeling" which the listener involuntarily attributes to the various measure-parts. Neither Marx nor Weber gives purely musical, psychological, or philosophical reasons to support his principles of accentuation.

Marx's discussion of change of measure without change of time signature is extremely important. Here he has abandoned the abstract accent principle, based on notated metre, in favor of the analysis of musical sounds.

The explanation of syncopation as set forth by both authors is based on the abstract accentual implications of the notated measure.

Syncopation, for them, is essentially the negation of a theoretical accent, produced by extending a note from an unaccented measure-part to an accented one.

Both authors consider the grouping of measures into larger formal structures within the scope of rhythmic theory. This implies that no line is to be drawn between musical rhythm and form.

The rhythmic theories in these two works are typical of those in most general music treatises of the nineteenth century. The ideas presented are those which were taught at an elementary level and which no doubt were taken for granted by most nineteenth-century musicians. Specialized treatises in the field of rhythmic theory, as we shall see, either take the form of philosophical, psychological, and analytical justification of the generally accepted principles, or else attack the accepted principles, seeking by argument to overturn or modify them.

CHAPTER II

MORITZ HAUPTMANN:

A THEORY OF RHYTHM BASED ON HEGELIAN DIALECTICS

Moritz Hauptmann (1792-1868), a student and friend of Louis Spohr, was a violinist, composer, and well-known teacher of theory and composition. After twenty years of service in Spohr's orchestra at Cassell, he was, on Mendelssohn's recommendation, appointed in 1843 to the positions of professor in the Leipzig Conservatory and cantor and musical director of St. Thomas' School at Leipzig.[1]

His chief theoretical writing, Die Natur der Harmonik und der Metrik,[2] is the treatise to be examined in this chapter. It is one of the most significant attempts of the nineteenth century to come to terms with philosophical issues underlying the theory of music. The treatise is based on the dialectical method of Hegelian philosophy. The work is important not only in itself but also as a strong influence, both positive

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1. Baker, p. 762. A. Maczewsky in Grove, IV, 138 ff. Moser, op. cit., I, 486. Riemann, op. cit., I, 718. Martin Ruhnke in Die Musik in Geschichte und Gegenwart, ed. Friedrich Blume (Kassel, 1949-), V, cols. 1828-35.

2. Leipzig, 1853; 2nd ed., 1873. The second edition, a corrected version of the first, appeared in English as The Nature of Harmony and Metre, trans. W. E. Heathcote (London, 1893).

and negative, on Hugo Riemann's important theory of rhythm later in the century.

In explaining the purpose and need of his treatise, Hauptmann says that text books on composition customarily begin with a chapter on accoustics which fails to accomplish the purpose of providing a consistent principle from which the materials of melody and harmony may be derived. In such a chapter the overtone series is explained, as are the ratios which result in the various pitches of the scale. Many of the ratios, however, are inconsistent with the tuning actually in use; the necessity of modifying the acoustical point of departure is proof of its inadequacy. The use of the overtone series as an explanation of harmonic material fails again, he says, in the derivation of the minor triad. This triad can be found in the series by combining numbers ten, twelve, and fifteen, but the intervening numbers must be eliminated arbitrarily. This has led to the common but false assumption that the minor triad is artificial in contrast to the major triad which is natural. For these reasons, Hauptmann says, the chapter on acoustics at the beginning of theory books is inadequate; his aim is to create a satisfactory beginning.

> That chapter is prefixed as a beginning to the book; its contents, however, can in no way count as an introduction to the doctrine, as a principle from which the subsequent matter is developed in a natural course. Neither the truth nor the falsehood of the acoustical presuppositions has any further influence upon the doctrine itself; although in view of the untruth and half-truth of these presuppositions this can only redound to the advantage of the doctrine.
>
> . . . . . .

> To take up the neglected beginning and present it in a sense such that it may be a real beginning, leading up to where the practical teaching of harmony and composition begins, and that as a real beginning effective in every further formation it may therein be but a development or further ramification of itself--this is the aim of the present attempt.[3]

Hauptmann stresses that he does not propose to establish a new practice in the areas of harmony and metre but only to unify philosophically the accepted practice:

> The contents of this book do not run counter essentially to any practical method of composition, so far as its teaching is right. But still less should they run counter to that, which to sound human perception seems musically sound and natural; which, if not always and everywhere in the rules of the text-books, we at least meet with always and everywhere in sound compositions.
>
> ... It is our intention to seek a natural establishment of the laws governing harmony and metre, the principle from which the manifold expansions in all directions issue determined from within, and developing are shaped into the phenomena known to us and again addressing us inwardly.
>
> This shaping principle must in every element of its operation always be, and remain, the same in itself. In the broadest relations of the expanded musical work, so far as it is one whole, as in the narrowest particular, the smallest member of it, in all elements of its harmonic-melodic, as also of its metrical-rhythmical existence, there will always be only the <u>one</u> law to be traced for its right and intelligible construction. Again, this law cannot be exclusively musical, but it is rather the wholly universal law of construction, which operates everywhere, in that operation of it which attains to musical, i.e., harmonic-melodic, metrical-rhythmical, manifestation.[4]

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3. Eng., p. xxxviii; Ger., p. 4. (The designation "Ger." in this and subsequent footnotes of the present chapter refers to the first German edition; "Eng." refers to the translation cited in the preceding footnote.)

4. Eng., pp. xxxviii-ix; Ger., pp. 5-6.

The "shaping principle," or "one law," utilized by Hauptmann is the dialectical method of Hegelian philsophy. Although the philosophy of Georg Hegel may seem obscure, it is nevertheless a system of extreme importance in many areas of present-day thought and deserves serious attention. Carl J. Friedrich, in his "Introduction" to The Philosophy of Hegel, has stressed this point as follows:

> Communism and Fascism, pragmatism and existentialism, to name the most outstanding movements in politics and philosophy, are incomprehensible without Hegel's philosophy. Contemporary social science, especially in America, bears the impact of Hegelian thinking to an extraordinary degree. Cultural anthropology and social psychology, especially of the psycho-analytic and Gestalt variety, and much of present-day sociology, whether inspired by Veblen or Max Weber, are more Hegelian than they would like to admit or do acknowledge.[5]

This is not the place for a complete exposition of Hegelian dialectics, nor would such be possible short of a thorough study of Hegel's Wissenschaft der Logik.[6] But it is necessary to examine a few of the basic ideas of Hegel's dialectics before studying Hauptmann's application of it to the theory of music.

The philosophy of Hegel may seem extremely abstract, but the philosopher abhorred abstractions, which he considered empty, motionless

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5. (New York, 1954), p. ix.

6. Ed. Leopold Henning, 2 vols. (2nd ed.; Berlin, 1841). This work is available in English as Hegel's Science of Logic, trans. W. H. Johnston and L. G. Struthers (2 vols.; New York, 1929). In addition to these works, and that cited above by Carl Friedrich, the present author has also relied upon the following two works by John M. E. McTaggart: A Commentary on Hegel's Logic (Cambridge, 1931) and Studies in the Hegelian Dialectic (Cambridge, 1896).

ideas not taking into account the fullness of things. He considered his philosophy to be concrete. One of his prime objectives was to distill the general from the concrete detail in such a way that the general remained concrete:

> Concretization is ... for Hegel not the process by which a general or abstract concept or thought is manifested in a particular thing or event (Dingheit) but the process by which thought takes hold of any real something, no matter how spiritual or general. It is motion, a continuous weaving back and forth.[7]

Hegel's is not traditional logic; he considered the latter to be concerned with abstract and lifeless ratiocination. Traditional logic is founded upon the law of contradiction (A is not non-A); Hegel rejects this traditional law for philosophical inquiry, though not for ordinary scientific thought. For the law of contradition he substitutes the dialectical principle with its three stages: thesis, antithesis, synthesis. The principle of dialectics is explained in a simplified manner as follows:

> Every truth, every reality, has three aspects or stages; it is the unification of two contradictory elements, of two partial aspects of truth which are not merely contrary, like black and white, but contradictory, like same and different [or A and non-A]. The first step is a preliminary affirmation and unification [thesis], the second a negation and differentiation [antithesis], the third a final synthesis. For example, the seed of the plant is an initial unity of life, which when placed in its proper soil suffers disintegration into its constitutents, and yet in virtue of its vital unity keeps these divergent elements together, and reappears as the plant with its members in organic union....[8]

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7. Friedrich, op. cit., pp. xviii-ix.

8. William Wallace and James B. Baillie, "Hegelian Philosophy," Encyclopaedia Britannica (Chicago, 1958), XI, 382.

In Hegel's view this dialectical principle is descriptive of the movement of thought, the "continuous weaving back and forth," which characterizes the process of reasoning by which one arrives at concrete general conceptions. But the process of thought is in a constant state of flux: each new synthesis, or "final" conception, becomes a thesis and the motion continues. Friedrich characterizes the process as follows:

> The dialectic is this "movement of the conceptions," this dynamic process by which they are distilled, not as something static and fixed, but as something forever evolving and achieving new forms as the perspectives change through the relation with other conceptions.[9]

Hauptmann's treatise is based on a rigorous application of this principle first to the materials of harmony and then to metre and rhythm. We are primarily concerned with the second section of the work, but, since it frequently refers back to the first section, we shall begin by summarizing some of the essential ideas of the author's treatment of harmony.

With respect to harmony, the first element of the dialectical process is the octave as thesis or unity:

> I. The Octave: the interval in which the half of a sounding quantity makes itself heard against the whole of the Root, or fundamental note, is, in acoustic determination, the expression for the notion of identity, unity, and equality with self. The half determines an equal to itself as other half.[10]

Thus, Hauptmann considers the octave an expression of unity because it is

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9. Op. cit., p. xli.

10. Eng., p. 5; Ger., p. 22.

produced by a half of a sounding medium against its whole. When he says "The half determines an equal to itself as other half," he means that in order to be the upper pitch of an octave, a given sounding medium must be joined by another part which is identical to it to produce the lower pitch of an octave. The two parts of the total sounding quantity have a one-to-one ratio and the qualities of the octave are therefore unity, identity, equality, or "being at one with self, without distinction."

The second step in the dialectical process, the antithesis, is expressed acoustically by the interval of a perfect fifth:

> II. The Fifth: the interval in which a sounding quantity of two-thirds is heard against the Root as a whole, contains acoustically the determination that something is divided within itself, and thereby the notion of duality and inner opposition. As the half places outside itself an equal to itself, so the quantity of two third-parts, heard with the whole, determines the third third-part; a quantity to which that actually given appears as a thing doubled, or in opposition with itself.[11]

Thus, in the case of the fifth, two-thirds of the sounding medium produces the upper pitch of the interval and another third must be added to this to produce the lower note. Whereas in the case of the octave the sounding quantity which produces the upper pitch is identical with the quantity it determines, in the case of the fifth the sounding quantity which produces the upper pitch is double the quantity it determines, and the ratio between them is one-to-two. Because Hauptmann accepts the postulate that a thing doubled is a thing in opposition with itself, he considers the fifth an expression of inner opposition or antithesis.

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11. Eng., pp. 5-6; Ger., p. 22.

Having presented unity and opposition, or thesis and antithesis, the author concludes the dialectical process by unifying the two previous steps:

> III. The Third: the interval in which a sounding quantity of four-fifths is heard with the whole of the root. Here the quantity determined is the fifth fifth-part, of which that given is the quadruple, that is, twice the double. In the quantitative determination of twice two, since the double is here taken together as unity in the multiplicand, and at the same time held apart as duality in the multiplier, is contained the notion of identification of opposites: of duality as unity.[12]

In his explanation of the interval of a fifth, the antithesis, Hauptmann indicated that a thing doubled is a thing in opposition with itself. This third step, the synthesis, contains a thing doubled and then multiplied by two, creating a ratio of one to two-times-two. As a thing doubled (1:2) it represents duality or opposition. But the doubled quantity is taken as a unit and then doubled again (2x2). Thus, in the expression "two times two," according to Hauptmann, there exists duality as unity because the second "two" is taken as a simple unit while the first "two" indicates that this unit is doubled.

The author continues by pointing out that these three intervals together, forming the higher unity or synthesis, comprise the basic unit of harmony, the triad:

> The Third fills out the emptiness of the Fifth, for it contains the separated duality of that interval bound up into unity.

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12. Eng., p. 6; Ger., p. 22.

> With the three intervals here named the major triad is known to be given. But if the determinations of Fifth and Third take place upon a Root, then the Octave is no longer of essential importance; for the Root must in itself answer to the notion of definite unity, if upon it the Fifth, as interval of duality, and the Third, as interval of union, are to be determined. Therefore the conditions of the notion of consonance are completely fulfilled in the combined sound of Roct, Fifth and Third.[13]

From the triad as a new thesis, understood as a tonic chord, Hauptmann proceeds to derive a "triad of triads." The subdominant and dominant triads form the antithesis, and the new synthesis is the key-center which is defined by these three chords. The dialectical process is then continued to arrive at all keys, major and minor, and all chord formations and dissonances in the academic vocabulary of the mid-nineteenth century.

Hauptmann's determination of the minor triad is of particular interest; it is formed by the inversion of the process used to arrive at the major triad. The fifth below a note is the antithesis while the major third below creates the synthesis, uniting the three tones into a minor triad.[14]

Hauptmann devotes the second part of his treatise to metre and rhythm. He begins by distinguishing between these two aspects of music as follows:

> We shall call the constant measure [Maass] by which the measurement of time is made--Metre [Metrum]; the kind of motion

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13. Eng., p. 6; Ger., pp. 22-23.

14. Eng., pp. 14-17; Ger., pp. 32-35.

in that measure--Rhythm.

> The measure [Maass], as to outward structure, is found to be a two-, three-, or four-part unity. For the motion in that measure, it may in itself be infinitely manifold of shape; nevertheless as measured it can be understood only by the determinations that issue from the metrical notion.[15]

Metre for Hauptmann is a theoretical conception of measured time. Rhythm is the audible motion, resulting from tones of varying intensity and duration, which fills up the theoretical measurement.

Turning to a discussion of two-timed metre (Zweizeitiges Metrum), he refers to his opening remarks about harmony. The two-timed metre is comparable to the octave, the thesis or initial unity in the dialectical process. As a starting point, he says, it is necessary to use an interval of time that is undivided. In order to explain his metrical theory, which is purely within the realm of ideas, he begins with two successive audible beats supposed one second of time apart. Although these two beats enclose only a single, undivided space of time, they actually determine or create an expectation of a second space of time equal to the first:

> With the two beats we have, not one, but two times determined. With the second beat, marking the end of the enclosed space of time, there is given the beginning of a second space equal in duration to the first. At the end of this second space we may expect a new beat, which, however, cannot happen earlier than at that point of time without causing an interruption, a curtailment of the time determined for us by the two beats....[16]

The structure of the two-timed metre, or "metrical octave," is represented

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15. Eng., p. 189; Ger., p. 223.

16. Eng., pp. 189-90; Ger., p. 224.

as follows:[17]

Figure 1

(Eng., p. 190; Ger., p. 224.)

Hauptmann says further that a single beat would have no significance as it would denote only a beginning without an end. The two-timed metre is thus the first and smallest metrical determination.

The three-timed metre is considered the equivalent of the interval of a fifth in harmony. It is the second step, the antithesis, in the dialectical process. The three-timed metre is not derived by linking together three successive times, but by the interlacing of two two-timed metres. This process, and its antithetical nature, are explained as follows:

> As two beats enclose one space of time, determine a second and join it to the first, so three beats, actually bounding two spaces of time, cause a third to follow as echo of the second. But this third part of that which is now to be comprehended as a whole of three parts does not stand in a relation of equality to the two preceding parts, but only to the second of them. It arises by echoing the second, just as we have seen the second arising as an echo of the first. And thus the second member of the three-part unity gets the double meaning of being second to a first and first to a second. But in the latter meaning, because it becomes first to a second, it is withdrawn from union

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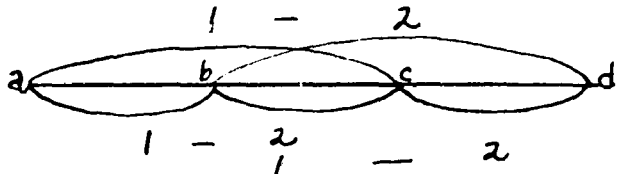
17. Most of the Figures of this chapter are either the same as or adaptations of those in Hauptmann's treatise. If no page references are provided, the Figure has been added by the present author as a clarification of Hauptmann's ideas.

> with the first member, which is left standing solitary. Separation of the unity enters in the first pair. The twin unity becomes twoness. This and the contradiction of the double meaning in the second element is what we have already pointed out as the essence of the Fifth.[18]

The three-timed metre is represented in the following figure.

Figure 2



(Adapted from Eng., p. 191; Ger., p. 226.)

In this illustration a, b, and c are the beats actually sounded, whereas d is the expected beat which terminates the third part of the three-timed metre. The space b-c is the crucial element: it is self-contradictory because of its double meaning, and it separates the unity of the first pair. It is a fundamental principle of Hauptmann's theory that only equals may be grouped together, and these may be grouped only in pairs. Therefore, it would be impossible to arrive at three-timed metre by linking together three single units, a double and a single unit, or a single and a double unit. The above derivation is the only possibility.

The four-timed metre is the reconciliation of the three-timed conflict. It is the final step in the dialectical process and is

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18. Eng., p. 191; Ger., p. 225.

comparable to the harmonic interval of a major third which, together with the root and fifth, produces the major triad. The four-timed metre, then, is the metrical triad, a higher unity comprehending both thesis and antithesis. Hauptmann expresses these ideas as follows:

> A fourth beat happening after completion of the third space of time now causes a fourth part of time to follow as echo of the third, which, at first itself preceded, now precedes, and has become a first with the fourth space as its second.
>
> This last metrical formation, being four-membered, is twice-two-membered, and in this sense is Third. But in the course of its successive growth--and it is shaped in time, and therefore can have its nature and reality only in this process of becoming and having become--it is at the instant of its first determination two-membered, or Octave; next it becomes three-membered, or Fifth; and lastly four-membered, i.e., twice-two-membered, Third. To the last determination it cannot attain otherwise than by passing through the shapes proper to the first two. And thus on reaching the last it is a successive union, a union in time, of Octave, Fifth, and Third: the metrical triad.[19]

The two-, three-, and four-timed metres may be compared in the following figure:

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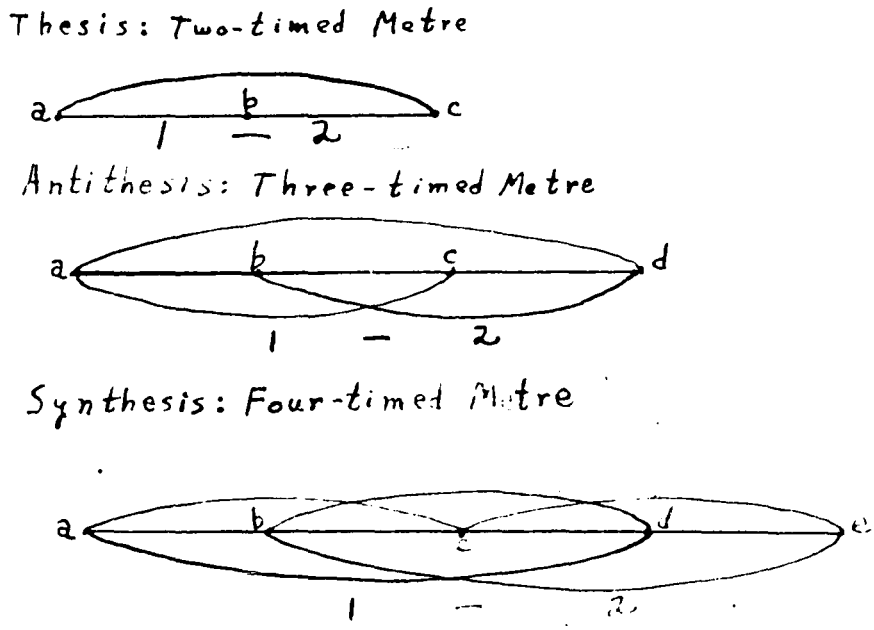
19. Eng., pp. 192-93; Ger., pp. 227-28.

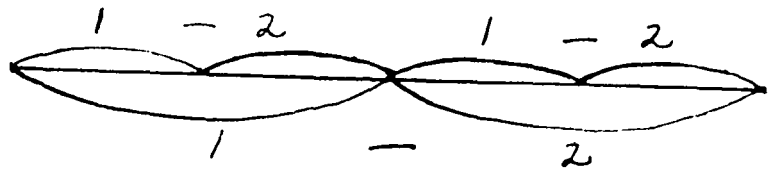
Figure 3



In two-timed metre, a and b are heard, c is expected, and a-b is first to b-c. In three-timed metre, a, b, and c are heard, d is expected, a-b is first to b-c, and b-c is both second to a-b and first to c-d. In four-timed metre, a, b, c, and d, are heard, e is expected, a-b is first to b-c, b-c is first to c-d, and c-d is first to d-e. The two-timed units within the four-timed metre are a-c, b-d, and c-e; the three-timed units are a-d and b-e. The four timed metre a-e comprehends all previous units.

Four-timed metre differs from two two-timed metres in succession because the latter do not form an integrated whole of the highest order. Two-timed metre repeated is illustrated as follows:

Figure 4



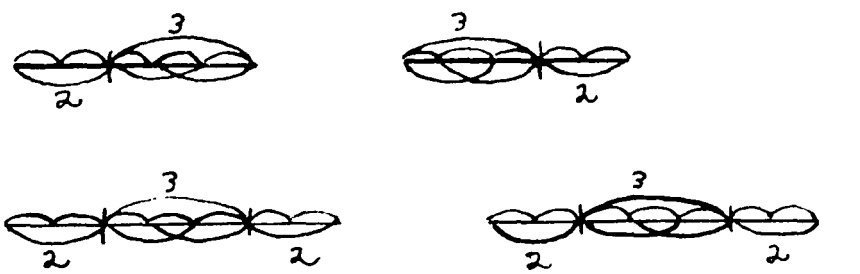
(Eng., p. 195; Ger., p. 230.)

According to Hauptmann's theory, five-timed and seven-timed formations are artificial and inorganic:

> Anything metrically five-part cannot but be understood otherwise than as artificially put together out of two-part and three-part, as 2 + 3 or 3 + 2....
>
> Similarly seven-part can only be metrically intelligible as artificially made up of three-part and four-part; or else of two-part, three-part, and two-part; as 4 + 3, 3 + 4, and 2 + 3 + 2.[20]

Some of these five- and seven-part formations are represented as follows:

Figure 5



(Adapted from Eng., p. 197; Ger., p. 233.)

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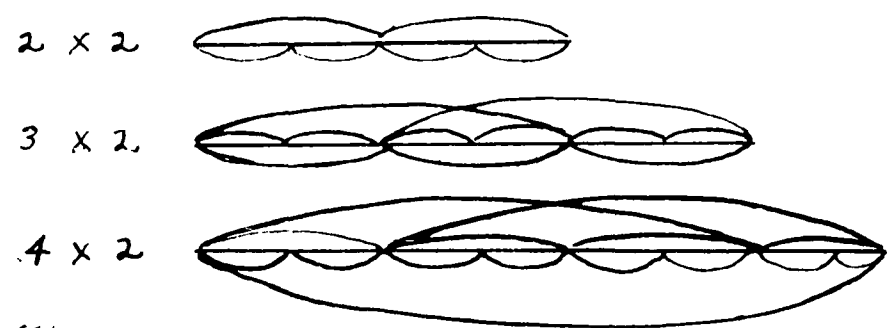
20. Eng., p. 197; Ger., pp. 232-33.

The author concludes that these "composite bars" a e perverse and of a metrically unhealthy nature:

> Formations of this kind, which spring out of an evolution, not that progresses steadily, but only that is steadily interrupted, regularly irregular, can never reveal a metrically healthy nature; and they are as little suited to the continued time-measurement of a whole piece as diminished and augmented triads for carrying out its harmony. Attempts to apply composite bars in music are as a rule far more apt to impress us with the perverse eccentricity of the composer than with the naturalness of growth, in metrical structure, of the composition....[21]

While the addition of metres is not consistent with Hauptmann's system, their multiplication by two, three, or four (termed "combined metre") is acceptable. Multiplications of two-timed metre by two, three, and four are illustrated as follows:

Figure 6



(Adapted from Eng., p. 201; Ger., p. 237.)

Hauptmann next turns to the accentuation of the parts of a measure, a subject which he relates directly to the preceding discussion

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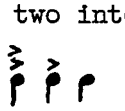
21. Eng., p. 199; Ger., p. 235.

of metrical determination. The following is his basic principle of accentuation:

> A first element of time, which metrically can only be the first of a second equal to it, is, in regard to its second, determining; the second is determined. A first as against its second has the energy of beginning, and consequently the metrical accent.[22]

The lowest order of accentuation is termed the accent of the member. The first member of a two-timed metre is accented because it has the energy of a beginning; the second member is not accented. The first and second members of a three-timed metre are accented because both are initial members of two-timed metres, even though these two-timed metres are interlocking; the third member is unaccented. The first, second, and third members of a four-timed metre are accented because all three are initial members of interlocking two-timed metres; the fourth member is not accented.

In addition to the accent of the member, there is a higher order of accention which Hauptmann discusses under the heading "Combined Accents." Whereas in the lower order of accentuation the first member of a pair is accented, in the higher order the first member of two pairs receives an additional accent because it is the most important first element of time. Therefore, in three-timed metre the first beat is accented twice as much as the second, because it is both the first of a pair and the first of two interlocking pairs. Thus, three-timed metre is accented as follows: 

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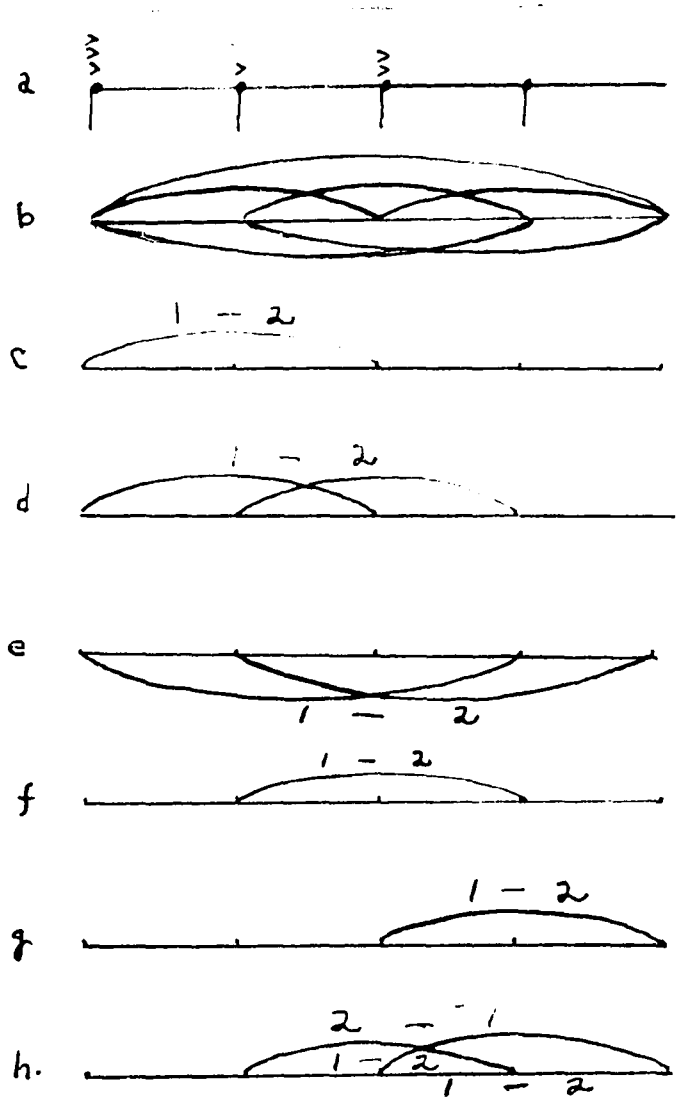
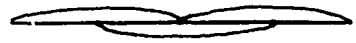
22. Eng., p. 204; Ger., p. 241.

The members of four-timed metre are accented as shown in Figure 7a:

Figure 7



The reasons for these accents may be understood most easily if we consider one beat at a time. (Figure 7b is an illustration of the complete structure of the four-timed metre and Figures 7c-h are segments of that structure.) The first beat receives a three-fold accent because it is the first beat of a two-timed metre (Figure 7c), the first of a pair of overlapping two-timed structures (Figure 7d), and the first of a pair of overlapping three-timed units (Figure 7e). The second beat receives only one accent because it is the first part of only one, two-timed unit (Figure 7f). The third beat receives a two-fold accent because it is the first beat of a two-timed unit (Figure 7g) and is accented with relation to the two-timed metre which precedes it and interlocks with it (Figure 7h). In Hauptmann's own words this second accent for the third beat is justified as follows:

> The four-timed metre in its derivation from the three-timed consists of three overlapping pairs,  of which the second is without accent as against the first, but the third must be accented as against the second; for that which has to follow a last can but be a new first.[23]

The four-timed metre is the largest metrical unit recognized by Hauptmann, and he therefore concludes his discussion of combined accents at this point. As we shall see later, each of the numerous combined metres have accent-schemes analogous to those just presented.

In the next section of the treatise, "The Notion of Major and Minor in Metrical Determination" ("Dur- und Moll-Begriff als metrische Bestimmung"), the author refers to the manner in which the minor triad was

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23. Eng., pp. 208-09; Ger., p. 245.

derived from an inversion of the process used for the major triad. A reversal of the normal procedure is now used to arrive at "negative determination" or "metrical inversion." The metres discussed up to this point have all been derived from "positive determination." This means, taking two-timed metre as an example, that a first or accented member is followed by one that is second or unaccented. In "negative determination," however, a second or unaccented member is followed by a first or accented one. The positive and negative two-timed metres are represented in musical notation, according to Hauptmann, as follows:

Positive: | ρ ρ |

Negative: ρ | ρ

In combined metres the entire metrical unit of the higher order and each member of that unit may be positive or negative. Thus, as shown in Figure 8, there are four possibilities in the twice-two-timed metres:

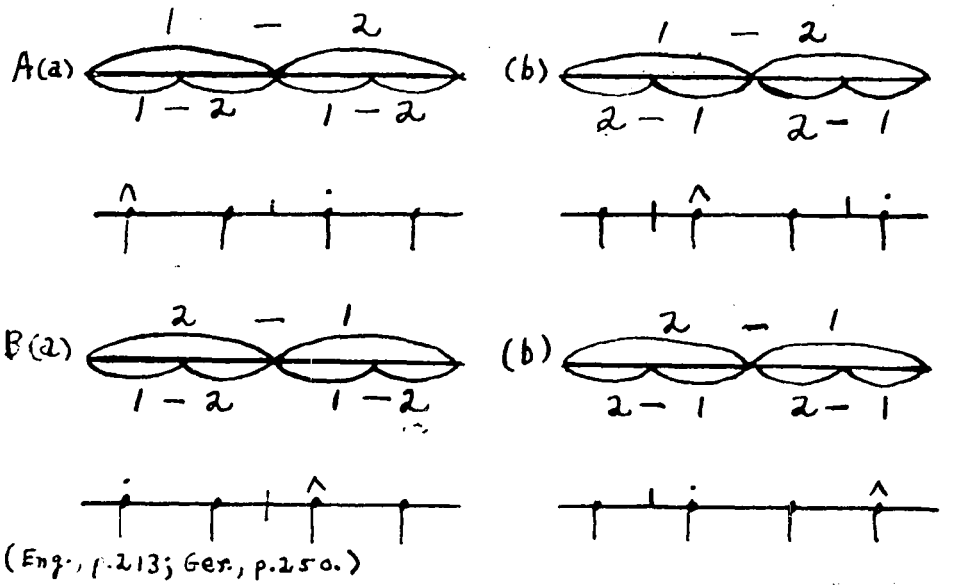
A. (a) Positive members in a positive unit of the higher order;

(b) Negative members in a positive unit of the higher order;

B. (a) Positive members in a negative unit of the higher order;

(b) Negative members in a negative unit of the higher order.

Figure 8



The principal accent of the measure occurs on the positive member of the positive metrical unit. In Figure 8 $\hat{\cdot}$ indicates the principal accent and $\dot{\cdot}$ the subordinate one.

The author next relates the three-timed metre to the twice-two-timed: "... three-timed metre is in fact a contraction of the twice-two-timed, or, more properly, it is a twice-two-timed metre imperfectly spread out."[24] This is illustrated as follows:

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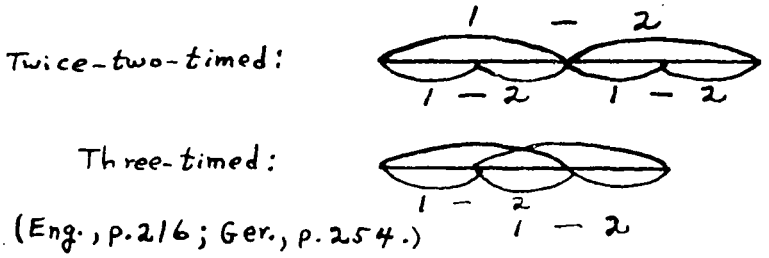
24. Eng., p. 216; Ger., pp. 253-54.

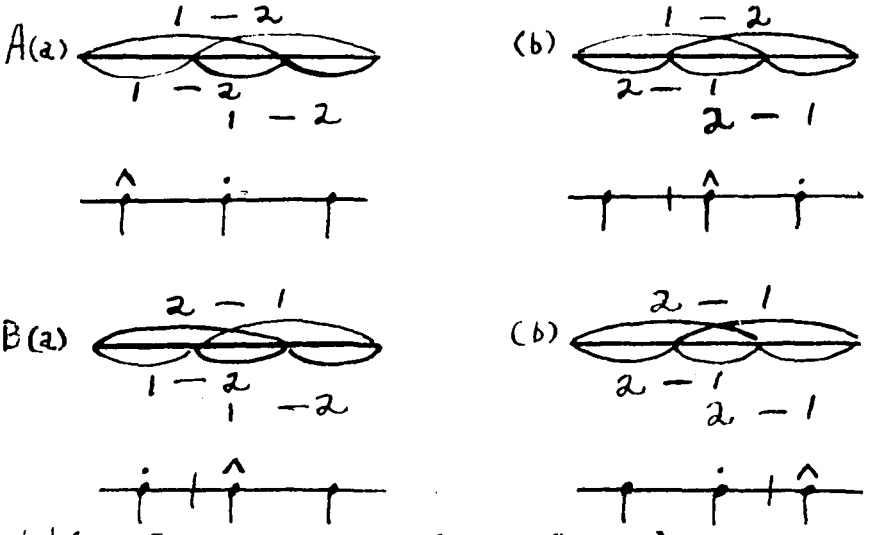
Figure 9



(Eng., p.216; Ger., p.254.)

Thus, for each kind of twice-two-timed accentuation illustrated in Figure 8 there is a corresponding three-timed accentuation as follows:

Figure 10



(Adapted from Eng., pp. 217-218; Ger., 254-255.)

Hauptmann says further that there is a form of accent which would seem to belong to the twice-two-timed but actually belongs to three-timed metre. It is the accentuation produced by successive positive-negative or negative-positive pairs as follows:

Figure 11

(Eng., p. 220; Ger., p. 258.)

Such formations contradict the theory, for they set equals after one another:

> ... 'after one another,' agreeably to its notion as well as to its verbal expression, requires after one, another: after a second, a first; after a first, a second. The elements which meet in the middle of the formation above, 2-2, 1-1, belong as the same elements to different pairs; and in this meaning they certainly have so far their difference. But in themselves they are alike. They are not one and another, but in fact one and the same, and will also want to take up one and the same place. In this sense these formations at once of their own accord take the shape of three-timed metre:[25]
>
> 1 - 2
> 2 - 1,
>
> 2 - 1
> 1 - 2

The juxtaposition of a negative and a positive pair of members, or vice versa, is therefore regarded as a three-timed metre produced by contraction of a twice-two-timed metre.

After discussing in minute detail the numerous possibilities of accentuation in three-timed and four-timed metre, the author presents a survey of all accent-determinations in the two-timed, twice two-timed, three-timed, and four-timed metres shown in Figure 12 (see p. 63).

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25. Eng., p. 221; Ger., pp. 258-59.

In all of the illustrations of accent-determination in Figure 12 the letters are to be interpreted as follows:

A: positive determination in the first, or highest order;

B: negative determination in the first or highest order;

(a): positive determination in the second order;

(b): negative determination in the second order;

(alpha): positive determination in the third order;

(beta): negative determination in the third order;

(a-b): positive-negative succession in the second order;

(b-a): negative-positive succession in the second order;

(alpha-beta): positive-negative succession in the third order;

(beta-alpha): negative-positive succession in the third order.

In the first column of musical notes in Figure 12 the number of dots above a note indicates the amount of accentuation a note should receive: three dots indicate the heaviest accent possible in four-timed metre. In the second column of notes  indicates the heaviest accent,  the next heaviest,  the lightest, and  no accent.

Figure 12

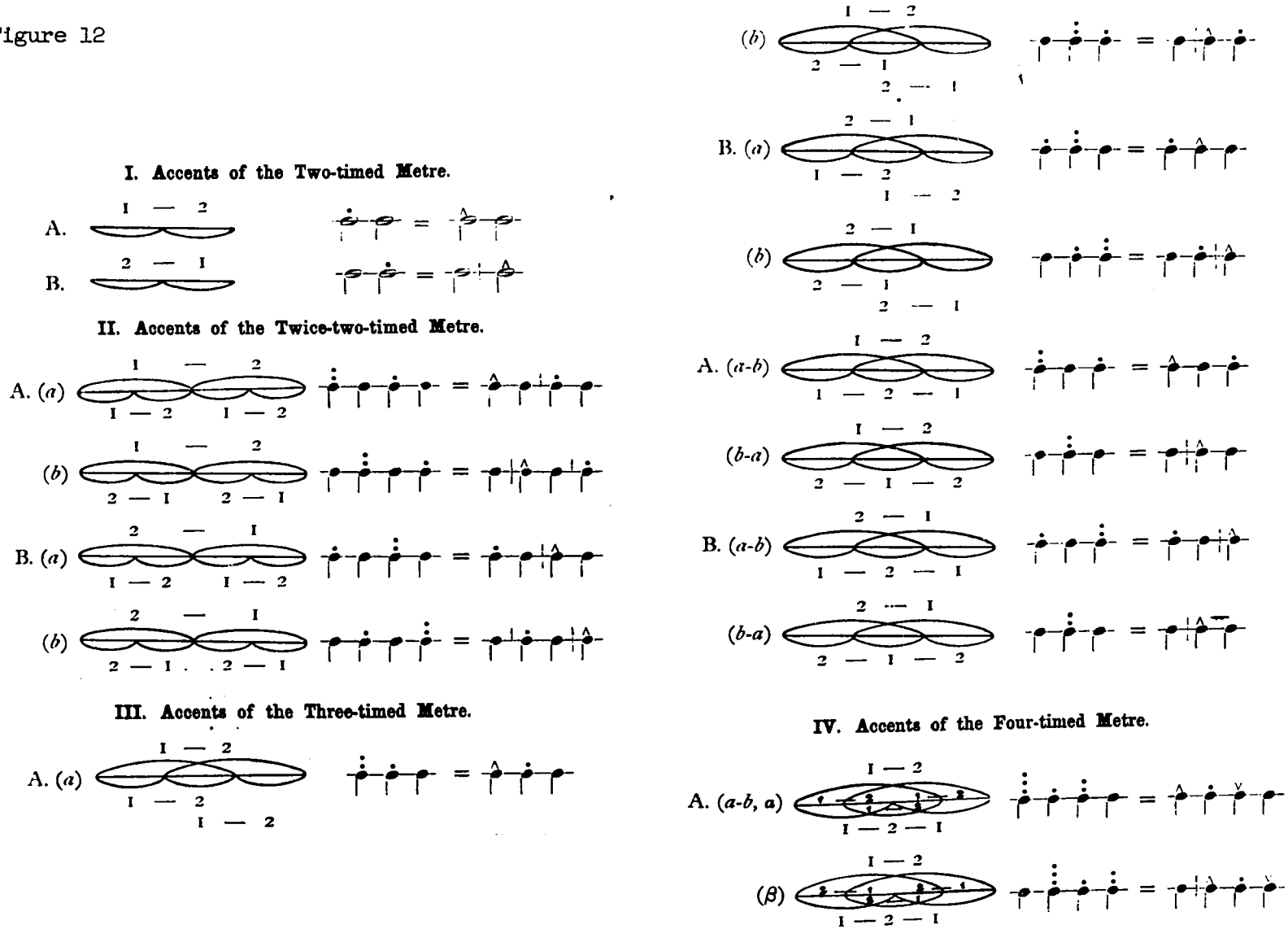
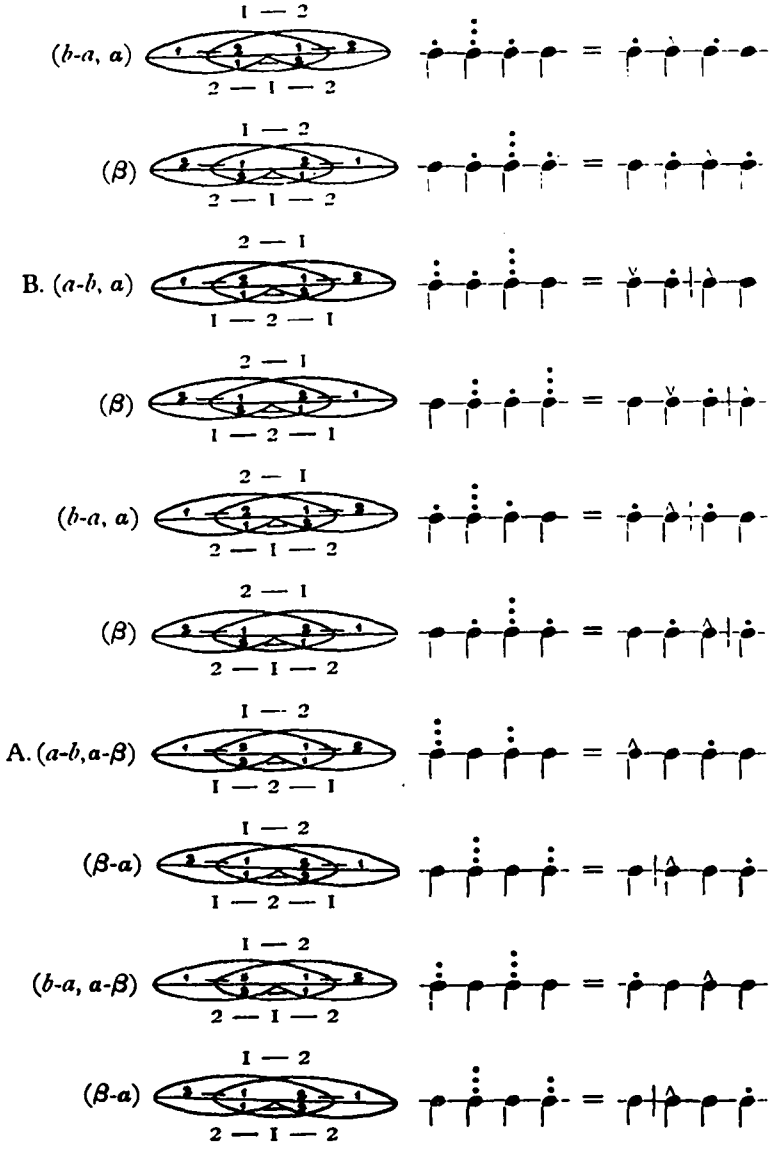


Figure 12 (part 2)



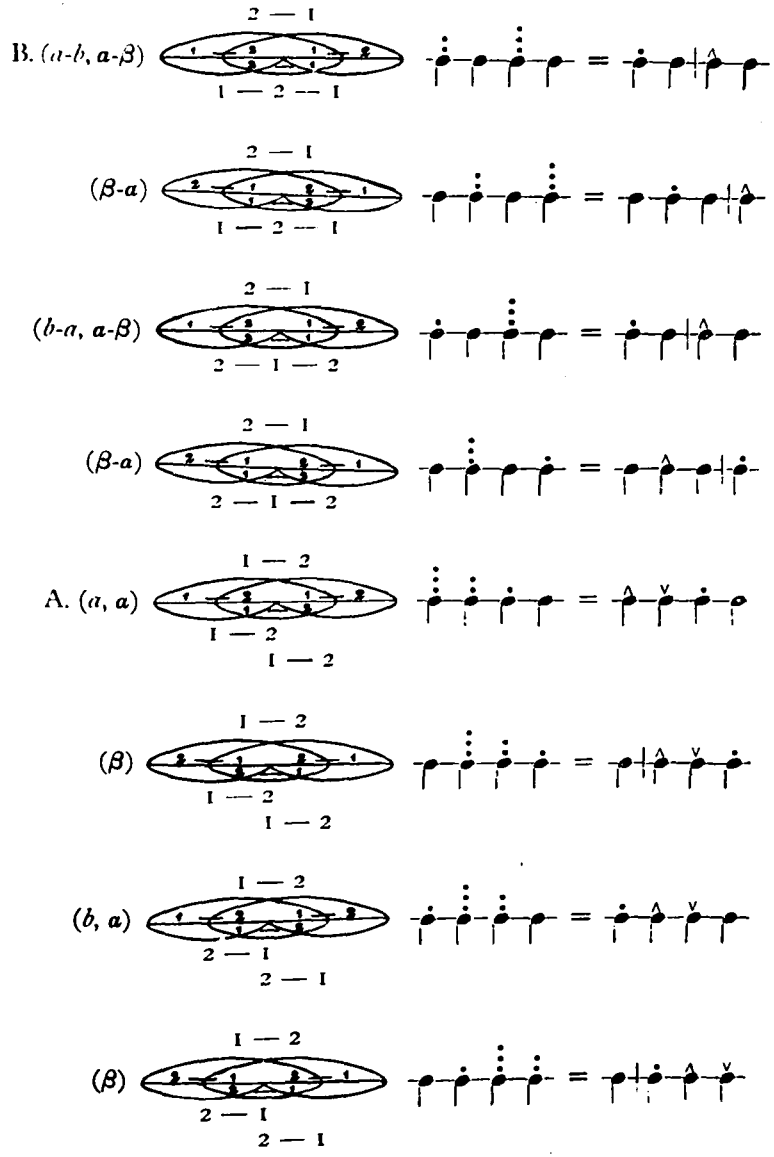
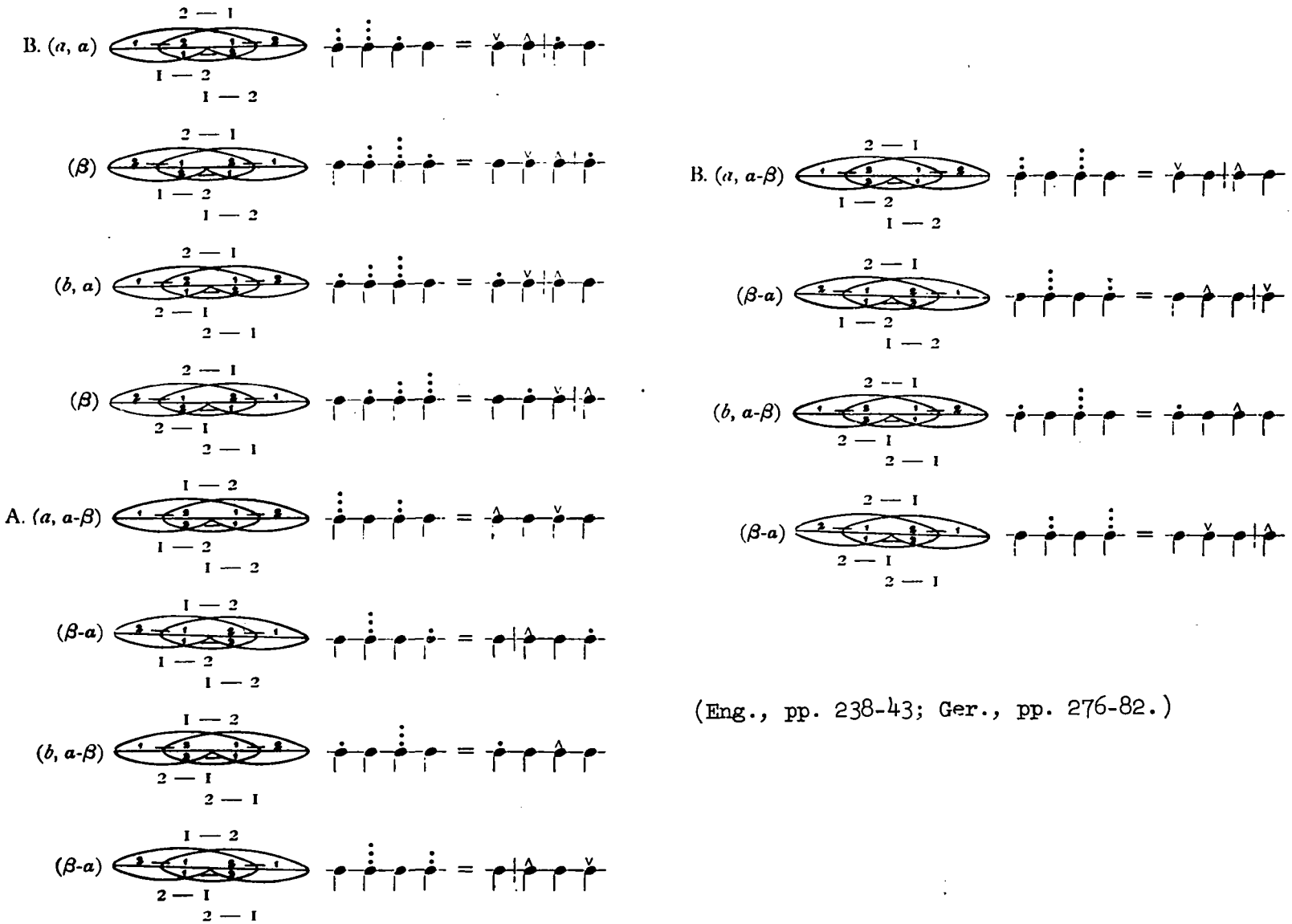


Figure 12 (part 3)

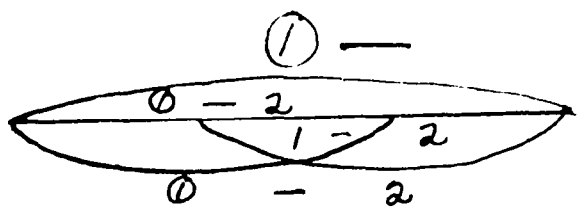


(Eng., pp. 238-43; Ger., pp. 276-82.)

Figure 12 shows that in two-timed metre there are only two possibilities of accentuation: positive (A) and negative (B). In twice two-timed metre there are twice as many possibilities: in the higher order either positive (A) or negative (B), and in the lower order either positive (a) or negative (b). There are eight possibilities in three-timed metre because the contractions formed by positive-negative and negative-positive successions add four additional forms.

To understand the reasons for the accentuation of each form in Figure 12, it is necessary to analyze each diagrammatic structure from the highest order to the lowest. In the first example of four-timed metre for instance, the first part of the highest order taken separately appears as follows:

Figure 13

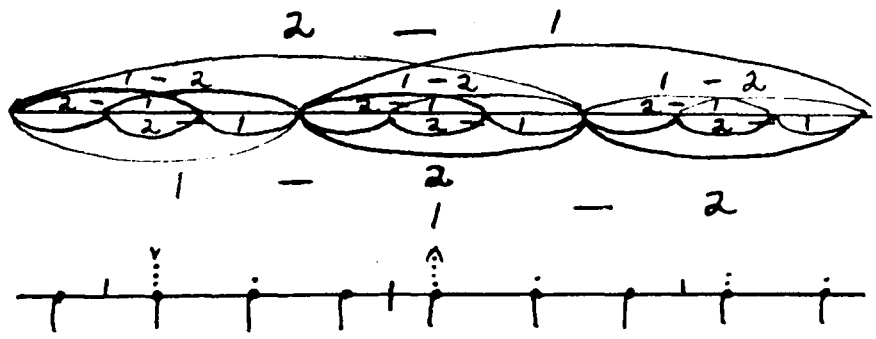


The encircled numbers in this illustration indicate the strongest parts of the first order (top number), second order (bottom number), and lowest order (middle number). Thus, stated as simply as possible, the strongest part of the lowest order in the strongest part of the second order in the strongest part of the first order is the strongest part of the metre. To arrive at the next degree of accent, it is necessary to analyze in a

similar manner the second division of the first order to determine its strongest part. To find the third degree of accent, the second order must be analyzed to arrive at its strongest part, exclusive of those already discussed in the analysis of the first order. If this procedure is followed carefully and consistently, it is possible to discover Hauptmann's reasons for the accentuations of every form shown in Figure 12.

Hauptmann next undertakes an exposition of "Accents in Combined Metre" ("Accente im combinirten Metrum") which are determined in a manner similar to that used for the simple metres. He says, for example, "thrice-three-timed metre with negative pair of the lowest order, positive of the second and third, and negative of the highest, will take the following shape and emphasis:"

Figure 14



(Eng., p. 249; Ger., p. 289.)

"Rhythm in Metre" is Hauptmann's next subject. By stating the topic in this manner he means to imply that rhythm is not something clearly separate from metre but dependent upon it. He explains this conception,

relating it to the areas of melody and harmony, as follows:

> The system of accents, their order, and their change, is that which in the chief sense we shall name rhythmical in metre. Hitherto this expression has been avoided; for it was necessary first to become acquainted with the conditions upon which this order and this change depend. These must always be metrical determinations, just as the notes of melody must always be parts of harmonies. For in this meaning rhythmical in opposition to metrical may justly be compared to melody in opposition to harmony.[26]

The first function of rhythm to be discussed is the "rhythmical close" (der rhythmische Schluss). Concerning this, Hauptmann says that the positive metrical pair is a self-contained unit, and the function of the rhythmical close is to link together these isolated metrical units. This junction can be achieved only by a rhythmical form derived from a negative metrical determination. Thus, the rhythmical form of Figure 15, derived from a positive determination, cannot link its measure with the following one:

Figure 15

1 — 2

(Eng., p.255; Ger., p.296.)

On the other hand, a similar rhythmical form based on negative determination, as shown in Figure 16, will achieve the desired rhythmical close:

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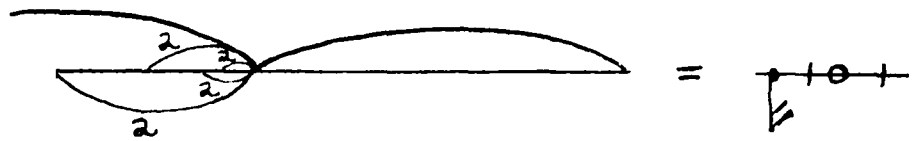
26. Eng., p. 253; Ger., p. 293.

Figure 16



(Eng., p. 255; Ger., p. 296.)

Hauptmann says further that so far as this function of rhythm is concerned, metre and rhythm may be considered opposites:

> In this sense rhythmical unity is something opposite to metrical unity. That which in the positive metre is separated and would fall asunder is by the rhythmical close united and held together. To be rhythmically united is to be metrically separated, and to be rhythmically separated is to be metrically united....[27]

In the next section of the treatise, "Filling-up of the Metrical Form" ("Erfüllung der metrischen Form"), Hauptmann reminds us that the entire discussion of metre so far has been a consideration of abstract forms. Even the audible beats which were taken to represent the members of a metre must be thought of as absent from abstract formal determination:

> Of itself the metrical form is still only an empty space of time, a metrically determined rest, and the membered form is only a rest conceived as membered.[28]

The metrical form may be filled up as a whole, one note filling the entire measure; divided, utilizing various quantities of durations; or in part,

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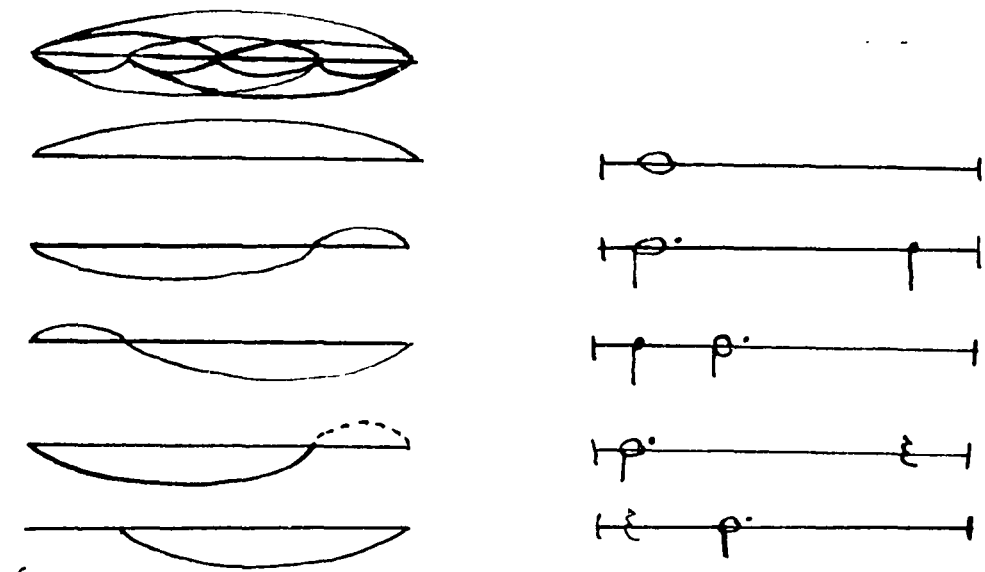
27. Eng., p. 256; Ger., p. 296.

28. Eng., p. 257; Ger., p. 298.

utilizing rests as well as notes. Hauptmann presents numerous illustrations for the two-, three-, and four-timed metres, showing how the rhythmical values are derived from metrical formations. The following are a few of his examples of the filled-up four-time measure:

Figure 17



(Eng., p. 260; Ger., p. 300.)

Under the heading "Metrical Construction Inwards and Outwards" ("Metrische Bildung nach Innen und Aussen"), Hauptmann deals with the organization of beats and beat-subdivisions as metrical units and the grouping of measures into larger structures. Using as an example the whole-note measure with motion in sixteenth-notes, he explains this concept as follows:

> In the so-called semibreve bar [ganzen Tacte] with motion in semiquavers the crotchet is, in respect of the whole, a part,

> half of the half; in respect of the semiquaver it is a whole, containing halved halves.
>
> But division into sixteen parts, which is here comprised in one bar, may also be comprised in a series of sixteen bars; and each of the bars may again be divided into sixteen. It is the same in the combination of different metrical determinations, the two-, three-, and four-parted, which readily explain themselves. So that a thing of six parts, made up of two three-parted or three two-parted unities, is in its highest order twofold or threefold, in its second order threefold or twofold, and may be further determined as a member in larger formations, as well as more minutely articulated in its own members.[29]

Although Hauptmann says that there are limits as to how small or large a metrical structure may be and still be perceived as such, he does not provide criteria for determining such limits.

Hauptmann admits that structures irregular in respect to the larger units of form are not only permissible but often aesthetically satisfying:

> ... it ought not to be regarded as showing a want of the sense for regular construction, or an incapacity for the review or comprehension of a whole of any considerable size, if it should seem to us that a metrical formation not strictly to be called regular nevertheless fulfills our aesthetic requirements. In reality the form is everywhere only the form of the contents. The artistic work that is richer in contents and higher of purpose is precisely that which contains such deviations from the absolute transparent regularity of pure metrical structure, and which can make them approved oftener than we should be willing to tolerate in productions of lesser rank....[30]

Just as each process of thought must go through the three dialectical stages, so Hauptmann's book has gone through them. The first

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29. Eng., p. 267; Ger., pp. 308-09.

30. Eng., pp. 268-69; Ger., pp. 310-11.

stage was a study of harmony, the thesis; the second was a study of metre and rhythm, the antithesis; the final section of the book is a synthesis of the first two, entitled "Metrical Harmony. Harmonic Metre." ("Metrische Harmonik. Harmonische Metrik.") This section deals with such matters as the metrical position of the seventh chord and the dissonance in a suspension. A series of linked seventh chords is considered to be analogous to a series of syncopations. The analogy itself is complex and its explanation would require a fuller treatment of harmony than it is possible to present here, but the sections dealing with syncopation are within the scope of our study.

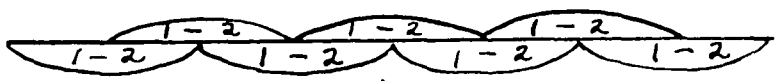
In considering the rhythmical close, Hauptmann pointed out that metrically positive pairs may be linked together by metrically negative formations. A structure like that shown in Figure 18 illustrates a positive series linked together by a negative series:

Figure 18

(Eng., p. 342; Ger., p. 388.)

If, however, the linking is created by a positive pair, the following structure results:

Figure 19

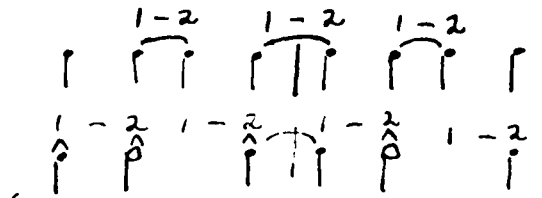


(Eng., p. 342; Ger., p. 389.)

The formation of Figure 19 Hauptmann terms syncopation:

> In music this proceeding is known to us under the name of syncopation, which joins a metrically second member to the following first member in positive undivided unity, and lends an accent to the unaccented member [as in Figure 20]:[31]

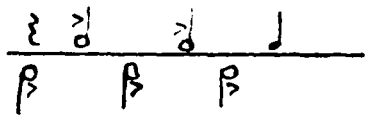
Figure 20



(Eng., p. 342; Ger., p. 389.)

If a series is to sound syncopated, however, the unsyncopated series must sound before or after it, as follows:

Figure 21



(Eng., p. 342; Ger., p. 390.)

Without the normal series, of which the syncopated series is the metrical contradiction, the syncopated one would seem normal.

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31. Eng., p. 342; Ger., p. 389.

Summary

Hauptmann uses Hegelian dialectics as the corner stone of his theoretical edifice; he assumes the basic principles of that system and proceeds to build his theory from that point. For this theory of harmony and metre to be completely persuasive to the reader it is necessary for him first to be persuaded of the value of Hegelian dialectics. The requirement of accepting a given philosophical viewpoint might be considered an unnecessary limitation of a theory if one did not realize that every theory is based upon, or at least implies, certain philosophical or psychological postulates which must be accepted before the theory itself can be accepted. Every theory is thus limited by its initial postulates, even though without such postulates no theory is possible. To criticize the very roots of Hauptmann's theory would be to criticize the Hegelian dialectical process; to do the latter adequately would lead to a criticism of philosophical idealism in general. Such matters are far beyond the scope of this study. It is therefore necessary for one to accept provisionally the author's viewpoint in order to evaluate his theory on its own terms.

Hauptmann begins his treatise with a consideration of harmony. Although this subject is not strictly within the limits of the present study, an understanding of the essentials of Hauptmann's theory of harmony is important for an understanding of his theory of metre and rhythm, since the latter contains numerous references to the former.

The octave is taken as the point of departure and is called the

initial unity or thesis. The author does not say precisely why he has chosen to use the octave as a point of departure. His reason is probably that the octave is the simplest of the harmonic intervals, both acoustically and aurally, and the simplest should form the beginning.

The interval of a fifth is taken as the antithesis in the dialectical process. This would be a logical second step as far as the upward progression in the overtone series is concerned; but Hauptmann's reasons have to do with the ratio between the quantity of the sounding medium used for the upper pitch and that which must be added to it to produce the lower pitch of the interval. The central concept here is that a thing doubled is a thing in opposition with itself. This proposition is given as axiomatic and must be simply accepted as far as Hauptmann's treatise is concerned, since he does not attempt to justify or explain it.

The interval of a major third is considered the synthesis. Once again this seems to be the logical next step in the process, as it is the next new note of the overtone series; but it is the ratio four-to-one, or one to two-times-two, which prompts Hauptmann to consider this interval as representing duality as unity. While the ratio one to two represents duality, two times two represents duality as unity.

In Hauptmann's theory of metre and rhythm he describes metre as an abstract measurement of time which must be filled in by sounds. The term rhythm refers to the actual sounds which fill in the abstract metre. An indefinite variety of tones of different intensities and durations is possible within the metrical organization, but they derive their meaning

from the underlying metrical thought-structure.

Hauptmann considers the two-timed metre to be the point of departure for the study of metre, the thesis of the dialectical process. By a "time" he simply means a duration. Although Hauptmann does not discuss the psychological principle of expectation, he bases his theory of metre partially on this principle. He says that two beats enclose one time and determine, or lead one to expect, a third which encloses a second time. His reasoning here seems to be consistent with that of his section on harmony, the analogy between the two-timed metre and the octave being clarified by his diagrammatic illustration.

The three-timed metre is the antithesis, the "metrical fifth." It is derived from two overlapping two-timed metres. Since the grouping of equal units in pairs is fundamental to Hauptmann's theory, this is the only possible derivation for the three-timed metre. The element of conflict and separation in this metre is the second of the three times because it has the function of both a second and a first time. The conflict is simpler to explain in the "metrical fifth" than in the "harmonic fifth," and it is more convincing. There is no such clear-cut example of double function, conflict, or separation in Hauptmann's explanation of the antithetical nature of the fifth in harmony.

The four-timed metre is the synthesis. In the course of its growth in time it is necessary for it to pass through two- and three-timed metres, and it thus includes these within itself. The "metrical octave," like the "metrical fifth" seems to be supported by more convincing

arguments than its harmonic counterpart. It is by no means as clear that the interval of a third includes the thesis and antithesis within itself, even though it does, with these intervals, form a triad. But it is perfectly clear that the metrical third passes through, and therefore comprehends, the smaller metres; it is the metrical triad, while the harmonic third only helps to create the harmonic triad.

The addition of unlike members is, according to Hauptmann, an artificial procedure. Metres having five and seven times can only be understood as additions of two-, three-, and four-timed metres. They are termed composite metres and are unsuitable to the continued measurement of a whole piece of music.

The multiplication of metres by two, three, or four is an acceptable procedure and is termed combined metre.

Hauptmann's basic principle of accentuation is that the first of any pair of units is accented. Three- and four-timed metres are organized by means of various overlapping pairs of units arranged in a hierarchy of first, second, and third order. Combined accents occur when a metre-part is accented because of its being the first unit of a pair in more than one order. In four-timed metre, for example, the first member receives a threefold accent because it is the first member of a pair in all three orders.

"Negative metrical determination," or "metrical inversion," means that the sequence of first-second, or accented-unaccented, in metrical grouping is reversed to produce the pattern second-first, or

unaccented-accented. This negative determination may be carried into any or all levels, thus making possible a wide variety of metrical accent-patterns.

One of the most important functions of rhythm is the "rhythmical close" which is a negative rhythmical pattern serving to link together the otherwise independent metrical units.

The concept of metre does not stop at the measure; it may be extended in both directions, from the smallest subdivisions of a measure-part to the larger formal structures such as phrases and phrase-groups. While irregular measures such as those of five and seven parts are not permissible, irregular groups at very high levels are tolerated in works of high artistic merit, in which the irregularities serve an aesthetic purpose.

Syncopation is the linking together of positive metres by positive metres, a procedure that shifts the normal accent from the first to the second member.

The stated purpose of Hauptmann's treatise was to provide a beginning for the study of harmony and metre that would be a real beginning, an initial idea from which the remainder of the theory would consistently grow. Hauptmann's philosophical system and the language he uses make him difficult to understand, and there are certain propositions that he does not fully explain or justify, particularly in the section on harmony. In spite of these defects, however, this work accomplishes its author's purpose admirably within the frame of its own philosophical system.

CHAPTER III

MATHIS LUSSY: A THEORY OF RHYTHM DERIVED FROM PERFORMANCE PRACTICE

Mathis Lussy (1828-1910) was a Swiss piano teacher and theorist active in Paris for more than fifty years. He became widely known as a composer of studies and exercises for piano and as an author of treatises on musical rhythm.[1] The most comprehensive exposition of Lussy's theory of rhythm is his Traité de l'expression musicale; accents, nuances et mouvements dans la musique vocale et instrumentale.[2] Two later treatises which rely heavily on the Traité are Le rythme musical; son origine, sa fonction et son accentuation[3] and L'anacrouse dans la musique moderne.[4] The Traité met with immediate acclaim. F. A. Gervaert, to whom it was dedicated, regarded it so highly that he had it adopted for use in the

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1. Baker, pp. 993-94. Edmond Monod, Mathis Lussy et le rythme musical (Neuchatel, 1912). Hans J. Moser, Musik Lexikon (1st ed.; Berlin, 1935), p. 429. (The entry "Lussy" has been deleted in subsequent editions of Moser's Musik Lexikon.) Hugo Riemann, op. cit., I, 1076.

2. Paris, 1873; 14th ed., 1911. This work will henceforth be referred to as Lussy's Traité.

3. Paris, 1883; 4th ed., Paris, 1897.

4. Paris, 1903.

Royal Conservatory of Brussels of which he was Director; the work was later considered by Jaques-Dalcroze to be of great value and influence.[5] In addition to fourteen French editions, the Traité appeared in English, German, and Russian translations. The French editions do not differ significantly in Chapters I-IX. Chapter X, which was added as a final chapter to the sixth edition (1892) and subsequent ones, is derived from parts of Le rythme musical. The present study of the Traité is based on the fourth edition.[6] Quotations are cited from the English translation of the fourth edition by M. E. von Glehn.[7] Chapter X of the Traité, which will be treated in connection with Le rythme musical, is based on the sixth French edition.

In the preface of the Traité Lussy deplores the fact that so few performers play with expression, that is with appropriate subtleties of accentuation, dynamics, and tempo. He says that a student can acquire some degree of artistic feeling if he observes the expression marks of a gifted teacher, but in doing so he does not learn the raison d'être of these marks. They show the student where to accent or to modify dynamics and tempo, whereas he should learn the reasons why an artist instinctively plays in one way in preference to another. Lussy says further that a gifted performer might believe that he follows the caprice of his

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5. Jaques-Dalcroze, Rhythm, Music and Education, pp. 54-55.

6. Paris, 1882.

7. Musical Expression (London, 1892).

imagination in matters of expression, but such is not the case; rather, "all is cause and effect, connection and law." Lussy explains that this treatise is the result of a search for the underlying causes of musical expression.

> The object of this work is to demonstrate the hitherto unknown reason which guides artists and professors in their accentuation, and to furnish a system of rules by which a player will be enabled to annotate and perform with expression every kind of vocal and instrumental music.... These rules claim neither originality nor novelty, for the greatest masters have observed them unconsciously from time immemorial, and artists and people of taste have always submitted to them instinctively. The task of the present writer has therefore been merely to discover, classify, and formulate them. By this discovery, and in spite of all the imperfections of carrying it out, ... musical expression leaves the exclusive domain of sentiment and enters that of reason.[8]

In Chapter I, "The Generating Causes of Expression," Lussy says that this work is the result of twenty years of investigation of two types of sources: (1) performances of the greatest musicians of his time; (2) works by such composers as Beethoven and Mozart edited by Moscheles, Marmontel, Le Couppey, and others. His investigation has convinced him that:

> In identical situations--that is to say, in similar passages--artists make use of identical expression, with only such differences as result from the greater or less degree of delicacy of their sentiment and technical skill....[9]

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8. Eng., p. iv; Fr., first page of "Préface" (no pagination). Page references in footnotes and musical examples are given for the English translation by von Glehn (see above, p. 1, footnote 7) and the fourth French edition (see above, p. 1, footnote 6).

9. Eng., pp. 1-2; Fr., pp. 1-2.

And from this conviction he draws the following conclusions which are basic to his study:

> 1. They [the performing artists] have all received the same impressions in different degrees from the same source; for similar effects are of course produced by similar causes.
>
> 2. As these expressions vary according to the different musical phrases, and not according to the individuals who produce them, it is clear that the cause of the expression resides and must be sought in the notes and the structure of the musical phrase.
>
> 3. The great artists do not feel at liberty to accept or to repudiate the sensation which they receive. Their unanimity of expression proves that they are, as it were, forced to give it utterance, not, perhaps, conscious of the force which impels them, but unable to resist it.[10]

Lussy says further that since the generating causes of expression are found in the notes and the structure of the musical phrase, it is equally possible to write a treatise on expression as on harmony. To accomplish this, he continues, one must determine which notes and passages most excite the performer, classify them, abstract from them the cause and nature of their action upon the sentiment, and then formulate the law of that action.

Chapter II, "Theory of Musical Expression," sets forth the aesthetic basis of the treatise. Lussy says that music is composed of three principal elements:

> 1. The Scale or the Tonality in its two modes, major and minor; that is to say, the union of the seven functions which the different sounds are capable of filling by turns, the

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10. Eng., p. 2; Fr., p. 2.

> attractive influence which these functions exercise amongst themselves, and their subordination to the tonic or first note of the scale.
>
> 2. The bar or measure [mesure]; that is to say, the periodical recurrence at short distances of an accented note dividing a piece of music into small portions, called bars, having the same value and duration.
>
> 3. The rhythm; that is to say, the periodical recurrence of 2 and 2, 3 and 3, 4 and 4 bars of the same value, which thus form groups or symmetrical designs, each containing part of a musical phrase corresponding to a line [vers] of poetry.[11]

These three elements of music, he continues, have trained us to expect and prefer tonal attraction as well as regularity and symmetry. When a certain order is established the listener expects it to continue, but his expectation is seldom completely fulfilled. It frequently happens that notes foreign to an established key, metre, or rhythm tend to disrupt the expected order. Such notes are especially important:

> Now it is precisely these unexpected, irregular, exceptional and, as it were, illogical notes which more especially have the faculty of impressing the feelings. They are the notes that engender expression, because they are the elements of stimulus, movement, force, fire, and contrast....[12]

But, Lussy says, it is difficult for the listener to accept immediately

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11. Eng., pp. 7-8; Fr., pp. 5-6. The French term mesure may be translated as metre, time, measure, or bar. It means metre or time in the sense of a regular system of accents, and measure or bar in the sense of the space between two bar lines; the context determines which meaning is intended. When necessary to avoid confusion in translated quotations, the original of this and other technical terms used by Lussy will be placed in brackets. It is important to note that Lussy does not use the term rhythm in a general sense but to refer to a specific structural unit which he explains in detail in Chapter V.

12. Eng., pp. 8-9; Fr., p. 7.

these unexpected notes; he struggles to retain the established order. To assert the validity of such disruptions, the performer must execute certain crescendi and accelerandi. As a result of these modifications of dynamics and tempo the unexpected notes are forced upon the listener's consciousness. The more sensitive a performer is to notes that tend to disrupt an established order, the more expressive his playing. Thus, Lussy defines musical expression as follows:

> Musical expression is the manifestation of the impressions produced on the sentiment by those irregular notes which are destructive of key, mode, metre, and rhythm, and a revelation of the struggles and distrubances of our musical instinct.[13]

Lussy says that the purpose of the following chapters is to present "clearly defined formulas and easily applied rules" so that even inferior students may learn to develop "sensibility and skill" in matters of musical expression.

In Chapter III, "The Phenomena of Musical Expression," Lussy discusses various kinds of accents. He states that the first kind which the listener notices is the metrical accent (accent métrique) which appeals to the instinct rather than the intellect. Because of it the listener instinctively taps his foot, moves his head, etc. at regular intervals. This is the accent of the bar line, and its purpose is to mark the separation between measures.

Lussy says that more careful attention reveals to the listener a

---

13. Eng., p. 10; Fr., p. 8.

second kind, the rhythmical accent (accent rhythmique),[14] which appeals to the intellect rather than the instinct. This accent occurs at the beginning of a rhythm. It does not necessarily coincide with the metrical accent but recurs periodically to mark symmetrical groups of measures which contain a more or less complete musical idea and constitute part of a phrase.

After having become aware of these two kinds of accent the listener may hear yet a third kind which Lussy vividly describes as follows:

> Listening once more we shall notice that there are some notes on which the artist concentrates his whole energy, bringing them into relief by dwelling on them and enforcing them with all his strength; and we shall feel that these exaggerated notes are independent both of the accented notes which mark the bar [mesure] and of those which define the rhythm. There is no coincidence, no regularity about them, they destroy the metrical and rhythmical accents, and thereby acquire additional force and brilliancy.
>
> When several of these sounds follow one another without interruption, the performer will exhaust all his energy and enthusiasm to express them. His passion and excitement will carry us on breathless, till with one supreme effort he pours forth the utmost fire of his soul, and then his voice dies away and sends a thrill through the audience. This we will call ... the "pathetic or expressive accent" (accent pathétique), and the "emotional element" (mouvement passionel). They are produced by the efforts of the artist to bring certain irregular notes into relief, notes foreign to the key or mode in which the phrase is written, and which break the regularity of the metrical accents, disturb the symmetry of the rhythms, and consequently jar upon and disturb the sentiment.[15]

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14. Lussy uses the older spelling, rhythme, in the Traité but the more recent spelling, rythme, in his later work, Le rythme musical.

15. Eng., p. 14; Fr., pp. 10-11. Hereafter von Glehn consistently translates Lussy's term accent pathétique as "expressive accent" and mouvement passionel as "emotional element."

Lussy establishes a hierarchy of accent values in which the metrical accent is of less importance than the rhythmical which is in turn less important than the expressive. The latter "will always take the lead and rule over the others." Thus, there will be instances in which the metrical and rhythmical accents will be suppressed to make the expressive accent more evident.

Chapter IV, "Metrical Accentuation," is an explanation of the first kind of accent discussed in Chapter III. Lussy begins with a description of the beat (*temps*) which is defined as "a fixed term of comparison," or "a standard unit," according to which the durations of musical sounds are measured. He says that the beat is arbitrarily chosen, and once chosen it remains unchanged until some indication to the contrary occurs. Our musical sentiment demands that beats do not recur with equal intensity:

> The first of every two, three, or four successive beats should be louder and more energetic. This divides the beats into equal groups or portions, each of which is called a *bar* or measure.
>
> Bars are therefore composed of two, or three, or four beats; and as the stronger emphasis is laid on the note which falls on the first beat, this is called the *accented beat* [*temps fort*].
>
> ... In written music, to prevent the eye from being confused, and to enable it at once to catch the first note of the bar, a vertical line, called "the bar-line" [*barre de mesure*], is placed before the first beat.[16]

Measures containing either two notes per beat or their binary

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16. Eng., p. 17; Fr., p. 13.

subdivisions are termed simple measures (mesures simples) by Lussy, while he terms those containing three notes per beat or their binary subdivisions compound measures (mesures composées).

After discussing elementary matters of beat subdivision and notation in simple measures, Lussy turns to the compound measure which he says originated by combining triple measures in quick tempo. He explains the origin of the compound measure as follows:

> Two facts have specially contributed to its development:--
>
> 1. The identical effect produced by triple time and by a beat divided into three; for the accent laid on a note beginning a bar in triple time, with one note to a beat, is equal to that laid on a note beginning a beat divided into three:  or 
>
> 2. The inconveniences which arise from beating triple time very rapidly, producing indistinct and spasmodic movements.... Now if the tempo be very rapid it will be impossible for the conductor to execute the three beats in a bar with sufficient emphasis for the orchestra to distinguish them, and thus the time will be lost. Instinctively, therefore, the conductor will be obliged to relinquish the three beats in a bar and reduce them to one. And yet one may recognise to a certain degree in the reinforced accent on the first third of the beat, the accented beat of the original bar in triple time. By this simple process two, three, and even four bars may be reduced to one.
>
> And this brings us quite naturally to compound time--duple, triple, and quadruple ternary time....[17]

Lussy continues by pointing out that compound duple ternary time (e.g., 6/8) is derived from two bars of simple ternary time; compound triple ternary time (e.g., 9/8) from three bars of simple triple time; and

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17. Eng., pp. 21-22; Fr., pp. 16-17.

compound quadruple ternary time (e.g., 12/8) from four bars of simple triple time.

There are two further classifications which Lussy calls mixed and alternate measures (mesures mixtes et alternées). The latter term embraces measures that are created by the alternation of duple and triple measures (e.g., 5/8). Mixed measures occur when different kinds of measures are used simultaneously, such as in Don Giovanni, Act I, in the "Veni con me, ma vita," where Don Giovanni sings in 2/4 time and Leporello in 3/8.

Lussy next establishes thirteen rules for metrical accentuation.[18] He says that the purpose of the metrical accent, and therefore of the following rules, is to enforce the feeling of the measure (i.e., the accent at the bar line), beat, and beat subdivisions. The negligence of composers in making it apparent which notes should be accented, he says, necessitates the following rules "which will assist the performer in all circumstances." He cites musical examples to illustrate most of the rules; since many of them are clear without the examples, however, the following account will include only the essential examples.

1. The first note of every bar should be accented.

2. In duple time, with one note to a beat, the second is unaccented.

3. In triple time, with one note to a beat, the second and the third are unaccented.

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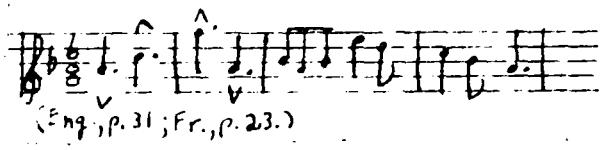
18. Eng., pp. 28-34; Fr., pp. 22-25.

4. In simple common time [Dans les mesures simples à 4 temps], with one note to a beat, the first beat is accented, the second, third, and fourth unaccented.

5. In compound time, each note of the value of a beat (that is, a bar of simple triple time condensed) is accented. [See Example 30.]

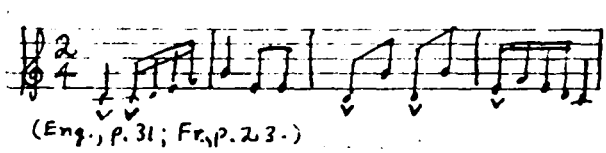
Example 30



The first two measures of Example 30 illustrate Lussy's fifth rule. In the Traité Lussy is frequently inconsistent in marking the musical examples to illustrate his points. For instance the last note of Example 30 should be accented, according to Rule 5.

6. In triple time, as well as in duple and common, the first note of a beat divided into several notes (a group or run) is accented, even if it falls on an unaccented beat.

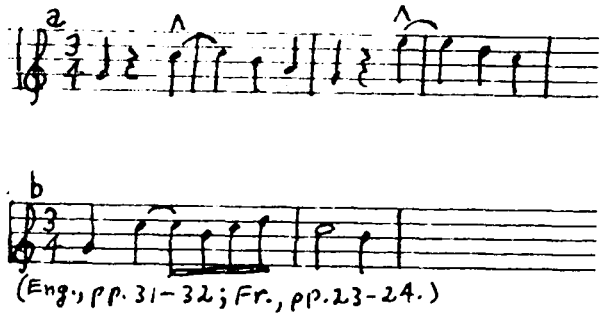
Example 31



In Example 31 the accents which most clearly illustrate Rule 6 are the second beat of measure 1 and the first beat of measure 4. Lussy does not explain the accents of measure 3; if they too were considered illustrations of Rule 6, then the second note of measure 2 would require an accent for the same reason.

7. Every note, whatever its value, when prolonged through the first note of the bar, or of the following beat, is strongly accented.

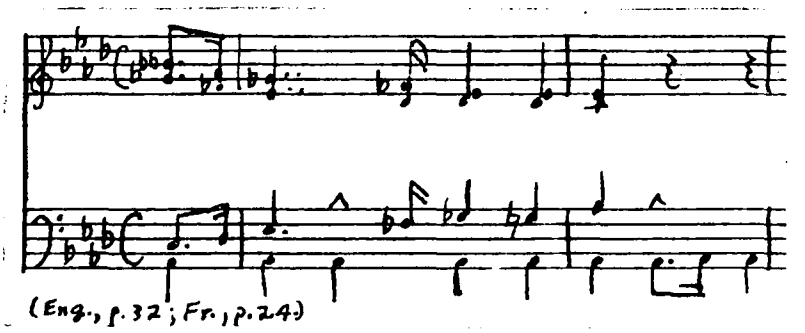
Example 32



Example 32a illustrates the prolongation of a note through the first note of a bar. The first measure of Example 32b illustrates the prolongation of a note through the first note of the following beat; according to Rule 7, this note should be accented, although Lussy has not marked the accent. In Example 32b the first note of the second measure might also be classified as a note prolonged through the first note of the following beat; it would, of course, receive an accent even if this were not the case since it begins the measure.

8. Every note which at the beginning of a bar, a beat, or fraction of a beat, occurs beneath or above a prolonged note (incorrectly called a syncopation), or beneath or above a rest, is strongly accented.

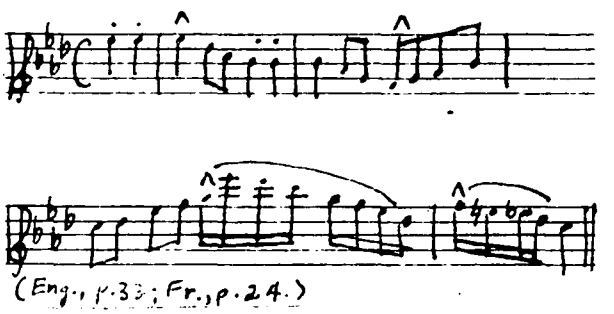
Example 33
Beethoven: Piano Sonata, Op. 26, "Marcia funebre."



The two accents marked in Example 33 illustrate Rule 8. According to that rule the last note of the example would be accented, but Lussy has not marked it.

> 9. The more rarely or exceptionally a group or beat composed of several notes occurs, the more strongly must the first note be accented.

Example 34
Gottschalk: Bananier.

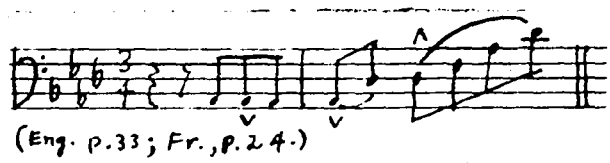


The last two accents marked in Example 34 are evidently intended to illustrate Rule 9; the others do not seem to derive from that rule. The accent mark in the first full measure is supplied in conformance with Rule 1, but accents according to that rule are not consistently indicated

in the succeeding measures. There is apparently no justification by rule for the accent which Lussy supplies in the second full measure.

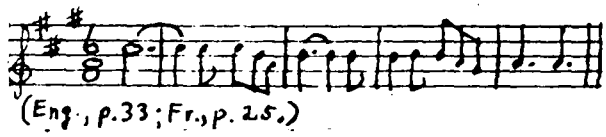
10. If the note which finishes a bar, a beat, or fraction of a beat is repeated (that is to say, if it begins the following bar, beat or fraction of a beat) it must be strongly accented; this is called the reiterated note.

Example 35
Weber: Invitation à la Valse.



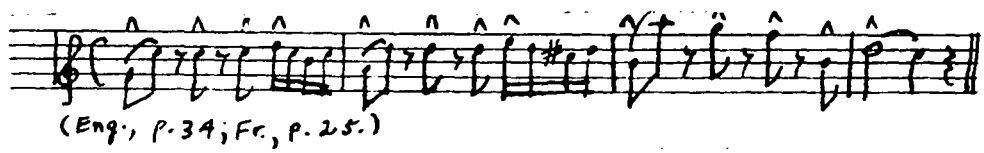
11. The longer a note, especially if it is the first of the bar, the more it must be accented....

Example 36
Auber: Haydée.



12. Every note preceded by a rest is accented.

Example 37



In Example 37 the first note of each measure is accented according to Rule 1, the eighth notes preceded by rests according to Rule 12,

and the groups of sixteenth notes according to Rule 9.

13. The quicker the tempo, the less accent is required by the first notes of the bars and beats.

These thirteen rules form the core of Lussy's theory of metrical accentuation. The chapter closes with two sections, entitled "The Beat" and "Practical Exercises," written primarily for instruction in various practice procedures by which a performer may achieve more accurate renderings of various kinds of beat subdivisions and durational patterns. Lussy implies by his suggestions for practice that this section of the treatise is addressed primarily to the pianist; he recommends his own Exercises de piano,[19] which, he adds, is useful for all instruments.

Chapter V, "Rhythmical Accentuation," is the longest and most detailed chapter of the treatise. It deals with the analysis and accentuation of the rhythm, which Lussy describes as a unit of music comparable to a line of poetry. The chapter begins with the analysis of vocal music to illustrate the correspondence of the line of poetry and the musical rhythm. Lussy presents numerous examples of rhythms of various lengths. Although he says he will follow the principle of considering all of the music set to a given line as one rhythm, he frequently deviates from this principle with no apparent justification. Example 38 is one of his clearest illustrations of two-measure rhythms; he does not indicate why the

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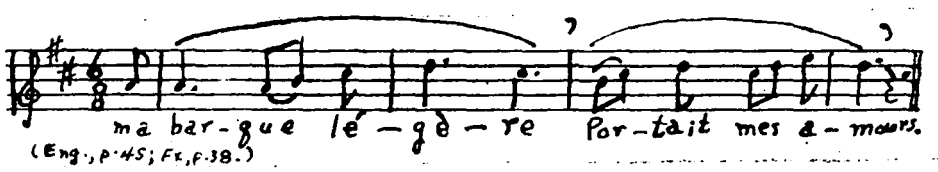
19. Paris, 1863.

first eighth note is excluded from the first rhythm.[20]

Example 38
Gretry.



Example 39 (see p. 95) is Lussy's illustration of a passage utilizing rhythms of various lengths. This example is more complex than his other illustrations. Here he does not consistently follow the principle of correspondence of the line of poetry and the musical rhythm since the principle does not lend itself to the analysis of short melodic and textual repetitions.

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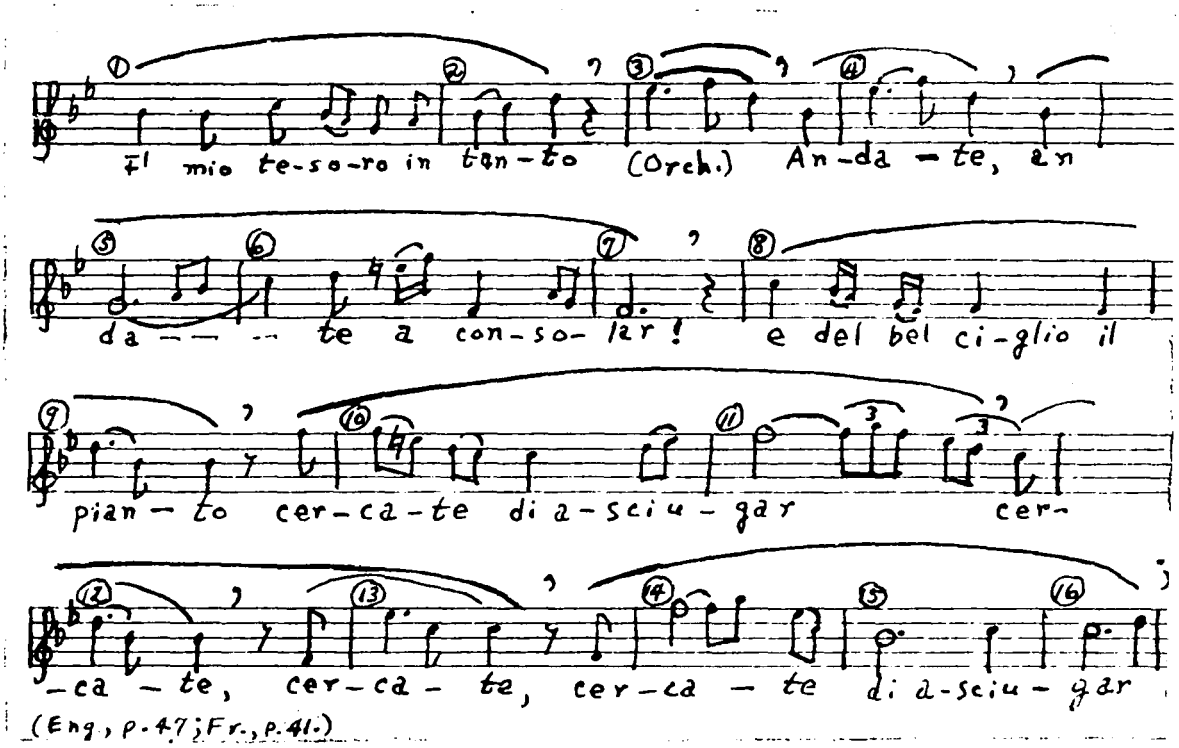
20. Lussy indicates that some of the examples in this chapter, including Example Nos. 38, 39, and 42 are found in a collection entitled Echos d'Allemagne et de France (Paris, [1870?]).

Example 39
Mozart: Don Giovanni, Act 2.



Next Lussy turns to a consideration of regular and irregular rhythms; the former are those of two or four measures, while the latter are explained as follows:

> The rhythms of three bars and those produced by their combination with the rhythms of two and four ... are called irregular.[21]

He lists five procedures by which composers create irregular rhythms: contraction, prolongation, repetition, melodic sequence, and echo.

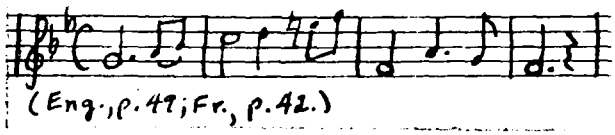
Lussy uses Example 39 to illustrate some of these procedures.

---

21. Eng., p. 48; Fr., p. 42.

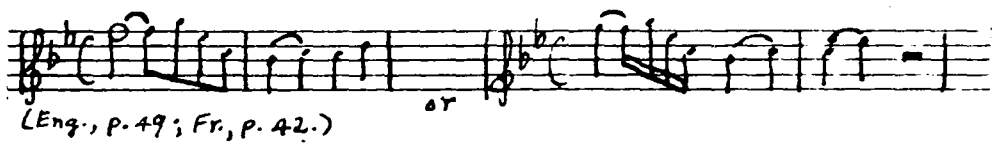
Measure 4 is a repetition, but here it is not used to create an irregular rhythm. Measures 5-7 form a rhythm of three measures which would therefore be irregular; Lussy considers these three measures to be a contraction of the following four-measure rhythm:

Example 40



Although he marked measures 12-16 of Example 39 as two rhythms, the first of which is subdivided, Lussy now states that these measures constitute a five-measure rhythm, the last three measures being a prolongation of a two-measure group like either of the following:

Example 41



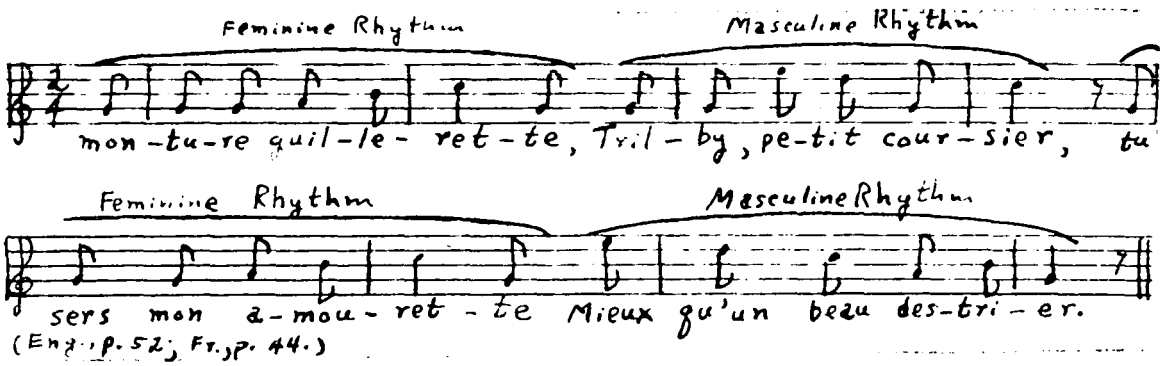
Lussy uses several musical examples to illustrate the two remaining procedures for creating irregular rhythms: melodic sequence and echo. Both are repetitions of melodic material which increase the length of a regular rhythm to make it irregular.

There are three more devices which Lussy says are frequently used by composers to break or re-establish the regularity of rhythms: ellipsis, coda, and pedal point. The ellipsis he describes as a note or

measure which serves as both the end of one rhythm and the beginning of another. He says that a coda of a few measures is often added to a piece in which the rhythms are normally regular in order to produce an irregular and therefore emphatic close. The pedal point he considers to be a strong means of re-establishing regularity following an irregular rhythm; he does not elaborate on this function of the pedal point.

Continuing to deal with vocal music, Lussy turns to a consideration of the masculine and feminine rhythm; the former ends at the beginning of a measure on an accented syllable, while the latter ends in the middle of a measure on an unaccented or mute syllable. Lussy illustrates both masculine and feminine rhythms with the following example:

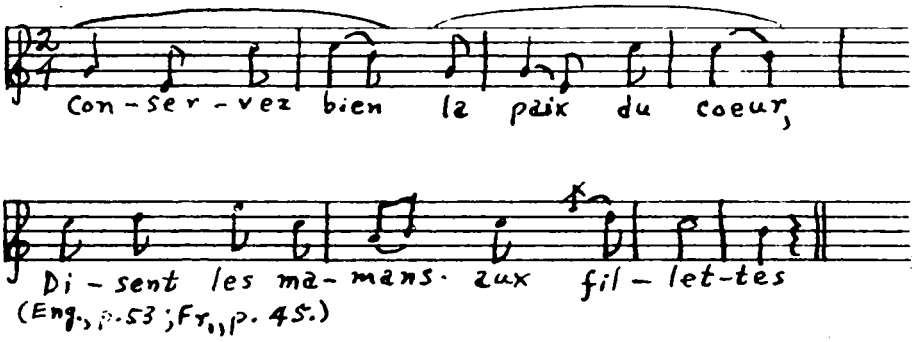
Example 42
Küchen.



Inverted rhythm is a term which Lussy applies to a rhythm ending in the middle of a measure on an accented syllable or at the beginning of a measure on an unaccented syllable. Three inverted rhythms are shown in Example 43 (see p.98): the first and second would be feminine, but their final syllables are accented; the third would be masculine but its final

syllable is unaccented.

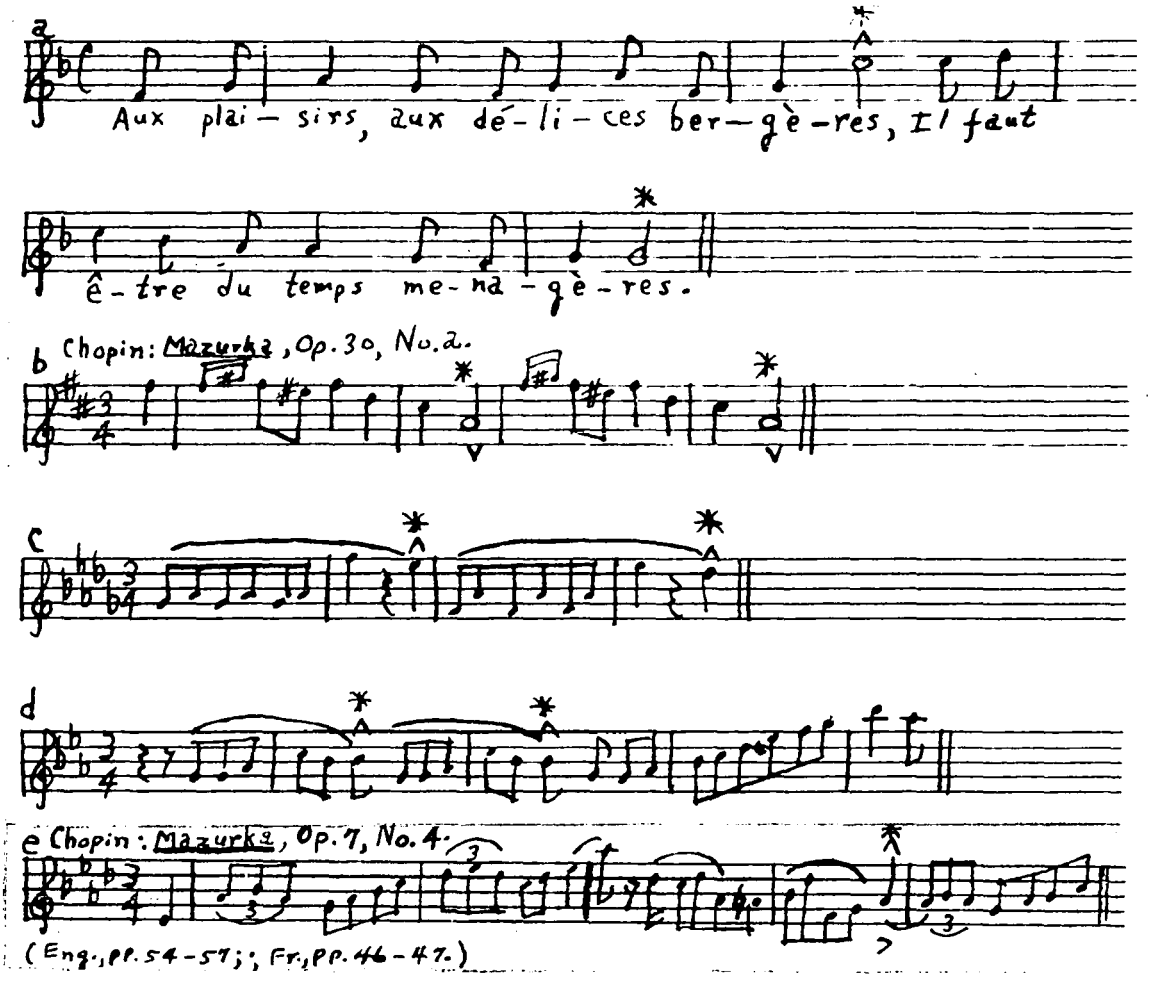
Example 43
Gaveaux.



There is still another kind of inversion which Lussy calls a strong feminine rhythm. Four instances are given:

> The feminine rhythm, though terminated by a short syllable, becomes strong--
>
> 1. When it finishes with a syncopation; that is to say, when the second note of the last bar is of longer duration than the first. [See Examples 44a and b. The endings of rhythms in these examples are indicated by asterisks.]
>
> 2. When the last note is preceded by a rest. [See Example 44c, p. 99.]
>
> 3. When the last note is a reiterated note. [See Example 44c, p. 99.]
>
> 4. When the last note is prolonged into the first of the next rhythm. [See Example 44e, p. 99.]

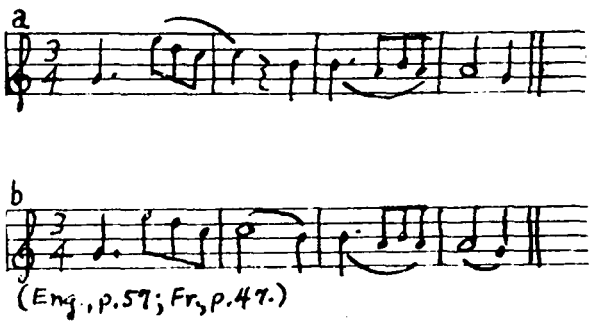
Example 44



Before leaving the subject of inverted rhythm Lussy mentions some practices which he considers abuses of the process. He says that composers often make inversions which are neither consistent with the character of the piece nor with the dynamic markings. Examples 45a and b (see page 100) illustrate two such abuses. The asterisk in Example 45a marks, according to Lussy, an error: "... no composer could be so illogical as to use such an energetic means of expression in so trifling a

passage."[22] He says that Example 45a should be played as notated in Example 45b.

Example 45



He continues by pointing out two kinds of errors in Example 46a: first, the long slur-mark over the notes is wrong since there are two two-measure rhythms which should be marked as such; second, the notes of measures 2 and 4 imply inverted rhythms while the dynamic markings imply feminine rhythms. He says that the latter interpretation is evidently the intention of the composer and that Example 46a should be played as notated in Example 46b or c.

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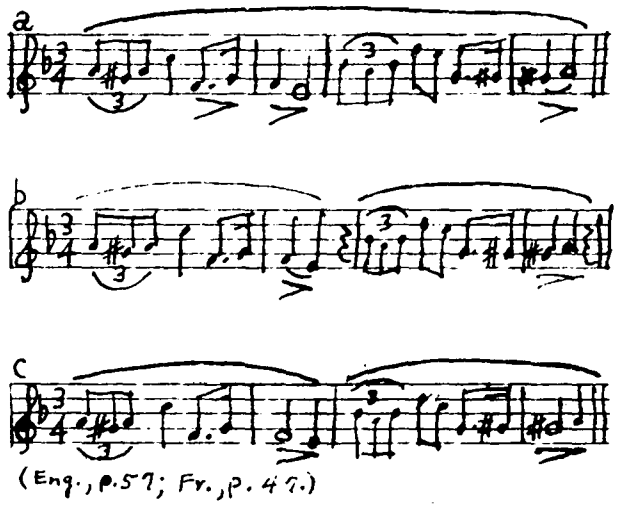
22. Eng., p. 57; Fr., p. 47.

Example 46



Thus far in Chapter V Lussy has dealt only with rhythms. He now turns to a larger unit which he calls the phrase and defines as a group of two or more rhythms which closes with a tonic cadence and a slight pause creating a more conclusive feeling than does the close of a rhythm. Regarding the pause at the end of a phrase, Lussy says:

> This pause is obtained--first, by a long note, or a note with a rest after it, at the beginning of the last bar [see the last measure of Example 47a-b]; secondly, by a note falling on an unaccented beat, preceded by a note longer than the last, or at least equally long [See Example 47c]; thirdly, by a note falling on the unaccented beat, preceded by several notes, each one shorter than the last [See Example 47d-f].[23]

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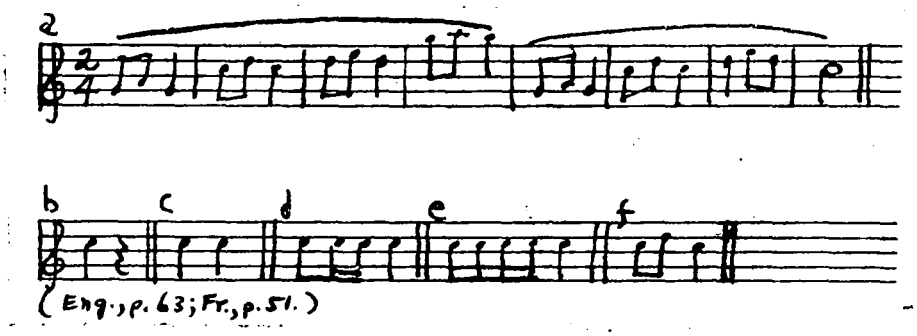
23. Eng., p. 63; Fr., p. 51.

Example 47



Having considered the grouping of rhythms into phrases, Lussy next turns to the subdivision of a rhythm into smaller units termed hemistich and section.[24] The hemistich is half or approximately half of a rhythm, and the section is a smaller unit often comprising only two notes. Lussy does not state principles by which one determines the hemistich and section, but he presents several illustrations. Example 48a is composed of two rhythms, each of which is divided into two hemistichs; Example 48b is a single rhythm divided into seven sections.

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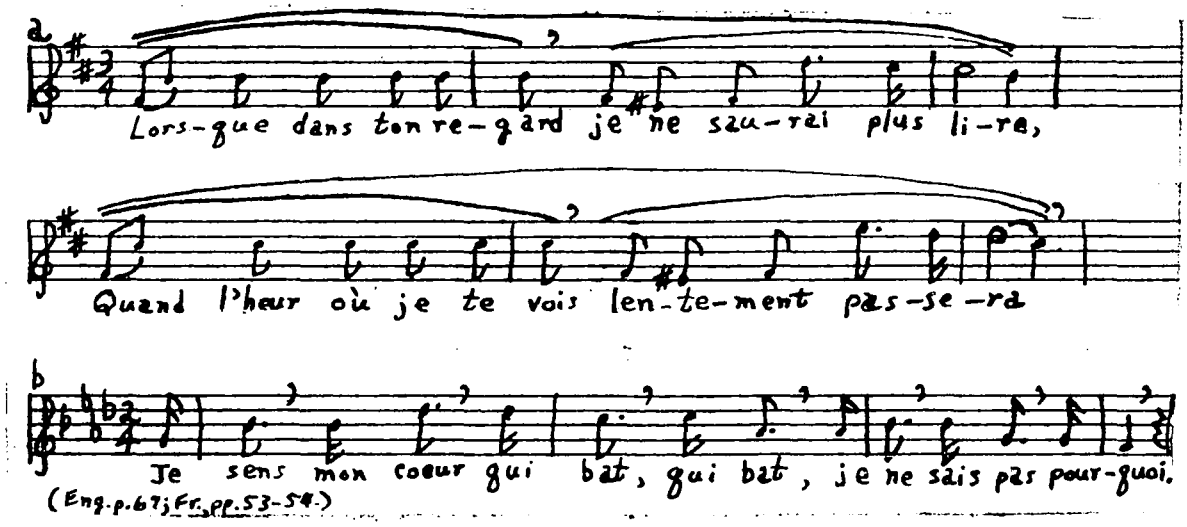
24. Lussy's terms are hémistiche and incise. Von Glehn translates the latter term with "section." The present author will use von Glehn's translation since the English word "section" is closer to Lussy's meaning than the English word "incise."

Example 48



Turning to the analysis of instrumental music, Lussy regrets the fact that rhythms are often incorrectly marked or not marked at all even in the works of the great masters. He provides three steps by which he says it is possible to determine rhythms in instrumental music. They may be paraphrased as follows: (1) Examine the notes to see if they are arranged in groups of equal duration and similar design. Each group, distinguished by its difference from or similarity to that which precedes or follows it, will be a section or a rhythm, depending on its length. (2) Determine whether the groups contain notes of the same time values and whether they are terminated by a longer note or a rest. (3) Determine the degree of repose at the end of each group to distinguish whether the close is "merely a pause leaving a desire for something to follow, or a definite and final close."[25]

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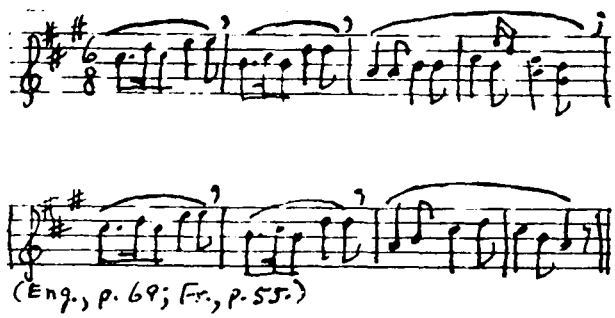
25. Eng., p. 68; Fr., pp. 54-55.

Lussy presents several relatively simple musical examples to illustrate these three steps. Example 49 will serve to illustrate Lussy's analysis: Measures 1 and 2 are similar separate units; measures 3 and 4 form a single unit since they are connected by conjunct motion and are closely related because of the ascending-descending melodic curve; measure 4 concludes with a semi-cadence "leaving a desire for something to follow" and is marked by a semicolon to indicate a more important ending than those of the preceding units which were marked with commas; this is the close of the first rhythm. Measures 5 and 6 are like 1 and 2; measures 7 and 8 are similar to 3 and 4, but measure 8 closes on the tonic with a quarter note followed by a rest. Since the cadence in measure 8 is "a definite and final close," it marks both the end of the second rhythm and the end of a two-rhythm phrase.

Example 49
Mozart: Piano Sonata (K. 331).

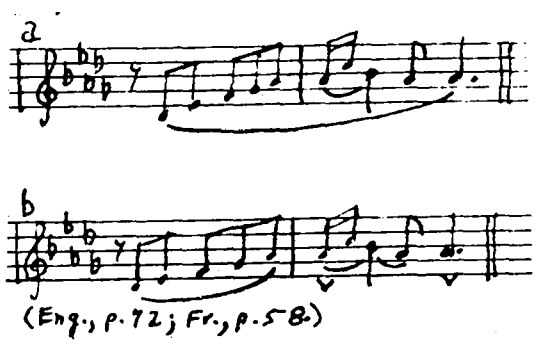


Lussy turns next to a consideration of sections. He says "a section is nothing more than an articulated note, or several slurred notes, followed by a short rest." He relates the determination of sections directly to performance on the piano and other instruments:

> All the notes, no matter how many, covered by a slur [coulé] ⁀ should be played on the piano with a single movement of the wrist for the first note, and the other notes must be articulated by the fingers alone, the hand merely gliding to right or left without any further movement of the wrist. When a passage requires several movements of the wrist, that fact shows that it contains several sections. All such notes require only one movement of the bow, or one emission of breath on the flute, clarinet, horn, &c.[26]

He continues by illustrating this point with Examples 50a and b; the former, he says, is evidently incorrectly marked because: "It is clearly impossible to play this rhythm as it is written with only a single movement of the wrist." There are two reiterated notes, each of which requires an accent and therefore a movement of the wrist. Thus, Example 50b illustrates the correct marking:

Example 50



Lussy next presents a detailed discussion of fourteen "cases in which the great composers generally make use of sections in instrumental music."[27] He sometimes treats these "cases" as rules and occasionally

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26. Eng., p. 71; Fr., p. 57.

27. Eng., pp. 72-84; Fr., pp. 58-65.

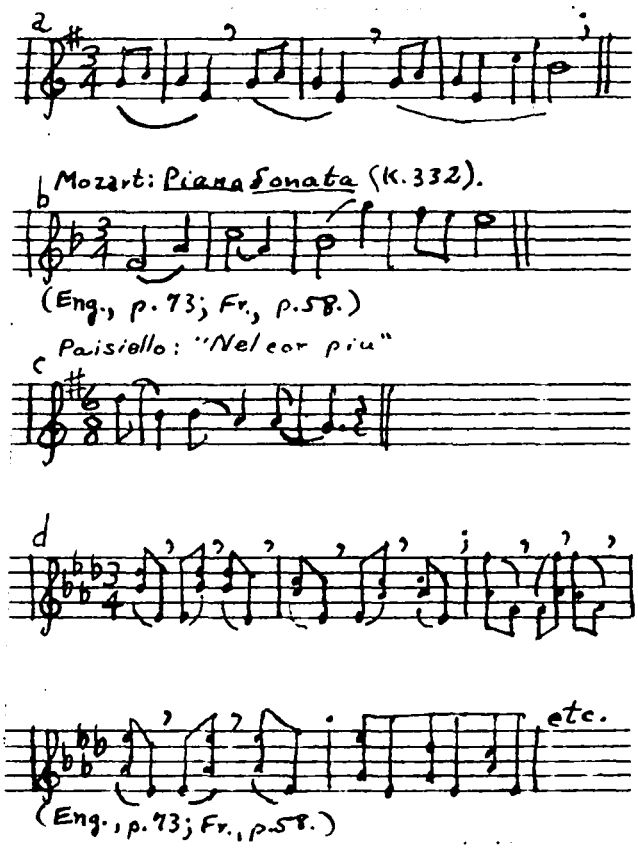
refers to them as such. Lussy illustrates each case with several musical examples and explains some of them at length; we shall quote the brief description of each and cite a few of the musical examples.

Lussy says that a section is made at the following places:

> 1. After a short figure ... repeated several times. [See Example 51a.]
>
> 2. After a long note followed by a short one and repeated several times. [See Example 51b.]
>
> 3. After a short note followed by a long one and repeated several times. [See Example 51c.]
>
> 4. Before a reiterated note--that is to say, when the same note finishes a bar, a beat or a fraction of a beat, and begins the following bar, beat, or fraction of a beat.... [See Example 51d.]

In Example 51a each section is indicated by a slur followed by a comma, and the rhythm is followed by a semicolon; no reason is given for grouping the last six beats together as one section. Commas are not used in Examples 51b and c, and there is no slur in measure 4 of Example 51b; no reason is given for these apparent omissions. In Example 51d each section is followed by a comma, the first rhythm by a semicolon, and the second rhythm by a period indicating the end of a phrase.

Example 51



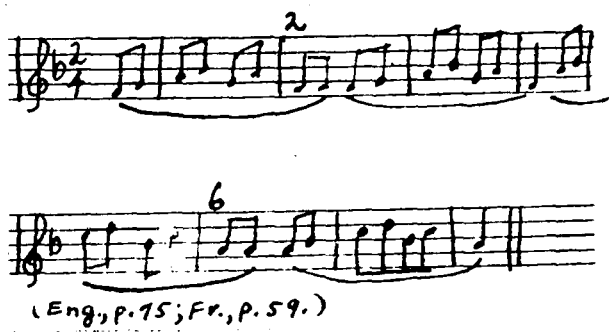
5. A section is also made when the second note of the bar or beat is exceptionally the same as the first, and either of the same or greater length. This rule must especially be observed when the rhythm begins on the last beat of the bar.... [See Example 52.]

Example 52

Lussy says that an exception to this rule is the feminine ending in which the second note of the measure is the same as the first. In

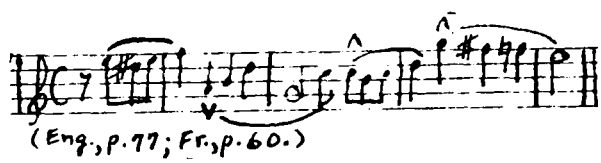
Example 53, measures 2 and 6, the second note of the measure is unaccented because it is the final note of a feminine rhythm.

Example 53



6. We make a section when there is a break in the continuity of the notes, especially if it is on the second note [i.e., between the first and second notes] of the bar or beat. Thus a note which makes a wide skip after a sequence of consecutive intervals may be considered an initial note, and have an accent. [See Example 54.]

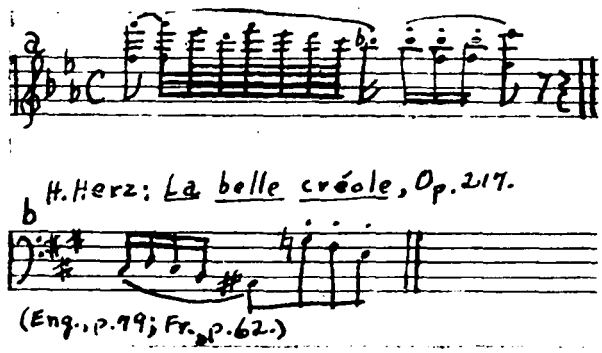
Example 54



Lussy points out that exceptions to Rule 6 must be made for pieces in quick tempo, otherwise a halting effect will result.

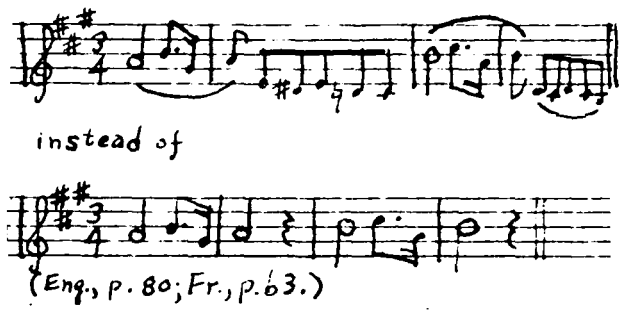
7. We must make a section after the first note succeeding a group of small notes in all the following cases: 1. If it is a longer note than the one which succeeds it; 2. If it is the same note [See Example 55a]; 3. If it is of equal length [See Examples 55a and b]; 4. If it is followed by a note which proceeds by a wide skip [See Example 55b]; 5. If it is followed by a chord.

Example 55
Beethoven: Piano Sonata Op. 13.



8. Where there is a group of notes which might be omitted, or seem to have a separate existence, serving either as imitation, echo, or padding [remplissage]. [See Example 56.]

Example 56
Mozart: Piano Sonata (K. 284).

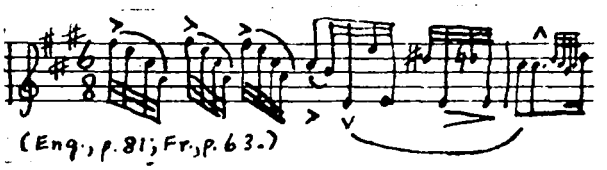


9. Again, after the note which precedes a codetta [guidon ou conduit mélodique]. [See Example 57, p. 110.]

Lussy defines guidon as a passage which is not an integral part of the rhythm but which serves to lead into a new theme or a repetition of a previous one.[28]

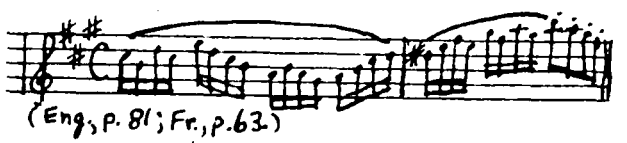
28. In using "codetta" to translate guidon ou conduit mélodique, von Glehn is using the term in a way comparable to its use in fugal analysis. See R. O. Morris, The Structure of Music (London, 1935), pp. 91-92.

Example 57
Mozart: Piano Sonata (K. 331).



10. At the end of a phrase [phrase], or period [période], notes which are of equal length, and proceed consecutively, either in ascending or descending motion, should be played in a detached manner. [See Example 58.]

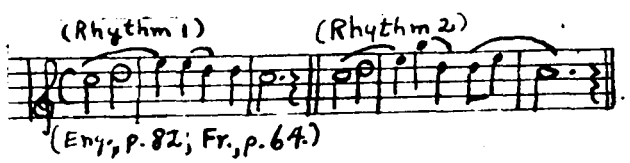
Example 58



Example 58 is evidently an illustration of a phrase consisting of two rhythms. Lussy uses the term "period" for a larger unit composed of two or more phrases.

11. Occasionally, where there have been sections in the first rhythm, the second rhythm by similarity of structure seems almost to require them in places where, without such similarity, they would not be made. [See Example 59.]

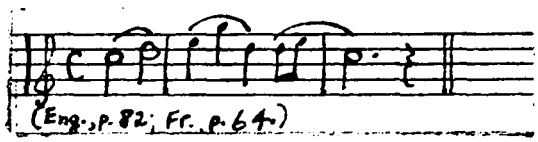
Example 59



Lussy continues by pointing out that in Example 59, Rhythm 1, measure 2, the secc note begins a section because it is an exceptional

repetition. Such repetition, however, does not occur at the same place in Rhythm 2; the second note of the second measure in Rhythm 2 begins a section only because of the similarity between Rhythms 1 and 2. Lussy says that if it were not for Rhythm 1, Rhythm 2 would be divided into sections as illustrated in Example 60.

Example 60

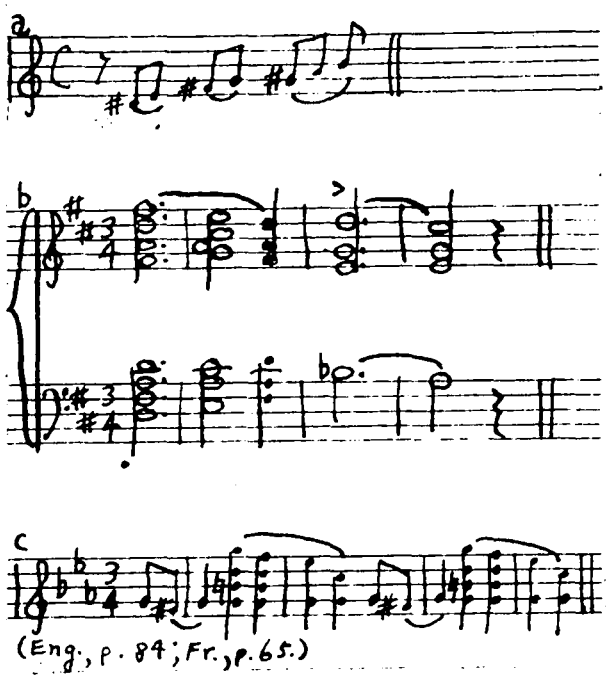


12. A section must be made in a passage of chromatic notes, each followed by the diatonic above it (F♯ G, A♯ B, C♯ D, &c.). [See Example 61a, p. 112.]

13. A section must be made after the resolution of a discord [accord dissonant]. [See Example 61b, p. 112.]

14. We make a section when passages in two or more parts, such as sequences of thirds, sixths, or octaves, are followed by a passage in single notes, or vice versa. [See Example 61c, p. 112.]

Example 61



Lussy summarizes his attitude toward the above fourteen points in the following paragraph:

> Such are the cases where great composers most often make use of sections. We have already said there are no absolute rules as to their employment. In quick pieces they ought not to be made, since there it is chiefly the first note of each bar, beat, or rhythm that has to be accented. It is better to make no sections than to make them out of place, and thus cut up the piece and make it halting and uneven. Here, as everywhere, musical feeling must be the principal guide. Sound and intelligent practice will so cultivate the taste of the musician that he will by intuition make sections which no rule could foresee or prescribe. Besides, we have seen that the last note of every section, or little group, brings a certain repose to the ear; and every note which gives the ear such rest may therefore be considered at least as the close of a section.[29]

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29. Eng., p. 84; Fr., p. 65.

Lussy concludes his remarks on sections in instrumental music by citing examples in which he considers incorrect the composers' markings of sections and rhythms; he corrects these markings in accordance with the above fourteen points.

The next section of Chapter V deals with the final and initial notes of rhythms. Lussy says that one of the most difficult problems of accentuation in instrumental music is to decide whether a note is the final one of a preceding feminine rhythm or the initial one of the following rhythm; it would be unaccented in the former case, but accented in the latter. He lists the following four aspects of the music which should be taken into consideration before reaching a decision:

> 1. The feeling of repose which a note gives to the ear, whether it is indispensable to the termination or not.
>
> 2. The analogy between the rhythms and the symmetry of their structure. It is probable that the second rhythm will begin on the same fraction of the beat as the first.... However, this is not an absolute rule, and has many exceptions.
>
> 3. The harmony or the accompaniment. The last note of a rhythm is generally an integral part of the chord which accompanies it.
>
> 4. The long notes, or rests, which are found at regular distances at the ends of rhythms. It is evident that the note followed by a rest must be considered final, especially if the rest is exceptional, or falls on the part of the bar where the rhythms and sections usually finish in the phrase. But this must not be implicitly accepted. We have seen ... that certain inverted rhythms have a rest before the last note. On the other hand, composers are often careless in their manner of writing the last note of a rhythm, giving it its full metrical value, instead of following it by a rest.[30]

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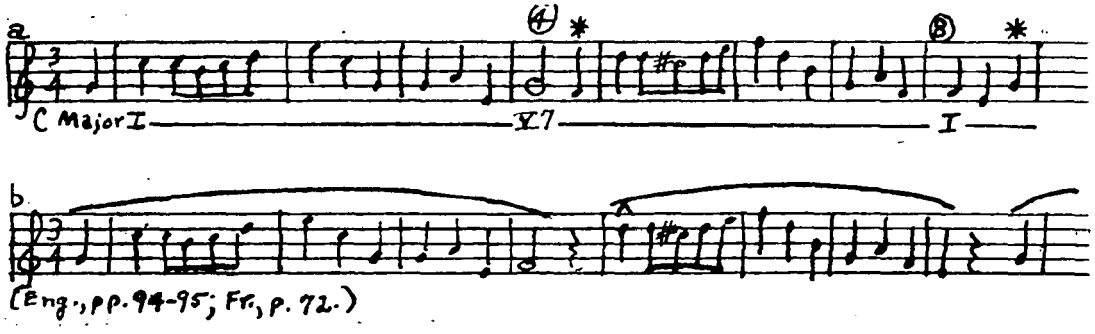
30. Eng., p. 92; Fr., p. 70.

Lussy's analysis of Example 62a illustrates his application of the above considerations. He says that example contains two rhythms. The question is whether the notes marked by asterisks belong to the preceding or following rhythms. Lussy says that in this example the principle of analogy would be deceiving. Although the first rhythm begins on the last beat of the measure, there is a harmonic reason for including the last note of measure 4 in the first rhythm: the f' of measure 4 is a part of the dominant seventh chord, and, according to Lussy, the seventh of the chord is sounded in the accompaniment throughout the measure. (He does not include the accompaniment in his example.) The function of the g' is to delay the f' which is the note desired by the ear for a conclusive effect. In measure 8 Lussy considers e' the essential note of the rhythm ending while g' begins a new rhythm. Example 62b is Lussy's illustration of the essential structure of the rhythms of Example 62a.

Example 62



In the next section of Chapter V Lussy deals with setting texts

to music.[31] No new theoretical principles are established in this section. His chief points are that accented syllables should coincide with accented notes; masculine or feminine verses with masculine or feminine rhythms; grammatical sense and punctuation with suitable musical units, i.e., those which are punctuated by cadences of appropriate degrees of finality; and the metrical scheme of the poem with a corresponding scheme in the music, dactyls and spondees being expressed by duple measures, and trochees by triple measures.

Lussy next presents a series of "rules for rhythmical accentuation."[32] The first group of rules concerns the initial note of a rhythm:

> 1. The first note of every rhythm has an accent, no matter what place it occupies in the bar or beat: (a) When it is the highest note of a descending rhythm or of a secondary rhythm, the first having begun with a lower note:--[See Example 63a, p. 116]. (b) When the note falls, by exception, on the up beat or last of the bar, the preceding rhythms having begun on the accented beat....[33] [See Example 63b, p. 116.]

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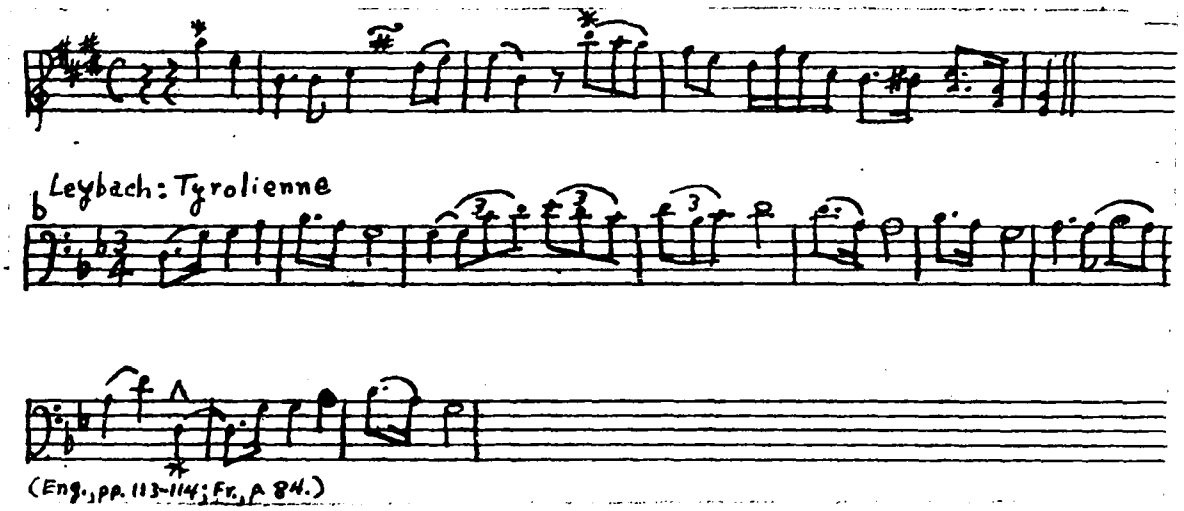
31. Eng., pp. 102-12; Fr., pp. 76-83.

32. Eng., pp. 113-16; Fr., pp. 83-85.

33. By "secondary rhythm" Lussy means the second of two rhythms. In Example 63a the secondary rhythm is the concluding rhythm of a phrase. The asterisks in Examples 63a-b indicate accented initial notes of rhythms.

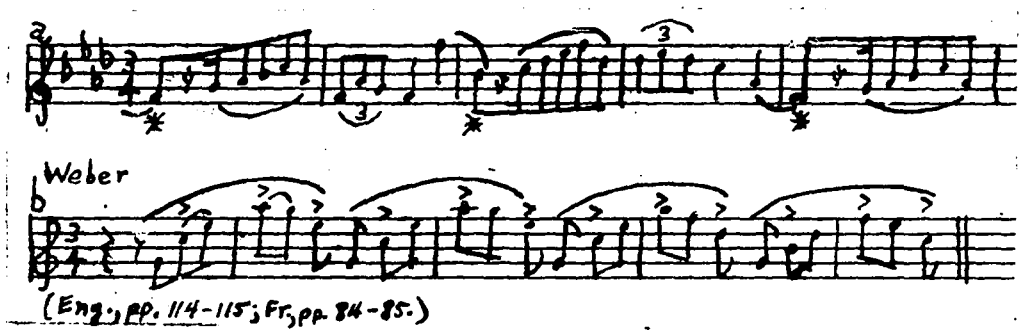
Example 63
Mendelssohn: Rondo capriccioso.



2. The first note of a rhythm is unaccented: (a) When it may be considered as finishing a section, that is to say, when it falls on the beginning of the bar, and is repeated or followed by a rest. [See Example 64a, p. 117.][34] (b) In 3-4 time, with six quavers to a bar, containing rhythms which overlap two bars and divide each into two parts, and which take the three last notes of one, and the three first of another. [See Example 64, p. 117.]

34. While Lussy intends to illustrate this rule with Example 64, that example does not actually serve its purpose. Lussy subsequently states that these rhythms begin on the third beat of the measure, not "on the beginning of the bar," as an illustration of the rule would require.

Example 64
Chopin: Mazurka, Op. 7, No. 3.

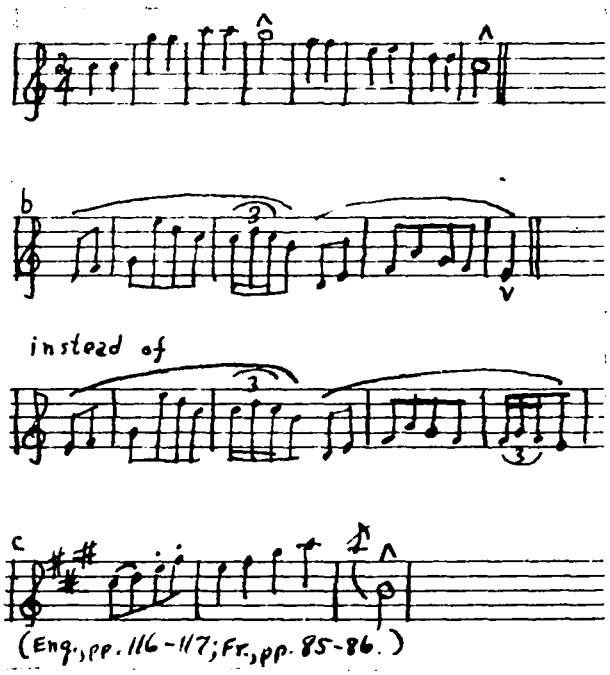


Lussy continues by pointing out that the accentuation as indicated in Example 64b preserves the 3/4 character of the piece whereas to accent the first and third notes of each rhythm would create an effect of 6/8 time, contrary to the composer's intent.

Concerning the accent of the final note of a rhythm, Lussy provides the following rules:

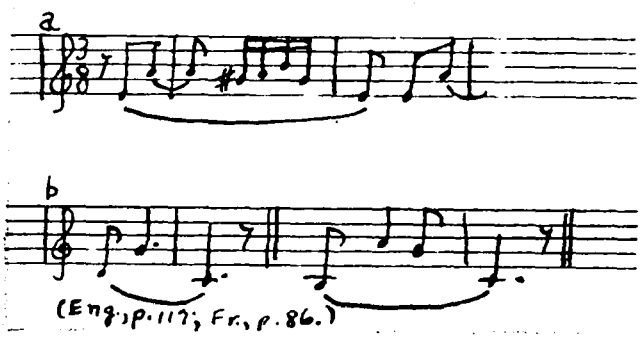
> 1. The last note of a masculine rhythm is accented: (a) If it is a reiterated note, or if it stands alone in the last bar: [See Example 65a, p. 118]. (b) If the rhythm which it terminates is pendant to a feminine rhythm; in this case it receives all the force and length of the notes which it replaces: [See Example 65b, p. 118]. (c) If it proceeds exceptionally by a wide descending interval, in which case it is frequently preceded by an acciaccatura, incorrectly called appoggiatura: [See Example 65c, p. 118].

Example 65
"Ah, vous dirai-je Maman."



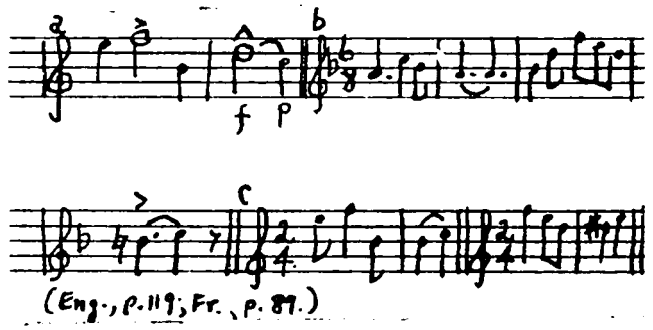
2. The last note of a masculine rhythm is unaccented: (a) If it is a short note, that is to say, if the next rhythm begins on the same or the next beat: [See Example 66a]. (b) If it is preceded by an expressive note (note pathetique) [No Example given]. (c) If the last note but one is an exceptionally long note, or is preceded by a long note. [See Example 66b.]

Example 66



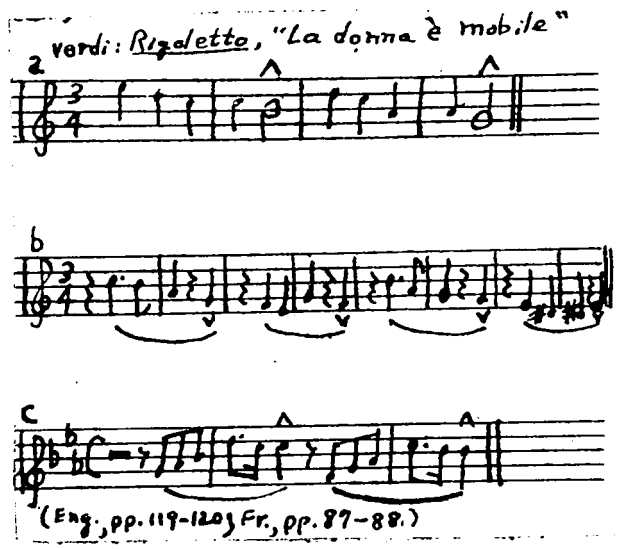
3. The last note of a feminine rhythm is unaccented ... (a) When the penultimate note is long: [See Example 67a]. (b) When the penultimate note is chromatic: [See Example 67b]. (c) When the penultimate note is a reiterated one, either diatonic or chromatic: [See Example 67c].

Example 67



4. The last note of a feminine rhythm is accented: (a) If it is syncopated; [See Example 68a]. (b) If it is preceded by a rest; [See Example 68b]. (c) If it is a reiterated note; [See Example 68c]. (d) If it is prolonged by the first note of the succeeding rhythm. [No example given.]

Example 68



5. The last note but one of a feminine rhythm (penultimate) is accented, especially: (a) If it is a long note; (b) If it is chromatic; (c) If it is a reiterated note. [See Examples 67a-c.]

Lussy closes Chapter V with a brief consideration of the accentuation of sections. He says that the first note of a section is accented and the last unaccented, regardless of the part of the measure on which the section begins, with three exceptions: "if the last note of a section is a syncopation or reiterated note, or if it takes up the whole bar, it is accented."

At the beginning of Chapter VI, "On Expressive Accentuation," Lussy reminds the reader that in the foregoing chapters on metrical and rhythmical accents he has dealt with matters of musical instinct and intelligence. In such matters, he says, it was possible to reduce the theory of accents "to a purely mechanical system." He is now about to enter the "domain of sentiment," that of the "expressive accent," which "is not subjected to any kind of regularity." He says that the essential character of the expressive accent "is defined by the single term the unexpected." There are three phenomena which function simultaneously to create the expressive aspect of music: "the expressive accent proper, the emotional element, and nuances"; these phenomena are taken up separately in Chapters VI, VII, and VIII.

Turning to the expressive accent proper, Lussy refers to the theory of expression stated in Chapter II which emphasizes the importance of accenting the "unexpected, irregular, exceptional" notes in order to

force them upon the listener's consciousness. In considering these irregularities he divides Chapter VI into four parts: metrical exceptions, rhythmical exceptions, exceptions in tonality and mode, and harmonic exceptions. Lussy cites numerous illustrations of exceptions in each of these categories, but his presentation is more in the nature of comments on miscellaneous examples than a series of rules or steps in a theoretical system. We shall, therefore, cite the general principles involved in each category without listing in detail the instances discussed by Lussy as was deemed necessary in treating Chapters IV and V.

Lussy says that the principal metrical exception requiring an accent is the syncopation, which he defines as follows:

> Syncopation is produced when an unaccented note is prolonged into an accented one; it is the last note of a bar, beat, or fraction of a beat prolonged during the first note of the following bar, beat, or fraction of a beat.[35]

Under the heading "Rhythmical Exceptions" Lussy includes the following:

> Every note or group of notes which by its exceptional length, by its ascending or descending motion, by its consecutive or disjunct movement, etc., destroys the symmetry of the rhythmical design to which it belongs, and thus forms a contrast to the notes which precede or follow it.[36]

Two instances of rhythmical exceptions are illustrated in Examples 69a and b (see p. 122). Lussy says that in Example 69a the

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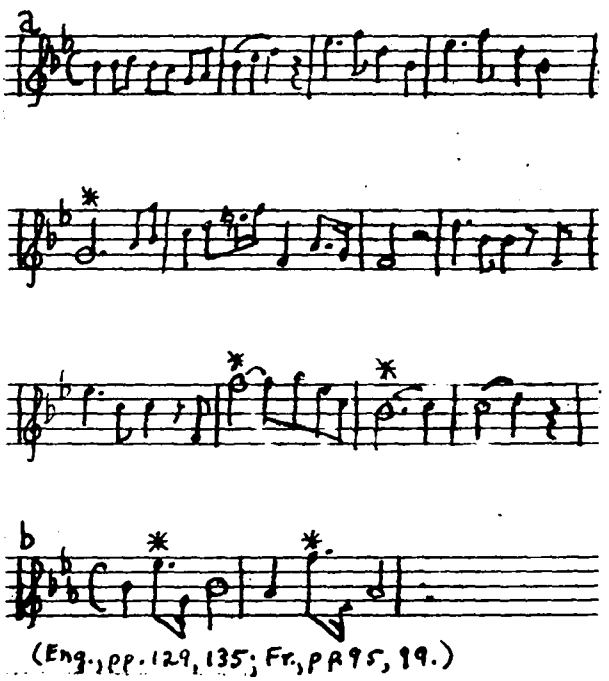
35. Eng., p. 127; Fr., p. 93.

36. Eng., p. 129; Fr., p. 95.

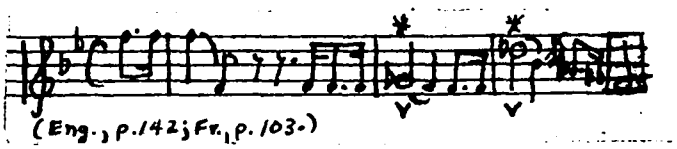
exceptionally long notes, marked by asterisks, should be accented. In Example 69b it is the disjunct manner in which the notes marked with asterisks are approached and quitted, in contrast to the conjunct motion from b'-flat to a'-flat, that requires them to be accented.

Example 69
Mozart: Don Giovanni, Act 2.



Under the heading "Exceptions in Tonality and Mode," Lussy says that a chromatic note must be accented if it is long and especially if it is an upper or lower auxiliary note or the penultimate of a rhythm. Example 70 illustrates the accented chromatic note.

Example 70
Boieldieu: Dame Blanche.



Another use of the expressive accent according to Lussy's theory is to emphasize modulation. He explains the relation between modulation and accentuation as follows:

> Modulation means a change of tonic or mode, or of both at once; it deprives the notes of their functions and imposes others upon them; it gives us a new resting point or centre of attraction; it startles our musical ear by robbing it of the notes which it desires and which would satisfy it logically, and forcing others upon it. This substitution, evidently, cannot take place without a struggle. We feel unwilling to yield to the attraction of the new tonic without resistance, and cling to the original key until we are carried away, willing or unwilling, into the orbit of the new one.... The more distant it is--that is to say, the more strange notes are introduced by the new key--the greater efforts are required in the modulation. If the change be too distant or too abrupt the ear must, so to speak, be stunned, and forced into accepting the new tonic by actual violence.[37]

Lussy's treatment of "Harmonic Exceptions" is similar to that of "Exceptions in Tonality and Mode" in that the criterion for the determination of the expressive accent is the chromatically altered chord. Regarding such chords he says "every chord containing accidentals, sharps, flats, or naturals which do not belong to the key in which the air is written, is accented." He illustrates this principle by citing musical

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37. Eng., pp. 143-44; Fr., p. 104.

examples in which various kinds of altered chords are used, each of which must be rendered with an expressive accent.

Chapter VII, "On the Emotional Element," concerns expressive modifications of tempo. Lussy says that there are two schools of thought regarding tempo, that which adheres to a strict, mechanical regularity throughout a piece, and that which believes in modifying the tempo from time to time for expressive purposes. While he is an advocate of the latter school, he says that one must be careful to exercise judgment and good taste. He summarizes his attitude regarding tempo modifications as follows:

> In quick pieces, such as Prestos, Allegros, Galops, Valses, &c., it seems natural to keep up a uniform ... [tempo], only slackening with the loss of power and impetus, or when there is an evident change in the structure. And in slow expressive pieces, such as Nocturnes, Rondos, Rêveries, Andantes, Adagios, Romances, &c., it seems equally natural to modify the ... [tempo]. In such pieces there should be accelerandos and rallentandos according to every change of feeling, and wherever the expressive structure of the phrases, or their motion up or down, seems to require them....[38]

Lussy lists and illustrates a series of principles for the performer to follow in deciding where tempo modifications should take place. He says that an accelerando is produced by "several consecutive expressive notes" or "one note of exceptionally great length." As an illustration of the accelerando produced by an exceptionally long note he refers back to Example 69a (see p. 122). A slight accelerando must take place on each note marked by an asterisk in that example. He says further that an

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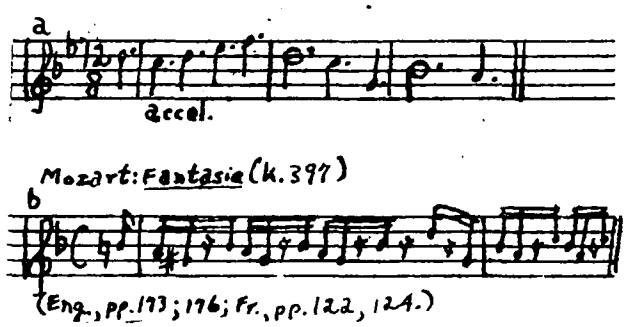
38. Eng., p. 164; Fr., pp. 115-16.

accelerando is produced by an ascending passage, as illustrated in Example 71a, and by a structure which "is provocative of an exceptional amount of passion and excitement," as illustrated in Example 71b.

Example 71
Field: Fifth Nocturne.



Lussy says further that a rallentando is produced by "the occurrence of one or two consecutive expressive notes at the beginning of a rhythm." Example 72 (see p. 126) illustrates exceptionally high notes (marked by asterisks) which must be performed with a rallentando. There are also rallentandos produced by "one or more expressive notes in the middle of a rhythm," by an "ascending or descending progression resulting from fatigue and exhaustion" at the end of a rhythm, by exceptional structure (i.e., a striking change of attitude like a calm section within an otherwise forceful allegro movement), and by "one or more expressive notes" at the end of a rhythm or phrase.

Example 72
Mozart.

Lussy begins Chapter VIII, "Nuances and Intensity of Sound," by pointing out that the function of dynamic gradations in musical performance is to unify the otherwise separate accents discussed in the previous chapters:

> The effect of metrical, rhythmical, and pathetic accents is, as we have seen, to produce opposition and contrast; the force given to one note necessarily inducing weakness in its neighbours, just as every effect of light produces shade. These accents would therefore be incapable of imparting poetry to the musical picture without the help of the most skillful gradations and delicate nuances. These are necessary to tone down abrupt transitions, to soften the notes which are too prominent, to bring into relief those that are not sufficiently perceptible, and to blend the contrasts into harmonious unity.[39]

He continues by stating that nuances are by no means arbitrary but are intimately bound up with the structure of the rhythm and the phrase. There are certain rules relating to nuances "which are instinctively observed by anyone with taste."

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39. Eng., p. 197; Fr., p. 138.

Lussy's rules for nuances[40] may be summarized as follows: (1) Crescendo in ascending passages. (2) Decrescendo in descending passages. (3) Crescendo as the texture thickens, i.e., as more parts are added. (4) "The longer the notes, the greater must be the force with which they are struck, so that the tone may be sustained." (5) "The shorter the notes the less force is required." (Rules 4 and 5 evidently pertain primarily to the pianist although Lussy does not mention this differentiation.) (6) "The more energetic the metrical figure, the greater the force required." (Lussy terms "energetic" dotted rhythms and syncopations.) (7) "Certain chords of an impressive nature require great sonority...." (8) "Great fullness of tone is required for discords and chromatic chords...." (Rules 7 and 8 are similar to "harmonic exceptions" covered in Chapter VI, although Lussy does not mention the similarity.) (9) "The more complex a passage, and the more metrical, rhythmical, tonal, and modal exceptions it contains, the more sonority it requires...." (10) "The sonority must be varied and full of contrasts, so as to avoid monotony...."

In Chapter IX, "On the Normal or Metronomic Tempo," Lussy begins with the following definition:

> The so-called normal tempo [mouvement général] of a piece is the pace to which the performer must adhere throughout, as long as the general structure is not disturbed by exceptional influences. The three principal tempi are:

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40. Eng., pp. 198-203; Fr., pp. 139-42.

1. --Quick tempo, or Presto, Allegro.
2. --Moderate tempo, or Moderato, Andante.
3. --Slow tempo, Grave or Lento, Adagio.[41]

He continues by pointing out the relativity of the Italian terms which are customarily used to indicate tempo. He says that these terms are not sufficiently precise for such an important element of musical expression; furthermore, the terms and even the metronome markings supplied by the composer are often wrong:

> For at the time of producing his work he [the composer] is in a state of exceptional excitement, and agitated by his inspiration; and this gives him a tendency to exaggerate the tempo either one way or the other. He may even have been entirely mistaken as to the speed suitable to the true character of his work, and may have given it a wrong or, at least, an inappropriate one. Extraordinary as this may seem it is none the less true....[42]

Lussy says that the true tempo for a given piece is that "which results from its actual structure." The more "expressive elements" there are in a composition (i.e., the more irregularities of key, mode, metre, rhythm, and harmony) the slower must be its tempo. Referring once again to the three principal tempi listed at the beginning of Chapter IX, he characterizes the kind of music for which each tempo is suitable as follows:

> 1. Pieces with rich harmony, full of suspensions, anticipations, discords, reiterated notes, appoggiaturas; or pieces written in irregular rhythms, in a low pitch, or in exceptionally long notes, demand a slow tempo. These are the Adagios,

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41. Eng., p. 223; Fr., p. 155.

42. Eng., pp. 224-25; Fr., p. 156.

> Largos, Andantes, Nocturnes, Reveries, &c. In such compositions the rhythmical and expressive accents, the nuances and the emotional element should predominate; they demand a passionate rendering, full of expression and sentiment.
>
> 2. Pieces of regular and but slightly varied metrical and rhythmical construction, in which the rhythmical and metrical accents coincide, and the harmony is simple, require a quick tempo. In such compositions the metrical accent and the normal tempo must predominate. They require the contrasts produced by forte and piano, crescendo and diminuendo, but little or no rallentando, accelerando, or expressive accents....
>
> 3. Compositions which have a certain richness of harmony and rhythm, and are yet devoid of complications and irregularities, require a moderate tempo. In these compositions the metrical, rhythmical, and expressive accents, nuances, tempo rubato ... may come into play, but with moderation and discretion....[43]

Lussy concludes by stating that the application of these principles will enable the performer to resolve difficulties of tempo which arise from various causes:

> By applying these principles to our previous remarks on melodic, rhythmic, harmonic, tonal, and modal structure any performer will be able to discover the normal tempo of a piece and guard against the mistakes which may arise from the false judgment of the composer, from a contradiction between the Italian terms and the metronome figures, from the impossibility of performing the piece in the tempo indicated, from the incompatibility of the tempo with the structure of the music, or, finally, from the absence of any indication, as is often the case in the original editions of classical music....[44]

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43. Eng., pp. 228-29; Fr., p. 159.

44. Eng., pp. 229-30; Fr., pp. 159-60.

Lussy's second treatise on musical rhythm, Le rhythme musical; son origine, sa fonction, et son accentuation, appeared in 1883, ten years after the publication of the first edition of the Traité. In the introduction of Le rythme musical, Lussy remarks on the success of the Traité, and says that numerous eminent scholars consider it the basis of a new science. He says that Chapter V, "Rhythmical Accentuation," was the most enthusiastically received, and that he has been urged to reprint it separately in order to make it more widely available. Le rythme musical contains a reprint of Chapter V of the Traité, together with observations Lussy has made since the writing of the Traité. He says that in this new work he has used material from the following recent treatises of importance to this subject: F. A. Gevaert, Histoire et théorie de la musique de l'antiquité (1875-81); Rudolph Westphal, Allgemeine Theorie der musikalischen Rhythmik (1880) and Elemente des musikalischen Rhythmus (1872); and Hugo Riemann, Musikalische Syntaxis (1879).

So far as Lussy's theory of rhythm is concerned, there is very little in this work that is new to a reader familiar with the Traité.

The first chapter, on the origin of rhythm, begins with a list of definitions of rhythm, mostly by ancient Greek authors. Lussy then states his definition of a rhythm as a unit of music between two points of repose. In the Traité he considered the rhythm a unit of music comparable to a line of poetry; in the present chapter he says that the rhythm is a unit comparable to that which the ancient Greeks called Kolon, or "member of a rhythmical construction." In the Traité, Lussy spoke of the initial

and final accent of a rhythm; here he speaks of the initial and final "ictus." He says further that the final ictus of a rhythm must fall on the strong beat of a measure.

Lussy's inquiry into the origin of rhythm may be paraphrased as follows: Man is born with strong aesthetic inclinations; measurement, regularity, order, and symmetry are human necessities. Nature offers man two infinities, time and space, from which he derives the materials necessary to satisfy his instincts of artistic creation. Since man is incapable of comprehending these infinities, he must divide them into fragments in order that they may be brought within his grasp and provide a logical foundation for his creative activities. In space man erects points of demarcation in order to break continuity and satisfy his need for symmetry; in this manner he creates architecture and the plastic arts. Man must also break the continuity of time by establishing points of demarcation in order to satisfy his need for rhythm; in this manner he creates music and poetry. In a general sense rhythm is the division, the regular interruption, in the continuity of time, as symmetry is the regular division of space; rhythm is to music as symmetry is to architecture. Whereas the points of demarcation in space are material, in time they are intangible. Man refers to his respiration in order to establish points of demarcation in time. Respiration is the prototype of the musical measure, and the generator of musical rhythm. Respiration is composed of two physiological movements: inhalation and exhalation. Inhalation represents action, arsis, or the last beat of a measure, while exhalation

represents repose, thesis, or the first beat of a measure. Respiration will normally divide time into units comparable to a measure of two beats, but observation of the respiration of a person in a calm and tranquil sleep will prove that such respiration divides time into units comparable to measures of three beats since the period of time between exhalation and inhalation is twice as long as that between inhalation and exhalation.[45]

In the second chapter, devoted primarily to an explanation of the ictus, Lussy continues to use the analogy between music and architecture by comparing a rhythm to an arch. Just as the arch has a support at each end, a rhythm has an initial and final ictus; the support of an arch, like the ictus of a rhythm, may be ornamented and disguised.

Lussy classifies rhythms according to the part of the measure on which they begin and end: a rhythm beginning on the first beat of a measure is thetic while one beginning on any other part of the measure is anacrustic; a rhythm ending on the first beat of a measure is masculine while one ending on any other part of the measure is feminine. Thus, rhythms are classified as thetic masculine, thetic feminine, anacrustic masculine, and anacrustic feminine.

The anacrusis is the subject of the third chapter. Lussy suggests that the term prothesis would be preferable for the part of a rhythm that precedes the thesis, or first beat of the measure; but he nevertheless uses the term anacrusis throughout the chapter, presumably

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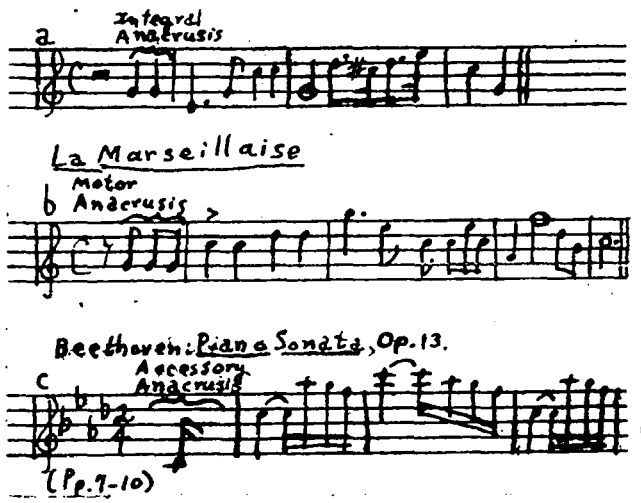
45. Le rythme, pp. 3-5.

because of the precedent established by other writers. According to Lussy there are three types of anacrusis: (1) The integral anacrusis which is of such importance that its omission would completely change the essential nature of the rhythm. (See Example 73a.) (2) The motor anacrusis which is such that its omission would only change the aesthetic or expressive character of the rhythm without changing its essential nature. (See Example 73b.) (3) The accessory anacrusis of which the omission would change neither the essential nature nor the expressive character of the rhythm. (See Example 73c.)

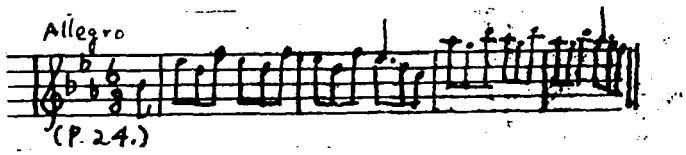
Example 73



The fourth chapter is concerned with connective notes (les notes de soudure--literally, "soldering notes"). Lussy defines these as notes which belong neither to a preceding nor a following rhythm and which serve to connect two rhythms (soudure de rythmes), or two periods (soudures de périodes). Lussy says that the omission of such notes would change

neither the essence, character, nor general economy of a work. Example 74 illustrates soudures de rythmes: measures 2 and 4 each contain two connective notes. In Example 74 Lussy has added the note stems pointing upward; he says that the passage should be performed exactly as notated in that example.

Example 74
Beethoven: Piano Sonata, Op. 7.



There are two further types of connective notes: melodic (soudures mélodiques) and notes used for "filling in" (notes de remplissage); in performance the former type proceeds immediately from the final note of the period without interruption, while the latter is separated from the final note of the period by a slight pause. Example 75 illustrates both types.

Example 75

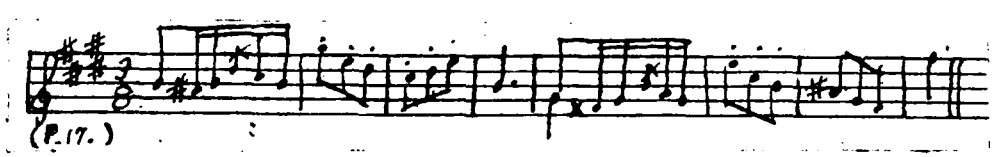
The fifth chapter deals with notes which destroy or weaken the metrical accent. The essential points of this chapter were covered in the Traité, Chapter VI, "On Expressive Accentuation."

The sixth chapter is a reprint of the Traité, Chapter V, "Rhythmical Accentuation."

The subject of the seventh chapter is the correlation between metre and rhythm. Here Lussy sets forth principles, based on the initial and final ictus of the rhythm, for determining the proper measure-length to be used in a given piece. He states the following three principles: (1) The notes which begin measures are of equal force, i.e., the first beat of the first measure is equal to the first beat of the second, third, fourth, etc. Therefore, one must avoid placing notes that are rhythmically weak, such as an anacrusis, on the first beat of the measure. (2) Only the first beat of the measure can create a feeling of repose. Therefore the final ictus of a rhythm must fall on the first beat of a measure. (3) Rhythms have various lengths and are often subdivided by intermediary accents. As far as possible one should employ measures that correspond in length to these accents and to the extent of the rhythms: short measures for short rhythms and long measures for long rhythms.

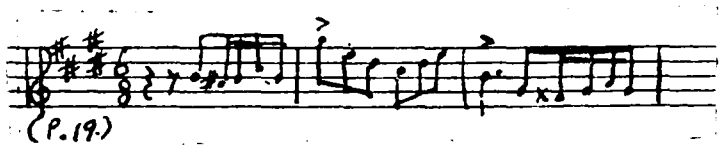
As an illustration of his viewpoint with regard to measures and rhythms, Lussy refers to Mendelssohn's Songs Without Words, No. 36, entitled "Serenade." This work is notated by the composer in 3/8 as in Example 76.

Example 76
Mendelssohn: Songs Without Words, No. 36.



Lussy says that this notation mistakenly indicates that the rhythm is thetic whereas it is actually anacrustic. He justifies his anacrustic interpretation as follows: The first measure of Example 76 is actually the fourth measure of the piece, which begins with a three-measure introduction to establish the accompaniment pattern. The three-measure introduction might lead one to conclude that the composer was thinking in terms of three-measure rhythms. That this conclusion is false may be seen if one analyzes the rhythms of the melody in Example 76; it is obvious that the long notes of measures 4 and 8 are the final notes of rhythms; therefore the composer intended four-measure rhythms. Had he wanted the rhythms to be interpreted as thetic he would have begun the melody on the fifth measure. Thus, two points favor interpreting the first measure of Example 76 as an anacrusis: (1) The melody begins on the fourth measure; (2) The normal length of rhythms in the piece is four measures. According to the first of Lussy's three principles for determining the proper lengths of measures, the notes which begin the measures of a piece are all of equal force. Since an anacrusis, which is weak by definition, cannot begin on the first beat of a measure, Lussy concludes that Mendelssohn's notation of this piece in 3/8 time is incorrect; it should be changed to 6/8 as in the following example:

Example 77



The eighth and final chapter deals with irregular rhythms. According to Lussy a regular rhythm is composed of an even number of measures, and an irregular rhythm of an odd number of measures. The only exception is the rhythm of three measures which could be considered regular if it were used consistently enough to be understood as a normal unit in the piece. Lussy does not extend this exception to include other rhythms of odd numbers of measures.

The two treatises which have been discussed thus far comprise Lussy's chief writings in the field of rhythmic theory. Two years after the publication of Le rythme musical an article entitled "Die Correlation zwischen Takt und Rhythmus," based on the seventh chapter of Le rythme musical, appeared in Vierteljahrschrift für Musikwissenschaft.[46] In the sixth and subsequent editions of the Traité[47] a tenth chapter was added, "Concordance entre la mesure et le rythme," which is based on the seventh chapter of Le rythme musical. The treatise entitled L'anacrouse dans la musique moderne (1903) is an extension of the third chapter of Le rythme musical; it also contains a reprint of the tenth chapter of the Traité.

Summary

The purpose of Lussy's Traité is to establish general principles of accentuation, nuances and tempo and from these principles to establish

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46. Vol. I (1885), p. 141 ff.

47. 6th ed.; Paris, 1892.

a system of rules which may be applied in specific instances by students of performance. While Lussy calls the Traité a treatise on musical expression, it is largely on musical rhythm since most of its topics are directly concerned with accent and duration. It is primarily an essay in practical theory, i.e., it is a guide for the performer. It differs markedly in this respect from the treatise by Moritz Hauptmann, which is entirely in the realm of speculative theory, an attempt to understand for the sake of understanding.

Lussy's method is inductive. He derives his general principles from observing the details of (1) performances of the greatest artists of his time and (2) performing editions of works of such composers as Beethoven and Mozart made by editors whom he considers to be authorities. This method is diametrically opposed to that of Hauptmann's theory which begins with Hegelian dialectics and proceeds to interpret the phenomena of music accordingly. Lussy's observations of specific details of performances and of "expression" marks in performing editions lead him to conclude that similar passages cause musically gifted persons to respond and perform in a similar manner. Lussy believes that even the less gifted student will be able to perform with proper accentuation, nuances, and tempo by following general principles and specific rules derived from the reactions and performances of the musically gifted person.

Lussy's theory of musical expression is based on the establishment of and deviation from tonal, metrical, and rhythmical expectation: deviation engenders expression. To clarify his theory he explains both

normally expected events and deviations. He says there are three principal types of accent: metrical, which appeals to the instinct; rhythmical, which appeals to the intellect and takes precedence over the metrical; and expressive, which appeals to the sentiment and takes precedence over the other two. Lussy's deduction from this accent hierarchy is that a normally expected metrical accent must sometimes be suppressed to emphasize the rhythmical, and likewise a normally expected rhythmical accent must sometimes be suppressed to emphasize the expressive which by definition is the least expected type.

By metrical accent Lussy means the accent of the parts of the measure. In general he prescribes an accent system similar to that found in the treatises by Marx, Weber, and Hauptmann. Lussy, however, is more specific than those writers in that he presents a list of rules and exceptions to guide the performer. This listing of numerous specific rules is typical of his procedure throughout the treatise.

Lussy uses the term rhythm to refer to a unit of music comparable to a line of poetry, and he begins with vocal music to illustrate this comparison. He says that rhythms vary in length and may be regular or irregular. The latter are derived from the former by contraction, prolongation, repetition, melodic sequence, and echo. Lussy classifies rhythms according to their endings as feminine, masculine, inverted, and strong feminine. Clarity of rhythmic classification is for him a criterion for evaluation: If a given rhythm-ending is ambiguous or the slur and dynamic markings self-contradictory from the standpoint of

Lussy's classification system, he assumes that the composer is in error and proceeds to correct the mistake.

Phrase is the term Lussy applies to a group of two or more rhythms which closes with a tonic cadence. The termination of a phrase differs from that of a rhythm in that the former has a more conclusive feeling. Lussy refers to units smaller than the rhythm as the hemistich, approximately half of a rhythm, and the section, a still smaller unit often comprising only two notes. He devotes considerable attention to the section and the rhythm, but very little to the hemistich and phrase.

Lussy defines the section as an articulated note or several slurred notes. His chief criterion for determining sections is keyboard performance: A small group of notes covered by a slur mark and played with "a single movement of the wrist" is a section. Such small groups on other instruments, he says, require "only one movement of the bow or one emission of breath." Following his usual procedure of prescribing rules to guide the performer, Lussy lists fourteen "cases in which great composers generally make use of sections in instrumental music." These, unlike most of the other similar lists in the treatise, are not treated consistently as rules. He points out, in fact, that there are no absolute rules as to the employment of sections.

Lussy's consideration of the final and initial notes of rhythms is devoted to principles of determining whether a given note is the final one of the preceding rhythm or the initial one of the following rhythm. His principles are based on the feeling of repose which the note in

question gives to the ear, the analogy between successive rhythms, the harmony at rhythm endings, and long notes or rests at the ends of rhythms.

In Chapter VI, "On Expressive Accentuation," Lussy refers to his general theory of expression stated in Chapter II that exceptional, unexpected notes must be accented. Chief among the exceptions discussed in Chapter VI are the syncopation, the exceptionally long note, the group of notes exceptional for its ascending or descending motion, exceptions of tonality and mode, and harmonic exceptions.

In Chapter VII, dealing with expressive modifications of tempo, Lussy lists and illustrates several principles to serve as guides for the performer. In the next Chapter, "Nuances and Intensity of Sound," Lussy points out that subtle gradations of intensity serve to unite the otherwise separate accents discussed in previous chapters. He presents a series of rules for nuances. In Chapter IX, "On the Normal or Metronomic Tempo," Lussy says that there are, basically, three tempos: quick, moderate, and slow. The tempo chosen for a given composition must depend on the style: the more irregularities of key, mode, metre, rhythm, and harmony, the slower will be the tempo. He says further that the composer sometimes provides a mistaken tempo marking and the performer must make his own decision as to tempo.

Much of Le rythme is based on the Traité, and the major part of the former is a reprint of Chapter V of the latter. The chief contributions of Le rythme to Lussy's theory of rhythm are the investigation of

the origin of rhythm, the extension of his classification system to include anacrustic and thetic rhythms as well as masculine and feminine, the three types of anacrusis, the connective notes, and the correlation between metre and rhythm.

CHAPTER IV

RUDOLPH WESTPHAL:

ANCIENT THEORY APPLIED TO MODERN MUSIC

Rudolph Westphal (1826-1892) studied classical philology at the University of Marburg. He held professorships at the Universities of Breslau (1858-1862) and Moscow (1875-1880). In his special field of research, ancient Greek theory of rhythm, he wrote thirteen treatises of which two are devoted to the relation between ancient theory and modern music.[1] The earlier work is a preliminary study of limited scope entitled Elemente des musikalischen Rhythmus mit besonderer Rücksicht auf unsere Opern-Musik.[2] The more comprehensive treatise, on which the present study is based, is entitled Allgemeine Theorie der musikalischen Rhythmik seit J. S. Bach auf Grundlage der Antiken.[3] At the end of the table of contents Westphal says that a second volume, Die specielle Theorie der Rhythmik, will be published as soon as possible. But it is not listed in

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1. Baker, p. 1785. H. C. Colles in Grove, IX, 270. Moser, Mus. Lex. (4th ed.), II, 1426. Riemann, op. cit., II, 2018. A. Rossbach in Allgem. deut. Biog., XLII, 203-16.

2. Jena, 1872.

3. Leipzig, 1880. This work will hereafter be referred to as Westphal's Theorie.

the bibliographies of Westphal's publications and unpublished writings,[4] nor is there reference to the second volume in the text of his Theorie. The latter seems not to require an additional volume for completion. Jules Combarieu's Théorie du rythme dans la composition modern d'après la doctrine antique[5] is a condensed and simplified version of Westphal's Theorie. In Combarieu's foreword he objects to Westphal's too strict application of ancient theory to modern music, and he urges that it be applied in a more musical manner. But Combarieu nevertheless follows Westphal closely in general organization, essential theoretical points, musical examples, and analyses.

In the dedication of his Theorie Westphal says that the treatise seeks to strengthen the threads by which the modern Christian world is connected to antiquity by presenting a hitherto unknown relation between the two worlds. In the foreword he says that the ancients left both theoretical works about rhythm and a large body of poetry; the ancient poets were also the composers of the music to which their poetry was sung, and their theory of rhythm was therefore applicable to music as well as poetry. Westphal found reference to modern music helpful in understanding the theory of rhythm of Aristoxenos (born c. 354 B.C.). The more he progressed in his understanding of Aristoxenos, the more convinced he became that modern music, rather than modern poetry, employs the manifold rhythms

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4. See footnote 1.

5. Paris, 1897.

of the ancients. He says that he completely understood Aristoxenos' theory only after relating it to the music of J. S. Bach, in whose keyboard fugues is found nearly every rhythmic form cited by Aristoxenos.

Westphal says that Mathis Lussy's Traité had no influence on his own treatise, as is clear from the fact that his Elemente (which employs principles similar to those of his Theorie) was published prior to the appearance of Lussy's Traité.

Westphal's Theorie is intended to be purely scientific rather than practical. It does not intend to impose rules upon the composer or performer. Its purpose is to provide more aid in acquiring theoretical insight into the rhythmic structure of music than do general text-books in the theory of music. Westphal recognizes that certain practical demands regarding musical expression and performance inevitably result from a theory of rhythm, but innovation in performance is not his purpose. He says that one who is familiar with the art of performance can refer to this theory to gain insight into the basis for decisions in matters of expression. He believes that the chief contribution of the treatise is to bring the rhythmic structure of modern music into relation with ancient theory.

The treatise is divided into five parts, of which Part I, "Rhythmic Sections in Poetry" ("Die rhythmischen Abschnitte in der Poesie"),[6] provides the basis for the study of musical rhythm undertaken

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6. Pp. 3-31.

in the remainder of the treatise.[7]

Westphal follows Aristoxenos in his definition of rhythm:

> According to Aristoxenos' correct and hitherto unexcelled treatment, the essence of rhythm consists in a division, perceptible to the listener, of the performance time of the poetic or musical work of art.[8]

Westphal says further that in both modern poetry and music the laws of rhythm are related to the following units: (1) Foot, or verse-foot (Versfuss); (2) Line, or verse-line (Verszeil), colon (Kolon), or rhythmic member (rhythmisches Glied); (3) Period (Periode); (4) System or strophe (System, Strophe). He illustrates the relations between these units as follows:

Strophe or System
- Period
  - Colon: Álles íst an Góttes Ségen
  - Colon: únd an séiner Gńad gelégen
  - Colon: úber álles Góld und Gút.
- Period
  - Colon: Wér auf Gótt sein Hóffen sétzt,
  - Colon: dér behält ganz únverlétzet
  - Colon: éinen fréien Héldenmít.[9]

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7. The terminology that Westphal uses in Parts I and II of his treatise will be familiar to the reader acquainted with Greek prosody. For a survey of the elements of Greek prosody, see: William W. Goodwin, Greek Grammar, rev. Charles B. Gulick (Boston, 1930), pp. 343-62. "Metre," The Oxford Companion to Classical Literature, ed. Paul Harvey (Oxford, 1937), pp. 268-72.

8. P. 4. Das Wesen des Rhythmus besteht nämlich nach der richtigen und bisher unübertroffenen Auseinandersetzung desselben Aristoxenus in einer dem Zuhörer vernehmbaren Gliederung der Zeit, welche das demselben vorgeführte poetische oder musikalische Kunstwerk einnimmt.

9. P. 4.

According to Westphal's presentation the line in modern poetry consists of a series of accented and unaccented syllables combined in such a manner that one or two unaccented syllables follow each accented one. He says that the ancient Greeks used the term "thesis" for the accented syllable (Hebung) and the term "arsis" for the unaccented syllable (Senkung). But he intends to avoid the use of the terms thesis and arsis because they are often a source of misunderstanding. The "foot" is a unit normally consisting of one accented and one or two unaccented syllables. An unaccented syllable at the beginning of a line is termed "anacrusis." Lines ending with accented and unaccented syllables are masculine and feminine, respectively. The "tetrapody" or line of four feet is the one most commonly employed in modern lyric poetry. The line in which the final one or two unaccented syllables are missing is termed "catalectic," while the complete line is termed "acatalectic." Westphal cites the following quotation to illustrate these points. The lines labeled (a) are acatalectic, and those labeled (b) are catalectic.

(a) Fühle, wás dies Hérz empfíndet,
(b) reíche freí mir déine Hánd,
(a) únd das Bánd, das úns verbíndet,
(b) seí kein schwáches Rósenbánd.[10]

The "brachycatalectic" line is one in which an entire foot is omitted as in (b) of the following example.

(a) Rítter, treúe Schwésterliébe
(b) wídmet eúch dies Hérz[11]

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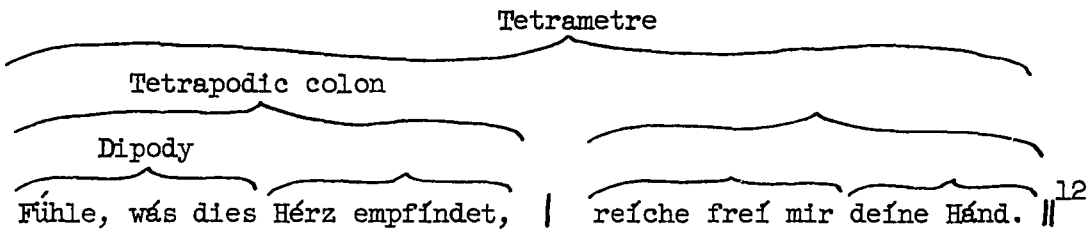
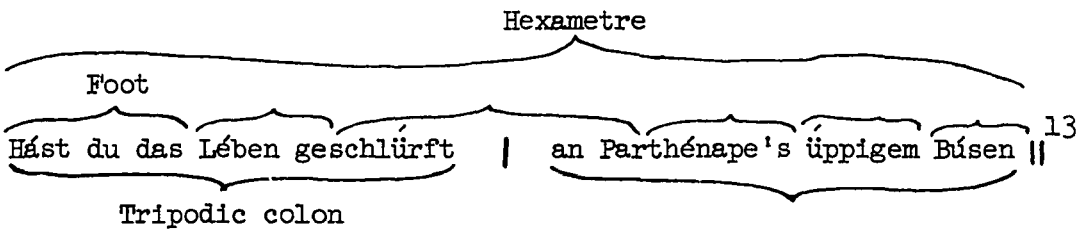
10. P. 14.
11. P. 15.

Westphal says that in ancient terminology the above modern lines are termed "cola," or members of lines. According to the ancients the line (stichos) would comprise two of the above tetrapodic cola. The term metre (metron) was applied by the ancients to the entire line (stichos). If a line, or metre, is composed of two tetrapodic cola, then it is designated according to the number of "dipodies," or groups of two feet, of which it is composed. Thus, the following line is termed a tetrametre since it consists of four dipodies.



[12]

If a line is composed of two tripodic cola, it is designated according to the number of feet of which it is composed, as follows:



[13]

Westphal says that the ancient theorists used the term period

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12. P. 19.

13. P. 19.

inconsistently.[14] Most often they applied it to metres of three or more cola, structures which were also termed "hypermetres." But occasionally "period" also referred to structures of two cola, or even to one colon. Thus, the tetrametre and hexametre above could be termed periods.

According to Westphal's treatment of larger structures in ancient theory,[15] two contrasting types of poetic organization are "stichic" and "systematic." The former refers to poems in which all of the lines have the same metrical form but in which there are no larger structural divisions except those which normally result from the requirements of non-metrical speech. Stichic organization is typical of the ancient epics. Systematic organization is that in which the poem is divided into sections formed according to metrical principles, each section consisting of several lines. These sections are called "systems." Systematic organization is most characteristic of poetry to be sung. If two systems of a poem are similar, the first is called "strophe" and the second "antistrophe." According to the earliest usage, the term strophe means that group of cola, or metres (i.e., periods), sung to one complete melody. If all of the systems of a poem have the same structure it is "monostrophic"; if not, it is "pericopic." The most frequently employed pericopic structure consists of two similar systems and one which is different. In such a poem the similar systems are the strophe and

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14. Pp. 21 ff.

15. Pp. 26 ff.

antistrophe, and the different one is termed "epode," "proode," or "mesode," depending upon whether it is placed after, before, or between the other two.

Part II, "Musical Feet and Measures" ("Musikalische Versfüsse und Takte")[16] begins with a comparison of the poetic and musical foot. Westphal says that the principal difference between the rhythm of modern poetry and modern music is in the nature of the foot. In poetry the differentiation between accented and unaccented syllables is clear, but there is no precise distinction in the durations of the accented and unaccented portions of the foot. In the musical foot, however, both accentual and durational relationships are clear. Since the latter are also clear in the foot of ancient Greek poetry, it is appropriate to employ the ancient Greek concept of the foot in analyzing modern music.

In ancient theory, according to which the long syllable is exactly twice the length of the short, some of the most important feet are the "spondee" (two longs), "dactyl" (one long followed by two shorts), "trochee" (one long followed by one short), "iamb" (one short followed by one long), and "anapaest" (two shorts followed by one long). The unit of measurement is the chronos protos, or primary time, which is the duration of the short syllable. The chronos protos, with isolated exceptions, is represented by one syllable only, i.e., it is nearly always treated as an indivisible unit. All other units of duration, however, may be represented

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16. Pp. 32-91.

by more than one syllable. When two short syllables substitute for a long, the latter is "dissolved," and when a long substitutes for two shorts they are "contracted." An "extension" takes place when a single syllable substitutes for an entire foot. The principles of dissolution, contraction, and extension are illustrated by Westphal as follows:

Three-time foot:

— ∪ Trochee
⏜∪ ∪ Trochee dissolved (or Tribrach)
⏜— Three-time extension

Four-time foot:

— ∪∪ Dactyl
— — Dactyl contracted (or Spondee)
⏜∪ — Spondee dissolved
⏜∪ ∪∪ Proceleusmatic
⏜— Four-time extension[17]

Westphal says that the ancients applied the term dactyl in a general sense to all four-time feet, including the anapaest, and the term iamb to all three-time feet, including the trochee. For the analysis of modern music Westphal calls these two species dactylic and trochaic, rather than dactylic and iambic; this modification relates the terms for the two species to the same form of foot, as both dactylic and trochaic feet begin with long syllables. Such a change, he says, is one of terminology only, not of theory. The third species is the five-time, or "paeonic," which Westphal says is so seldom employed in modern music that it need not be considered at length in his treatise. The fourth species

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17. P. 35.

is the six-time, or "ionic," which is composed of three two-time units.

In his consideration of measures in modern music,[18] Westphal explains that even measures (gerade Takte) are those which divide into two equal parts (e.g., 2/4) and uneven measures (ungerade Takte) those which divide into two unequal parts (e.g., 3/4). He believes that the concept of the chronos protos as applied to modern music has considerable theoretical and practical value, even though it is expressed by a wide variety of time units such as the quarter, sixteenth, thirty-second note, etc. He says that J. S. Bach among other composers has employed the chronos protos as a small indivisible unit of which all other values are multiples in most of his instrumental fugues, without, of course, any intention of conforming to ancient Greek principles. He says that most later composers do not respect the indivisibility of the chronos protos and Bach does not respect it in all of his works.

In the three-time or trochaic species Westphal finds a closer relation between ancient theory and modern practice than in any other. He says that the time signatures for these measures, especially as used in the period of J. S. Bach, tell us the time value employed for the chronos protos and the number of chronoi protoi used in each measure. Thus, in measures that bear the signatures 3/8 and 3/4 there are three chronoi protoi, and the value of the chronos protos is the eighth and the quarter note, respectively. These are simple measures. Compound measures ar-

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18. Pp. 38 ff.

those which bear signatures such as 6/8, 9/8, and 12/8, comprising two, three, or four feet of the trochaic species.

For the interpretation of time signatures in the dactylic species of modern music Westphal employs a principle which is different from that of the trochaic species. If the measure is compound the number of feet it includes is expressed in the numerator of the time signature. Thus, 4/2, 4/4, or 4/8 means a compound measure comprising four dactylic feet, each foot of which has the time value of the denominator, i.e., either a half, quarter, or eighth note. The duration of each dactyl may be dissolved into chronoi protoi to form the proceleusmatic foot (see p. 151) which is expressed in four eighth, sixteenth, or thirty-second notes for the three time signatures, respectively. Signatures such as 2/2, 2/4, 2/8, etc. are used to indicate compound measures comprising two feet. Westphal says that it is difficult to determine simple dactylic measures from their time signatures since they employ the same signatures as compound measures. Thus, 4/4 could indicate a simple measure in which the proceleusmatic foot is expressed by four quarter notes.

The ionic species employs the same time signatures as the trochaic. Ionic and trochaic interpretations of the 3/4 signature would differ in the value of the chronos protos, which would be a quarter note for the trochaic and an eighth note for the ionic.

In dealing with divisions of the chronos protos in modern music,[19]

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19. Pp. 51 ff.

Westphal points out that there is no justification in ancient theory for dividing it into two or four parts. But the triplet in which three notes substitute for two chronoi protoi, i.e., in which each note equals two thirds of a chronos protos, was employed by the Greeks. The notes of the triplet were classified as irrational time values.

Westphal says that it is not possible to determine the accentuation of a measure merely from its time signature as is often assumed.[20] Accentuation depends upon the relation of the measure to the colon, and upon whether the measure is simple or compound. A colon of four feet would be accented the same whether it were notated in four simple measures or in two or four compound measures. He warns against interpreting the bar line as a division between feet. The foot may fall within the confines of the measure, or may overlap the bar line.

In considering the relation of simple and compound measures to the colon, Westphal advises beating time and counting the feet of the colon as an aid in understanding it. Examples 78a-c illustrate cola of four feet, the first two of which are expressed in compound measures, the last in simple measures. The chronos protos in Examples 78a, b, and c is represented by the eighth, sixteenth, and quarter note, respectively.

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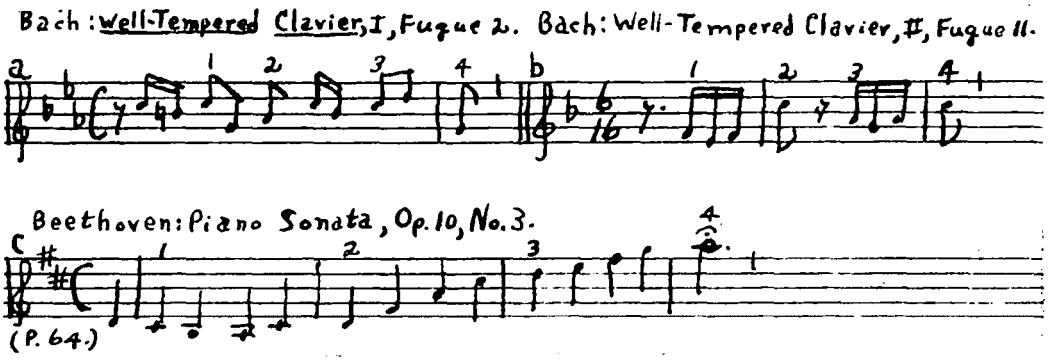
20. Pp. 59 ff.

Example 78



Because Mathis Lussy's Traité was so well received, Westphal feels obliged to come to terms with it.[21] He says that despite Lussy's ignoring of ancient theory, some of his conclusions are in accordance with it. But Westphal objects to Lussy's designation of the 4/4 measure as simple, and he points out that Lussy is mistaken in his use of the term rhythm. He says that the unit which Lussy terms a rhythm should be termed a colon.

Part III of the treatise, "Musical Cola" ("Die musikalischen Kola"),[22] deals with the grouping of musical feet into units comparable to a line of modern poetry. Westphal's definition of the colon in music is as follows:

> We define the musical colon as a group of several feet belonging to the same species of rhythm which are held together in a rhythmic unit through the fact that one of the accents of the combined feet is elevated to the level of the principal accent

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21. Pp. 67 ff.

22. Pp. 92-169.

> of the colon and that the colon is separated from the neighboring cola through a perceptible designation of the dividing points. That manner of musical performance which we call rhythmic performance consists in the correct distribution of the accents and in the correct indication of the limits of the colon.[23]

Westphal presents five categorical descriptions of cola: (1) Species of foot; (2) Length, i.e., number of feet; (3) Kind of caesura; (4) Inner structure, i.e., the configuration of rests and note-groupings; (5) Position and nature of the principal accent. The first of these was considered in Part II of the treatise where the dactylic, trochaic, paeonic, and ionic species were discussed. The difference between the trochaic and ionic species is further clarified here, as Westphal says that three-part measures which are quick enough to be conducted in one beat per measure belong to the trochaic, while those conducted in three beats per measure belong to the ionic species.

In his consideration of the lengths of cola, Westphal says that modern practice corresponds closely to ancient theory. Cola may include as many as six feet in the trochaic and dactylic, and three feet in the ionic species. He says that the two classes of cola most frequently

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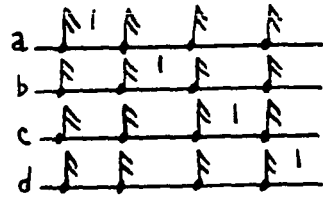
23. P. 92. Wir definiren das musikalische Kolon als eine Gruppe mehrerer demselben Rhythmengeschlechte angehöriger Versfüsse, welche dadurch zu einer rhythmischen Einheit zusammengehalten werden, dass von den Accenten der vereinten Versfüsse Einer zum Hauptaccente des Kolons erhoben wird und dass das Kolon von den benachbarten Kola durch vernehmbares Markiren der Grenze gesondert wird. In der richtigen Vertheilung der Accente und dem richtigen Abgrenzen des Kolons besteht diejenige Weise des musikalischen Vortrages welche wir den rhythmischen Vortrag nennen.

employed in modern music are: (1) Cola of four dactylic or trochaic feet (two dipodies) or two ionic feet (one dipody); (2) Cola of three dactylic or trochaic feet (one tripody).

Westphal says that it is essential that cola be clearly separated by interruptions in the legato flow of the music. He derives the basic laws of the caesura from ancient Greek principles.[24] In the dactylic foot there are four possibilities of caesura as illustrated in Examples 79a-d. The first two were considered masculine and the last two feminine by the ancients. They employed the masculine caesurae more than the feminine, and that of Example 79b more than Example 79a. They strictly avoided that of Example 79d, however, because it was considered too weak. Westphal says that we must look to the ancient Greeks for our standards of beauty and thus avoid caesurae like Example 79d.

Example 79



(P. 109.)

Westphal applies the above possibilities of caesura to the fugue subject of Example 80a (see p. 159). That subject consists of two pairs

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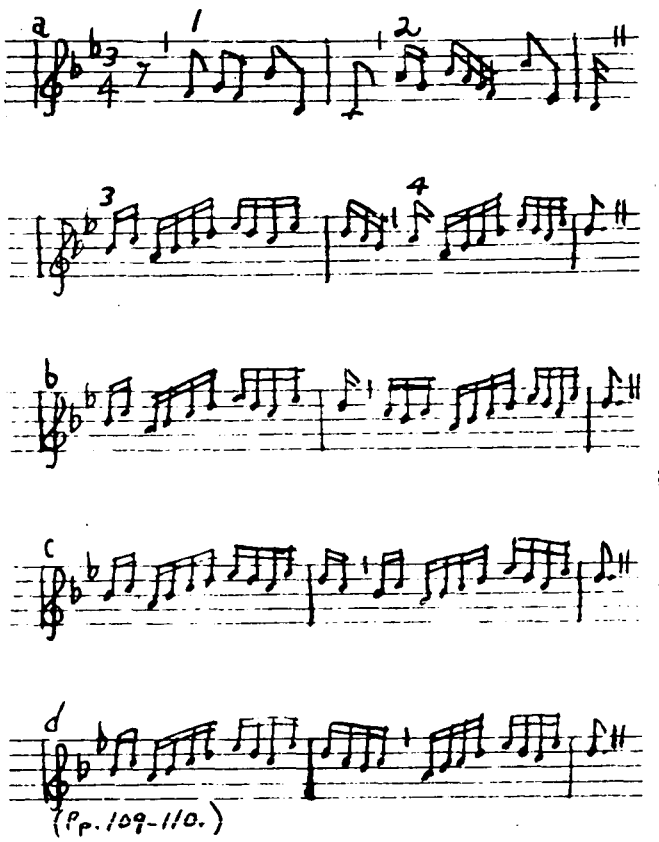
24. Pp. 106 ff.

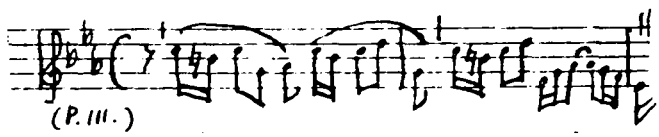
of cola, each pair of which forms a hexametre of the dactylic species. Cola 1 and 2 end with masculine caesurae of the type illustrated in Example 79b, and colon 3 ends with a feminine caesura as in Example 79c. Westphal does not state whether the caesura at the end of colon 4 is masculine or feminine but it is presumably the former. Colon 3, according to Westphal, could be concluded as in Examples 79b and c, but not as in 80d. There was considerable variety in the kinds of caesurae employed in Greek poems, and one should likewise seek variety of caesurae in the performance of music. For example, the form of the caesura should be changed from time to time at subsequent entries of this subject during the course of the fugue.

Example 80
Bach: Well-Tempered Clavier, I, Fugue 21.



Westphal says that the ancients recognized the necessity of caesurae within cola, and the same necessity is present in modern music. Thus, the first colon of Example 81 (see p. 160) should be divided into two legato sections as indicated. He says it is characteristic of ancient poetry and Bach's music that the first but not the second colon of a period of two tetrapodic cola is divided by an inner caesura.

Example 81
Bach: Well-Tempered Clavier, I, Fugue 2.



In Westphal's consideration of the upbeat or anacrustic colon,[25] he says that the popular teaching is erroneous which restricts the upbeat or anacrusis to the note or several notes that occur before the first measure. Anacrustic cola may be found throughout a composition. Even when the first colon of a piece begins on the first beat of the measure, the succeeding cola are frequently anacrustic; if the first colon of a composition is anacrustic, the composer usually intends the following cola to be anacrustic as well. The first movement of Beethoven's Sonata Op. 2, No. 1 (see Example 82, pp. 161-62) is used as an illustration of a piece in which the anacrustic beginning of the first colon determines the interpretation of the following cola. Only the last three cola are thetic, beginning on the first beat of a measure, rather than anacrustic. Example 82 also illustrates Westphal's manner of dividing a composition into cola and periods. The endings of the former are marked with a single vertical line and the latter by double vertical lines. The feet of each colon are numbered. There are nine periods, each of which is numbered at its beginning. Westphal says that the c' at the beginning of the second and third

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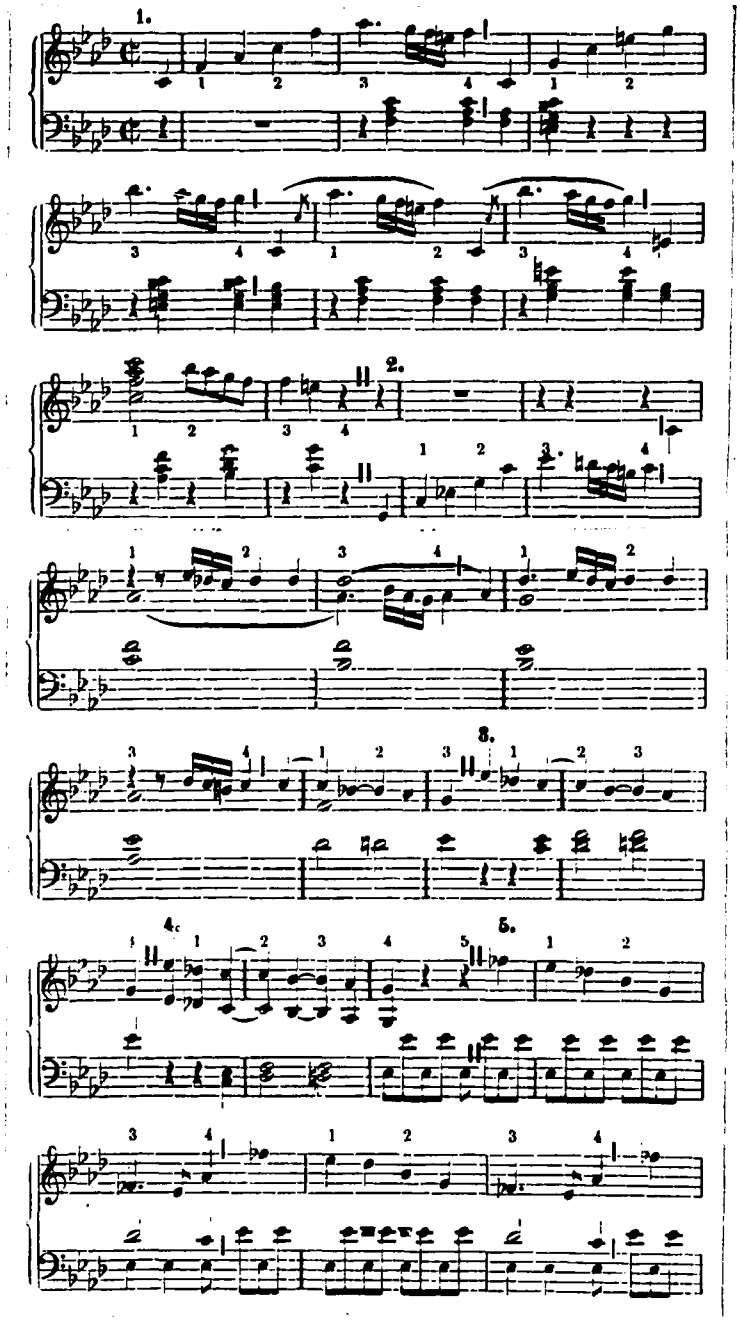
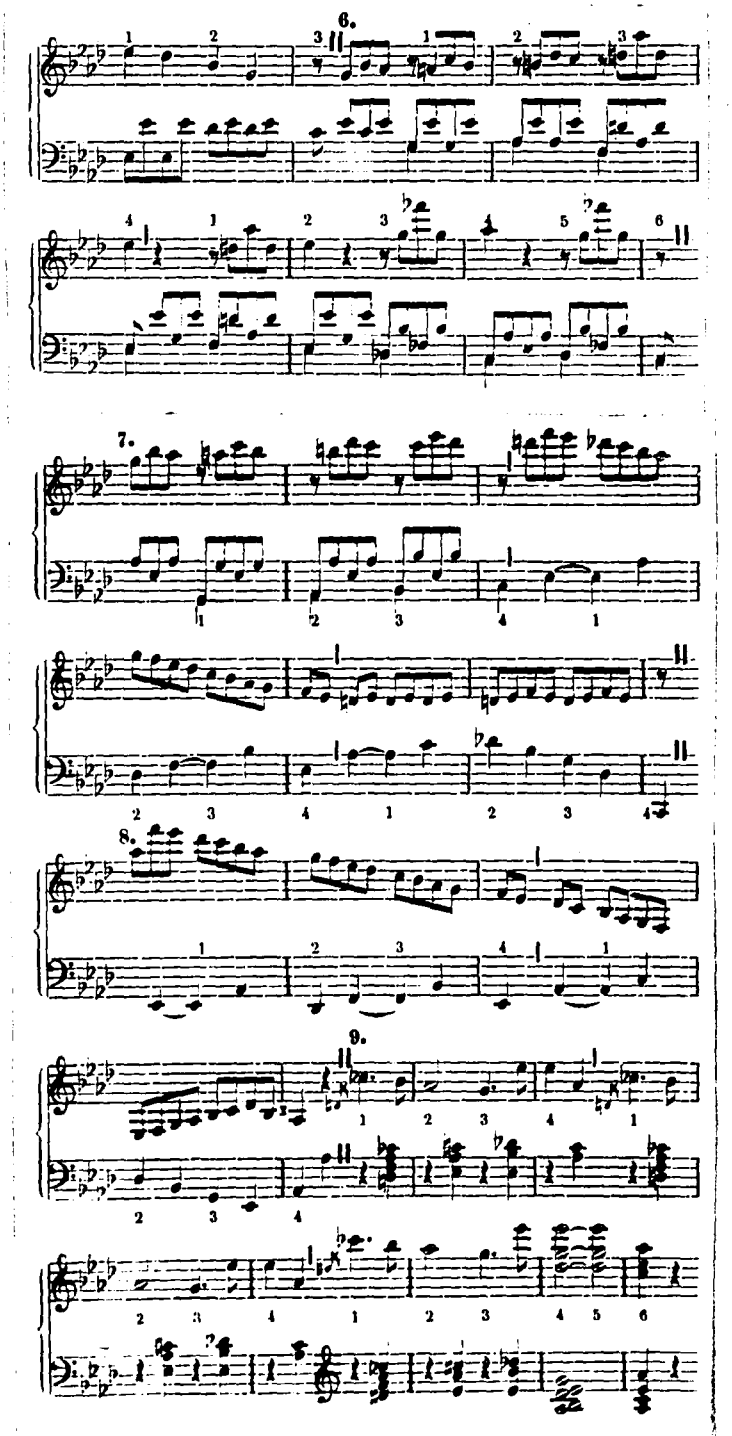
25. Pp. 114 ff.

Example 82
Beethoven: Piano Sonata, Op. 2, No. 1.



Example 82 (cont.)



cola, and other notes in similar positions, should be performed as anacrustic melodic notes. The legato marks in measures 5 and 6 indicate a caesura between the second and third feet of the cola in which they are found.

Westphal says that the metrical structure of this entire section of the sonata, which forms one strophe, may be represented in symbols as in Example 83 (see p. 164), where, in general, the long represents the quarter note and the short the eighth note. He makes no mention of his inconsistencies in symbols expressing dotted notes, and there are several errors such as misplaced ties. But this example illustrates his approach to analysis, and his comment regarding its similarity to Pindar's style shows how close he feels the parallel to be between ancient and modern rhythmic practice.

> One does not need to base one's viewpoint of modern musical rhythm upon ancient rhythm and the doctrine of Aristoxenos and the ancient metrists, as has been done from the beginning in the present book, in order to place the Beethoven strophe in parallel with one by Pindar.... Considering the external impression which the Beethoven strophe makes, it stands as near as possible to a Pindaric strophe, apart from the formation of the individual feet. If we did not know that Beethoven had composed the strophe in the year 1796, we might be tempted to conjecture that the composer had been not altogether unacquainted with an edition of Pindar prepared according to Boeckh's text.[26]

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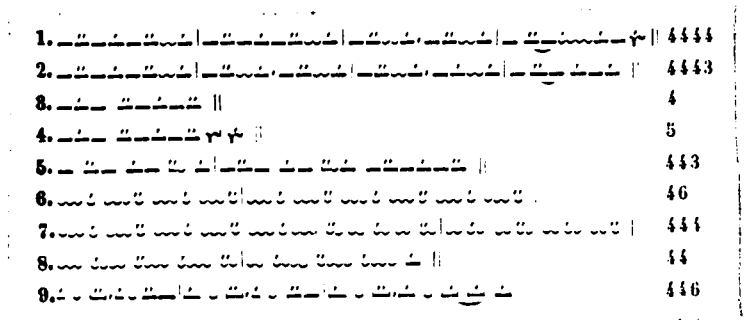
26. Pp. 124-25. Man braucht nicht, wie es in dem vorliegenden Buche von Anfang an geschehen ist, die Betrachtungsweise der modernen musikalischen Rhythmik auf die antike Rhythmik und die Doktrin des Aristoxenus und der alten Metriker zu basiren, um die Beethoven'sche Strophe mit einer Pindarischen in Parallele zu stellen.... Dem äusseren Eindruck nach, den die Beethoven'sche Strophe macht, steht sie einer Pindarischen, von der Formation der einzelnen (continued on page 164)

Example 83



Divisions between cola may be effected, according to Westphal, not only by breaking the legato flow at the caesura, but also by a slight irrational lengthening of the final note in the colon.[27] He says that it is sometimes desirable to maintain the legato while indicating a caesura, and a slight irrational lengthening may then be employed. According to Aristoxenos' theory, the irrational lengthening of the last note of a colon should have a value of one half the chronos protos. Westphal says that the irrational lengthening is appropriate for the chorale caesurae which are traditionally marked by fermate. In Example 84 (see p. 165) he has replaced the fermate of the chorale Beweis' dein Macht, Herr Jesu Christ with irrational lengthenings. The chronos protos of the chorale is

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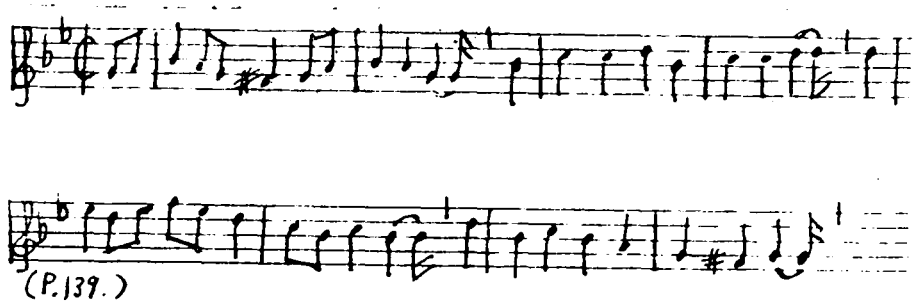
(continued from page 163) Versfüsse abgesehen, so nahe wie möglich; wenn wir nicht wüssten, dass Beethoven die Strophe schon im Jahre 1796 komponirt, so läge die Vermuthung nicht so fern, dass der Komponist mit einer nach dem Boeckh'schen Texte veranstalteten Pindar-Ausgabe nicht ganz unbekannt gewesen sei.

27. Pp. 132 ff.

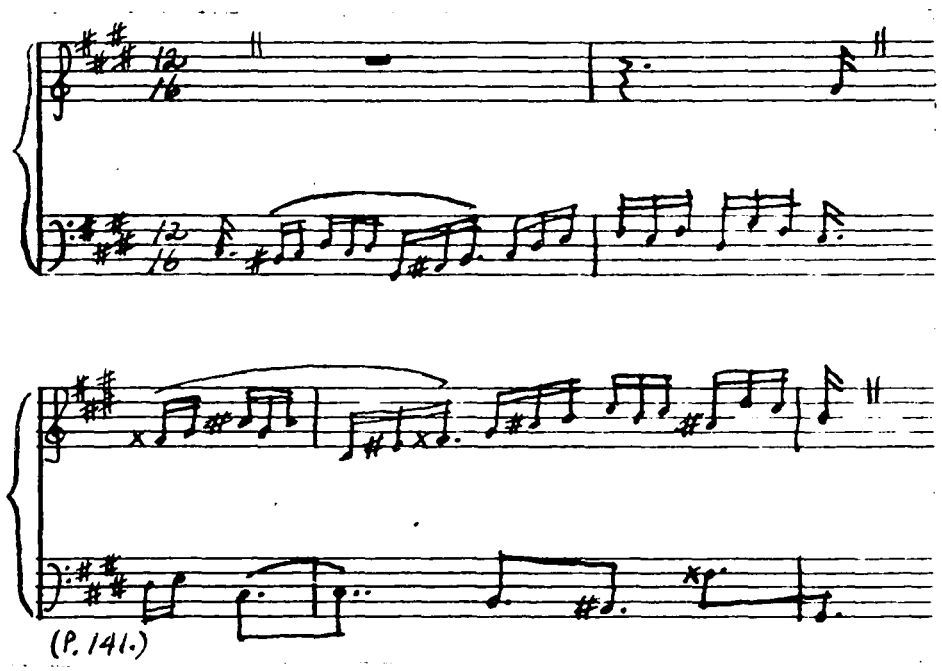
the eighth note and the irrational lengthenings therefore have the value of the sixteenth note.

Example 84



Example 85 illustrates the irrational lengthening in a fugue by Bach in which the sixteenth note is the chronos protos.

Example 85
Bach: Well-Tempered Clavier, II, Fugue 4.



Westphal warns that irrational lengthening is not always appropriate and that great care must be taken to employ it only where it will clarify the caesura.

The remainder of Part III[28] contains extensive analyses of the caesurae and cola in Beethoven's Sonatas Op. 13, Movement 2, and Op. 7, Movement 1. Principles and terminology established thus far in the treatise are employed in these long and detailed analyses for further illustration.

Part IV, "The Rhythmic-Musical Period and Accentuation" ("Die rhythmisch-musikalische Periode und die Accentuation"),[29] begins with a brief consideration of the modern confusion of terms for the unit which the ancient Greeks called the period. Westphal cites Anton Reicha's Traité de melodie[30] as a work in which the ancient period is termed "member" and the ancient strophe "period." Westphal says that this common error is due to Reicha's insufficient knowledge of ancient theory.

In regard to the relation between poetic and musical accents, Westphal says that while a colon of poetry has as many accents as feet, in the recitation of a poem all of the accents are not given equal emphasis. They are stronger or weaker according to the meaning of the text, as in the following cola:

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28. Pp. 143-69.

29. Pp. 170-233.

30. Paris, 1814.

Wie kómmt's, dass dú so traűrig bíst, | wo Álles fr̋oh erscheínt?
Man siéht's dir án den Aűgen án, | gewíss, du hást geweínt.[31]

In the first of the above cola, not only is the root syllable of the word traurig recited with more emphasis than the other accented syllables, but the word kommt's, while not as strong as traurig, is stronger than du and bist. Westphal says that the accents of kommt's and traurig have the significance of strong beats of measures in music. He says further that several repetitions of the same word or several words of equal significance and stress are customarily accented with increasing intensity as follows:

Ihr lärmt und rauűscht und ̋ähnet nícht.[32]

Westphal says that the closer music is to recitative the closer it is to the kind of poetry in which the chief accents are employed to emphasize the meaning of the text. Vocal music which is organized strictly according to cola and periods does not follow this principle of accenting the most meaningful words, but it simply places accented syllables on accented beats of the measure. Sometimes the rhythmically heaviest point in music does not coincide with the heaviest point of the poem as it would be declaimed. The term period, according to Westphal, was first used in ancient Greek theories of rhythm and then transferred by the ancients to the discipline of rhetoric. In the latter the period is a unit of meaning

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31. P. 175.

32. P. 175.

which usually consists of two or more cola, and which can be recited in one breath as in the following illustration:

> Wo göttliche Kraft und Empfindung die Gedanken belebt; | wo
> Dank und Bitte auf den Flügeln des Wortes zum Himmel steigt; |
> wo ein heiliger Ort den nachschweifenden Sinn fesselt und sammelt; |
> da ist Religion. ||[33]

This rhetorical period becomes poetic when modified as follows:

> Wo göttliche Kráft die Gedánken belébt;
>
> wo Dánk und Bítte zum Hímmel steígt;
>
> wo heílige Órte die Sínne sámmeln:
>
> da íst Relígión.[34]

When the poetic period is set to music, an important difference between the musical, rhetorical, and poetic periods becomes clear. While the last two can be recited in one breath, it is appropriate to breathe after every colon in the musical period.

Westphal says that unity in the performance of a rhetorical period is created not only by executing the whole in one breath, but by carefully controlling the dynamic shadings as well. The usual manner of declaiming a rhetorical period is to produce a crescendo throughout its first part and a diminuendo throughout its last part. Only in passages of exceptionally violent emotion is it possible to conclude a period with a crescendo. The parts of the period in which the crescendo and diminuendo

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33. P. 180.

34. P. 180.

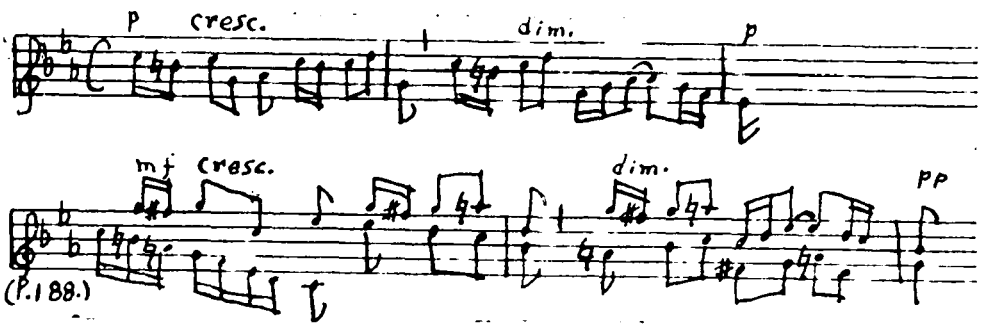
are employed are termed the "protasis" and "apodosis," respectively.

Westphal says that there is a close analogy between the period in rhetoric and music, and that the latter should follow the principles of crescendo and diminuendo employed in the former. In the rhetorical period, however, the protasis and apodosis can consist of several cola each whereas in the musical period the apodosis may include only one colon regardless of the number of cola in the protasis. The principal form of the period in both rhetoric and music is that of two cola of which the first is the protasis and the second the apodosis. Westphal says that it is natural for ascending and descending lines to be accompanied by crescendo and diminuendo, respectively. It is not, however, the ascending and descending lines which demand the crescendo and diminuendo, but vice versa. While he recognizes that the rhythmic and melodic elements come into being simultaneously in the mind of the composer, he says that the rhythmic-dynamic norm of the period, a norm of which the composer may not be conscious, is the reason for the preponderance of ascending lines in the protases and descending lines in the apodoses of musical periods. He does not mean to imply that every ascending line must be performed with a crescendo and every descending line with a diminuendo. There are many instances when the opposite dynamic shading is appropriate, depending upon the position of the line within the period.

According to Westphal's account of rhetorical declamation, a series of repetitions of the same word receive accents of increasing intensity. He says that the repetition of a musical period is treated in an

analogous manner: The crescendo of the repetition of the protasis rises to a point of greater dynamic intensity than in the first period, but the diminuendo of the apodosis reaches a lower dynamic intensity than in the first period. As an illustration of the dynamic shading of a two-colon period and its repetition, Westphal cites Example 86.

Example 86
J. S. Bach: Well-Tempered Clavier, I, Fugue 2.

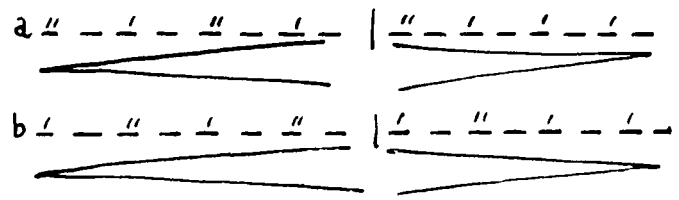


Westphal says further that the crescendo of the protasis of several cola extends throughout its entire length. Thus, it is possible to include several cola within the crescendo. But the diminuendo can only comprise one colon, as the apodosis is always the final colon of the period.

The crescendo and diminuendo of the protasis and apodosis form the basis for all musical accentuation. Just as the colon can have the form either of crescendo or diminuendo, so the subdivision of the colon, such as the dipody, will have its strongest accent either on the first or second foot. Example 87a illustrates the shading and accentuation of a period of two cola, each of which is composed of two dipodies. The first

foot of each dipody of the protasis receives a heavier accent than the second foot. In Example 87b the principal accent of each dipody in the protasis falls on the second foot. Westphal does not give the reason for the accent-scheme's not being carried out in the apodosis, but the influence of the diminuendo is presumably responsible.

Example 87

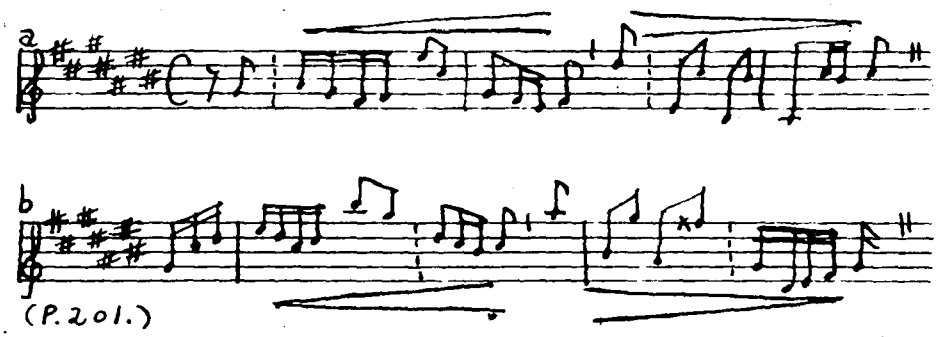


Westphal says that the ancient Greeks differentiated three musical styles according to their ethical properties: the "diastaltic" (diastaltische) style of noble and heroic agitation; the "hesychastic" (hesychastische) style of tranquillity and peace of soul; and the "systaltic" (systaltische) style of weakness, effeminacy, and often of agitated sentimentality. Of these three styles the diastaltic and hesychastic are diametrically opposed, while the systaltic is a vulgarization of either of the first two. He says that modern music is either hesychastic or diastaltic, depending upon the rhythmic accentuation. Hesychastic accentuation is the type illustrated in the protasis of Example 87a, while diastaltic is illustrated in that of 87b.

Westphal established in Part II (see pp. 153-54) the possibility of notating a tetrapodic colon in a compound measure of the dactylic

species, such as 4/4, 4/2, etc. In such a measure the bar line may be placed before the first, second, third, or fourth foot of the colon, and for these placements of the bar line Westphal uses the terms measure of the first, second, third, and fourth order, respectively. There is no difference of accentuation between a tetrapodic colon expressed in a tetrapodic measure (i.e., 4/4, 4/2, etc.), and in two dipodic measures (i.e., 2/4, 2/2, etc.), and there is no difference between a tetrapodic measure of the first order and of the third order. Thus, the cola in the period of Example 88a receive the same dynamic shading and hesychastic accentuation as those of Example 88b. In order to understand clearly the relationship between these two examples, Westphal advises thinking of both in terms of dipodic measures as the dotted bar lines indicate.

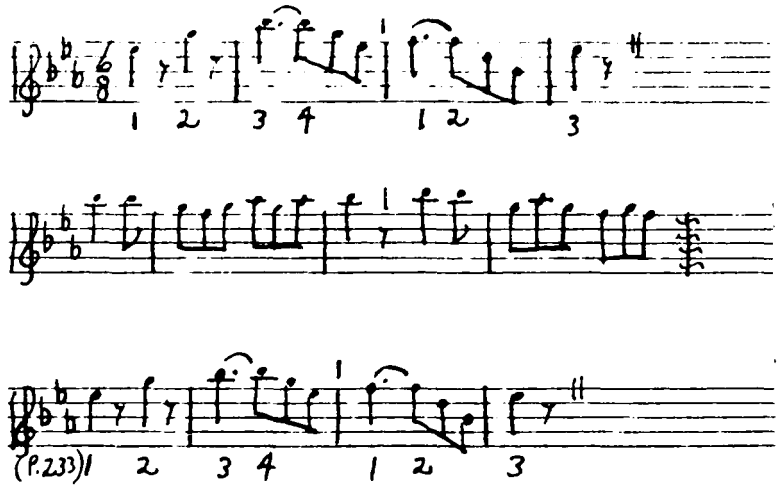
Example 88
J. S. Bach: Well-Tempered Clavier, I, 3.



In Example 88b the melodic line has been shifted with relation to the bar line as used in Example 88a. Such shifts Westphal terms displaced measures (Taktverschiebungen). Another kind of measure displacement occurs when there is a change from diastaltic to hesychastic

accentuation or vice versa. Such a change takes place in Example 89, which begins with two cola with hesychastic accentuation, changes to diastaltic accentuation for the next two cola, and reverts again to hesychastic in the next two cola.

Example 89
Mozart: Don Giovanni, Act I, Scene 20.



The sign at the end of the fourth colon (i.e., at the end of the second staff) indicates a linking of periods (Perioden-Verkettung). Westphal places this sign before the first note of a new period when it is also the final note of the preceding period.

Part V, "Musical Systems or Strophes" ("Die musikalischen Systeme oder Strophen"),[35] deals with the largest rhythmic structures of vocal and instrumental music. Westphal says that modern vocal music

35. Pp. 234-98.

always employs systems or strophes, even when the text does not. The term "alloiostrophic" is applied to the through-composed song in which each succeeding strophe is different.

Westphal says that modern instrumental music, except for that which employs the so-called endless melody, is systematic or strophic. But the systems of instrumental music are very seldom indicated by the composer, and even phrased editions do not indicate the endings of systems. The simplest and clearest instance of systems in instrumental music is found in the dance forms. The repetition schemes of dance forms have a close parallel in the tragedies of Sophocles and Euripides in which the songs are usually composed of a strophe and its repetition, or antistrophe, followed by a new strophe and antistrophe. The unit composed of the strophe and antistrophe together is termed the "syzygy." The form of the scherzo, trio, da capo, and coda would be designated in ancient terminology as follows:

Pericope A
1st syzygy: Strophe a, Antistrophe a,
2nd " " b, " b,
Pericope B
3rd syzygy: Strophe c, Antistrophe c,
4th " " d, " d,
Antipericope
Strophe a
" b
" e [36]

According to Westphal's analysis of the first-movement form of the classic sonata, the exposition is the strophe, its repetition the

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36. P. 243.

antistrophe, and the development and recapitulation together are the epode. He says, however, that the increased complexity and length of the first-movement form over the dance form would justify the use of the terms pericope, antipericope, and epipericope since they imply larger dimensions and more complex structure than the former set of terms.

Westphal refers to the importance of the bar form in the history of German music, especially in the songs of the minnesingers and in the chorale. This form corresponds to the strophe, antistrophe, and epode of ancient Greece. Westphal prefers to use the German terms Stollen, Gegenstollen, and Abgesang. He says that J. S. Bach's formal point of departure in his fugal composition is the bar form, and he analyzes several of Bach's fugues as series of Stollen, Gegenstollen, and Abgesänge. His analysis of Bach's fugue from the Well-Tempered Clavier, Volume I, Number 2 is represented in outline form below and illustrated in Example 90. (See pp. 177-79.) (There is an error in Westphal's example which we have quoted as Example 90. In the sixth measure, the fourth note of the top voice should read g'' rather than f''.)

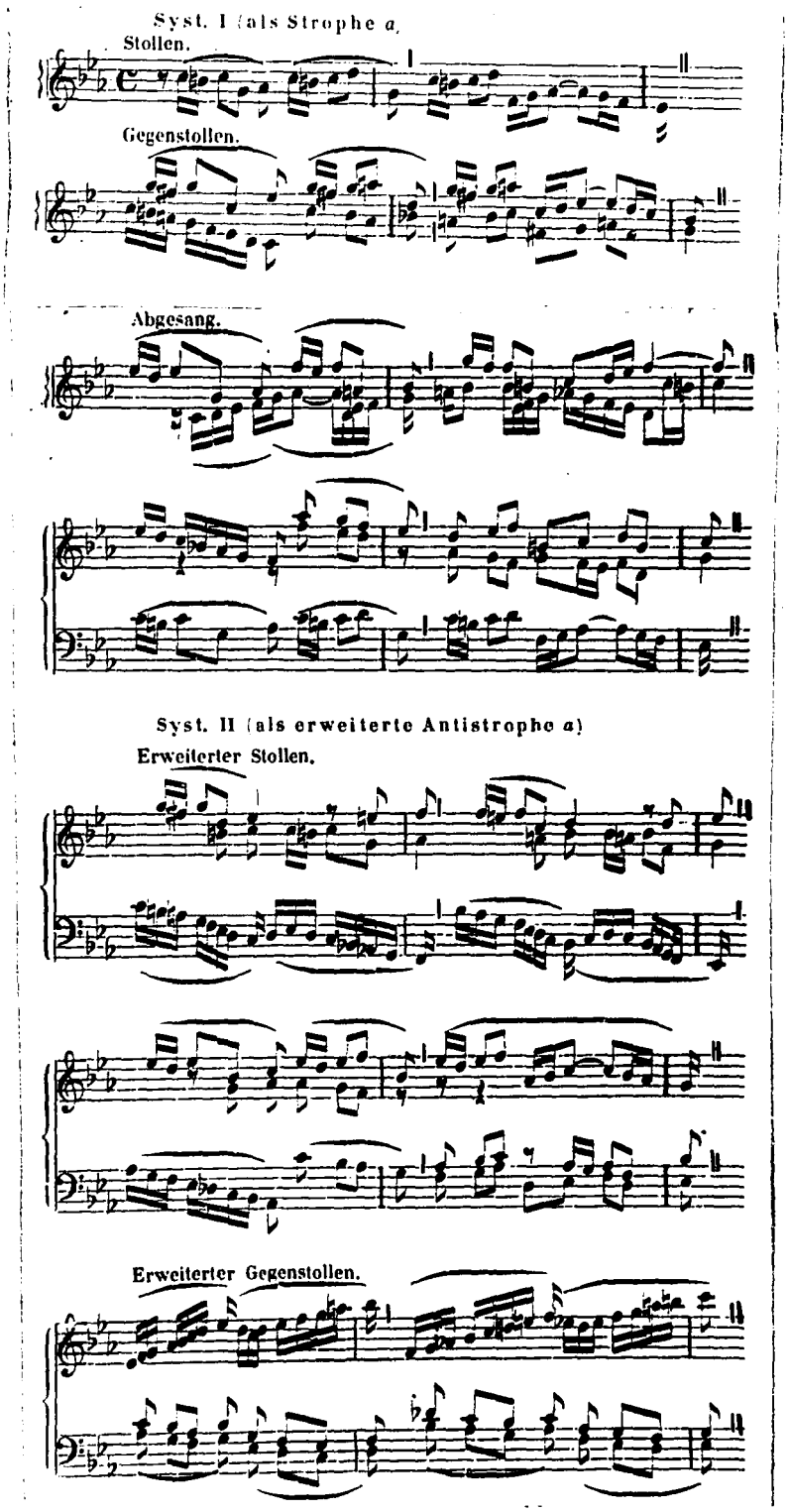
System I (strophe a)
- Stollen (one period of two tetrapodic cola)
- Gegenstollen (one period of two tetrapodic cola)
- Abgesang (two periods, each of two tetrapodic cola)

System II (expanded antistrophe a)
- Expanded Stollen (two periods, each of two tetrapodic cola)
- Expanded Gegenstollen (two periods, each of two tetrapodic cola)
- Expanded Abgesang (two periods, the first of two hexapodic cola, the second of two tetrapodic cola)

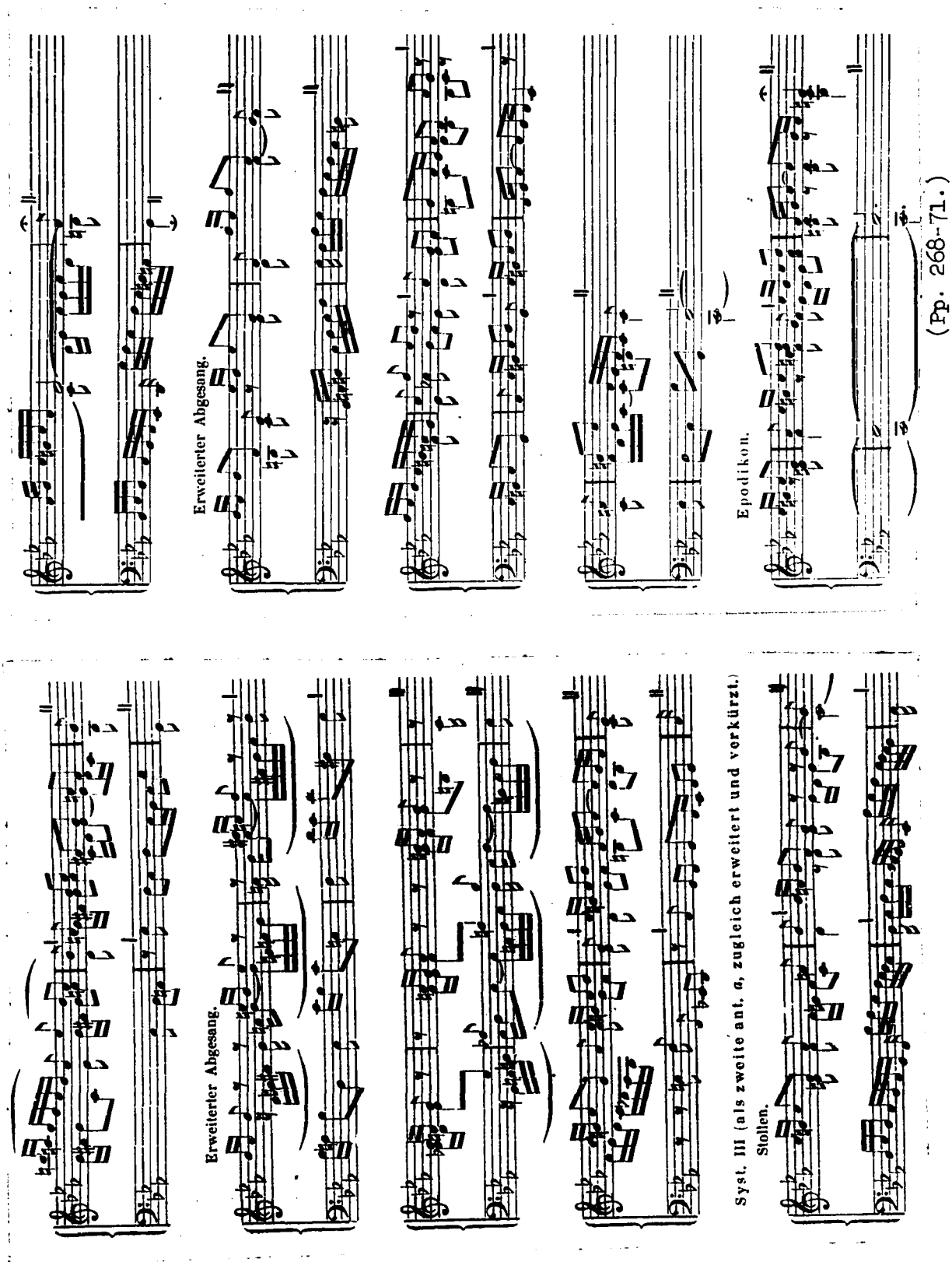
System III (second antistrophe, both extended and contracted)
Stollen (two periods, the first of two tetrapodic cola, the second of a single tetrapody)
(Gegenstollen omitted)
Expanded Abgesang (two periods, the first of one hexapodic colon, the second of a tetrapodic, a pentapodic, and a tripodic colon)

Epode (one period of two tetrapodic cola)

Example 90



Example 90 (cont.)



Summary

The purposes of Westphal's treatise are to show a hitherto unknown relation between ancient and modern times and to provide a theory for the understanding of the rhythm of modern music. He says that he does not intend the treatise to be a practical work for the instruction of performers and composers but a purely scientific one for the purpose of understanding for its own sake. But he is not entirely consistent in this respect as he says further that certain practical demands inevitably result from a theory, and his treatise contains recommendations for the performance of accents, dynamic shadings, and caesurae. The purpose of Westphal's work stands between that of Hauptmann's and Lussy's. The former is a speculative theory and the latter is predominantly practical, while Westphal's is primarily speculative, occasionally becoming practical. The method of Westphal's treatise differs from both Hauptmann's and Lussy's. Whereas Hauptmann's grows from a philosophical principle and Lussy's from the observation of performance practice, Westphal accepts the ancient rhythmic theory as expressed primarily by Aristoxenos and applies it to modern music with as little modification as possible.

Part I of the treatise consists of an introduction to the rhythmic analysis of poetry according to ancient principles. The chief rhythmic units considered are the foot, colon, period, and system or strophe. The explanation of these units is intended to provide a foundation for the musical analysis in the remainder of the treatise.

Part II is a consideration of the relation between the foot in poetry and the measure in music. The ancient concept of the chronos protos, or primary time, is explained, as is the constitution of the more important feet in ancient theory and their modifications through dissolution, contraction, and extension. Four species of feet are discussed, the trochaic (three-time), dactylic (four-time), paeonic (five-time), and ionic (six-time). Westphal says that he will not treat the paeonic at length because it is seldom employed in modern music. He says that the concept of the chronos protos in modern music is most easily applied to the keyboard fugues of Bach where it is frequently an indivisible unit. But he says that the indivisibility of the chronos protos is not respected in the music of most modern composers.

The trochaic or three-time species of foot is represented in music by measures bearing such time signatures as 3/8, 3/4, 6/8, and 6/4. The first two are signatures for simple measures, each comprising one foot, and the last two are for compound measures, each comprising two feet. The dactylic species is represented in music by measures with signatures such as 4/4, 4/8, 2/4, and 2/8. All of these measures could be compound, the first two containing four feet and the last two, two feet; or they could be simple, each containing one foot. The ionic species is represented by measures employing the same signatures as those representing the simple trochaic species.

Westphal does not provide criteria for determining whether measures of the dactylic species are simple or compound. Such criteria

would be related to the determination of the chronos protos for a given piece, and he does not consider that determination. Since he recognizes the necessity of treating the chronos protos in music as a divisible unit, the selection of the chronos protos is a central question and should have been considered. His neglect of this question is a serious weakness of his application of ancient theory to music. He does not entirely neglect the question with reference to the determination of the 3/4 measure as either trochaic or ionic, as he says in Part III that if such a measure is quick enough to be conducted in one beat per measure it is trochaic, and if in three beats, ionic. Thus, he relates the determination of the chronos protos to tempo. But he does not develop this principle further, nor does he apply it to the question of simple as opposed to compound interpretation of the measures of the dactylic species.

In Part III, "Musical Cola," Westphal lists five categorical descriptions of cola. The first, species of foot, was considered in Part III. Regarding the second, length, he says that the lengths most frequently employed in modern music consist of four dactylic or trochaic feet, two ionic feet, and three dactylic or trochaic feet.

His discussion of the third distinguishing characteristic, the caesura, deals with four possibilities of the proceleusmatic expression of the dactylic species. Caesurae occurring after the first or second chronos protos are considered masculine, and those after the third and fourth, feminine. The last of these was avoided by the Greeks as being too weak and should therefore be avoided in modern music. The Greeks

employed a variety of caesurae within a given poem, and we should likewise seek a variety of caesurae in the performance of modern music. Caesurae are also occasionally necessary within cola.

The upbeat or anacrustic colon is considered extremely important. Westphal says that works beginning with an anacrustic colon usually are intended to be interpreted as having anacrustic cola throughout, and even works beginning on a down beat frequently employ anacruses in subsequent cola. Westphal's analysis of the cola and periods in the first movement of Beethoven's Sonata Op. 2, No. 1 illustrates a movement in which nearly all cola are anacrustic and indicates his strong belief in an extremely close parallel between the rhythm of ancient poetry and that of modern music, in this case between a common rhythm of Pindar and a particular rhythm of Beethoven.

Westphal presents two possibilities for performing caesurae: breaking the legato flow between cola, and slightly lengthening the final note of the colon. The latter is derived from ancient theory and is termed the irrational lengthening. Westphal's application of it seems appropriate in some instances, but in Example 85 (see p. 165) he applies it with an apparent disregard for harmonic relationships. The first and third cola end with an irrational lengthening on the leading tone, creating an unsatisfactory conclusion from the harmonic point of view.

In Part IV Westphal considers the accentuation of periods. He makes an analogy between the execution of the period in rhetoric and in music; in the former there should be a gradual crescendo in the first half

and a diminuendo in the second half. Westphal says that the same manner of execution should be applied to music. In both rhetoric and music, the section of the period containing the crescendo is termed the protasis, and that containing the diminuendo, the apodosis. In music only the last colon of the period is included in the apodosis, regardless of the number in the protasis. Westphal says further that the repetition of a period should have greater dynamic intensity in the protasis than the first statement, in the same manner as successive repetitions of a word in poetry are accented with increasing intensity. But the apodosis of the second period should contain a diminuendo to a lower dynamic level than that of the first period.

Westphal says that there is a preponderance of ascending lines in the protases of periods and of descending lines in the apodoses. He does not support this statement with statistics, nor does he qualify it by a comment upon the style or composer in which the correlation is said to exist. He says further that the predominance of ascending lines of protases and descending lines of apodoses is the result of the natural association of crescendo and diminuendo with melodic ascent and descent. The composer is induced by the normal dynamics of the protasis and apodosis to write ascending lines in the former and descending in the latter. Westphal does not provide the reader with further explanation of this principle.

He says that three musical styles in ancient Greek theory are the diastaltic, hesychastic, and systaltic. The diastaltic is represented

in modern music by dipodies with the heaviest accent on the first foot and the hesychastic by dipodies with the heaviest accent on the second foot. The systaltic can be similar to either of the other two but is a vulgarization of the others which are of greater ethical value.

Westphal discusses two types of displacement of measures. One is that in which a given melodic line is repeated with the bar lines occurring at points different from those in the original statement. In most instances the change in the placement of the bar line affects the accentuation of the colon. But the accentuation is not changed if the bar line of a tetrapodic colon in a tetrapodic measure (e.g., 4/4) is shifted from the position preceding the first foot to that preceding the third foot, because the tetrapodic colon is like two dipodies with similar accentuation (e.g., a tetrapodic 4/4 measure is equal to two dipodic 2/4 measures). Another kind of displacement occurs when there is a change from diastaltic to hesychastic accentuation and vice versa. If a change from hesychastic to diastaltic accentuation occurs at the end of one period and the beginning of another, a linking of periods takes place in which the last note of one period becomes the first note of the next.

Part V concerns the analysis of musical systems or strophes. Westphal says that particularly clear instances of systems in instrumental music occur in the dance forms, and systems are also employed in the first-movement form of the classic sonata and the fugues of Bach. With regard to the latter, Westphal is particularly interested in the application of the strophe, antistrophe, and epode, which corresponds to that of the

Stollen, Stollen, Abgesang so important in German music from the Middle Ages to Bach. He considers Bach's keyboard fugues as instances of the application of this form.

CHAPTER V

HUGO RIEMANN: A THEORY OF RHYTHM BASED ON *DYNAMIK*, *AGOGIK*, *AUFTAKT*, AND *VIERHEBIGKEIT*

Hugo Riemann (1849-1919) was one of the most prolific and influential musicologists of the nineteenth century. He received most of his musical training at the Leipzig Conservatory and held numerous teaching positions, chief among which were those of *Privatdozent* at the University of Leipzig (1878-1880, 1895-1901), teacher of pianoforte and theory at Hamburg Conservatory (1881-1890) and Wiesbaden Conservatory (1890-1895), and Professor at the University of Leipzig (1901-1919).[1] He wrote two treatises devoted exclusively to the theory of rhythm: *Musikalische Dynamik und Agogik: Lehrbuch der musikalischen Phrasierung auf Grund einer Revision der Lehre von der musikalischen Metrik und Rhythmik*[2] and *System der musikalischen Rhythmik und Metrik*.[3] These works emphasize the importance of gradual dynamic shading in the motive and phrase (*Dynamik*),

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1. *Baker*, pp. 1342-43. J. A. Fuller-Maitland in *Grove*, VII, 163. Moser, *Mus. Lex.* (4th ed.), II, 1046-48. Riemann, *op. cit.*, II, 1515.

2. Hamburg, 1884. Hereafter this treatise will be referred to as Riemann's *Dynamik*.

3. Leipzig, 1903. Hereafter this treatise will be referred to as Riemann's *System*.

of subtle agogic accents or accents of length within the phrase (Agogik), of the upbeat beginning for the motive and phrase (Auftakt), and of four- and eight-measure units as structural norms (Vierhebigkeit).

In the introduction of his Dynamik[4] Riemann says that in spite of the gaps in Rudolph Westphal's Theorie (1880) it was an important beginning in a neglected field. He considers Mathis Lussy's Traité (1873) and Le rythme musical (1883) important chiefly for their sections on the anacrusis. He says that the treatises of Westphal and Lussy as well as the numerous recent periodical articles about phrasing, phrase marks, and freedom of tempo have indicated a need both for a revision of the theory of rhythm and metre and for a system of notation of motives and phrases. Riemann praises Moritz Hauptmann as a theorist of genius and considers Die Natur der Harmonik und der Metrik (1883) such an important contribution that he is compelled to come to terms with it at every opportunity in his own treatise. He says that he must reject much of Hauptmann's theory, but he considers himself a student of Hauptmann's in spirit and seeks to build a new theory on Hauptmann's foundation.

Chapter I of this treatise is entitled "Metrical Schemes in Equal Values" ("Metrische Schemata in gleichen Werthen").[5] Riemann begins the chapter by disputing Hauptmann's application of Hegelian dialectics to harmony and metre. According to Riemann the dialectical process as

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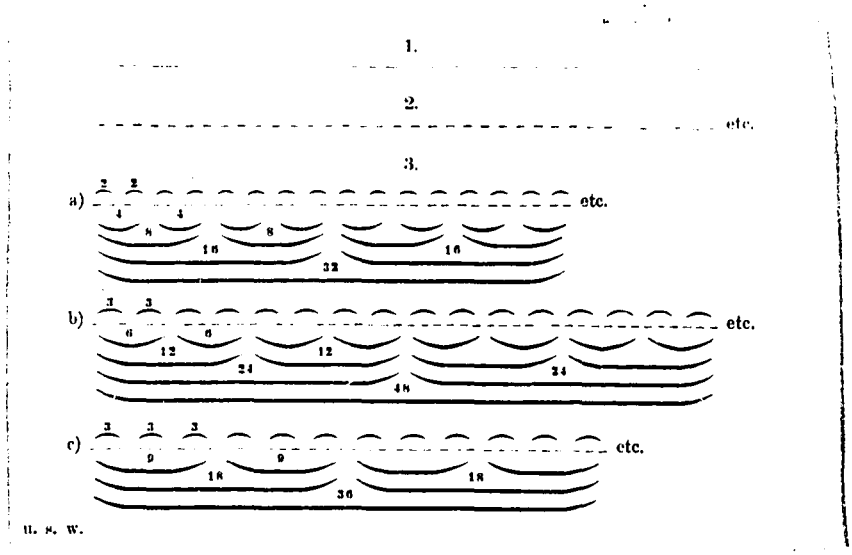
4. Pp. 1-4.

5. Pp. 7-47.

applied to harmony begins with the tone as the initial unity or thesis. Presumably he uses the word tone to mean the fundamental as opposed to the upper partials. The second step of the dialectical process, the antithesis, is expressed by the partials (Partialtöne). The final unity or synthesis is the sound (Klang), presumably referring to the fundamental together with its upper partials. On a higher level the sound becomes the thesis, related sounds (verwandte Klänge) form the antithesis, and tonality is the synthesis.

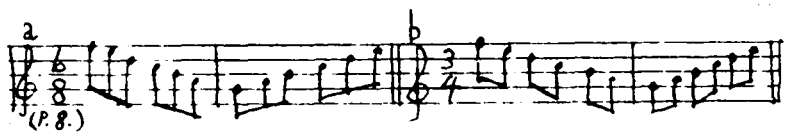
Rejecting Hauptmann's method of applying the dialectical process to metre, Riemann illustrates the relation between thesis, antithesis, and synthesis by the diagrams shown in Example 91: A continuous tone (1) is the thesis; a tone broken into a series of shorter ones of equal duration (2) is the antithesis; Groupings of these shorter tones into units of two or three tones each and of these units into still larger structures (3a, b, c) form the synthesis.

Example 91

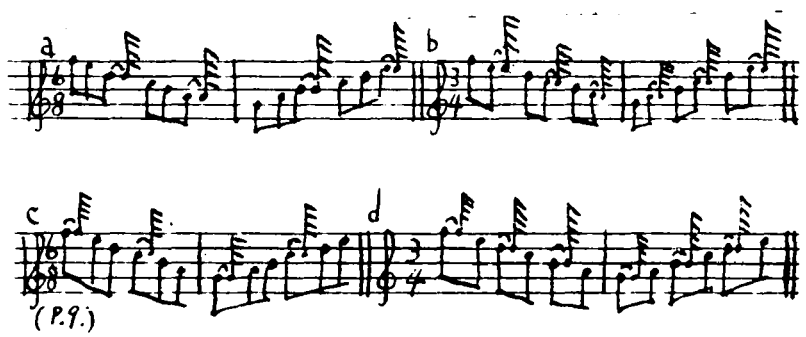


Riemann finds it strange that in establishing a theory of metre no one has taken into account the fact that tones which belong together in a metrical group are closely connected in performance while a slight loss of time is evident between the groups. This loss of time is effected by a brief unnotated rest or an irrational lengthening of the final note in the group. The irrational lengthening, termed agogic accent, is particularly important, he says, in distinguishing between passages like Examples 92a and b when played on the organ which has no means of effecting dynamic accents. Examples 92a and b would be differentiated on the organ by the irrational lengthenings shown in Examples 93a and b, or c and d.

Example 92



Example 93



Riemann uses small vertical bars called reading marks (Lesezeichen) to in-

dicate the division between two small metrical groups, and legato phrase marks (Phrasenbögen) to indicate the extent of larger groups.

Riemann begins his consideration of the dynamic and agogic aspects of metrical groups with the following statement which expresses one of the chief points of his theory of rhythm and metre:

> As the essence of the harmonic-melodic element is change of pitch, so the essence of the metric-rhythmic element is change of living energy: of tone-intensity (dynamics) on the one hand, and of rapidity of tone-succession (agogics, tempo) on the other.[6]

He continues by pointing out that the customary manner of demonstrating relationships of rhythm and metre by tapping on a drum, a table, etc. indicates only the division of time and has little to do with the life of music. The characteristic quality of musical motion is legato, not staccato as such tapping would imply. One reason for the prevalent staccato presentation of metre and rhythm is the mistaken notion that poetic metrics can be transferred directly to music. Such transference is invalid since consonants in speech do not permit the legato possibilities of music.

Riemann next considers the motive and its various types. Each motive, which is the smallest member of a composition, is an organism with its own peculiar dynamic and agogic life. The most complete type of motive is that which includes an organic growth and decline as in Example 94.

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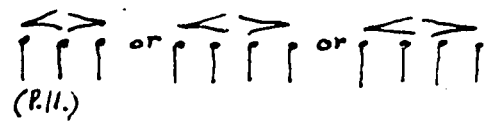
6. P. 10. Wie das Wesen des Harmonisch-Melodischen die Veränderung der Tonhöhe ist, so ist das Wesen des Metrisch-Rhythmischen die Veränderung der lebendigen Kraft, einerseits der Tonstärke (Dynamik), andererseits der Geschwindigkeit der Tonfolge (Agogik, Tempo).

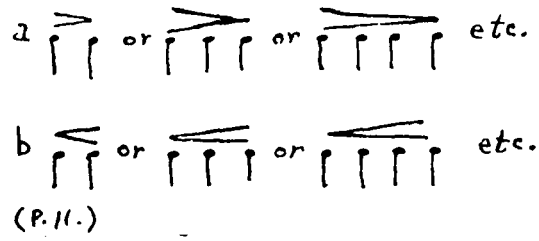
Example 94



The agogic element in the motive is directly related to the dynamic. Each crescendo is accompanied by a slight accelerando, and each diminuendo by a slight ritardando. Riemann considers unmusical a metronomically exact performance.

The type of motive illustrated in Example 94 is only one of Riemann's three basic types which are: (1) Initially stressed motives (anbetonte Motive) as in Example 95a; (2) Terminally stressed motives (abbetonte Motive) as in Example 95b; (3) Internally stressed motives (inbetonte Motive) as in Example 94.

Example 95



Of these types Riemann considers the internally stressed the most satisfactory and the most frequently employed. He finds the initially stressed motive the least frequently employed and terms it the least satisfactory aesthetically as the listener invariably misinterprets it, hearing it as a modification of one of the others. Once again Riemann finds it necessary

to disagree with Hauptmann, this time in the latter's interpretation of the initially stressed motive as a positive formation:

> While Hauptmann sees in it [the initially stressed motive] the positive formation of metre, I must on the contrary designate it as negative, since to decline, to die away, is unquestionably the opposite of a becoming, of a positive development....[7]

Riemann turns next to the measure-motive (Taktmotiv) which has the length of the notated measure. The bar line is not considered the boundary line of the measure-motive; rather, it indicates the position of the strong point (Schwerpunkt) within the motive. Distances between bar lines indicate distances between strong points of motives and therefore lengths of motives. Internally and terminally stressed motives overlap bar lines and thus begin and end within measures.

In two-part measures Riemann says that there are only two motivic possibilities: terminally stressed or upbeat (auftaktig) as illustrated in Example 96a or initially stressed as illustrated in Example 96b. In these examples the reading marks indicate the boundary lines of motives.

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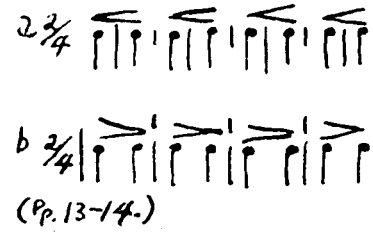
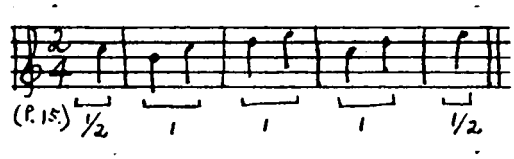
7. P. 12. Während Hauptmann in ihnen die positiven Bildungen der Metrik sieht, muss ich sie im Gegenteil als negative bezeichnen, da das abnehmen, absterben doch ohne Frage das Gegenteil eines Werdens, einer positiven Entwicklung ist....

Example 96



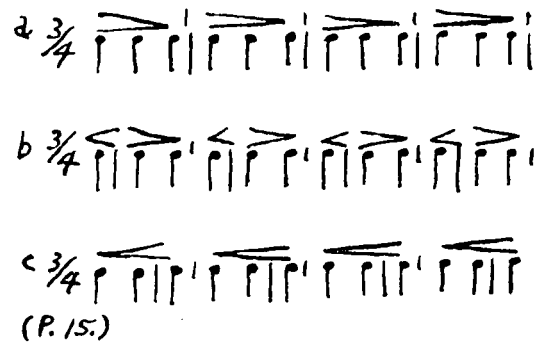
Riemann says that the customary theory of accentuation does not recognize the upbeat form of the two-part measure. Thus, a phrase like Example 97 would customarily be analyzed as beginning with an incomplete measure which is completed at the end of the phrase, while Riemann would analyze it as four complete motives.

Example 97



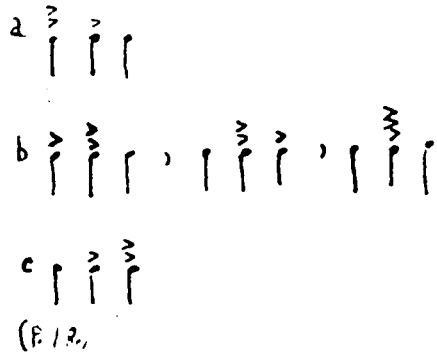
In the three-part measures all three types of motives are possible as illustrated in Example 98.

Example 98



In comparing his dynamic shadings for motives of the three-part measure with Hauptmann's accentuations, Riemann finds that the two coincide in many instances. Hauptmann's positive determination of the three-part measure is accented as in Example 99a which thus approximately corresponds to Riemann's initially stressed motive. The negative determinations in Hauptmann's theory as illustrated in Examples 99b and c approximate Riemann's internally and terminally stressed motives.

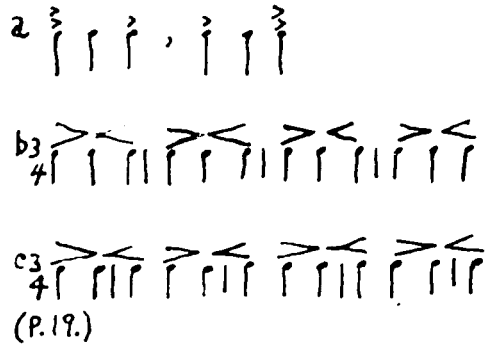
Example 99



Riemann says that in certain instances he considers Hauptmann's manner of deriving accent schemes to be only an empty game, and that schemes of accentuation thus derived are of little value in actual music. One such scheme is that in which a totally unaccented beat is located between two accented ones as in Example 100a (see p. 195). Examples 100b-c illustrate Riemann's version of these. The second of the three notes in the motives of Examples 100b and c begins with a diminuendo and ends with a crescendo. Riemann terms these motives with changed stress (umbetonte Motive); more specifically, he terms the motives of Example 100b motives

with initial and changed stress (anbetont-umbetont) and those of Example 100c motives with changed and terminal stress (umbetont-abbetont).

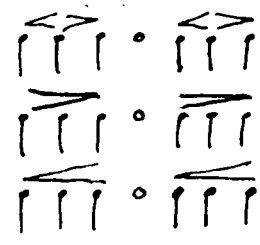
Example 100



(P. 19.)

Riemann rejects motives with changed stress because they cannot be clearly perceived. The listener would not understand the dynamic shading of the second note but would group it either with the first note as part of a diminuendo or with the third note as part of a crescendo. Another reason for Riemann's rejection of motives with changed stress is that he finds it totally unacceptable to make a division between two motives at the height of a crescendo. He says that there must be a zero-point of intensity between motives as is indicated in Example 101.

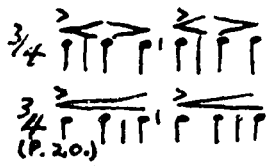
Example 101



(P. 20.)

Although Riemann rejects motives with changed stress, he recognizes the validity of a practice that is somewhat similar, the accentuation of the initial note of a motive to make it stand out as a beginning. This practice, audible only in the terminally and internally stressed motives, is notated as in Example 102.

Example 102



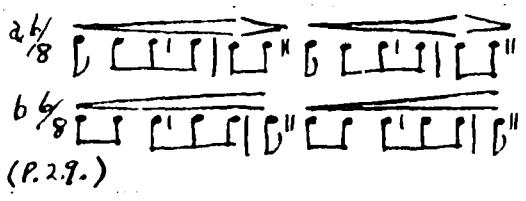
According to Riemann, simple measures are those of which the number of parts is a prime number, excluding number one which of itself has no possibility of musical life. Thus, simple measures are those of two, three, five, seven, etc. parts. He says that there is no justification for ignoring five- and seven-part measures, nor should they be considered curiosities. He points out that they are being used more and more frequently and cites Reinecke's Etude Op. 121 as a successful use of the 5/8 measure. He says that the ancient Greeks employed five and seven part metres successfully, and he attacks Hauptmann's assertion that these are inorganic and unsatisfactory. He says that Hauptmann's attempt to prove their inorganic nature only indicates that with the aid of graphic presentation and philosophical reasoning one can prove what one wants to prove.

Riemann considers the four-part measure to be a higher power of the two-part, and thus a compound measure (zusammengesetze Takt). Here

again he compares his and Hauptmann's theories to indicate the points of similarity and difference. Hauptmann claims an essential difference between the four-part and the doubled two-part measure, whereas Riemann sees no difference at all. He says that the doubled two-part is only a two-part measure at a higher power just as is the four-part measure.

In the remainder of Chapter I, Riemann shows in considerable detail the various possibilities of dynamic shading of the larger compound measures. Example 103a illustrates one of the possibilities of the internally stressed motive in a measure of six parts, and Example 103b illustrates the terminally stressed motive. Double and single reading marks (Lesezeichen) indicate divisions between motives and members of motives, respectively.

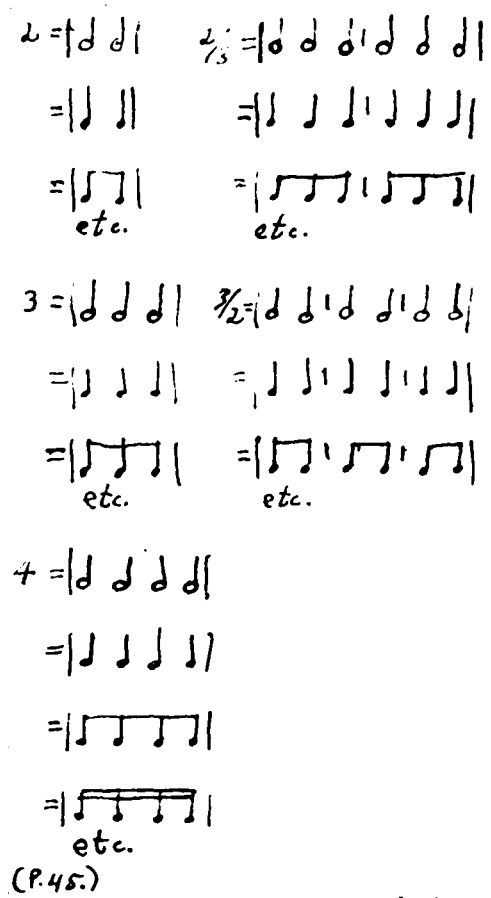
Example 103



Chapter I is concluded with a proposed time signature reform. Riemann says that the time signatures now in use are superfluous because there is no need to state in the signature what denomination of notes is to be normal, and time signatures are inaccurate because they do not indicate the number of beats to be felt within a measure. The latter consideration, he says, depends upon tempo. When a metronomic indication is given it is easy to discover which unit is to be considered the beat-note:

one chooses the note which comes nearest to the rate of the normal pulse, between 75 and 80 beats per second, as the beat-note. Thus, if the metronomic indication requires the eighth note to equal M.M. 80, that note is chosen as the beat-note. Example 104 illustrates Riemann's proposal for time signature notation. The number 2 means two of the beat-notes (half, quarter, or eighth-notes) per measure; likewise the numbers 3 and 4 indicate that there will be three and four beat-notes per measure. The indications 2/3 and 3/2 indicate respectively a two-part measure with a triple beat-subdivision and a three-part measure with a duple beat-subdivision. Most of Riemann's musical examples in the remainder of this treatise employ the reformed time signature.

Example 104



(P.45.)

In Chapter I Riemann has dealt with metre; in Chapter II he turns to an elementary form of rhythm. Curiously enough, he does not present his reader with formal definitions of metre and rhythm in this treatise. His concept of these two elements, however, can be inferred from this treatise as well as from his other writings. Heinz Ludwig Denecke, in his dissertation entitled Die Kompositionslehre Hugo Riemanns, historisch und systematisch dargestellt[8] has derived the following definitions of metre and rhythm from Riemann's various treatises on theory and composition. These definitions coincide with those implied in Riemann's Dynamik and System.

> Metre is, according to Riemann, the theory of the measure conceived as equal note-values without rests; it is the theory of the varying weight of the tones within the measure, thus of the lesser or greater finality of tones, of their position in and their significance for the construction of symmetries. Thus, metre is also the theory of musical structure.
>
> Rhythm is the theory of free musical motion within metrical schemes, of the mixture of various time-values, that is, of shorts and longs. It treats of the formations that arise from binding together or subdividing [elements] within a [time unit] and from the changing patterns within such a unit--in short, of the transformations of metrical patterns brought about through the processes of subdivision and combination. Rhythm, therefore, is the theory of more complicated metrical formations; metre, on the other hand, is the theory of simple rhythmical formations.[9]

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8. Kiel, 1937.

9. Metrik ist nach Riemann die Lehre von dem in gleichen notenwerten ohne Pausen gedachten Takt; sie ist die Lehre vom verschiedenen Gewicht der Tönen innerhalb des Taktes, die Lehre also von der geringeren oder grösseren Schlussfähigkeit der Töne, ihrer Stellung in und ihrer Bedeutung für den Aufbau von Symmetrien. So ist Metrik auch die Lehre vom musikalischen Satzbau. (continued on page 200)

Chapter II is entitled "Rhythmic Formations through the Tying of Several Beats" ("Rhythmische Bildungen durch Zusammenziehung mehrerer Zähleinheiten").[10] Riemann says that the effect of a long note following a series of short ones is to check the flow of the music. At the entry of a long note there is a loss of energy, an effect of restraining, weighing down, and relaxing.

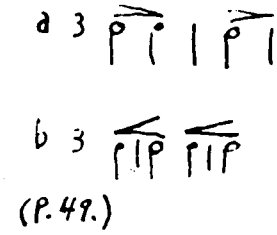
Riemann illustrates the various possibilities of tying two parts of two and three-part measures. Regarding the former he points out that the two-part measure must be firmly established in the listener's mind before the two parts are tied, otherwise the effect will simply be that of a slower tempo. In his consideration of the possibilities of tying two parts of a three-part measure, Riemann warns that the listener will interpret the motive of Example 105a (see p. 201) as that of Example 105b because the long note creates a restraining, concluding effect while the short note creates the energetic effect of a new beginning.

(continued from page 199)

Rhythmik ist die Lehre von der freien musikalischen Bewegung innerhalb der metrischen Schemata, von der Mischung der verschiedenen Zeitdauerwerte, also der Kürzen und Längen. Sie handelt von den durch Zusammenziehung und Unterteilung sowie durch deren abwechselnde Kombination in den Zählzeiten entstehenden Bildungen, also von der Umgestaltung der metrischen Schemata durch Unterteilung und Zusammenziehung. So ist: Rhythmik die Lehre von den komplizierten metrischen Bildungen und umgekehrt Metrik die Lehre von den einfachen rhythmischen Bildungen.

10. Pp. 48-70.

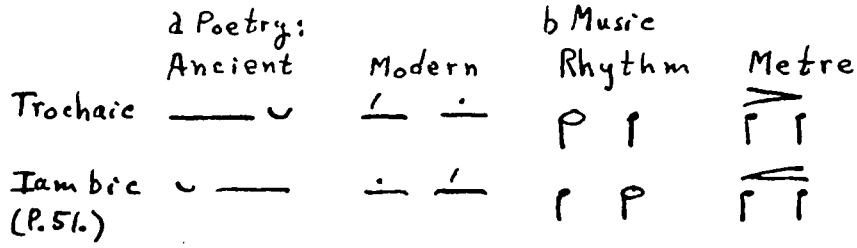
Example 105



(P. 49.)

Although the terms and concepts of poetic metrics are not important in Riemann's theory, he recognizes a general relation between the various types of poetic feet and musical motives. Poetic feet are expressed by long and short syllables in ancient Greek poetry or by stressed and unstressed syllables in modern poetry as illustrated in Example 106a; music can also express these forms by stress or duration as illustrated in Example 106b. Organization by stress and duration in poetry are comparable to musical organization by metre and rhythm, respectively.

Example 106

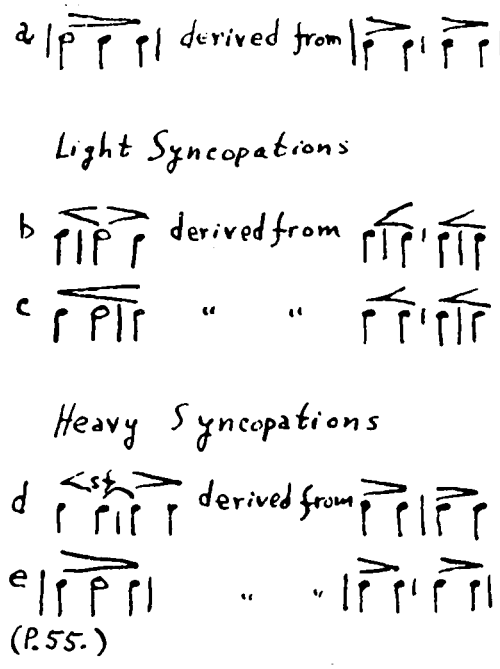


(P. 51.)

Riemann turns next to the possibilities of tying two parts of four-part measures. He again emphasizes the point that the initially stressed motive will usually be interpreted by the listener as an upbeat form.

Syncopation is introduced for the first time in the discussion of tying two parts of four-part measures. In explaining syncopation Riemann says that the four-part measure is a compound of two two-part measures and thus comprises two two-part motives. Syncopation results if a note in one of the two-part motives is tied to a note in the other two-part motive, thus concealing the border-line between the motives. In Example 107a (see p. 203) there is no syncopation since the border-line is retained between the two two-part motives from which the four-part is derived. Examples 107b-c are syncopations because the border-line between the two-part motives are concealed by the tie. Riemann terms them light syncopations, however, since the strong points in the two-part motives remain intact. Examples 107d-e are heavy syncopations because the strong point in the second two-part motive is displaced by anticipation. He says that a syncopation is to be performed with a slight dynamic accent regardless of its position within the motive.

Example 107

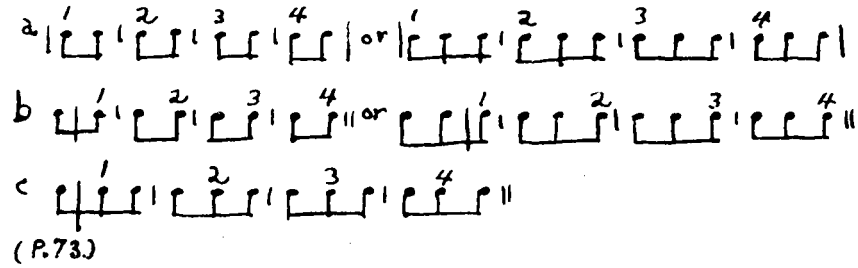


(P. 55.)

The remainder of Chapter II consists of a detailed account and tabulation of the possibilities of tied notes of two beats' duration in measures of five, six, seven, and nine parts. This section does not contribute anything essential to Riemann's theory but is provided for the sake of thoroughness and consistency. In the closing paragraph of the chapter Riemann says that the numerous metrical and rhythmic possibilities of this treatise provide a basis for the same kind of study of rhythm and metre as has heretofore been possible only in the field of harmony. He says that students should write exercises employing the various metric and rhythmic possibilities as they do when studying the various uses of certain chords in the field of harmony.

Chapter III, "Rhythmic Formations through Subdivision of Individual Beats," ("Rhythmische Bildungen durch Untertheilung einzelner Zähleinheiten")[11] treats essentially the theoretical formulations of the first two chapters but at the lower level of the beat-subdivision. All three forms of motives, initially, terminally, and internally stressed, are recognized at this level. Riemann attacks the theory which holds that the beat-subdivisions are related almost exclusively to the beats from which they are derived as in Example 108a. Such a relationship implies initially stressed subdivision-motives. He says that in subdivision-motives, just as in measure-motives, the terminally and internally stressed forms as illustrated in Examples 108b-c are more frequently employed.

Example 108



(P.73)

Dotted patterns are considered subdivisions with tied notes. In a measure which employs the quarter note as the beat-note, a dotted eighth followed by a sixteenth is considered a quadruple beat-subdivision, the first three notes of which are tied.

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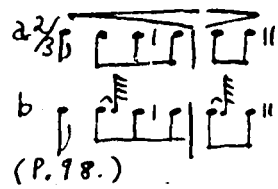
11. Pp. 70-110.

Riemann is more specific with reference to the agogic accent, or irrational lengthening, in this chapter than in Chapter I. He says that the agogic accent is to be used to emphasize the strong point of the subdivision-motive. Since the dynamic shading is extended over the entire measure-motive, the subdivision-motive loses its individual dynamic shading which is absorbed into that of the measure-motive. But for clarity of metrical expression it is essential to emphasize slightly the strong point of the subdivision-motive. This emphasis is effected by a slight agogic accent. Thus, the measure-motive of Example 109a is to be performed with its dynamic shading as marked, but with the agogic accents shown in Example 109b.

Example 109



Riemann says that clarification of the structures of subdivision-motives by agogic accents is essential, but the latter must nevertheless be subordinate to the clarification of the measure-motive by means of the slight crescendo and diminuendo with the accompanying accelerando and ritardando.

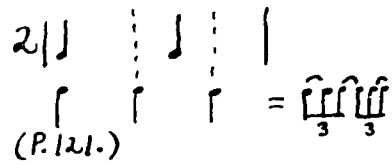
The remainder of the chapter consists of a detailed tabulation of the various possibilities of subdivision motives, including dotted patterns, triplets, and syncopations.

Chapter IV, "Overlap-Tying of Subdivided Beats" ("Uebergreifende

Zusammenziehung untergetheilter Zähleinheiten"),[12] is a brief and largely tabular treatment of the possibilities of beat-subdivisions with tied notes which overlap, or conceal, the border-lines between subdivision motives. Such tying creates syncopations which Riemann treats in the same manner at the level of the subdivision-motive as at the level of the measure-motive. This chapter, then, adds nothing essential to Riemann's theory, but extends the previously established principles to the level of the subdivision.

The title of Chapter V, "Irregular Subdivision of Tied Beats" ("Abweichende Untertheilung zusammengezogener Zähleinheiten")[13] indicates Riemann's viewpoint toward such formations as triplets, quintuplets, and septuplets. Riemann says that the customary interpretation of a traditional 2/4 measure with a triplet of three quarter-notes is as illustrated in Example 110. In that example the quarter-note triplet is derived from a syncopated tying of eighth-note triplets.

Example 110

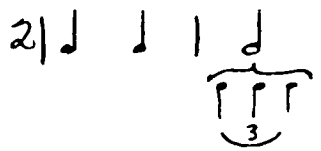


12. Pp. 110-21.

13. Pp. 121-37.

Syncopated notes, according to Riemann, must be accented to assert themselves. But he says that triplets should be performed smoothly, for to accent would be contrary to good taste and musical feeling. Therefore, the conception of the triplet as a syncopated figure is erroneous. Riemann considers the triplet as a substitute subdivision of the measure. His conception of the triplet of Example 110 is illustrated in measure two of Example 111 in which the normal two quarter notes are conceived as tied to form a half note which is then subdivided into three beats.

Example 111



(P. 122.)

Riemann says that this derivation of the triplet avoids the conception of syncopation and accent which are foreign to the triplet.[14]

Riemann is consistent in his derivation of the triplet, quintuplet, and septuplet at the level of the measure, beat, and beat-subdivision. All of these irregular figures are considered subdivisions of larger tied-note values. In this chapter, as in previous ones, Riemann

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14. Alette, op. cit., p. 232, has misunderstood Riemann's derivation of the triplet. Alette quotes and discusses an example from Musikalische Dynamik und Agogik, p. 121, to illustrate Riemann's viewpoint. But the example he quotes is one which illustrates the position to which Riemann is strongly opposed.

provides extensive tables of possibilities of irregular subdivision.

In Chapter VI, "Rests" ("Pausen"),[15] Riemann explains the negative dynamic value of musical silence, beginning with a consideration of terminal rests (Endpausen). He says that it is impossible for a listener to think in terms of measured musical silence before the beginning of a composition although rests are sometimes written there as performance aids, especially in ensemble music. But a listener frequently continues to measure silence musically after the end of a composition or part of a composition, such as a phrase, followed by rests. This is particularly true when the expectation of a certain dynamic pattern is established and then is suddenly broken off by a rest. The effect which is felt during such a rest is that of a specific dynamic value comparable to the value of the note which the rest replaces. In Example 112a the rest is felt as the completion of the last motive and has the dynamic value of the note which it replaces. The rest in Example 112b occurs at the strong point of the motive and thus has a greater dynamic value than the rest of Example 112a. Likewise, rests replacing two or more consecutive beats of a motive are felt to have the dynamic values of the notes which they replace, as illustrated in Examples 112 c and d.

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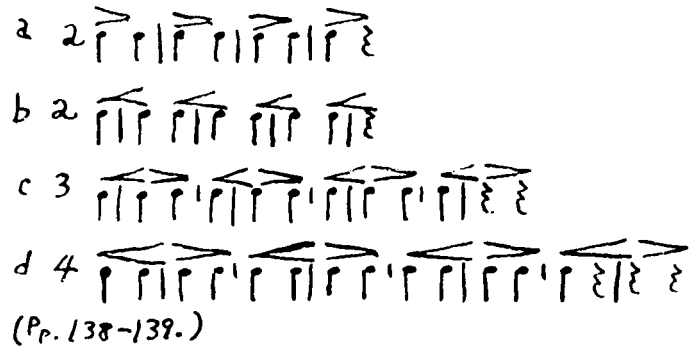
15. Pp. 137-60.

Example 112



(Pp. 138-139.)

Riemann considers the dynamic value of the rest to be negative, and he compares it with the negative visual image which one sees upon closing one's eyes after staring at a bright object. The rest in music is more than the mere absence of sound; it is, rather, the dynamic negation of sound.

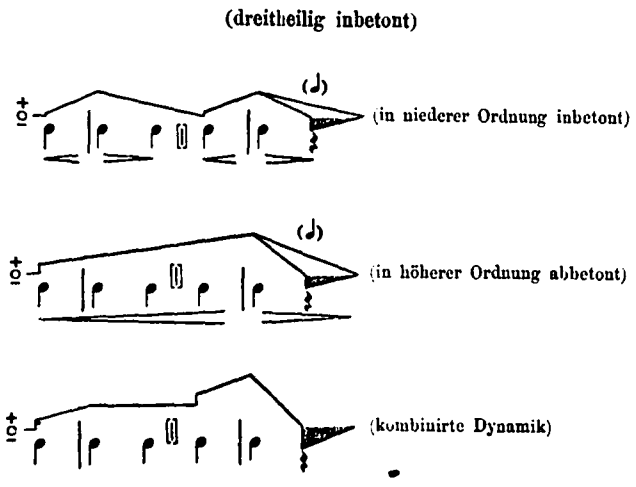
Before considering the dynamic value of the terminal rest in more detail, Riemann turns to a preliminary explanation of large metrical structures. He says that two measure-motives of two beats each may be grouped together to form one motive of four beats, and larger motives may be formed by the grouping of pairs of four-beat motives, six-beat motives, etc. It is even possible to form analogous structures of sixteen, eighteen, twenty-four, or more beats, but for large structures the term phrase is more appropriate than motive. The dynamic shading of the phrase must extend throughout its entire length as does that of the motive. Thus, the dynamic strong point of the phrase could occur at a considerable distance from the end, and the phrase could conclude with a large number

of rests. The internally stressed phrase is by far the most frequently employed type, while the initially stressed is practically nonexistent. Riemann reserves for his tenth chapter his account of the determination of phrases.

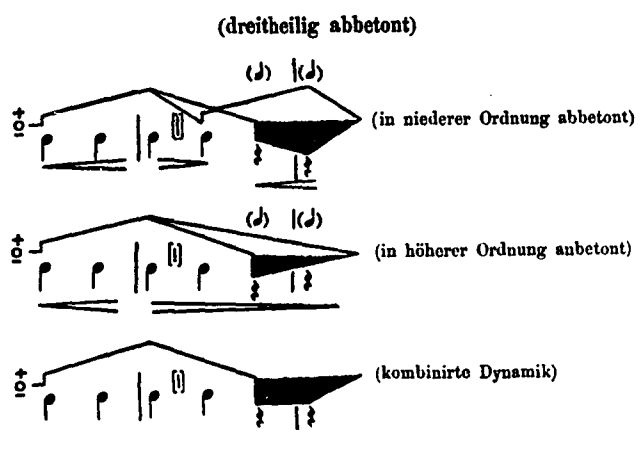
Turning to a more detailed consideration of the dynamic value of rests, Riemann distinguishes two types of terminal rest: that which falls within the diminuendo, and that which falls on the strong point. He illustrates with diagrams the dynamic values of these types in Examples 113 and 114 (see p. 211). Example 113 illustrates in the first diagram the three-part internally stressed (dreitheilig inbetont) motive in the lower order (in niederer Ordnung), in the second diagram a six-beat compound motive which is terminally stressed in the higher order (in höherer Ordnung abbetont), and in the third diagram a combination of the dynamic values (kombinirte Dynamik) shown in the first two diagrams. The zero, plus, and minus signs in the diagrams illustrate, respectively, the minimum dynamic value of sound, the positive dynamic value of sound, and the negative dynamic value of the rest. The shaded area in the negative zone clarifies the negative dynamic value of the rest, the line above the shaded area indicates the positive dynamic value of the tone had it been retained, and parentheses enclose the note which has been replaced by the rest. The reading mark is placed in brackets between the two three-part motives of the lower order. Example 114 illustrates in the first diagram the three-part terminally stressed motive in the lower order. The label anbetont in the second diagram is incorrect and should read inbetont as

this is an internally stressed motive in the higher order. The difference between the negative dynamic values of the rests in Examples 113 and 114 is clearly seen by a comparison of the sizes of the shaded areas.

Example 113

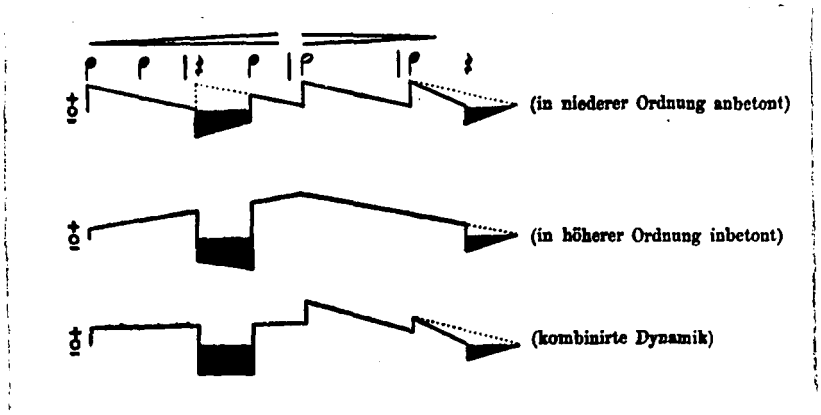


Example 114

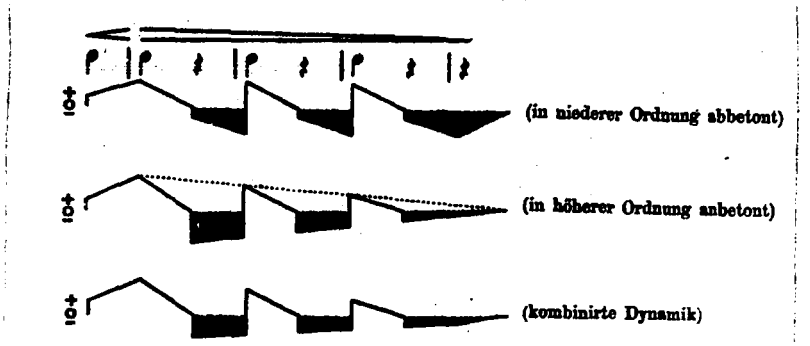


Riemann's section on internal rests (Innenpausen) is based on an extension of the principles established in reference to the terminal rest. Here the two types of rests are those falling on the strong point and within the crescendo. Example 115 illustrates in the first diagram the two-part initially stressed motive in the lower order, in the second diagram the higher order which is internally stressed, and in the third diagram the combined dynamics. Example 116 (see p. 213) illustrates in the first diagram the two-part terminally stressed motive in the lower order. The second diagram illustrates the internally stressed motive in the higher order; the erroneous label anbetont in this diagram should read inbetont. The combined dynamics are illustrated in the third diagram.

Example 115



Example 116



Riemann next considers rhythmic rests as opposed to metrical rests. The latter replace beats, while the former replace beat-subdivisions or tied beat-subdivisions. The principles of rhythmic rests are essentially the same as those of metrical rests.

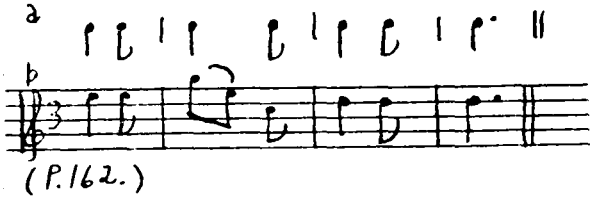
The terminally accented rest (abbtonte Pause) is the final topic of the chapter. This is the rest which replaces an expected strong note at the end of a motive. Such an effect was treated earlier under terminal rests, and this is a more detailed consideration of it which, however, adds nothing essential to the theory.

Chapter VII, "Legato and Staccato Execution of the Rhythmic Forms" ("Legato- und Staccato-Vortrag der rhythmischen Formen"),[16] begins with a discussion of "rhythm as metre." Riemann says that metre as understood in ancient Greek metrics is rhythm according to the conception of this treatise. But occasionally one finds a composition or a passage in

16. Pp. 161-71.

which a given pattern of long and short notes is constantly repeated as illustrated in Example 117a. Riemann refers to such a pattern as a basic rhythm (Grundrhythmus) but says it could be interpreted as a metre of two parts, the first of which is twice as long as the second. If the first part is occasionally subdivided into two notes, the long-short pattern must be retained by a legato execution of the subdivided long as illustrated in Example 117b, measure 2.

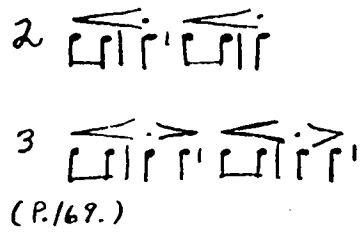
Example 117



Riemann says that groups of beat-subdivisions which are played in a legato manner like those of Example 117b should be preceded by a brief rest effected by the staccato execution of the preceding note. The same kind of rest should precede an accented note, particularly a syncopation.

When two or more short notes are followed by a longer one, Riemann advises that the latter be made staccato since the momentum of the short notes carries over to affect it. Example 118 (see p. 215) illustrates this principle.

Example 118



(P.169.)

Riemann concludes the chapter by explaining that he has intended it to be a stimulation for discussion rather than a thorough and systematic study. Although he has not intended to provide strict rules for staccato and legato execution, he says that he has no doubt that such rules could be established.

In Chapter VIII, "Melodic and Harmonic Dynamics" ("Melodische und harmonische Dynamik"),[17] Riemann adds the dimension of pitch to his theory. The first section of the chapter deals with dynamics in relation to melodic rise and fall. Riemann cites the commonly accepted rule that ascending and descending melodic lines are accompanied by crescendo and diminuendo, respectively. He points out, however, that a glance at any piece of instrumental music will show that the strong point within the phrase is not always the highest point. Thus, he refuses to accept that rule as the only one governing the relation between melody and dynamics. He cites four possible relationships between dynamics and the melodic line: (1) Crescendo with an ascending line; (2) Diminuendo with a

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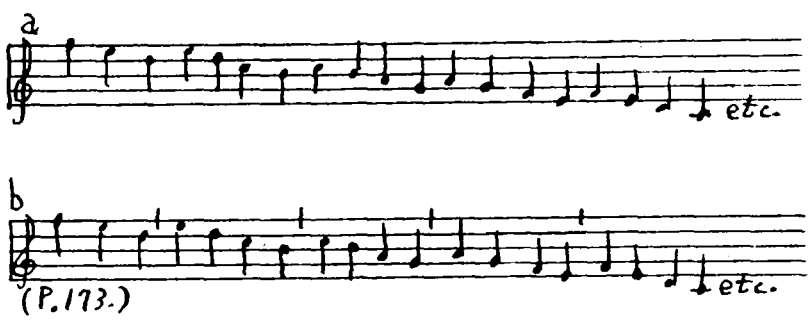
17. Pp. 171-91.

descending line; (3) Crescendo with a descending line; (4) Diminuendo with an ascending line. Riemann says further that the first two of these possibilities, which are the commonly accepted ones, are by far the most frequently employed.

While Riemann does not consider melodic direction to have a decisive influence on dynamic shading, he regards it as of utmost importance in the determination of the borders of motives. He cites Example 119 to illustrate his point. Example 119a, without dynamic shading or agogic accent, divides itself naturally by means of pitch into the four-beat motives shown in Example 119b. In the latter example, pitch has aided the determination of the borders of motives, but there is still no metrical organization and thus no dynamic shading.

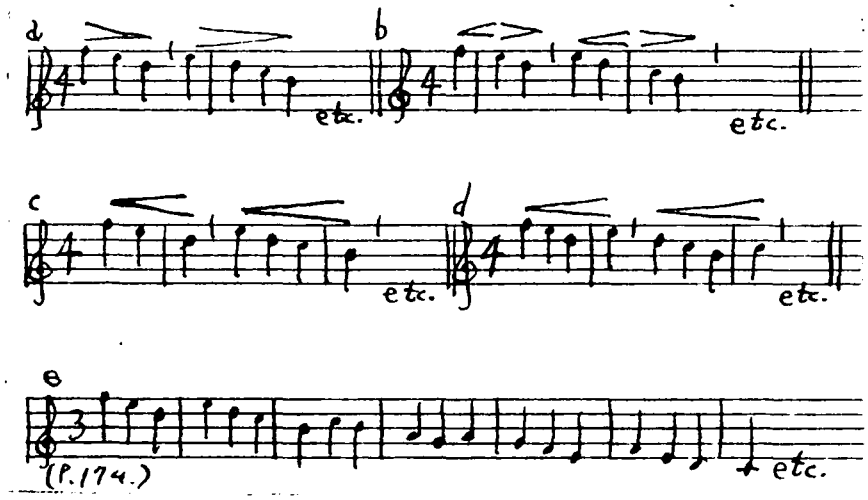
Example 119



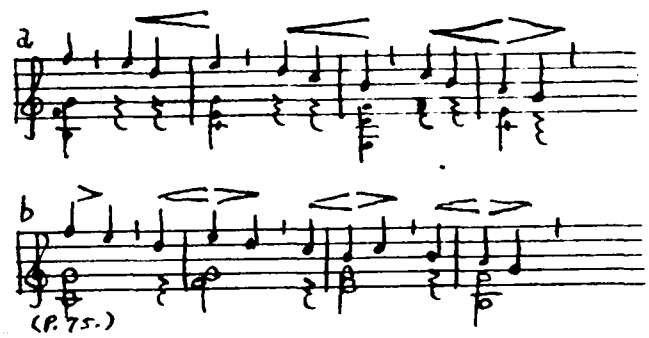
Example 119b may be divided into measure-motives as illustrated in Examples 120a-e (see p. 217). Examples 120a-d are clear since the four-beat motives are fitted into four-beat measures. In Example 120e, however, the melody is fitted into three-beat measures. This complication

requires that the harmonic element be considered in order to determine motive-borders. Examples 121a and b are two solutions of the first four measures.

Example 120



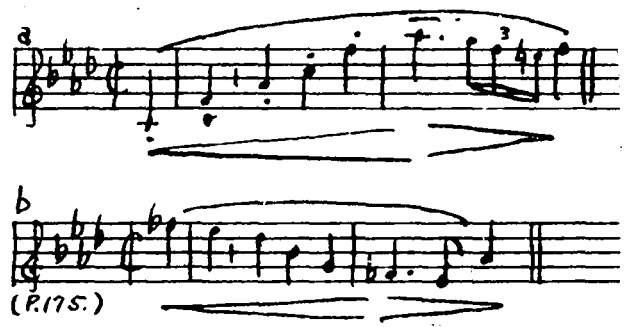
Example 121



While Riemann considers melodic direction an aid in determining the borders of the measure-motives, he considers it even more important in determining the strong point within the phrase. He says that in most cases the strong point occurs where the melodic direction changes, whether

it be at a high or a low point. In Example 122a the strong point occurs at the top of the melodic line, whereas in Example 122b it occurs at the bottom. Riemann explains that Beethoven did not notate the dynamic shadings in these examples, but their melodic shapes require the dynamics he has added.

Example 122
Beethoven: Piano Sonata, Op. 2, No. 1.



Riemann treats the dynamics of ornamentation with considerable discussion and numerous examples, but he adds nothing essential to his theory. The central point in regard to ornaments is that they must conform to the dynamic shading of the part of the phrase in which they are found.

In regard to harmonic dynamics Riemann says that the positive form of harmonic motion is progression away from the tonic, while the negative form is progression toward the tonic. Since he considers crescendo and diminuendo to be positive and negative dynamic forms respectively, he concludes that a harmonic progression away from the tonic must be accompanied by a crescendo and a progression toward the tonic by a

diminuendo. This principle also applies to modulation. As a modulation begins, a crescendo begins; a diminuendo is employed as the new tonic is approached.

The chapter closes with a brief discussion of the dynamics of the harmonic and melodic sequence. Riemann says that a sequence can never be divided into phrases, nor can it be of itself considered a phrase. It is rather an extension of a phrase, and one must await the dissolution of the sequence into freer movement before one can consider the phrase to be finished. The sequence assumes the dynamics of its position within the phrase.

Chapter IX is entitled "Polyrhythm" ("Polyrhythmik"),[18] a general term which Riemann uses to designate all music of more than one voice which is not in note-against-note style; the latter he terms homorhythm (Homorhythmik). Within the general classification of polyrhythm there are several degrees of complexity. To the simplest type Riemann applies three terms synonymously: simple polyrhythm (schlichte Polyrhythmik), polymetre (Polymetrik), and parallel metres (parallelen Metra). This simple departure from homorhythm is illustrated in Example 123 (see p. 220) where the middle voice moves regularly at the rate of one note per beat while the upper and lower voices employ the time-values of the beat-subdivision and measure, respectively.

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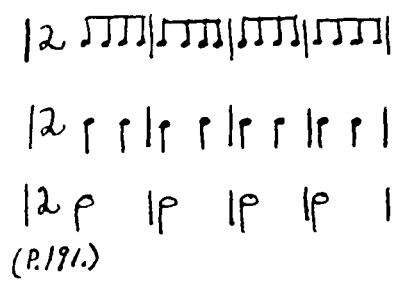
18. Pp. 191-242.

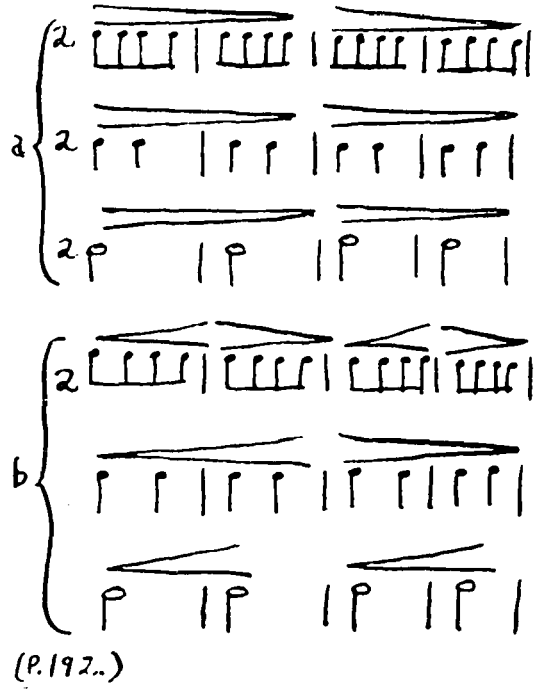
Example 123



(P.191.)

Since it is impossible for a single note to be understood as a motive, it is necessary to group the half notes of the lowest voice into a higher order which will determine the strong points in the other voices as shown in Example 124a where the motives are initially stressed and Example 124b where the higher order is terminally and the lower order internally stressed.

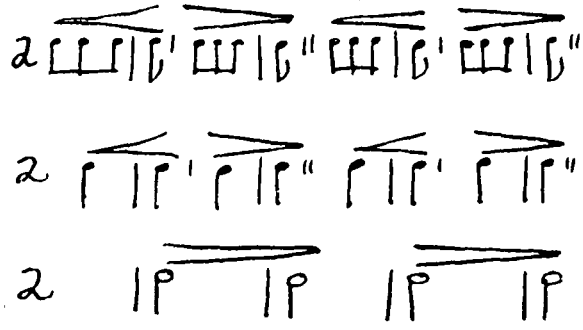
Example 124



(P.192.)

In parallel metres all voices have the same strong point, although melodic and harmonic factors can cause them to have different motive-borders and thus different forms of dynamic shading as do those in Example 125.

Example 125



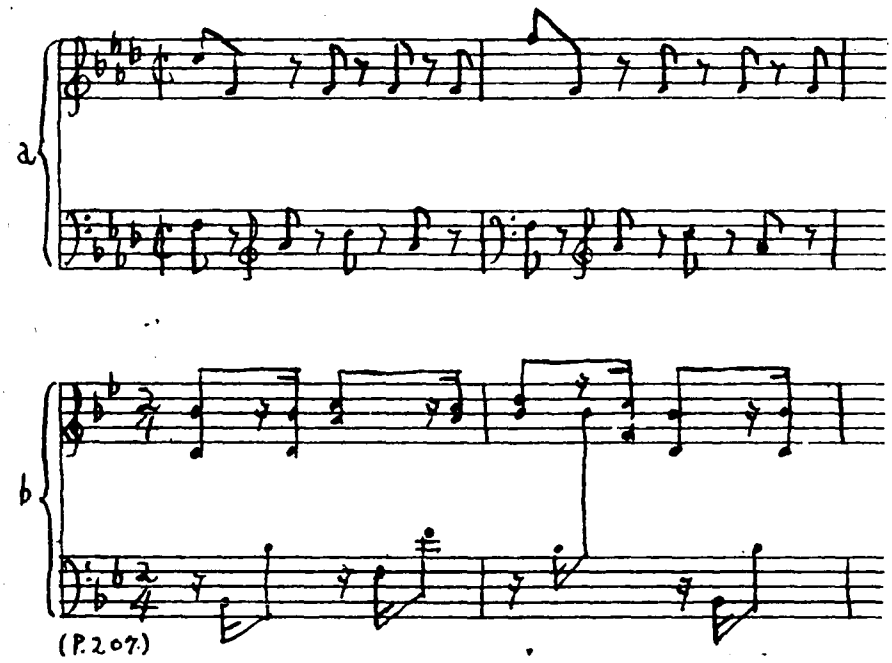
(p.194)

Riemann says that the subdivision-motives of parallel metres are nearly always internally or terminally stressed. Since the motive-borders in the lower and higher orders frequently fall at different points, the motives in the lower order serve to bind together those in the higher order. This function of the motives at the lower order Riemann compares to Hauptmann's concept of the rhythmic close.

The term complementary rhythms (komplementäre Rhythmen) refers to a type of polyrhythm in which the rhythmic motion of the total texture proceeds in terms of a uniform time value such as the beat or a certain beat-subdivision, the voices complementing one another so that a note is sounded in at least one voice of the texture on each of the uniform time

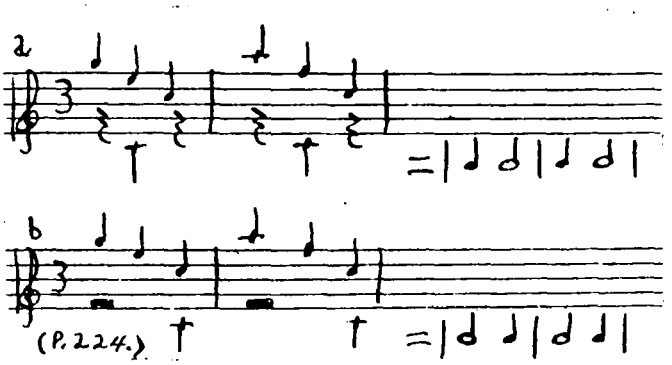
values. Examples 126a and b are two of Riemann's numerous illustrations of complementary rhythms.

Example 126



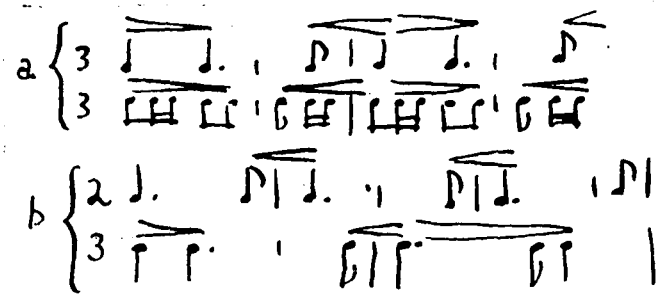
Riemann discusses still another type of polyrhythm under the heading "Completion of Basic Rhythms" ("Ergänzung zu Grundrhythmen"). A basic rhythm, according to the explanation presented at the beginning of Riemann's seventh chapter, consists of a steadily reiterated pattern such as the constant alternation of half and quarter notes. The type of polyrhythm in which the total texture results in the effect of a basic rhythm produced by the interdependence of the separate voices is the type to which Riemann refers as the completion of a basic rhythm. In Examples 127a-b (see p. 223) each voice carries part of the basic rhythm, but both voices are necessary to complete it.

Example 127



Riemann says that all of the types of polyrhythm considered above (parallel metres, complementary rhythms, and completions of basic rhythms) are understood in the sense of collective rhythm (Gesammtrhythmus). Although each voice of the texture retains some degree of independence, the collective effect is of primary importance. This is not the case with the next type of polyrhythm which he terms side rhythms (Seitenrhythmen). In these rhythms, which cannot be analyzed as any of the above types, the independence of the separate lines is of primary importance. Example 128a (see p. 224) illustrates side rhythms in which the strong point is the same in both lines, while Example 128b illustrates the most complicated form in which the strong points of the separate lines do not coincide. The latter kind of rhythmic organization employs different metres simultaneously.

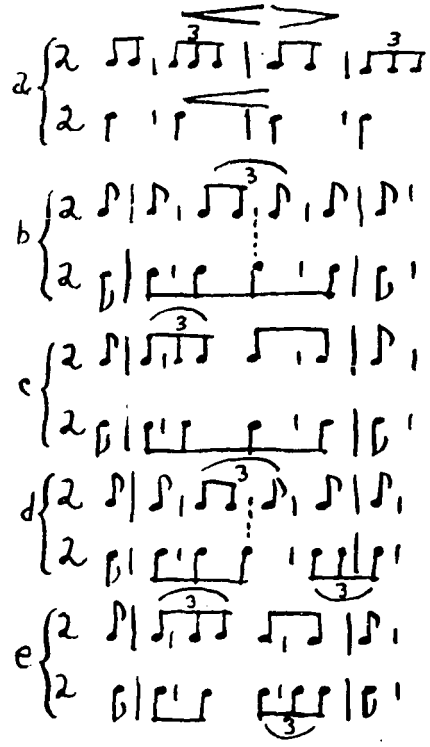
Example 128



(P. 235.)

Riemann's final consideration of polyrhythm deals with such formations as triplets and quintuplets. In Chapter V he had established the principle that the triplet should be considered a substitute subdivision. There, however, he was speaking in terms of the rhythm of a single line. In polyrhythm Riemann says that formations like those of Example 129a (see p. 225) can easily be understood as substitute subdivisions, while the more complicated ones, especially those that displace the beginning of a beat or measure, are extremely difficult to understand and perform. Because of the extreme difficulty presented by triplets which displace the beginning of a beat or measure, Riemann recommends that the performer simplify the passages. Thus Example 129b, which contains a triplet that displaces the beginning of a beat, should be changed to the form of Example 129c; likewise Example 129d should be changed to the form of Example 129e.

Example 129



(Pp. 237-240)

Chapter X, "Phrasing" ("Phrasirung"),[19] is the final chapter of the treatise. Riemann says that the unit of the higher order of metric-rhythmic structure is sometimes termed the "rhythm." Thus one may speak of rhythms of two, three, or four measures. He says, however, that the term rhythm is also commonly employed in the sense in which he has used it in this treatise. Therefore, to avoid confusion he has chosen the term "phrase" to designate the unit of the higher order.

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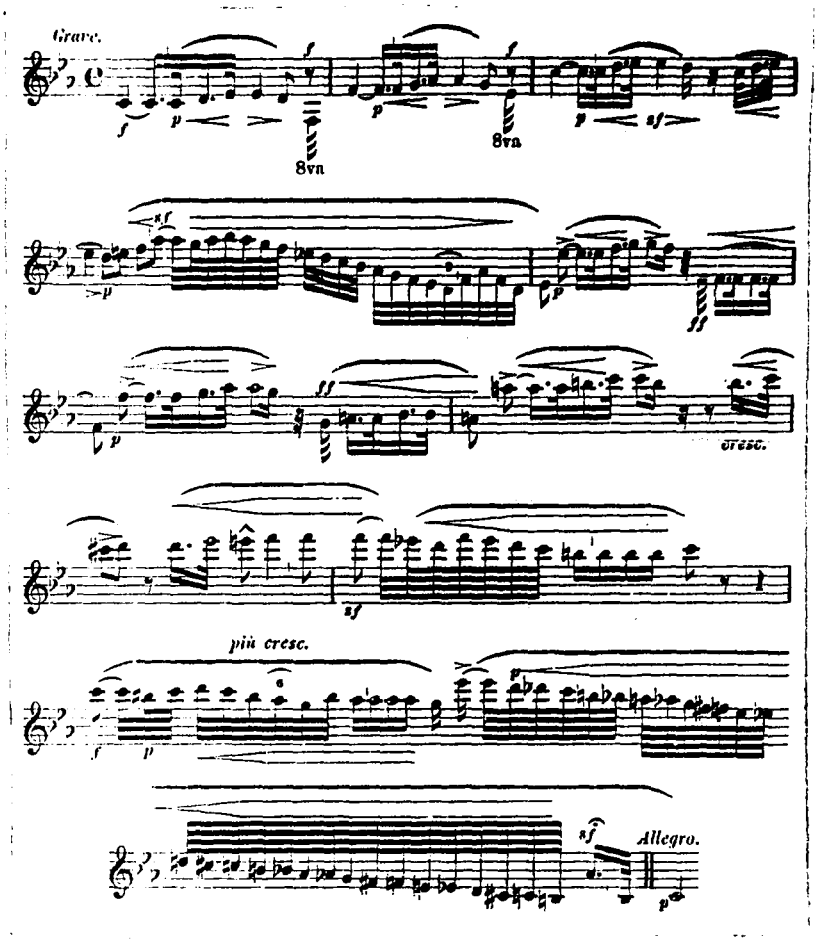
19. Pp. 243-69.

Riemann rejects the possibility of the initially accented phrase, i.e., the phrase which begins at the dynamic strong point and gradually diminishes in intensity throughout its entire length. He says that any series of initially accented phrases would lack coherence. The principal form of dynamic shading for the phrase is the internally stressed which maintains coherence through its constant growth and decline. Riemann recognizes the fact that many compositions begin with a heavy accent on the first beat of the measure. He says that such a beginning is not procatalectic, presupposing an initial upbeat, but it is an initially stressed beginning which changes immediately to an upbeat form. He says that he disagrees with the procatalectic interpretation to which Westphal adheres and which is derived from ancient metrics. The procatalectic view would presuppose a rest of a particular negative dynamic value before the beginning of the composition. Riemann rejects such a possibility since no dynamic expectation can be established before the composition begins. He says that the initially accented beginning has no other significance than the establishment of a firm point of departure for the rhythmic feeling, the unmistakable accent of a first beat in the higher order. Through the distance from this beat to the strong point of the following motive one understands immediately the metrical basis for the rhythms. When a composition begins with an upbeat the metrical basis is not clear until the second dynamic strong point.

In this chapter Riemann employs the principles established in the earlier chapters in his analyses of examples from the Beethoven

sonatas. Example 130 (see p. 228) is his analysis of the Grave at the beginning of Opus 13. The phrases in this example are short and frequently identical with the motive in length. Immediately after the accented first note the first motive begins with an upbeat and is an internally stressed form. The first motive ends on the eighth-note d'. The next motive begins on the F, and its ending is shown by the reading mark in the second measure. In the first three measures the strong points fall on the first and third beats. In measure four, however, the second strong point is displaced by the sf notated by the composer. In measure eight the phrase beginning on the d''' consists of two motives. In order to clarify the position of the strong point of the first motive, the e''', Riemann has indicated that it should be performed with an agogic accent.

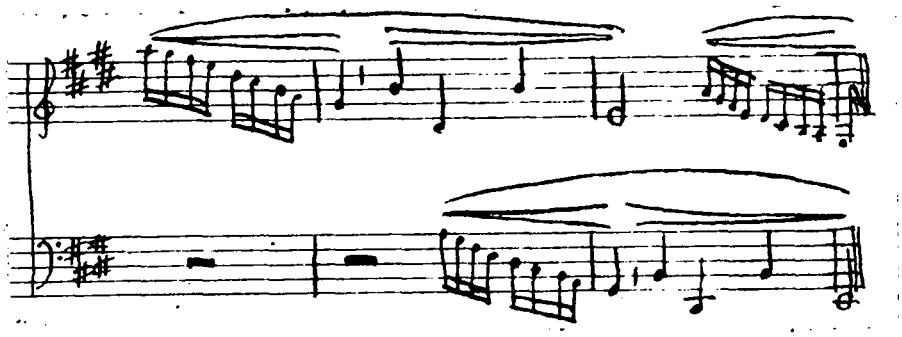
Example 130
Beethoven: Piano Sonata, Op. 13.



Turning to the problem of determining the endings of phrases, Riemann says that it is necessary to analyze the melodic and harmonic factors in order to reach a decision. He presents analyses of numerous individual examples in which cadential effect creates the phrase-endings. But Riemann does not establish rules for determining phrase-endings; on the contrary, it is not his purpose to do so, but rather to point out the necessity of a reasonable approach to phrasing.

In his section on double phrasing (Doppelphrasirung) Riemann treats examples from keyboard music in which the strong point of the phrase in one line falls at a different place than the strong point in another line. Most of his examples employ imitation as does Example 131.

Example 131



In his conclusion Riemann asserts the necessity of the use of the phrase mark as an integral element of notation. He says that his phrased editions should serve as the proper conclusion to this treatise.

Riemann's second treatise on the theory of rhythm, his System, includes some new principles together with a considerable amount of material treated in the earlier work.

In the Foreword[20] Riemann comments on the one-sidedness of current theory of music which devotes much attention to harmony but little to rhythm. He says that the fact that Moritz Hauptmann's Natur der Harmonik

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20. Pp. V-X.

und Metrik was considered by some to be a sound basis for a theory of rhythm indicates that around the middle of the nineteenth century the basic rhythmic problems were not yet clearly recognized. This is Riemann's only mention of Hauptmann in the treatise in contrast to his frequent reference to him in the earlier work. Riemann says that Rudolph Westphal was the first scholar to recognize the problems of rhythmic theory and to attempt solutions. His attempt was unsuccessful because it was too firmly rooted in the theory of ancient Greece, a theory which cannot hope to account for the complexities of modern music. Riemann emphasizes the need for an independent theory of musical rhythm rather than one borrowed from poetry.

The Introduction is subtitled "Basic Concepts: Tempo, Measure, Motive" ("Grundbegriffe: Tempo, Takt, Motiv").[21] Regarding the first of these concepts, Riemann says that rhythm requires a regularly recurring pulse. The tempo of the pulse which a listener feels most strongly in a piece of music is as close as possible to that which he considers normal rather than fast or slow. This normal tempo corresponds approximately to that of the heart beat, and may be defined as M.M. 75-80. When musical events occur at a rate of M.M. 120 or faster, the listener tends to group two or more together and refer the groups to a tempo which is nearer the normal one; likewise, when the rate of occurrence is M.M. 60 or slower he mentally subdivides the events and refers the subdivisions to the vicinity of the normal tempo.

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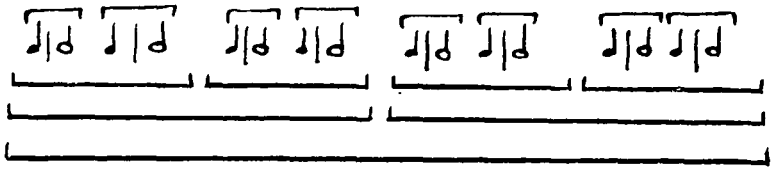
21. Pp. 1-18.

Riemann calls tempo the "rhythmic quality" (rhythmische Qualität) of music and the tendency to refer quick or slow values to the normal tempo, "relativity of the rhythmic quality" ("Relativität der rhythmischen Qualität"). It is because of the latter that quick notes ornamenting a composition in a normal tempo do not effect a change of tempo.

Riemann says that the time units which form the pulse, or beat, of music are usually composed of several notes grouped together. It is only because the listener perceives a relation among the notes which are sounded during the beat that he can group them and speak of a beat. Just as the listener perceives relations among the notes of a beat, he also perceives relations among the beats themselves. The latter relations are not in the realm of rhythmical quality but in that of metrical quality (metrische Qualität) which concerns the varying weights of beats.

With reference to metrical weights, Riemann establishes a hierarchy based on the upbeat principle: a first event (beat, measure, group of measures, etc.) is a beginning while a second is an answer or a conclusion. In Example 132 (see p. 232), measure 2 is an answer to measure 1 and is thus metrically heavier; measures 3-4 answer 1-2, and measure 4 is heavier than measure 2; measures 5-8 answer 1-4, measure 6 is heavier than measure 5, and measure 8 is the heaviest of all. Thus, the four classes of weights are: (1) Measures 1,3,5, and 7; (2) Measures 2 and 6; (3) Measure 4; (4) Measure 8.

Example 132



(P. 13.)

Example 132 illustrates the principle known as Vierhebigkeit, a term which Riemann does not use in this treatise but which he uses in a subsequent publication with reference to the principle established in this treatise.[22]

Riemann defines the motive as follows:

> A musical motive ... is the musical content of a medium time unit suitable to our comprehension [e.g., a measure or beat] as we have discovered it to be the carrier of rhythm, thus, by no means a mere rhythmic structure, but rather an all inclusive definite musical concrete in which melody, harmony, rhythm, even dynamics, tone color, etc. participate.... A motive is thus a melodic fragment which in itself forms the smallest unit of independent expressive significance, the single gesture of musical expression....[23]

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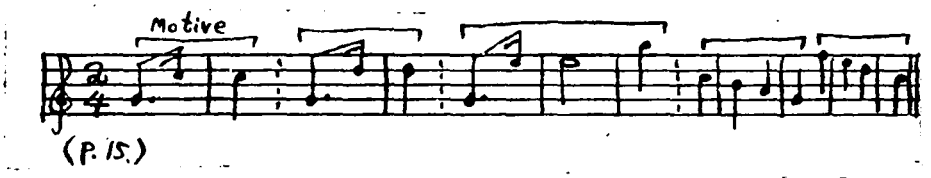
22. "Die Beck-Aubry'sche 'modale Interpretation' der Traubadourmelodien," Sammelbände der Internationalen Musikgesellschaft, X (1910), 569-89. See also concerning Vierhebigkeit: Willi Apel, Harvard Dictionary of Music (Cambridge, 1947), p. 792. Curt Sachs, op. cit., p. 174.

23. Pp. 13-14. Ein musikalisches Motiv ... ist der musikalische Inhalt einer unserer Auffassung bequemen mittleren Zeiteinheit, wie wir sie als Träger des Rhythmus eruiert haben, also keineswegs ein nur rhythmisches Gebilde, sondern vielmehr ein nach allen Seiten hin bestimmtes musikalisches Konkrete, an welchem Melodie, Harmonie, Rhythmus, ja Dynamik, Klangfarbe usw. Anteil haben.... Ein Motiv ist also ein Melodierbruchstück, das für sich eine kleinste Einheit von selbständiger Ausdrucksbedeutung bildet, die einzelne Geste des musikalischen Ausdrucks....

He says further that all melodic intervals within a motive are to be considered as motion from one tone to another rather than as separate tones, and he refers to Aristexenos who he says recognized that to skip from one tone of a scale to another should be considered a motion passing through all of the intervening tones. This concept of continuous motion applies only to the notes within a motive, while the divisions between motives are considered "dead" spots as illustrated in Example 133.

Example 133



The main body of the treatise is divided into two parts, each of which contains three chapters. Part I is entitled "Rhythm. Theory of Motive-Formation in Equal and Mixed Values "("Rhythmik. Lehre von der Motivbildung in gleichen und gemischten Werten"), and Part II is entitled "Metre. Theory of Musical Period-Structure" ("Metrik. Lehre von musikalischen Satzbau").

Chapter I, "Simple Subdividing and Simple Tying" ("Schlichte Unterteilung und schlichte Zusammenziegung"),[24] begins with an illustration of Riemann's approach to analysis in terms of the normal beat and of groupings of the beats into "real" measures as opposed to notated measures.

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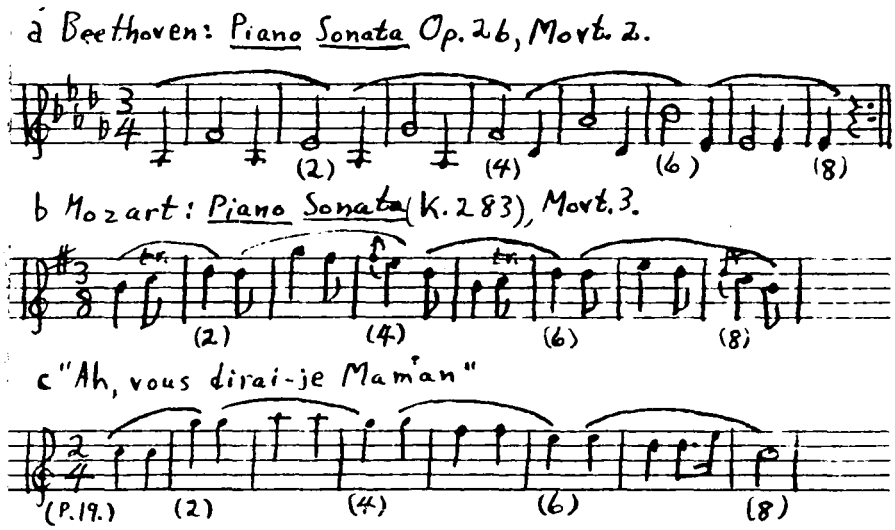
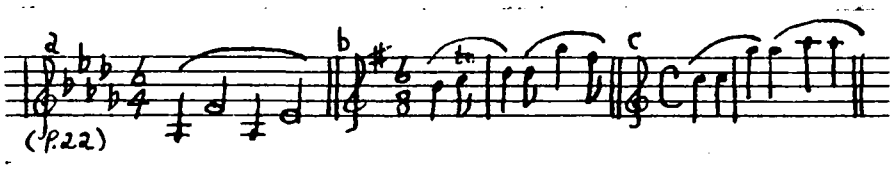
24. Pp. 19-87.

Examples 134a-c illustrate notated measures which, according to Riemann, are really beats. He says that it is necessary to add the phrase marks as seen in those examples in order to indicate the groupings of the beats, and he has also added numbers below the notated measures to indicate which are the heaviest. But he says that in the interests of clarity one should notate these examples in larger measures. In so doing, however, it is essential to retain the proper bar lines. Since the bar line implies metrical weight and the even-numbered measures in the original notation are the heaviest ones, it follows that the bar lines at the beginnings of those measures should be retained. Thus the examples should begin with upbeats and close on the strongest beat as illustrated in Examples 135a-c. These latter illustrate, according to Riemann, the real measures of the compositions.

Example 134
Beethoven: Piano Sonata, Op. 26, Movt. 2.

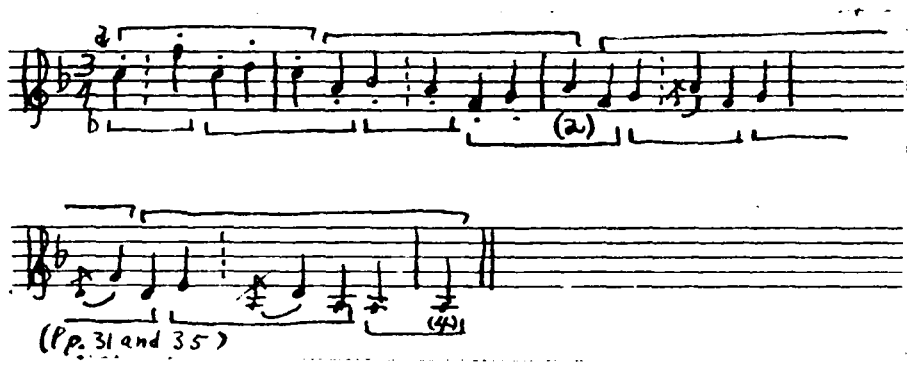


Example 135



Riemann begins his consideration of the determination of motives with detailed discussions of several melodies in triple measures with equal time values. Example 136 illustrates two interpretations of a melody which is discussed at greater length than most. The dotted bar lines in this example indicate the positions of original bar lines which Riemann has removed to clarify the extent of the real measures. He points out that in motive-structure a (i.e., the brackets above the staff) the first motive has a single upbeat while the subsequent ones have two-note upbeats. He says that this interpretation is one possibility, but that it is inconsistent to begin the first motive with an upbeat of one quarter note and all of the others with upbeats of two quarter notes. Furthermore, the appoggiaturas (Vorschläge) of the fifth, sixth, and seventh original measures are insufficiently emphasized in this interpretation. Motive-structure b is an alternative and preferable interpretation. It is consistent in its alternation between one and two quarter-note upbeats for the first four motives, and it then changes to upbeats of one quarter note for the remaining motives, thus placing the appoggiaturas at the heaviest points of the measures.

Example 136
Beethoven: Symphony No. 6, Movt. 3.



Riemann discusses the relative merits of alternative motive structures in only a few of his analyses. Occasionally he takes into consideration harmonic and other aspects of texture in such discussions, but for the large majority of his analyses he presents only one motive structure as an illustration of a certain type of motive without presenting reasons for his particular motivic interpretation. The remainder of Chapter I treats material found in Riemann's Dynamik such as the various possibilities of internally and terminally accented motives at the level of the beat and beat-subdivision, simple instances of motives with tied notes, and the triplet and quintuplet. These are all illustrated by examples from actual music as well as by abstract schemes.

Chapter II, "Conflicting Structures in Tying and Subdividing" ("Konfliktbildungen der Zusammenziehung und Unterteilung"),[25] begins with a treatment of syncopation which is simpler than that presented in the

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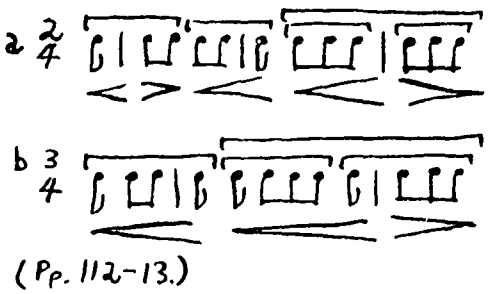
25. Pp. 87-155.

earlier treatise. Riemann defines syncopation as follows: "A syncopation arises if a light time-value is tied with the heavy one which follows it to form one note."[26] Syncopations at various levels of the beat-subdivision are illustrated, but there is no mention of the differentiation between light and heavy syncopations as there was in Riemann's Dynamik.

The triplet and the rest are treated in Chapter II much as they were in the earlier treatise.

Riemann says that in most melodies a motive that is shorter than the measure is followed by one that is longer, i.e., a complementing one, as is the case in Example 136, motive-structure b. But he says that there are instances in which a given melodic motive which is longer or shorter than the measure is repeated several times. When such is the case, each repetition of the motive receives a different dynamic shading as is illustrated in Examples 137a and b.

Example 137

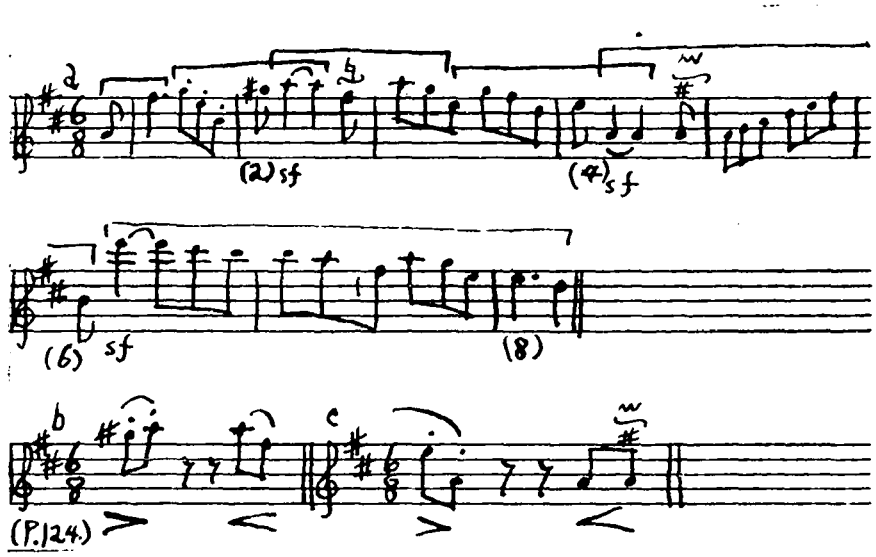


(Pp. 112-13.)

26. P. 88. Wird ein leichter Zeitwert mit dem ihm folgenden schweren in eine Note zusammengezogen, so entsteht eine Synkope.

Motive-crossing (Motivverschränkung) takes place when a note belongs to two successive motives. Example 138a illustrates motive-crossing in measures 2 and 4. Riemann says that measure 2 is a tied version of Example 138b, and likewise measure 4 is a tied version of Example 138c. He does not consider measure 6 as containing a motive-crossing because the distance between the b' and d''' is too great to consider it analogous to the corresponding places in measures 2 and 4.

Example 138
Beethoven: Violon Sonata, Op. 12, No. 1



Riemann says that there are two steps in deciding whether a note constitutes a motive-crossing: (1) Determine whether a separation can be made either before or after the note and (2) Determine whether the note could be separated into two parts, one of which would belong to the first and one to the second motive.

Chapter III, "Polyrhythm" ("Polyrhythmik"),[27] corresponds closely in content and terminology with the chapter bearing the same name in the earlier treatise.

Part II deals with metre, and it is here that Riemann presents a detailed treatment of the principles of Vierhebigkeit.

Chapter IV is entitled "Simple Symmetrical Structure. Weight-determination of Beginning-Values" ("Schlicht symmetricher Aufbau. Gewichtsbestimmung der Anfangswerte").[28] Riemann emphasizes his basic assumption that a second note, measure, or group of measures is an answer or conclusion to a first and that as such its metrical weight is heavier than the first. This was also pointed out in the introduction (see p. 44) where the relations between notes, measures, and measure groups were illustrated and explained in terms of a hierarchy of weights. Riemann says that the four-measure half-period (Halbsatz) and eight-measure period (Satz) are to be considered norms of musical structure.[29] He presents three reasons for his restriction of the normal metrical structure to eight real measures: (1) The eight-measure period has been considered

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27. Pp. 155-95.

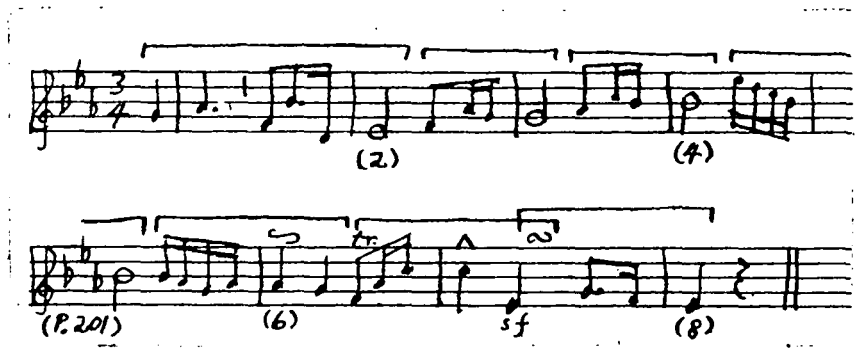
28. Pp. 196-241.

29. Riemann employs the terms Satz and Periode synonymously. The present writer will translate these as "period." Thus, the term Halbsatz will be translated as "half-period." Riemann uses the terms Vordersatz and Nachsatz to designate the first and last halves of periods. He does not use the term Phrase in this treatise, and his usage of it in the earlier treatise does not correspond exactly to any of these terms.

normal for at least the past two hundred years; (2) For at least the past four hundred years simple dance compositions have employed eight-measure periods with repetitions; (3) With the exception of simple dance-like compositions, one seldom finds series of eight-measure periods without long insertions between them. Thus, it is normal for four measures to be answered by four more measures to form an eight-measure period, but it is not normal for eight measures to be answered by eight, for sixteen to be answered by sixteen, etc. When a second eight-measure period follows a first, it tends to be a new whole rather than an answering or completing unit.

Example 139 is an illustration of Riemann's analysis of the simple eight-measure period. This period corresponds to the scheme of Example 132 (see p. 232).

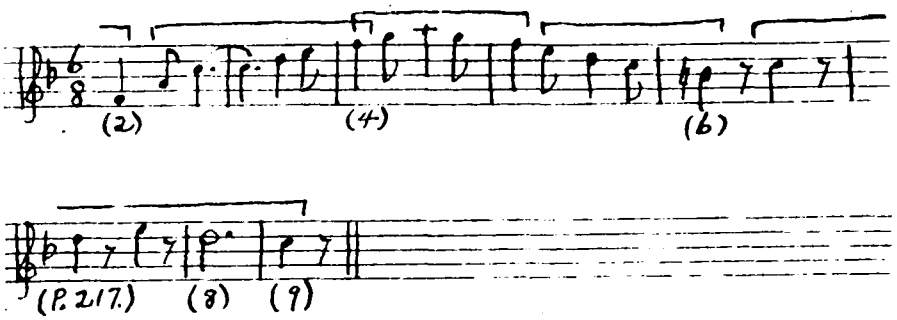
Example 139
Beethoven: Violin Sonata, Op. 30, No. 3.



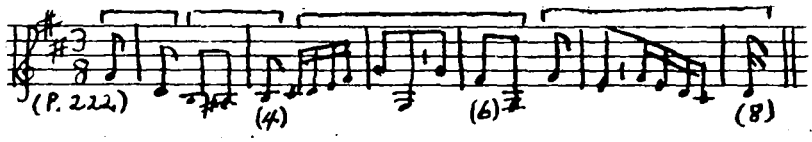
Riemann recognizes some periods as beginning on a metrically strong measure and closing on a weak measure, i.e., closing with a feminine ending. Since a metrically strong measure is considered a second,

answering a first, a composition beginning on a metrically strong measure must be said to have the metrical weight either of the second, fourth, sixth, or eighth measure of a period. Likewise, periods may be said to begin on measures having weights comparable to any of the odd-numbered, light measures. The first and most important task is to determine the location of the measure comparable in weight to an eighth measure of a period. Then the preceding measures may be designated accordingly. Example 140 begins on the metrical weight of a second measure, and it closes with a feminine ending on the ninth measure with the eighth measure assuming its role of the heaviest measure of the period. Riemann designates a motive-crossing on the first note of the measure numbered (4) Example 141 (see p. 242) begins on an eighth-note upbeat to the weight of a third measure. Example 142 (see p. 242) begins with the weight of a fifth measure, and Example 143 (see p. 242) with that of an eighth measure.

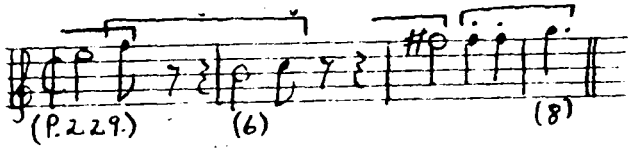
Example 140
Beethoven: Violin Sonata, Op, 12, No. 1.



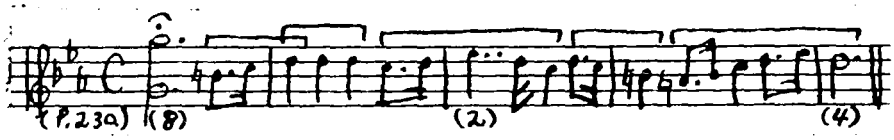
Example 141
Bach: Well-Tempered Clavier, II, 24.



Example 142
Beethoven: Symphony No. 1.

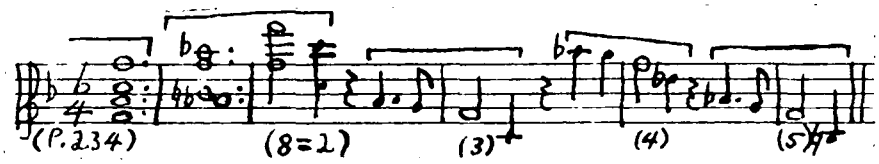


Example 143
Schubert: Impromptu, Op. 90, No. 1.



Riemann concludes Chapter IV with a discussion of introductory units termed Vorhänge. Such units sometimes consist of several measures, but more often they are simply formed of one or two chords. They may occur at beginnings of compositions or beginnings of periods within compositions. Example 144 (see p. 243) illustrates a two-measure Vorhang which closes on a measure with the double meaning of an eighth and a second measure of a period.

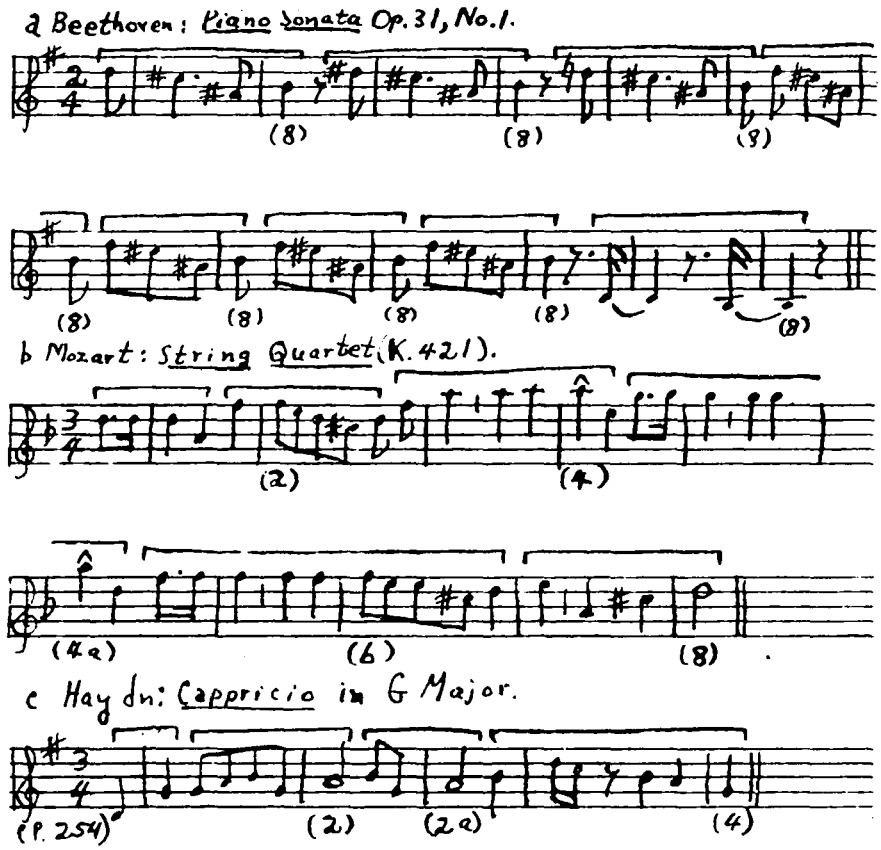
Example 144
Brahms: Symphony No. 3



Chapter V is entitled "Extension of Periods through Codas and Interpolations" ("Erweiterungen der Sätze durch Anhänge und Einschaltungen").[30] Riemann points out that the common principle of extending a composition by means of a coda is also employed at the level of the period, the half-period, and even the two-measure group. In many of the examples which Riemann has chosen to illustrate this principle, the codas are effected by means of repetitions of motives which are also considered repetitions of metrical weights. Example 145a (see p. 244) illustrates the coda following the eighth measure of the period. Each (8) indicates a measure which is of a metrical weight comparable to the eighth measure of a period. Example 145b illustrates the coda following the fourth measure of a period. Riemann uses both the terms coda and interpolation for such structures. Example 145c illustrates the coda or interpolation following the second measure.

30. Pp. 241-70.

Example 145
Beethoven: Piano Sonata, Op. 31, No. 1.



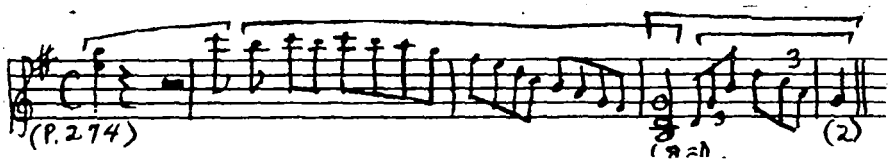
Riemann says that other measures, both light and heavy, are also followed by codas. The light measures, however, are less frequently followed by codas than the heavy measures, with the exception of the penultimate measure of the period which often employs a coda to strengthen the cadence.

Chapter VI, the final chapter of the treatise, is entitled "Shortening of the period through Crossings and Elisions" ("Verkürzung der Sätze durch Verschränkungen und Elisionen").[31] In Chapter II Riemann

31. Pp. 270-304.

treated motive-crossing, in which a given note was interpreted both as the final note of one motive and the initial note of the following one. Here he applies the same principle on a higher level. He says that the simplest and clearest crossing to understand is the crossing of periods in which a measure is given the double interpretation of the eighth measure of one period and the first measure of the following period. Such crossing, he says, is commonly found in the sonata form between the close of the development and the beginning of the recapitulation, as is shown in Example 146.

Example 146
Beethoven: Piano Sonata, Op. 49, No. 2.



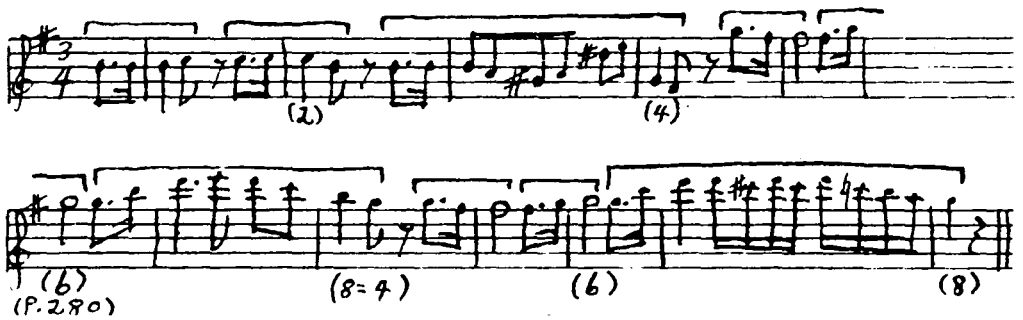
Riemann says that just as the eighth measure of a period can equal the first or second of the following period, it can also equal the fourth measure of a period. When this is the case, measures 4-8 are retrospectively interpreted as carrying the metrical weights of measures 1-4. Such retrospective interpretation (Zurückdeutung) results in periods of three phrases. This is illustrated in measure numbers as follows:

1-4;5-8 He says that such analysis is appropriate for the song form 1-4;5-8.

in which a four-measure half-period is interpolated between two statements of an eight-measure period. Example 147 illustrates this structure in

which measures 5-8 equal 1-4.

Example 147
Beethoven: Piano Sonata, Op. 49, No. 2.

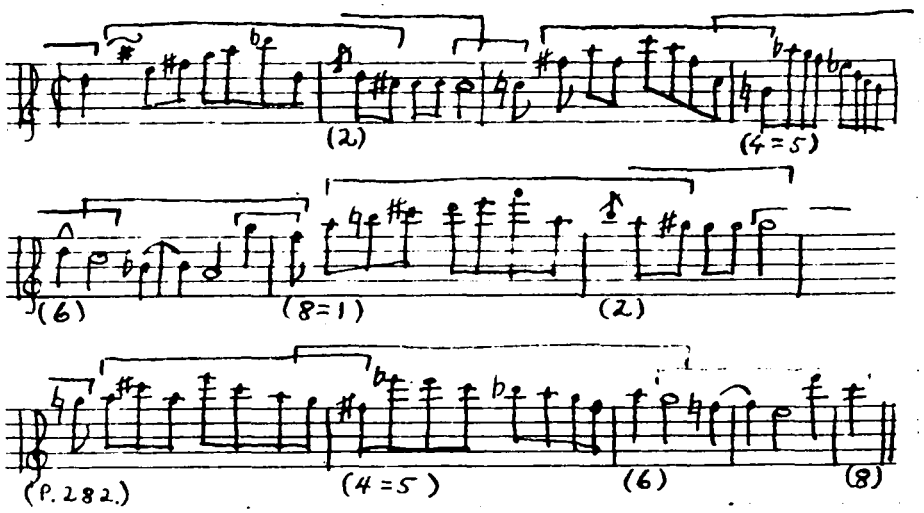


Another instance of retrospective interpretation results in half-periods of three rather than the normal two groups of two-measures: 1-2;3-4 And still another instance results in extending the two-
1-2;3-4.

measure group to three measures: 1-2
1-2.

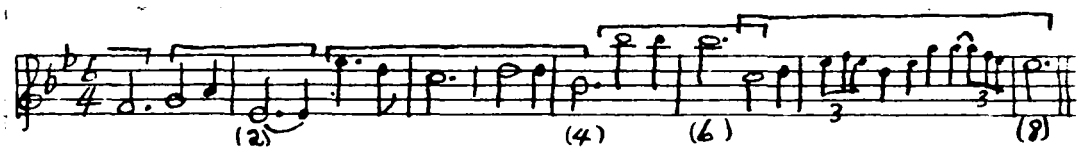
The crossing of the half-period may also involve a forward change of interpretation (vorwärts umdeutende Halbsatzverschränkung) which involves the double interpretation of a measure carrying both its own weight and that of the following measure, or the measure after the following measure. Example 148 (see p. 247) illustrates both the crossing of the half-period 4=5) and that of the period (8=1). Riemann's open bracket at the beginning of the example indicates an incomplete motive while a similar designation in measure 2 indicates an extension of a motive.

Example 148
Beethoven: Piano Sonata, Op. 2, No. 3.

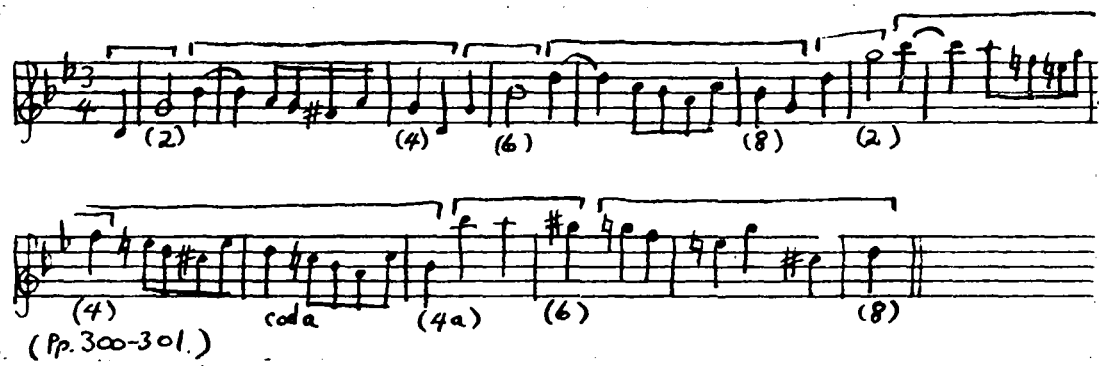


In none of the instances of crossing thus far has there been any question of omitted measures, or elisions. The latter is an omission of a measure rather than a double interpretation. In Example 149 the fifth measure, metrically speaking, has been omitted, and in Example 150 (see p. 248), which begins on the second measure, the fifth measure has been omitted from the first period, while the second period omits the first measure, employs a coda to the fourth measure, and omits the fifth measure.

Example 149
Chopin: Ballade, No. 1, Op. 23.



Example 150
Mozart: Symphony No. 40.



Summary

Riemann's Dynamik is speculative theory in its use of Hegelian dialectics and its frequent effort to come to terms with Moritz Hauptmann's theory. It is also practical in its numerous recommendations for performance and its tables of metrical and rhythmic possibilities to be used for composition exercises comparable to harmonic symbols and figured basses in the field of harmony.

In this treatise Riemann disputes Hauptmann's application of Hegelian dialectics to harmony and metre. In reference to the latter he says that the continuous tone is the thesis, the division of the tone into equal parts the antithesis, and the grouping of these parts into larger units the synthesis.

Riemann's consideration of dynamics and agogics is based on the assumption that the essence of metre and rhythm is change of intensity and

rapidity of series of tones. Every motive, or smallest member of a composition, has its own dynamic and agogic life. Three types of motives are possible: initially, terminally, and internally stressed. The first of the three is considered unsatisfactory, for the listener will interpret it as one of the other two. Thus, only upbeat motives are acceptable.

No definitions of metre and rhythm are presented in this treatise, but Riemann's conception of these elements, derived from statements in this and his other writings, is that metre includes the measure considered in equal note-values, the relative weights of these note-values to each other, and the significance of the weights for the construction of larger symmetries. Rhythm is conceived as the motion of short and long notes within the metrical scheme.

Syncopation occurs when the border-line between two motives is concealed by tied notes. There are light and heavy syncopations. Those which Riemann terms light are formations not commonly referred to as syncopations, and he does not mention them in his later treatise.

Riemann says that the strong point of the motive at the level of the measure should be performed with the strongest dynamic emphasis and should be slightly lengthened by an agogic accent. Since dynamic shading extends throughout a measure-motive, the strong point of the subdivision-motive loses its dynamic emphasis in performance and should be marked only by an agogic accent.

The quarter-note triplet filling a 2/4 measure is interpreted by Riemann not as a syncopation but as a new subdivision of the measure.

It should be performed smoothly rather than with the accents necessary for the execution of syncopations.

Riemann considers the rest as a negative dynamic value rather than the mere absence of sound. The dynamic value of a rest is the same as that of the note it replaces.

Melodic direction is not considered by Riemann to have a decisive influence on dynamic shading. The motive is the chief factor determining dynamics. But patterns of pitches are to be considered in marking motive-borders, and melodic direction is also important in determining the strong point of a phrase which usually occurs where the melodic direction changes. Harmony also affects dynamic shading, as progression away from a tonic requires crescendo while that toward a tonic requires diminuendo.

Polyrhythm is a term used to designate all music of more than one voice which is not in note-against-note style. The latter style is termed homorhythm. Riemann discusses five kinds of polyrhythm: (1) Simple polyrhythm, polymetre, or parallel metres; (2) Complementary rhythm; (3) Completion of basic rhythms; (4) Side rhythms; (5) Substitute subdivisions such as triplets and quintuplets. With regard to the performance of triplets which, in notation, displace the first beat of a measure, Riemann recommends that the performer execute the triplet as though it did not displace the first beat of the measure. Ease of comprehension and performance apparently justifies this falsification of the composer's intention.

In his treatment of phrasing Riemann says that the phrase is a

higher order of structure than the motive, but he does not specify the length of the phrase nor does he attempt to present any rules for phrase determination. His examples show the phrase to consist of one or more measure-motives. His chapter on the phrase and phrasing is less systematic than the previous ones. The determination of phrases seems to be more a matter of intuition than theory. The upbeat principle, however, is consistently followed. If a phrase begins with a downbeat, the motive-structure changes immediately thereafter to the upbeat form.

Riemann's later treatise, System, begins with a consideration of the three basic concepts on which the remainder of the treatise rests: tempo, measure, and motive. The real tempo of a composition is the beat which is nearest the normal tempo, defined as M.M. 75-80. The notated measures of a composition might be merely beats. Real measures are groups of real beats.

Riemann establishes a hierarchy of metrical weights based on the upbeat principle according to which a first beat, measure, or group of measures is a beginning to which a second is a conclusion or answer. The essential property of the principle of Vierhebigkeit is the eight-measure period in which there are four strong points, measures 2, 4, 6, and 8, of which measure 4 is stronger than measures 2 and 6, and measure 8 is the strongest of all. (See Example 132, page 232.)

The motive is defined as "the musical content of a medium time unit, suitable to our comprehension...," such as a measure or a beat. Thus, the motive is not determined merely by rhythm, but by all of the

elements of music. Melodic motion within a motive is considered to be continuous while the border-lines between motives are "dead" spots.

Riemann advises re-notating compositions which use measures as real beats. Such re-notation consists of the removal of bar lines designating the lighter beats, i.e., of notating the piece in larger measures in such a manner that bar lines indicate only heavy beats.

No rules are presented for the determination of motives. Riemann gives reasons for his choice of motive-structure in only a few of the numerous examples analyzed. His reasons in these few instances are based chiefly on repeated or analogous melodic and rhythmic patterns, although he occasionally takes harmonic and textural aspects into consideration. The only consistent principle which may be gleaned from his examples is that motives begin with upbeats. Aside from this principle Riemann's determination of motives seems to be based on his personal musical feeling rather than on theory.

Motive-crossing takes place when a note belongs to two successive motives.

Riemann's discussion of metre is devoted primarily to the systematic exposition of the principles of Vierhebigkeit. The eight-measure period, consisting of four principal strong points, is taken to be the norm of all musical structure. In the simplest period the first measure is light and the eighth is strong. But an eight-measure period may begin on a strong measure and end, with a feminine ending, on a weak measure. When this is the case the period is said to begin with the metrical weight

of a second and end with that of a ninth measure. Likewise, periods may be said to begin with the metrical weight of any other measure of the period. The concepts of coda and interpolation are also employed in such a manner that periods of nine, ten, eleven, or more measures may be interpreted as falling within an essentially eight-measure scheme.

Period-crossing, half-period crossing, crossings of measures within the two-measure group, and elisions are all concepts employed to explain departures from the eight-measure period. With the aid of the full system of Vierhebigkeit it is possible to explain a unit of practically any number of measures as a modification of the eight-measure period.

Riemann's principle of Vierhebigkeit and that of Auftakt with which it is closely related are useful in analyzing a composition in which four- and eight-measure units have been established by the composer as normal and from which he only occasionally departs. But such devious explanations of simple structures like that of the Minuet of Mozart's Symphony No. 40 (Example 150, see p. 248) are unnecessarily complicated. Vierhebigkeit becomes an encumbrance rather than an aid to musical understanding when applied to compositions in which the norm it assumes is not present.

CHAPTER VI

THEODOR WIEHMAYER: A SYNTHESIS OF PREVIOUS THEORIES

Theodor Wiehmayer (1870-1947) studied composition at the Leipzig Conservatory under Carl Reinecke and piano under Martin Krause. He traveled extensively as a concert pianist and taught at the Leipzig Conservatory (1902-1906) and the Stuttgart Conservatory (1908-1925).[1] His published works include compositions for organ, piano, and mixed chorus, several periodical articles concerning the theory of rhythm, and two treatises, Musikalische Rhythmik und Metrik,[2] and Musikalische Formenlehre in Analysen.[3]

Wiehmayer intends his Rhythmik to be both a correction and synthesis of earlier theories, especially those by Hauptmann, Westphal, and Riemann. In the Foreword[4] he says that in spite of the sudden burst of activity in the field of rhythmic theory in the nineteenth century there

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1. Baker, pp. 1793-94. Moser, Mus. Lex. (4th ed.), II, 1429-30. Riemann, op. cit., II, 2024.

2. Magdeburg, 1917. Hereafter this treatise will be referred to as Wiehmayer's Rhythmik.

3. Magdeburg, 1927.

4. Pp. V-XIII.

is still no generally valid theoretical basis for the study of musical rhythm. In fact he considers the confusion to be greater than ever regarding such matters as upbeats, motives, phrases, and periods. He says that Westphal's treatises contain a core of valuable material but that his lack of musical training and his zeal to demonstrate a complete correspondence between ancient theory and modern music limited the success of his work. Wiehmayer considers Riemann's chief service to have been that of emphasizing the danger of routine accentuation and the significance of upbeat forms. But he says that Riemann's errors were to consider the upbeat forms as obligatory, to base his entire system of accentuation upon them, and to emphasize the eight-measure period to the exclusion of other possibilities.

Previous treatises, according to Wiehmayer, have emphasized the systematic, scholarly approach at the expense of the musical. In his work he intends to draw freely from and synthesize the valid results of earlier works while placing greater stress on the role of musical feeling, as opposed to strict rules, in the solution of rhythmic and metrical problems.

Wiehmayer says that the accent theory, supported by Hauptmann but rejected by Riemann, is to form the basis of his treatise. He recognizes that the accent theory has fallen into disrepute from time to time as a result of certain theorists' having failed to understand its deeper meaning and having overstepped the boundaries of its usefulness. He considers A. B. Marx as one theorist among many of the nineteenth century who

carried the accent theory to such lengths that its application became a mere game. He cites an example by Marx (see Chapter I, Example 16, p. 20) to illustrate the extreme use of the accent theory. But he notes that Marx did not expect all of the accents to be rigorously observed in actual performance. They are to flow into one another creating gradual dynamic shadings. Since the accent theory forms a basis for a system of dynamic shadings, Riemann was not justified in asserting that he had replaced it with a new theory based on dynamic shadings. There is no essential contradiction between the theory of accents and that of dynamic shadings--the former is the skeleton, the latter the living musical form. A clear distinction between these two manners of stress can provide the key to a deeper penetration into the problems of musical rhythm and metre. The accent theory is tc music as scansion is to poetry. Neither music nor poetry is intended to be executed in strict accord with the theoretical scheme of accents.

In the Introduction[5] Wiehmayer stresses the close relation between music and poetry and supports this view by quotations from Westphal's Elemente.

Wiehmayer's treatise is divided into seven chapters of which Chapter I, "Sketch of Prosody" ("Abriss der Verslehre")[6] depends heavily upon Part I of Westphal's Theorie. But Wiehmayer's account of prosody is

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5. Pp. 1-3.

6. Pp. 3-13.

simpler than Westphal's in its use of modern rather than ancient terminology and its condensed treatment. Wiehmayer explains trochaic, iambic, dactylic, and anapaestic feet, masculine and feminine endings, acatalectic, catalectic, and brachycatalectic verse-lines, and strophes of various lengths. He uses the terms period and strophe as does Westphal (see pp. 146 and 160 ff.).

Chapter II is entitled "The Musical Verse-Foot" ("Der musikalische Versfuss").[7] Wiehmayer distinguished between the quantitative metrical principles of ancient Greek poetry and the qualitative principles of modern poetry. He says that modern music employs both principles. The parts of a foot in modern music are called tone-syllables (Tonsilben), and the long is either two or three times the length of the short tone-syllable.

Wiehmayer presents a list of the feet employed in modern music, shown in Example 151 (see p. 258), and he illustrates these by numerous musical examples, some of which are reproduced as Example 152 (see p. 259).

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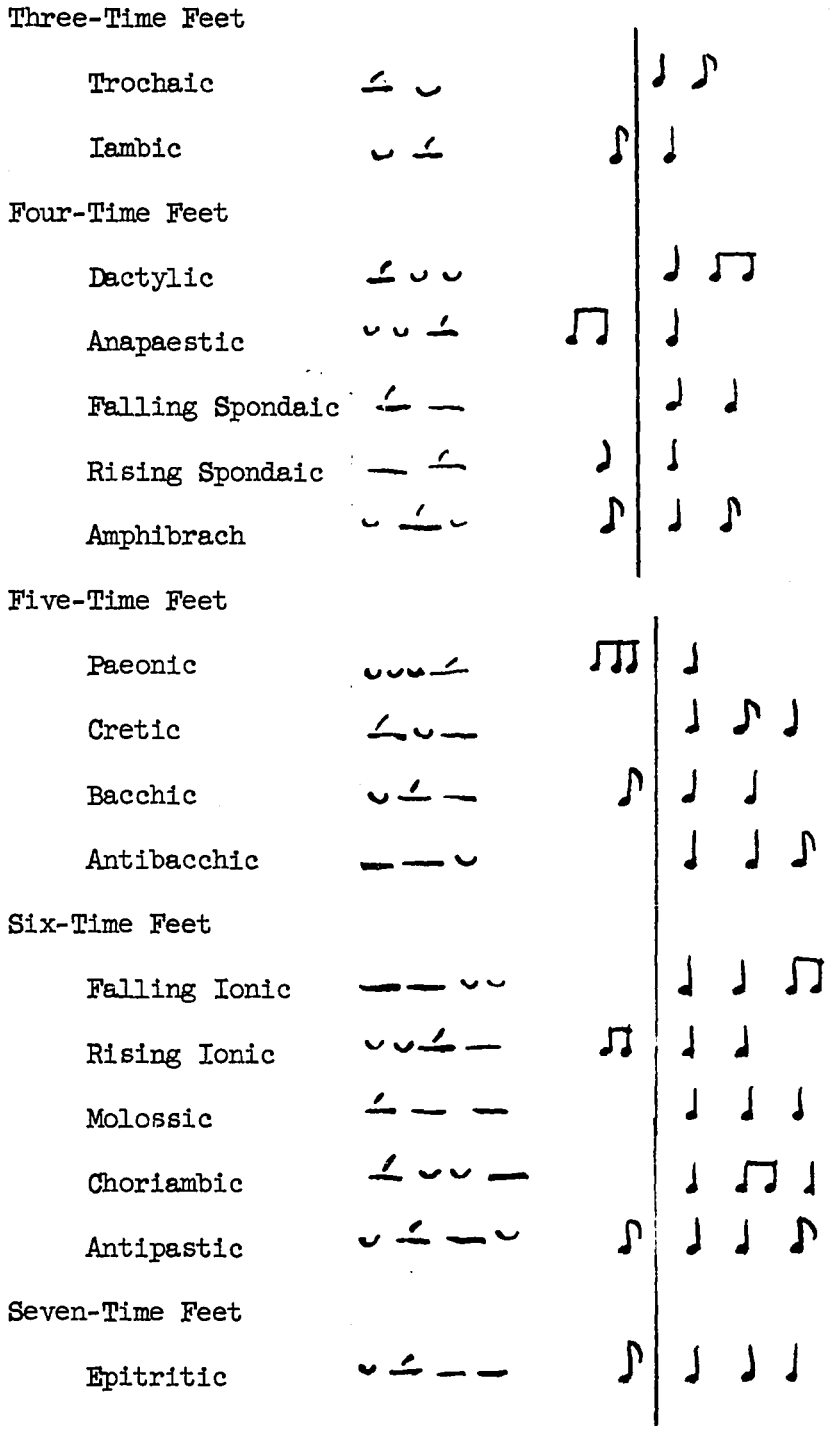
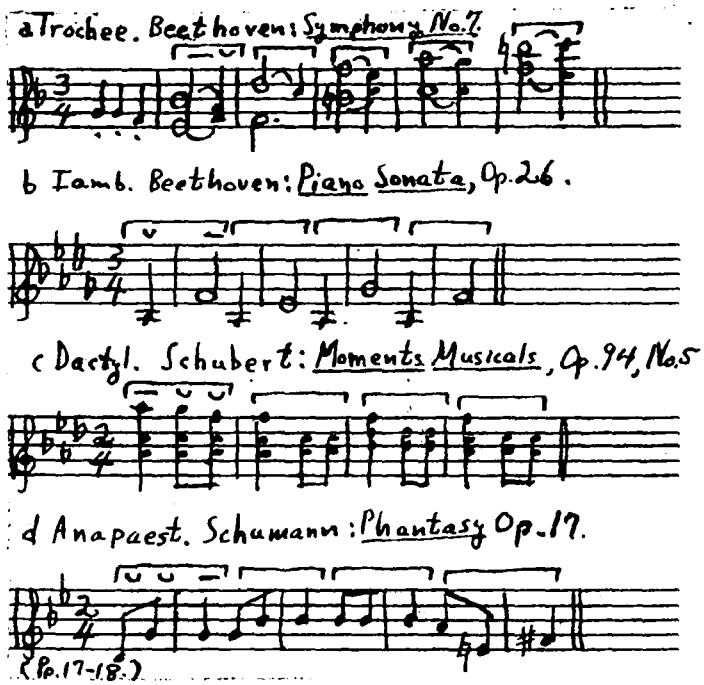
7. Pp. 13-24.

Example 151

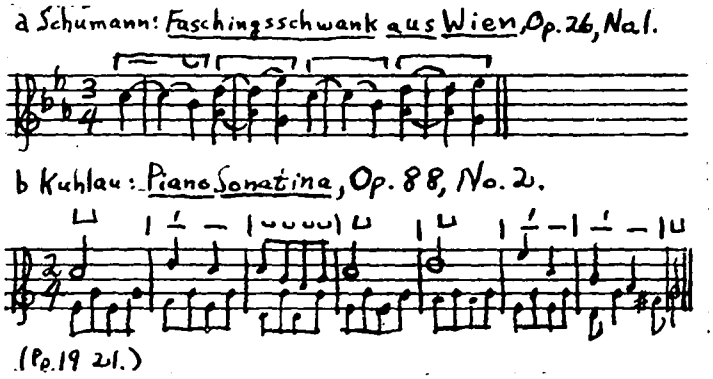


Example 152



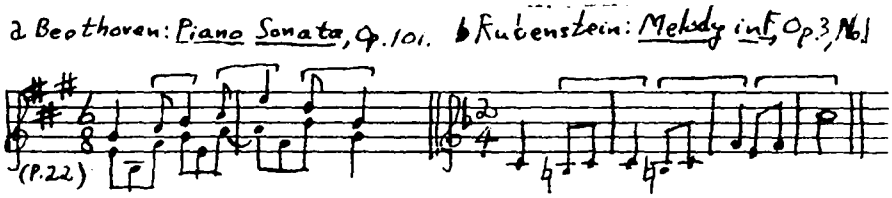
Wiehmayer says that there are several possibilities for modifying the feet. Some of those most frequently employed are the displacement (Verschiebung) or syncopation, the dissolution (Auflösung) or expression of a foot in short values, and the tie (Zusammenziehung) or substitution of a long note for shorter ones or for an entire foot. Example 153a (see p. 260) illustrates the displaced trochee, and Example 153b illustrates the dissolution of the spondee in measure 3 and the tie in measures 1, 4, 5, and 8.

Example 153



The final topic of Chapter II concerns the differentiation between upbeat and downbeat forms of feet. Wiehmayer attacks Riemann for over-emphasizing the upbeat at the expense of the downbeat form, but he agrees with Riemann that on certain occasions a composition beginning with a strong downbeat changes to the upbeat form for subsequent feet. He says that such changes of grouping, illustrated in Example 154, can be justified on the basis of the logical relationship of the tones. Logical relationships are treated in Chapter V (see p. 272).

Example 154



In Chapter III, "Rhythm and Metre" ("Rhythmus und Metrum")[8]

8. Pp. 24-50.

Wiehmayer begins by emphasizing the importance of correctly determining the basic unit of time, or beat, to which all other rhythmic and metrical units are related. He quotes statements by Westphal, Lussy, Riemann, and others concerning the function and duration of the beat and relies most heavily on Riemann's discussion of the close relation between the heart beat and the normal beat of music.

Wiehmayer says that the beat forms the border-line between the areas of rhythm and metre. The latter refers to the grouping of beats into formal structures while the former refers to the long and short values created by beat-subdivisions and ties. Thus, his differentiation between rhythm and metre is similar to Riemann's.

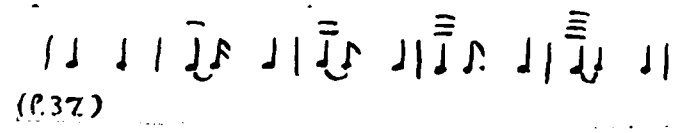
The beat of music is compared to that of poetry. In the latter the beat establishes the basic unit of measurement termed the verse-foot. Since the phrase in music is similar to the verse-line of poetry, Wiehmayer says that it would be appropriate to use the term phrase-foot for the beat of music. He rejects this term as being too awkward and unusual, and accepts instead the term sound-foot (Klangfuss) which he says is borrowed from Johann Mattheson's Kern melodischer Wissenschaft (1737). Like the foot of poetry, the sound-foot may be divided into several members (Glieder), but unlike the ancient Greek chronos protos the member is divisible into still smaller parts called split values (Spaltwerte) of various degrees. If the dactylic sound-foot is expressed as a quarter and two eighth notes, the sixteenth note is the split value of the first degree, the thirty-second note is the split value of the second degree, etc.

The sound-foot and its members are rhythmically essential notes while split values are non-essential.

In his consideration of metre Wiehmayer says that the process of grouping sound-feet into structures of a higher order stems from man's inborn sense of order. When one hears a series of beats of equal intensity and duration, one imagines every second or third beat to be stronger than the others. Thus, the basic metres are those consisting of two and three beats, or sound-feet, and they are called even and uneven metres. Wiehmayer says that when a series of alternating accented and unaccented beats is presented to a listener he always considers the accented beat as a beginning, even if the series actually begins with an unaccented beat. He supports this view by the authority of Moritz Hauptmann according to whose theory the first beat is always the accented or determining and the second is the unaccented or determined.

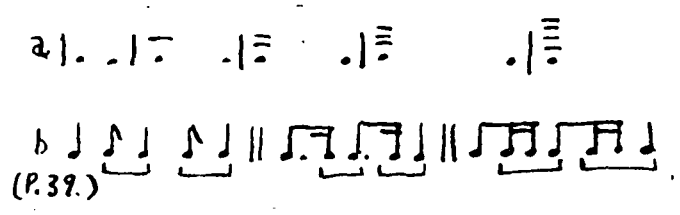
Wiehmayer considers the metre of two beats to be elemental and that of three beats to be derived from it. He cites Hauptmann in support of this point and employs Riemann's principle of the agogic accent to explain the derivation of the three-beat metre. The latter is conceived as growing from the two-beat metre by means of irrational lengthening. The more the first beat of the two-beat metre is accented, the longer becomes its agogic or irrational lengthening. The lengthened note eventually becomes twice as long as its original value. The origin of the three-beat metre is illustrated in Example 155 (see p. 263) in which horizontal lines represent accents.

Example 155



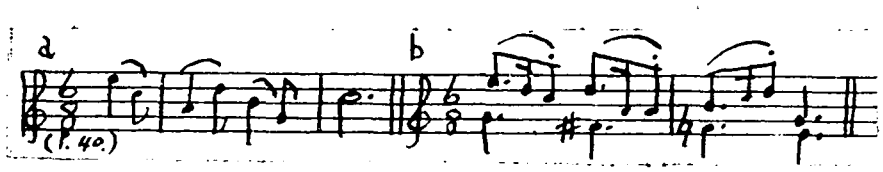
The theory of irrational lengthening also forms the basis for Wiehmayer's explanation of the origin of the upbeat. In a series of alternating long and short notes, the longer the first note is in comparison to the second, the more the second note seems to be grouped with the note that follows it rather than with the one that precedes it. This concept is illustrated by dots representing beats in Example 156a.

Example 156



Thus, Wiehmayer follows Riemann in stating that it is more natural to group short notes with following long notes, as illustrated in Example 156b, than with preceding long notes. But he rejects Riemann's assertion that the upbeat is the only artistically valid form of grouping. On the contrary, Wiehmayer says that it is often effective to group as downbeat units notes that would naturally be felt as upbeat units. But when a composer wishes to indicate such downbeat groupings, he must notate them with slur marks as illustrated in Examples 157a-b (see p. 264).

Example 157



Wiehmayer begins his discussion of compound metrical forms with a quotation from Hauptmann which states that the first note of a compound metre receives accents by virtue of its being the first note of a simple pair, the first note of a pair of pairs, etc., a conception that runs throughout Hauptmann's treatise. Basing his theory on Hauptmann's, Wiehmayer says that just as simple two-beat metre is formed by the accentuation of every other beat, so compound four-beat metre is formed by giving a double accent to every other accented beat of the simple metre as follows:

$$\overline{\overline{1}}\ 2\ \overline{1}\ 2,\ \overline{\overline{1}}\ 2\ \overline{1}\ 2,$$

$$\text{or}\ \overline{\overline{1}}\ 2\ \overline{3}\ 4,\ \overline{\overline{1}}\ 2\ \overline{3}\ 4.$$

Even and uneven metres may be combined into larger ones to the extent of eight and twelve beats, respectively. Beyond these limits, it is not possible to feel metrical unity. Wiehmayer says that every listener, because of his natural propensity to group and order sounds, is already in possession of the various metrical schemes, which are filled out when he listens to music.

Wiehmayer distinguishes not only between even, uneven, simple, and compound metres, but also between regular and irregular metres.

Simple and compound metres, both even and uneven, are termed regular. The term irregular is applied to metres created by a combination of even and uneven forms. Thus, five-beat and seven-beat metres are irregular as they consist of combinations of three-beat and two-beat metres. Wiehmayer's classification of regular and irregular metres with their accents is as follows: (Forms marked a and b are even and uneven, respectively.)

Simple Forms

I (a) $\overline{1}$ 2

(b) $\overline{1}$ 2 3

Compound Forms

II (a) $\overline{\overline{1}}$ 2 | $\overline{3}$ 4

(b) $\overline{\overline{1}}$ 2 3 | $\overline{4}$ 5 6

III (a) $\overline{\overline{1}}$ 2 | $\overline{3}$ 4 | $\overline{5}$ 6

(b) $\overline{\overline{1}}$ 2 3 | $\overline{4}$ 5 6 | $\overline{7}$ 8 9

IV (a) $\overline{\overline{\overline{1}}}$ 2 | $\overline{3}$ 4 | $\overline{\overline{5}}$ 6 | $\overline{7}$ 8

(b) $\overline{\overline{\overline{1}}}$ 2 3 | $\overline{4}$ 5 6 | $\overline{\overline{7}}$ 8 9 | $\overline{10}$ 11 12

Irregular Metres

Five-time

$\overline{\overline{1}}$ 2, $\overline{3}$ 4 5

$\overline{\overline{1}}$ 2 3, $\overline{4}$ 5

Seven-time

$\overline{\overline{1}}$ 2 $\overline{3}$ 4, $\overline{5}$ 6 7

$\overline{\overline{1}}$ 2 3, $\overline{4}$ 5 $\overline{6}$ 7

?($\overline{\overline{1}}$ 2, $\overline{3}$ 4 5, $\overline{6}$ 7)

Wiehmayer says that these schemes form the metrical basis, the skeleton, for all musical thought. But he says that they are not to be strictly followed in actual performance. It is necessary to understand the metrical skeleton of a poem before determining how it should be read, even though the reading will not always follow the scansion; likewise, it is necessary to understand the metrical scheme of a piece of music in order to gain insight into its structure, even though the accentuation of the performance may depart from that implied by the metre.

In Chapter IV, "The Measure" ("Der Takt"),[9] Wiehmayer establishes the relationship between musical notation and the metres presented in Chapter III. He says that there are only two lengths of real measures, those of two and of three sound-feet. Recognizing that notated measures are frequently larger or smaller than real measures, he distinguishes three lengths: (1) The normal measure which contains either two or three sound-feet. Normal measures may express the simple forms of regular metres in which case the initial beats of the measures are equally accented. Normal measures may also be grouped together to form compound metres. In three-measure metres the first measure is heavy and the other two light, and in four-measure metres the first measure is heaviest, the third next heaviest, and the second and fourth light. (2) The large measure which contains four sound-feet. It is equal to two normal measures of two sound-feet each. (3) The small measure which contains

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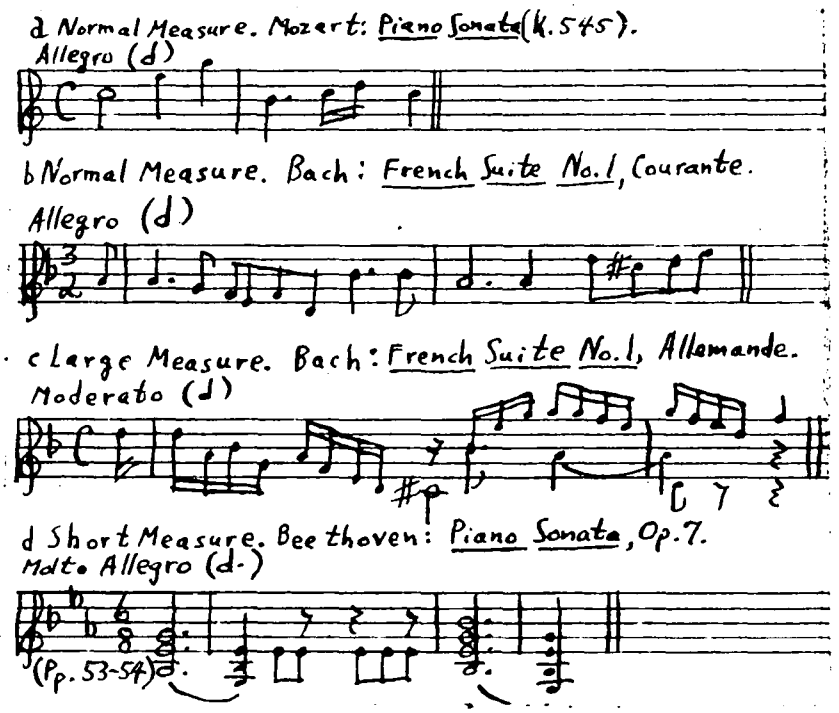
9. Pp. 50-83.

only one sound-foot. Two or three small measures must be grouped together to form one normal measure. Examples 158a-d illustrate the three sizes of measures. (The note in parentheses following each tempo mark indicates the duration of the sound-foot.)

Example 158



Wiehmayer's presentation of the ancient Greek dactylic, trochaic, ionic, and paeonic species of rhythm is similar to that of Westphal's Theorie which he quotes at length. These species, he says, are similar to those already established as even (dactylic), uneven (trochaic and ionic), and irregular (paeonic).

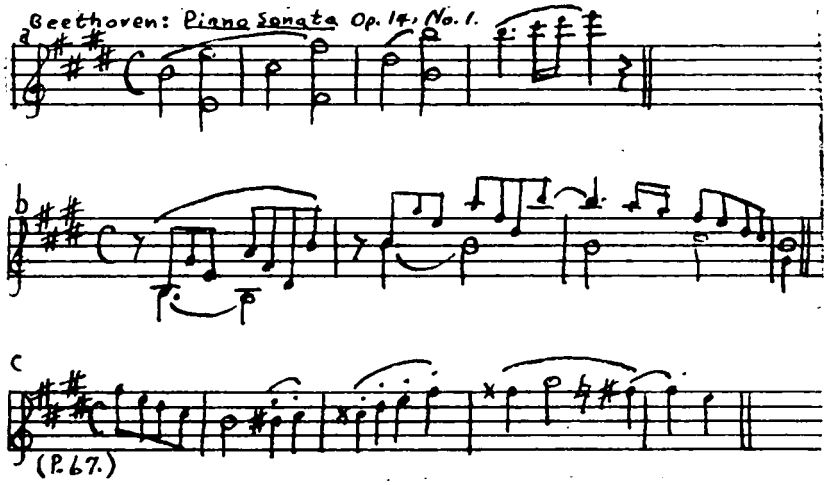
The differentiation between trochaic and ionic species is given special consideration. The trochaic consists of a long followed by a

short while the ionic consists of three longs. In a 3/4 measure of the trochaic species the quarter note will be interpreted as the short and eighth notes as non-essential split values. If the same measure is interpreted as ionic, quarter notes will be longs and eighth notes will be shorts. Wiehmayer says that generally speaking the trochaic interpretation is appropriate for quick tempi in which there is little harmonic and melodic activity per measure, while the ionic interpretation is appropriate for pieces in which the tempo is slower and the measure is more crowded with harmonic and melodic activity.

Wiehmayer says that one of the most important aspects of the rhythmic and metrical analysis of a piece is the determination of the duration of the sound-foot. He emphasizes that notes must really be felt as shorts and longs to be so designated. He says that it is easy to determine the sound-foot in dance forms. Those usually notated in normal, even measures are the March, Polka, Gavotte, Rigaudon, and Bourée. The Polonaise is usually notated in uneven, normal measures, and the Courante occasionally so. Dance forms in small measures are the Galop, Czardas, Waltz, Ländler, Mazurka, Minuet, Sarabande, Courante, Passepied, and Scherzo. It is more difficult to determine the duration of the sound-foot in movements which are not in dance forms and especially those in slow tempo. In determining the sound-foot duration of a piece or movement it is important to take into consideration the entire movement or composition. The first movement of Beethoven's Piano Sonata, Op. 14, No. 1 clearly points out this necessity. Example 159a might lead one to adopt the whole

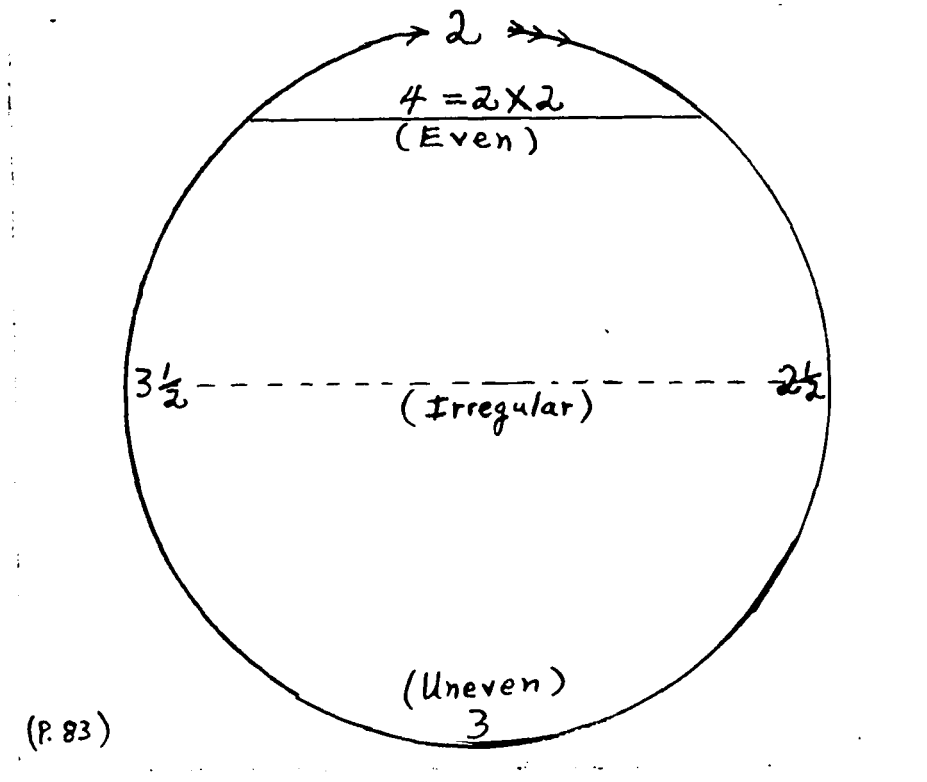
note as the sound-foot. But Examples 159b and c show that the half note is the sound-foot, the quarter note the long, and the eighth note the short. Shorter notes are split values. Thus, the composition is notated in large measures.

Example 159



Wiehmayer presents an extensive table showing various possibilities of notating even, uneven, and irregular sound-feet of small, normal, and large dimensions. He closes his chapter with a circle of metres, shown in Example 160 (see p. 270), which indicates the relation between the even, uneven, irregular and compound metres. The metres of five, three, and seven sound-feet are represented by the figures 2 1/2, 3, and 3 1/2, respectively. They are considered to be derived from the increased irrational lengthening of the first sound-foot of the metre of two sound-feet. With the metre of four sound-feet the circle is complete since that metre is derived by doubling the metre of two sound-feet.

Example 160



In Chapter V, "The Phrase" ("Die Phrase"),[10] Wiehmayer says that the phrase is the smallest independent unit of music, comparable to the sentence in prose or the verse-line in poetry. Paraphrasing Aristotle's definition of a sentence (in Rhetoric, iii, 9) Wiehmayer says that a phrase is a series of tones which has a beginning, ar end, and an easily surveyable size. Phrases vary in length as do sentences and verse-lines, but the phrase of four sound-feet is the one most frequently employed, as is the line of four verse-feet in poetry. The phrase is the largest unit

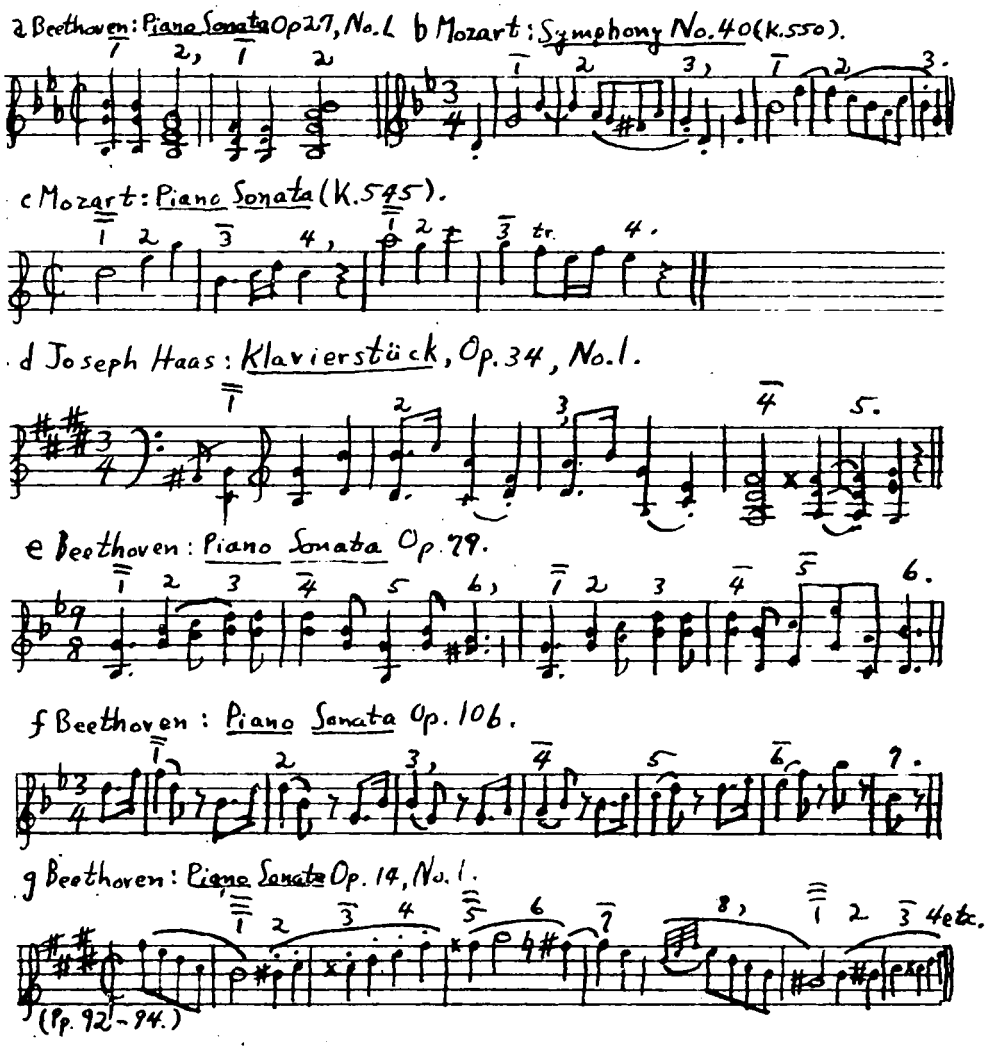
10. Pp. 83-161.

of musical structure that can be perceived immediately and directly, while larger structures can be grasped only after reflection.

Wiehmayer says that there are important psychological and physiological reasons for the predominance of the phrase of four sound-feet. As was pointed out previously, the normal tempo of the sound-foot corresponds to the average pulse-beat, approximately 75-80 beats per minute. Wiehmayer says that psychologists have established the human wave of attention (Aufmerksamswelle) as approximately three seconds. Thus, at the rate of 80 sound-feet per minute, the duration of four sound-feet corresponds to that of the wave of attention. Another reason for the preference for the phrase of four sound-feet is based on the physical correspondence between the heart beat and respiration. He says that there are, as a rule, four heart beats for every complete cycle of respiration. This physical correspondence conditions our psychological preference.

The smallest phrase recognized by Wiehmayer is that of two and the largest is that of twelve sound-feet. Phrases of various lengths are illustrated in Examples 161a-g (see p. 272). (Wiehmayer separates phrases by small vertical marks like Riemann's Lesezeichen.)

Example 161



Wiehmayer distinguishes between two kinds of accentuation: metrical and logical. The former corresponds to what is termed metrical scansion in poetry. Scansion of a poem or metrical accentuation of a piece of music emphasizes the underlying metrical structure but tends to ignore the meaning of the words of a poem or the melody of a composition. Logical accentuation, however, is that which emphasizes the thought content

of the poem or composition. In the following two verse-lines, logical accentuation is responsible for the occurrence of the heaviest accentuation on the words traurig and froh.

Wie kómmt's dass dú so traúrig bíst,
da álles fróh erscheint?[11]

Logical accentuation will be changeable, irregular and alive in contrast to the unchanging regularity of the metrical scheme. But it is only by contrast to the underlying regular metrical scheme that the individuality of the logical accentuation is emphasized. Logical accentuation in music will most often take the form of gradual crescendo and diminuendo rather than the accentuation of individual tones. Thus, the term dynamic curve would be more descriptive than logical accentuation. Wiehmayer says that there is no part of a phrase or foot that cannot receive an accent resulting from the necessities of its content. In the phrases of Example 162a-e (see p. 274) both the logical accents and the underlying metrical schemes are indicated.

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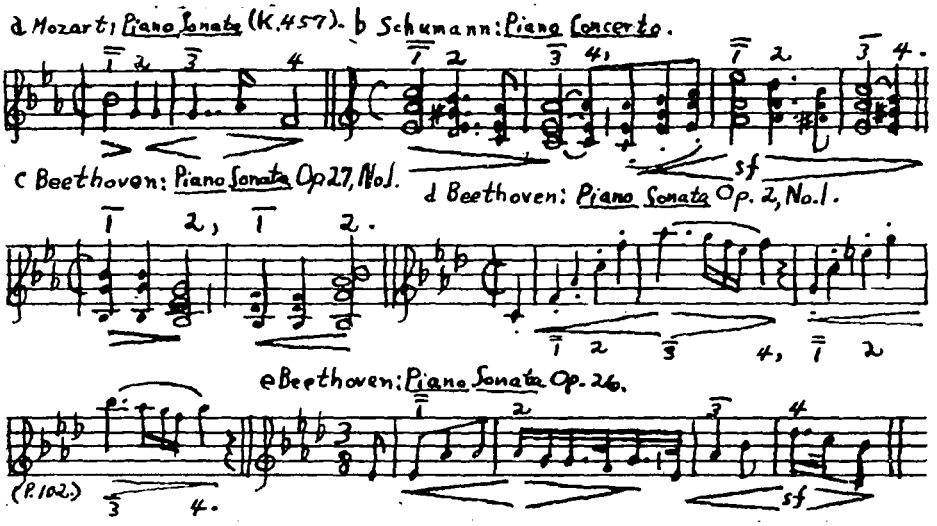
11. P. 100.

Example 162



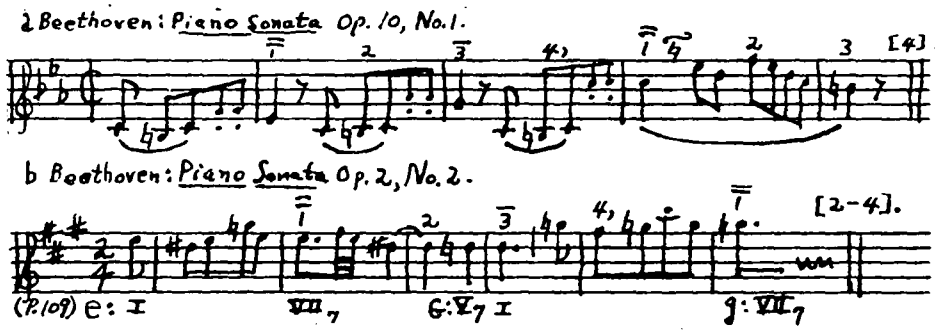
Wiehmayer says that Hauptmann did not intend the accent theory to be a guide to accentuation in performance, but that he assumed a distinction between metrical and logical accentuation. Wiehmayer attacks Riemann for having obscured this distinction and for having reversed Hauptmann's theory by considering a first value light and a second heavy. Wiehmayer is particularly harsh in his objection to Riemann's practice of considering a strong first measure as having the metrical weight of a second measure. He says that the only reason for Riemann's confusing doctrine is his arbitrary reversal of Hauptmann's theory.

The determination of the upbeat phrase-beginning is, according to Wiehmayer, one of the most difficult problems of musical analysis. Any portion of a phrase can serve as an upbeat beginning. The chief problem is to determine which sound-foot is to be considered the metrical strong

point of the phrase. But Wiehmayer says that the strong point of the phrase can only be determined by musical instinct or feeling. The entire art of phrasing is ultimately based on musical instinct or feeling. Rules for determining such matters as the extent of an upbeat and the border of a phrase are valid only in obvious cases for which no rules are needed, but they are useless for the analysis of complicated passages.

Examples 163a-b and 164 (see p. 276) illustrate Wiehmayer's approach to the analysis of upbeat phrase-beginnings. Example 163a is notated in normal measures and, as is always the case in normal measures, the bar lines designate the metrical heavy points. In Example 163b, notated in small measures, the changes of harmony (indicated by Wiehmayer's figures beneath the staff) in the second and fourth full measures indicate the location of the metrical strong points.

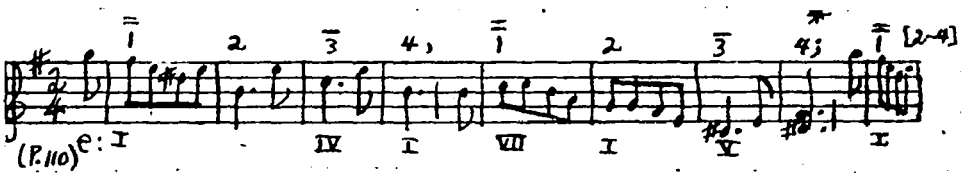
Example 163



Example 164, also notated in small measures, might seem to have an upbeat of the same length as Example 163b. But here again harmonic changes determine the heavy point. If the second full measure were to be considered

the first foot of the phrase, there would be no change of chord in the measure marked with an asterisk which would be considered metrically a third, or heavy measure, and which would normally be emphasized by a chord change. On the other hand, if the music is analyzed as shown in Example 164, the measure before that marked with an asterisk assumes the metrical weight of a third measure and is appropriately emphasized by a chord change.

Example 164
Schumann: Album for the Young, Op. 68, No. 16.

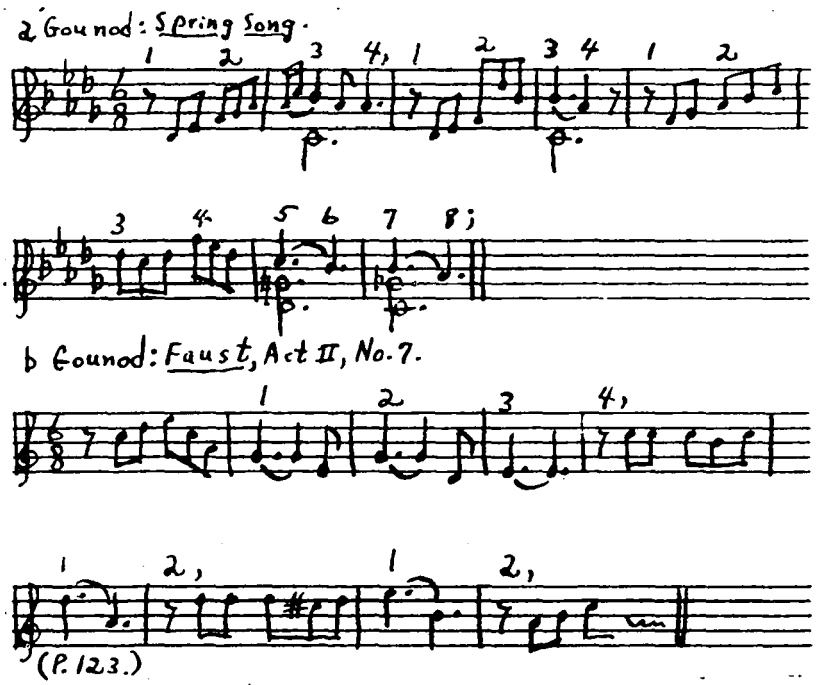


Phrases that begin with rests are called procatalectic phrases. In such phrases the melody begins after the initial accent which is frequently represented by a note in another voice. Any phrase beginning on a downbeat could be made into a procatalectic phrase by placing a rest in the melody on the downbeat and beginning the melody either on a later fraction of that beat or on the next beat.

Wiehmayer again emphasizes musical instinct and feeling, this time as the means of determining whether a phrase has an upbeat or a procatalectic beginning. As an aid in making this decision he recommends extending the first note backward to fill in the entire first measure. If this filled-in measure feels like a strong one, the phrase has a procatalectic beginning; if not, it begins with an upbeat. The two melodies

by Gounoud in Examples 165a-b have rhythmically similar but metrically different beginnings. Example 165a is notated in normal measures while b is in small measures. If Example 165a were considered as beginning with an upbeat, harmonic difficulties would arise. Such an important chord as the tonic would occur on the upbeat and the dominant would occur on the downbeat, which seems in this case contrary to natural musical feeling. On the other hand, the procatalectic interpretation of this example is both metrically and harmonically satisfying. Example 165b is more satisfying metrically and harmonically if the heavy beat of the first phrase falls in the second measure as indicated.

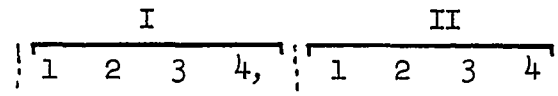
Example 165



A particular type of procatalectic phrase is that with an overhanging cadence (mit überhängendem Schluss). When two procatalectic phrases occur in succession, they are normally separated by a rest as are those in Example 165a. If, however, a note occupies the place of the initial rest of the second procatalectic phrase, the first phrase is said to conclude with an overhanging cadence. This structure would appear to be similar to the upbeat phrase, but it differs from the latter in that the last note of an upbeat phrase falls on an accented member of the first phrase, as does the measure marked "3" in Example 165b; but the last note of the procatalectic phrase with overhanging cadence falls on the accented member of the following phrase, as would be the case if there were a concluding note at the beginning of measure 3 in Example 165a. Wiehmayer illustrates the differences between four kinds of phrases by the diagram shown in Example 166 (see p. 279). (Each Arabic numeral designates a sound-foot, and each Roman numeral designates a phrase. Brackets enclose phrases.)

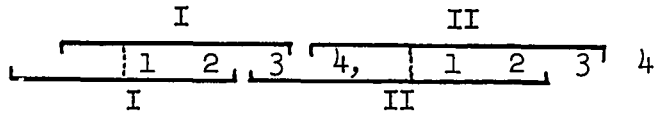
Example 166

I Downbeat Phrases:

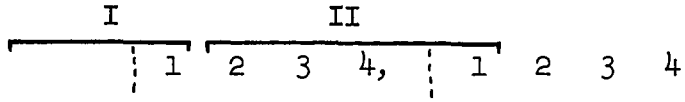


II Upbeat Phrases

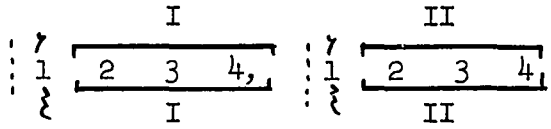
a. Normal upbeat



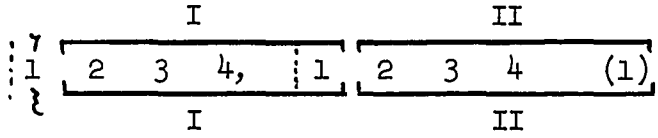
b. Strong upbeat



III Procatalectic Phrases



IV Procatalectic Phrases with Overhanging Cadences



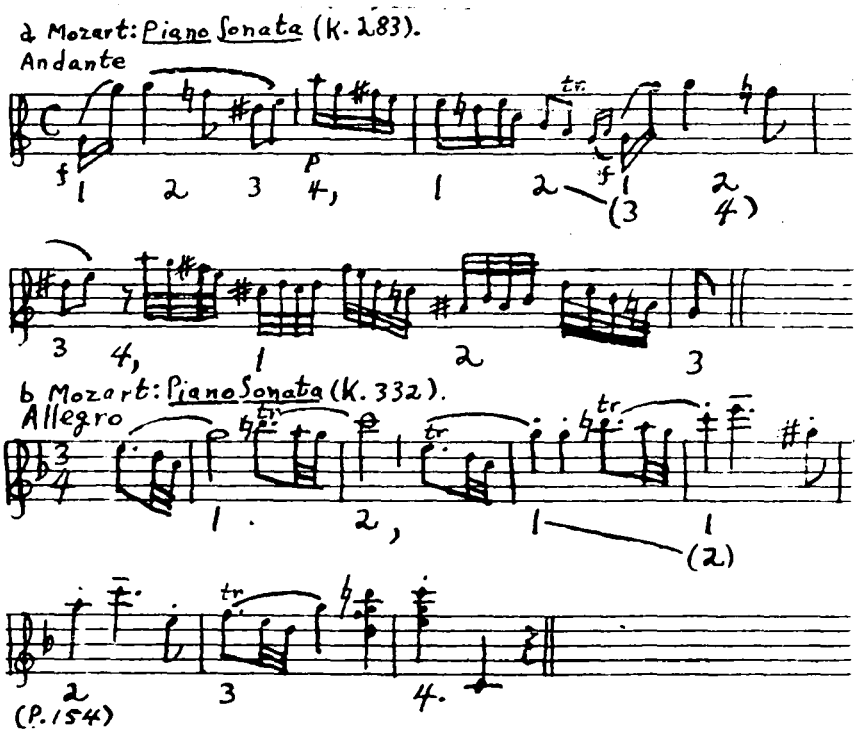
The essential point of Wiehmayer's brief discussion of masculine and feminine phrase-endings concerns the relation between the last two essential notes of the phrase: If the last essential note is metrically heavier, then the ending is masculine, if lighter, the ending is feminine.

Phrase-linking (Phrasenverkettung) is Wiehmayer's term for the technique whereby two successive phrases are linked together by a transitional passage in such a manner that it is impossible to determine the exact point of caesura between them. The bracket in Example 167 illustrates phrase-linking.

Example 167
Mozart: Piano Sonata (K. 283).

Phrase-crossing (Phrasenverschränkung) occurs when a new phrase begins before the previous one is finished as illustrated in Example 168.

Example 168



Wiehmayer says that there is considerable confusion regarding the terms articulation and phrasing. He distinguishes between the two as follows: Articulation means slurring together small groups of notes and clearly separating the groups from one another. Phrasing means conceiving a phrase and presenting it in performance as a complete thought. Articulation is grouping within the phrase.

Chapter VI is entitled "The Motive" ("Das Motiv").[12] Wiehmayer defines the motive as the smallest organic unit of music. It consists of more than one tone and has a characteristic and easily understandable rhythmic design. Although rhythm plays the chief role in the formation of a motive, melody and harmony also contribute. When the melodic and harmonic factors of a repeated motive are modified, it is still recognizable if its rhythm is retained. But rhythmic changes effect more pronounced modifications of the motive and can cause its complete dissolution.

Wiehmayer sees the origin of the motive in the sound-foot forms, and all of those illustrated in Example 151 (see p. 258) are possible motives. He considers upbeat motives more natural than downbeat ones. This conception is developed from his presentation of the origin of the upbeat as a result of the irrational lengthening which accompanies a dynamic accent (see p. 262). But downbeat motives, although artificial, are no less valuable. The downbeat motive can serve the special artistic purpose of contradicting the natural tendency of upbeat grouping, and as such is

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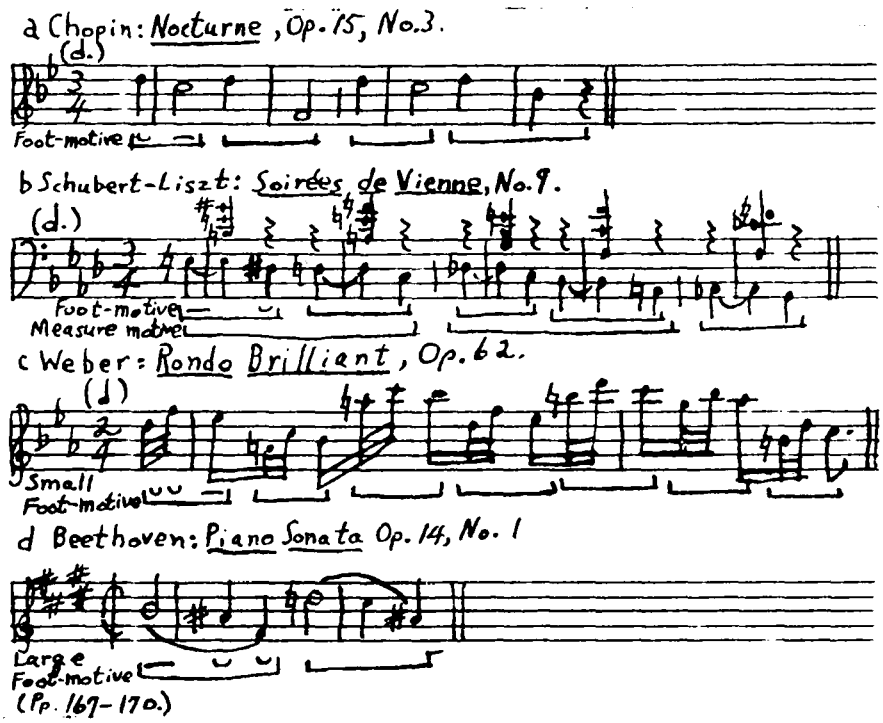
12. Pp. 161-95.

of aesthetic importance.

Wiehmayer speaks of four sizes of motives: (1) The foot-motive (Fussmotiv) which is the duration of the sound-foot, illustrated in Example 169a; (2) The measure-motive (Taktmotiv) which consists of two or three foot-motives, and has the length of an entire normal measure as illustrated in Example 169b; (3) The small foot-motive which is smaller than the sound-foot, illustrated in Example 169c; (4) The large foot-motive which is larger than a sound-foot, illustrated in Example 169d. The large foot-motive is distinguished from the measure-motive in that the latter is always composed of two or three foot-motives.

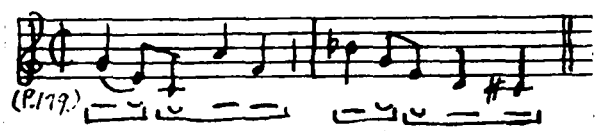
Example 169



Wiehmayer says that the motive could be considered a phrase in miniature. The formations discussed in relation to the phrase are relevant to the motive as well. There are downbeat and upbeat motive-beginnings, procatalectic motives, motives with masculine and feminine endings, etc.

The motives illustrated in Example 169 are complete motives, i.e., each contains the number of shorts and longs required by one of the feet illustrated in Example 151 (see p. 258). If, however, in a series of motives there is a change from a downbeat to an upbeat motive-form, then one motive must be shortened and another lengthened. Example 170 illustrates incomplete and over-complete motives (inkomplette und überkomplette Motive).

Example 170



Two more types of motives are dissolved (abgelöste) motives and figuration motives (Figurationsmotive). The dissolved motive is expressed entirely in values equal to the short of the sound-foot, and the figuration motive is expressed in still shorter split values.

Regarding the relation between motives and articulation, Wiehmayer says that in general the latter will follow the former. But this should not be taken as a fast rule. The performer must judge each case independently.

Wiehmayer differentiates between two kinds of rhythmically

conflicting structures: (1) Those which take place within the sound-foot without influencing the organization of motives and measures; (2) Those which take place at a higher structural level and thus disturb the motive or the measure. Wiehmayer illustrates the first kind by sixteenth-note triplets within a 2/8 measure. Such formations, he says, are only mild conflicts. The second, more forceful kind of conflicting structure is illustrated by the organization of the 6/8 measure as if it were 3/4 and vice versa, or the organization of two 3/4 measures as if they constituted a single 3/2 measure. (Wiehmayer does not use the term hemiola.) He describes several such structures but no general principles emerge from his discussion.

Chapter VII, the final chapter of the treatise, is entitled "Phrase-Group and Period" ("Satzgruppe und Periode").[13] Wiehmayer laments the great confusion of meanings for the terms phrase, Satz, and period. Therefore, his first task is to clarify the meanings of these terms as used in his treatise. He says that the four metrical divisions of music are: (1) Measure-motive, the smallest unit of metrical structure resulting from the grouping of two or three sound-feet; (2) The phrase, also called Satz, resulting from the grouping of several foot- or measure-motives; (3) The phrase-group (Satzgruppe), resulting from the grouping of two or more phrases; (4) The period, resulting from the grouping of two phrase-groups. The first two of these divisions, the measure-motive and

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13. Pp. 196-240.

phrase, were discussed in earlier chapters. The phrase is considered the largest unit which one can immediately and directly perceive. Groups of phrases are understood only by reflection, not by immediate and direct perception. The chief characteristic of the phrase-group consists in the question and answer relation of the two phrases involved; occasionally a third phrase is inserted between the two question and answer portions of the phrase-group. The period consists usually of two phrase-groups, although occasionally an additional phrase-group is inserted between the first and last.

Just as Wiehmayer differentiated small, normal, and large measures and motives, he also differentiates small, normal, and large phrases, phrase-groups, and periods as shown in the following table:

Unit	No. of normal measures	No. of next smaller units
Phrases		
Small	1	2 or 3 feet
Normal	2	4 or 6 "
Large	4	8 or 12 "
Phrase Group		
Small	2 or 3	2 or 3 small phrases
Normal	4 or 6	2 or 3 normal "
Large	8 or 12	2 or 3 large "
Period		
Small	4 or 6	2 or 3 small phrase groups
Normal	8 or 12	2 or 3 normal " "
Large	16	2 large " "

He says that the period of sixteen measures is the largest possible metrical unit. All larger units are properly the study of form rather than metre.

Wiehmayer considers four possible ways of disturbing the symmetry of a metrical structure: (1) Crossing of metrical units; (2) Elision; (3) Insertion and extension; (4) Coda. He employs these concepts in analysis much as did Riemann, but with one important exception. He says that they must be employed to relate an irregular metrical structure to a regular norm only if such a norm has been previously established. He attacks Riemann for using them to relate all structures to a norm of four principal accents, even when such a norm is not present in the music. He thus supports the integrity of irregular metrical structures.

Wiehmayer concludes the treatise with a system of numbers and symbols for designating at a glance the structure of the phrases, phrase-groups, and periods of a composition.

Summary

Wiehmayer intends his treatise to be a correction and synthesis of earlier theories, particularly those by Hauptmann, Westphal, and Riemann. He says that they over-emphasized systems and rules at the expense of musical feeling which he believes should play a more important role.

Much of his treatise is based upon the accent theory which was supported by Hauptmann whom he frequently cites. He also emphasizes the similarity between the structure of music and that of poetry; this concept he derives from Westphal, whose Theorie he closely follows in his introduction and Chapter I.

Westphal, Lussy, Riemann and others are quoted in support of his conception of the beat as the unit of time to which all rhythmic and metrical units are related. He accepts Riemann's statement that the tempo of the normal beat is approximately that of the heart beat. He compares the beat of music to the foot of poetry and calls it the sound-foot, a term borrowed from Mattheson.

Wiehmayer follows Hauptmann, as opposed to Riemann, in considering the first beat of a two- or three-beat unit to be heavy, rather than light. He also follows Hauptmann in stating that the three-beat metre is derived from the two-beat, but he utilizes Riemann's principle of agogic accent to describe the process of derivation. Thus, the first beat of a two-beat metre is doubled by a strong agogic accent to form the three-beat metre.

Riemann's recognition of the upbeat grouping as the most natural is accepted by Wiehmayer, but he rejects Riemann's assertion that the upbeat is the only aesthetically valid form.

Wiehmayer's system of accentuation of simple and compound metres is similar to Hauptmann's, but he is careful to point out that the accents are not to be strictly followed in performance.

In relating the various metres to musical notation Wiehmayer distinguishes three lengths of measures: (1) Normal, containing two or three sound-feet; (2) Large, containing four sound-feet; and (3) Small, containing one sound-foot. This designation of lengths of measures differs from Riemann's approach of modifying the composer's notation by

omitting or inserting bar lines so that the notation will correspond to "real" measures.

One of the most important steps in Wiehmayer's analytical procedure is to determine the duration of the sound-foot. In doing this he advises taking an entire movement into consideration to determine which note-values are to be considered longs, shorts, and split values. He does not provide rules for this important step but instead relies upon musical feeling.

Wiehmayer integrates the metres of two, three, four, five and seven beats into a systematic circle of metres according to which irregular and uneven metres are derived from irrational lengthening of the two-beat metre, and the four-beat metre is a combination of two two-beat metres.

The phrase is considered the smallest independent unit of music, comparable to the sentence in prose or the verse-line in poetry. Wiehmayer says that the phrase of four beats is normal, and he points to the correspondence between the human wave of attention and the duration of a phrase of four normal beats as one possible reason. Phrases can be as small as two and as large as twelve beats.

Wiehmayer distinguishes between two kinds of accentuation: metrical and logical. The former is that which adheres to the kinds of abstract schemes of accentuation treated in great detail by Hauptmann, and the latter is accentuation or dynamic gradation dictated by the logical progression of musical ideas. Wiehmayer does not provide rules for

logical accentuation but leaves their determination to musical feeling. Other areas in which decisions must rest on musical feeling are those of the upbeat and procatalectic phrase beginning, phrase-linking, and phrase-crossing.

Wiehmayer defines the motive as the smallest organic unit of music. It consists of two or more tones and receives its characteristic quality from a combination of harmonic, melodic, and rhythmic factors, the latter being the most important. The upbeat motive is more natural than the downbeat, but the latter is of no less aesthetic value. There are four sizes of motives: (1) The foot-motive containing one sound-foot; (2) The measure-motive containing two or three foot-motives; (3) The small foot-motive which is shorter than a sound-foot; (4) The large foot-motive which is larger than the sound-foot. A motive is a phrase in miniature and has the same variety of forms as the phrase. There are incomplete and overcomplete motives, dissolved motives, and figuration motives.

Wiehmayer recognizes the following four metrical divisions: (1) Measure-motive consisting of two or three sound-feet; (2) The phrase, consisting of several foot- or measure-motives; (3) The phrase-group, consisting of two or more phrases; (4) The period, consisting of two phrase-groups. There are four possibilities for disturbing the symmetry of any of the above metrical structures: (1) Crossing; (2) Elision; (3) Insertion and extension; (4) Coda. These possibilities may be employed in analysis to relate irregular structures to a regular norm only if such a

norm is actually present in the music under consideration. If irregularity of structure is the norm in a piece, then the integrity of the irregular units must be retained in the analysis; such irregular structures must not be forced to conform to a regular norm as they are in Riemann's theory.

PART II

CHAPTER VII

A COMPARISON AND CRITICISM OF THE CENTRAL POINTS OF THE THEORIES EXAMINED IN PART I

In order to compare and criticize the theories that have been set forth separately in Part I, some general principles must be accepted as a framework or foundation. The first task in determining the proper subject of an investigation of musical rhythm is to establish a definition of rhythm. Curt Sachs has commented upon the confusion that has existed since ancient times regarding the meaning of this term.[1] Since it would not serve our present purpose to enter into a detailed consideration of this problem, we shall state as a working definition for this chapter that rhythm is order in time. The term "order" is to be interpreted here in its most general sense as any harmonious relation, rather than as a regular arrangement. This definition of rhythm, in its reference to the general concept of order rather than a particular kind of order, is similar to the ancient one stated in Plato's Laws,[2] as well as to that found in modern writings on musical rhythm by numerous authors among whom are

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1. Op. cit., p. 12.

2. ii. 665.

Philippe Biton,[3] René Dumesnil,[4] Vincent d'Indy,[5] Lionel Laundry,[6] and Dom Andre Mocquereau.[7]

But the assertion that musical rhythm is the order of time in music is not yet a complete definition of the subject of investigation. Will the subject be the order of time in music as conceived by its composer, as notated in the score, as performed, or as understood by the listener? Let us begin our answer to this question by stating a few truisms: Music is an art in sound, not in visual design upon staff paper. A score is only a plan for the music. While it more or less corresponds to the composer's conception of his music, it cannot possibly represent every detail of his conception. The performer will interpret the score according to his understanding of what is required to make of the notation a work of art in sound. Every performance of a given composition will differ, to some extent, from every other performance. The pitch relationships of melody and harmony will differ minutely or not at all, but rhythmic relationships are liable to differ to a considerable degree. A performer seldom renders a composition in a mechanical way, obeying rigorously the time ratios indicated by the score; rather, he modifies

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3. Op. cit., p. 15.

4. Op. cit., p. 12.

5. Cours de composition musicale (4th ed.; Paris, 1912), I, 21.

6. "Le rythme musical," Revue philosophique, LII (1926), 223.

7. Op. cit., I, 31.

these ratios to the extent that he feels necessary according to his interpretation of the meaning of the music. Just as various performers will interpret a score in various ways, so different listeners to the same performance will interpret the music differently, depending upon their general musical training, familiarity with the style or composition, and psychological and physical differences.

For a theory of rhythm to have general validity it must be based upon objective fact as seen in the light of reliable psychological principles, rather than upon subjective opinion. Whether a theory be intended for the description, classification, comparison, or performance of various rhythmic styles and techniques, it must begin with the rigorous observation of the facts of the music under consideration. A theorist cannot depend solely upon his musical feeling or instinct in formulating a theory of rhythm.

To return to the question posed above, where does one find the facts of the order of time in music? The perception of the listener is variable, being relative to the individual, and thus is not a source for the investigation of musical fact, which must be essentially constant. The music as performed is likewise variable, being relative to the individual performer. The original conception of the composition dwells within the mind of the composer. Thus, the only constant record of the composition is the musical notation. That record, to be sure, does not fully represent the composer's conception, and subjective interpretation must be added to the score for it to come alive in sound. But certain of the

musical relationships represented by the score will remain essentially the same when realized in various performances, despite differences of interpretation. These relationships, which we shall call the "factual relationships" or the "musical facts," form the proper subject of study for the attainment of knowledge about musical rhythm. A theory of rhythm should differentiate, as far as possible, between the symbols of notation that represent the factual relationships (or those least liable to undergo essential change in various performances), and the interpretational relationships (or those most liable to undergo essential change).[8] The differentiation between the factual and interpretational relationships of musical rhythm will be clarified below; for the present we may consider the facts of rhythm to be the notated relationships of duration and intensity as well as melodic and harmonic pitch relationships to the extent that they are elements of accent or grouping.

Purposes and Methods

A comparison of the purposes and methods of the theories of rhythm studied in Part I shows that the purposes range between the extremes of philosophical understanding and practical application; the methods range from the study of music in terms of preconceived philosophical or theoretical principles to the derivation of theory from music.

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8. The author apologizes for his use of the awkward but necessary term "interpretational," which will appear frequently in this and the following chapter.

The treatises by Marx and Weber are intended for general musical instruction. Their purpose is to provide the reader with information that is basic to an understanding of music; the principles that they set forth are common to most nineteenth-century treatises for general musical instruction. Since the validity of these principles was generally assumed in such treatises, the method employed was simply to state them as basic assumptions to be accepted prior to the study of the music without supporting arguments. The principles found in these elementary treatises, representing the general assumptions of the period, are useful in determining the degree of originality of contribution of the more scholarly works.

Hauptmann's purpose is to provide a philosophical basis for the generally accepted theory of rhythm of the kind set forth by Marx and Weber. He does not question this theory of rhythm but merely adds to it the support of Hegelian dialectics. Hauptmann's treatise is purely speculative rather than practical; he bases his speculation upon theoretical and philosophical preconceptions rather than musical fact. He does not attempt to verify or illustrate his theory by reference to actual music.

In striking contrast to Hauptmann's theory, Lussy's is intended for practical application. His purpose is to discover, classify, and formulate the basic laws that govern interpretation in performance. His initial assumption is that all gifted performers will interpret a given passage, or type of passage, in essentially the same way. He bases his study upon the analysis of performances and performing editions. While the subject of his investigation is the changing, subjective, interpreta-

tional facet of rhythm, his aim is to isolate the essentially invariable aspects of performance and to formulate laws which govern these invariables.

The method of Lussy's theory approaches more closely that implied by the point of view set forth at the beginning of this chapter than does any other treatise studied in Part I. Lussy proposes to derive his theory from music rather than from prior assumptions. It is nevertheless true that he seldom bases his laws of performance upon the essentially invariable facts of rhythm; in spite of his attempt to arrive at laws based upon such facts, most of them remain within the realm of subjective interpretation. Although his interpretation of a given example often seems to be useful as a guide or at least a stimulation for the student performer, it is usually closer to opinion, albeit enlightened opinion, than to valid theory.

Westphal's treatise is intended to be both a study in history and in the theory of rhythm. As a historical study is it to show a hitherto unknown relation between ancient and modern culture; as a theory of rhythm it is to provide an approach to the understanding of musical rhythm, to the attainment of insight into rhythmic structure, rather than to establish practical rules for the composer and performer. But he recognizes that theory may sometimes be applied to practice and suggests certain principles for performance.

The method of Westphal's treatise is to analyze modern music according to ancient theoretical principles and terminology. Thus, he

accepts a prior theoretical system and relates music to it rather than deriving the theory from the musical facts. This method occasionally forces him to distort certain aspects of ancient theory so that it may be adapted to modern music, as he does when he admits the divisibility of the chronos protos.

The purpose of Riemann's two treatises on musical rhythm is to establish a theory that is partially speculative but primarily for interpretation in performance. Its purpose is thus more closely related to that of Lussy's treatise than any of the others. The speculative aspects of his theory are most in evidence in his Dynamik, where he makes a special effort to come to terms with Hauptmann's theory, the most speculative one of the group; the practical aspects are evident in both treatises.

Riemann's method is to establish theoretical principles prior to the examination of musical fact and then to interpret music accordingly. His principles are either stated as axiomatic, with no evident derivation or support, or derived from and supported by Hegelian dialectics or psychological principles.

While Lussy's and Riemann's theories have in common a practical aim, the latter is the less successful of the two. Riemann attempts, especially in his System, to apply a few basic principles in a rigorously systematic manner to all of the examples studied; the result is often to superimpose upon a simple passage of music an extremely complicated interpretation based upon principles that are not actually exhibited in the music. Lussy's attempt to derive his performance practice from actual

music resulted in a profusion of rules, laws, and special cases; this result is preferable to Riemann's in its greater recognition of the individuality and multiplicity of rhythmic possibilities when considered from the interpretational standpoint. But both treatises are bound to fall short of their mark, as both attempt, in varying degrees, to systematize and regulate the subjective, highly elusive, interpretational aspect of musical rhythm, an aspect which by its very nature resists all such attempts.

Wiehmayer's purpose is to provide a theory for the understanding of musical rhythm, and one which will form a basis for decisions in matters of interpretation. But he is more cautious than Riemann and Lussy in providing rules or principles for performance; he is more prone to treat interpretational matters as within the realm of feeling than of law and rule. Wiehmayer's method is eclectic; his treatise is intended to be a correction and a synthesis of earlier theories. He depends most heavily upon the works of Hauptmann, Westphal, and Riemann, modifying and amplifying their principles.

The Beat

All of the treatises studied in Part I assume that an essential aspect of musical rhythm is an underlying beat, the periodic recurrence of which is made evident by the facts of the music and the performer. These theorists were primarily concerned with art music of the eighteenth and nineteenth centuries; with reference to that music their assumption of an

underlying beat is valid. In listening to most music of that period one will find a regularly recurring pulse with which one may easily coordinate muscular activity such as tapping the foot. A cursory glance at representative scores of that period is sufficient to determine the factual reasons for the listener's perception of a regularly recurring beat; the durational relationships, melodic patterns, harmonic rhythm, and the composer's additional markings such as dynamic accents and slurred groups of notes all combine to establish the factual reasons for the listener's perception of a regular beat, quite apart from the possible accentuation added by the performer.

But recent developments in twentieth-century music make it strikingly clear that a regular pulse is not essential to musical rhythm. In certain compositions by Anton Webern a variety of note values is used in such a free manner as to provide little factual reason for feeling a regularly recurring pulse.[9] Music that is much freer rhythmically than Webern's has been written recently by younger composers, among whom are Pierre Boulez,[10] Luigi Nono,[11] and Karlheinz Stockhausen.[12] The most extreme instance of free rhythm in the twentieth-century is that used in

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9. For example, the third song of his Drei Lieder, Op. 18 (Wien, 1927), pp. 6-7.

10. See Example 213, p. 428.

11. See Example 212, p. 426.

12. See Example 211, p. 425.

electronic music, an example of which is Stockhausen's Gesang der Junglinge.[13] Curt Sachs admirably expresses the nature of the extremes of strict and free rhythm and the continuum that exists between them as follows:

> Order is the vast expanse between the deadly extremes of chaos and mechanization. There are numberless shades within this expanse, some of which draw closer to one of the poles, and some to the other: freedom is often not far from chaos; punctilious, frigid strictness stands next to mechanization....
>
> Rhythmical freedom must therefore not be looked upon as lawbreaking with a judge's contemptuous eye. It is neither inferior nor rudimentary, but just dissimilar. Far from being chaotic or defective, the rhapsodic strains of a shepherd lonely on the hills can have the wild, exciting beauty of horses, unbridled and panting, that gallop across the savanna. And again they have the soothing, tender, often melancholy charm of a streamlet rippling forth in dreamy monotone. Indeed, they might not even suggest that much motion; wide-spun and often with long fermatas and rests, they seem to defy the lapse of time and to hover motionless in the air....[14]

Thus, within the limitations of the music that they treated, the theorists whose treatises were studied in Part I were justified in their assumption of a regularly recurring pulse as essential to musical rhythm; but a general theory of musical rhythm must reject that assumption.

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13. Recorded by Deutsche Grammophone Gesellschaft, LP16133.

14. Op. cit., p. 20. For a more extended treatment of free rhythm of the kind described by Sachs, see: Walter Wiora, Europäische Volksmusik und abendländische Tonkunst (Kassel, 1957), pp. 194-97.

The Notated Measure

The basic assumption that the written measure is a fact of musical rhythm is implied in all of the theories studied in Part I; this is the assumption underlying the principle that bases accentuation in performance on the theoretical weights of the various parts of the measure. Marx, Weber, and Lussy present this principle in its simplest form: Marx carries his theory of accentuation systematically to the smallest subdivision of a beat (see pp. 19-20); Lussy's thirteen rules for metrical accentuation, intended to enforce the feeling of the measure, begin with a rule that the first beat of every measure is performed with a dynamic accent (see p. 88); and Weber believes that the listener should feel an accent at the beginning of every measure (see p. 30). But Weber's statement that the first beat of every measure need not be executed with more force for the listener to feel an accent there, and his concept of an "internal feeling" of accent at the bar line, indicate an understanding of the accentual aspect of the measure that is clearer, from the standpoint of factual analysis, than is Marx's or Lussy's. Although Weber does not provide an explanation for this internal feeling, a possible explanation is that the organization of the facts in most music of the eighteenth and nineteenth centuries usually creates an emphasis of contrast at the bar line. Such a contrast will tend to produce a feeling of accent even when no dynamic accent is supplied by the performer. Another possible explanation lies in the principle of expectation, according to which a listener tends to retain an established pattern of expectation after that pattern

is no longer objectively present. Thus, if an expectation of accent at the bar line is established, the listener will continue to feel the accent even in its absence.[15]

That Marx and Lussy were not unaware of the importance of factual accents is clear from their analyses of certain exceptional passages of music. In the analyses of Examples 3 and 4 (see pp. 12-13), Marx recognizes a conflict between the accentual pattern implied by the measure and that which is given by the facts of the music. In these analyses he has abandoned the concept of the notated measure as a fact of rhythm and has directed his attention to the actual facts. Lussy takes the facts into consideration in his analysis of Mendelssohn's Songs Without Words, No. 36 (see pp. 135-36). He advises that the length of the measure in this composition be changed from that of the 3/8 signature to that of the 6/8, as the latter corresponds more closely to the musical facts. Lussy's principle of expressive accentuation also demonstrates his awareness of the importance of both the facts of rhythm and the role of expectation. The expressive accent, which is determined by the durational, melodic, and harmonic aspects of music, has priority over the accent of the measure; the expressive accent achieves its peculiar aesthetic effect by virtue of its contradiction of the expected accent of the measure (see pp. 83-84 and 120 ff.).

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15. Arthur D. Bissell, The Role of Expectation in Music (New Haven, 1921), pp. 1-5.

Westphal implies the acceptance of the notated measure as a fact of musical rhythm, although his position is less clearly stated than is that of Marx, Weber, and Lussy. It is only by inference from certain of his comments and analyses that his position in regard to the notated measure becomes evident. Westphal says that in modern music both durational and accentual relationships are indicated in musical notation (see p. 150). Although he says that it is impossible to determine the accent of the measure merely from its time signature (see p. 154), he apparently does not intend to disregard entirely the accentual implications of the bar lines, but merely to consider some of them to represent more important accents than others, and to point out that their relative importance cannot be determined from the time signature. In his analyses illustrated in Examples 82, 83 and 89 (see pp. 161, 164, and 173), he assumes an accent at the bar line. But Examples 82 and 83 show that he does not assume an accent of equal intensity at every bar line as does Marx; rather, the accents at some of the bar lines are stronger than at others.

Westphal says that accentuation depends upon whether the measure is simple or compound, and upon the relation of the measure to the colon (see p. 154). Simple and compound measures are determined by the time values chosen to represent the chronos protos. Thus, if a 4/4 measure is analyzed in terms of the quarter note as the chronos protos, the measure contains one foot of the dactylic species and is a simple measure; if the 4/4 measure is analyzed in terms of the sixteenth note as the chronos protos, it contains four feet of the dactylic species and is compound.

But the weakness of Westphal's determination of the accentuation of the measure is his failure to provide a method for determining the chronos protos and foot. With the exception of a few passing comments, he ignores this question which should be of central importance for analysis in terms of his theory. One of these comments, regarding the role of tempo in differentiating between the trochaic and ionic species of three-part measures (see p. 156), might well have been elaborated to form an essential part of his theory, as it does in Riemann's and Wiehmayer's. In the absence of any principle for determining the chronos protos and foot, one must assume that they are to be determined at will by the performer, although even this is not stated by Westphal.

According to Westphal's definition of the colon (see pp. 155-56), one accent of the colon is stronger than the others. But he does not explain how the chief accent of the colon is determined. Once again, one may only assume that the accent is to be chosen at will by the performer. Westphal's analyses are inconsistent with his theory, for even in his most extensive analyses, like that of Examples 82 and 83, he fails to indicate the chief accent of the colon; in those examples there are two principal accents of equal intensity occurring on the first and third foot of nearly every colon rather than a single principal accent.

Hauptmann, Riemann, and Wiehmayer all treat the notated measure as a fact of musical rhythm, and all introduce a distinction between the terms metre and rhythm which is not found in the other treatises. For Hauptmann, the term metre designates the theoretical conception of

measured time, together with an abstract structure of accents; the term rhythm designates the variety of accents and durations that fill the metrical structure. While his differentiation between rhythm and metre implies a dualistic concept, the two elements are not entirely independent; rhythm and metre are not the same, but they are related since the former is interpreted in terms of the latter (see pp. 47-48 and 69). Hauptmann's metrical theory is based primarily on Hegelian dialectics, but the psychological principle of expectation may be inferred from his statement regarding the derivation of metre that two beats enclose a single unit of time and determine a second unit (see pp. 48-49). This principle, referred to above in connection with the theories by Weber and Lussy, is of considerable value for the study of musical rhythm. While the theories of Marx, Weber, and Lussy all imply the kind of dualism found in Hauptmann's treatise, they do not refer to it specifically, nor do they use the terms metre and rhythm in the manner in which he uses them.

Riemann and Wiehmayer both employ slight modifications of Hauptmann's dualism; they accept his meaning for the term rhythm but consider metre to be the measure filled out in equal note values rather than a purely abstract structure. Wiehmayer includes in his conception of metre a system of dynamic accents similar to that presented by Hauptmann; Riemann modifies this system by introducing the concepts of the measure-motive (see p. 192) and the subdivision-motive (see p. 204) in which the metrical weights are points of greater intensity in a crescendo, together with a slight agogic accent, rather than simple dynamic accents.

Riemann's theory further differs from Hauptmann's and Wiehmayer's in its "upbeat" principle according to which the bar line marks the culmination of the measure-motive rather than the beginning of a metrical unit, and the beginning of a beat marks the culumination of a subdivision-motive rather than the beginning of a smaller metrical unit.

In the theories by Riemann and Wiehmayer the conception of the notated measure as a fact of musical rhythm is modified by the principles of the "real measure" and the "normal tempo." These two treatises are the only ones studied that incorporate tempo into their theories as an aspect of the interpretation of the notated measure. In his Dynamik Riemann introduces the principle of the normal tempo in connection with his proposed time-signature reform, but he does not apply it to the analysis of musical examples as he does in his System (see pp. 230 and 233-34). In the latter treatise he establishes the normal tempo as that of the heart beat, or about M.M. 75-80. He says that a listener tends to group musical events around a pulse that lies somewhere between M.M. 60 and 120. Thus, the first step in the analysis of a composition is to determine the note value to be considered the beat, having a tempo between those two extremes. It may be that the notated measure is a real measure, or that it is really a beat and must be grouped with other notated measures to form a real measure. In the latter case every bar line would receive a stress, as every beat is stressed with relation to its subdivisions, but the bar line of the real measure would receive the heaviest stress. The differentiation between the real measure and the notated measure is not mentioned in

Riemann's Dynamik but it is found only in his System.

It is noteworthy that the tempo that Riemann considers normal has been established as normal for motor activity by the experimental psychologist Paul Fraisse, who states that the preferred "spontaneous motor tempo" is around M.M. 80; but he concludes that the range of possibilities of tempo above and below the norm is from M.M. 50 to 200, a wider range than Riemann admitted.[16] Curt Sachs also considers the tempo M.M. 80 as normal.[17] Whereas Riemann assumes a causal relationship between the heart beat and the normal tempo, both Fraisse and Sachs deny such a relationship because there is seldom a close correlation between the tempo of an individual's pulse and his preferred musical tempo. Max Lund, in a study in experimental psychology designed specifically to determine whether the tempo of the preferred beat in music is conditioned by some regularly recurrent physiological process, found only a chance correlation, and thus no support for such a theory, in the data of his study. Lund also found that the preferred tempo of his subjects ranged from M.M. 40 to 77, a much smaller range than that found by Fraisse and assumed by Riemann.[18]

Riemann's principle of the negative dynamic value of the rest

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16. Les structures rythmiques (Paris, 1956), pp. 113-14.

17. Op. cit., pp. 32-33.

18. "An Analysis of the 'True Beat' in Music" (Unpublished Ph.D. dissertation, Stanford University, 1939), p. 69.

(see pp. 208 ff.) does an important service in calling attention to the fact that the rest is not merely a dead spot in music but can play a significant role in rhythmic structure. Riemann's is the only theory studied that introduces such a principle. The validity of the specific dynamic values which Riemann assigns to rests in various contexts is of course open to question since those values depend upon his preconceived theory of metrical weights.

Wiehmayer, whose treatise is essentially eclectic, chooses to adopt Riemann's concept of the normal beat (see p. 261). His treatment of the notated measure depends upon the choice of the value to be considered the beat note, or "sound-foot." In Examples 158a-d (see p. 267) he indicates the time value of the sound-foot beside each tempo marking to clarify the interpretation of the written measure. Wiehmayer also follows Riemann's concept of the real measure as opposed to the notated measure, but he amplifies that concept in his classification of three sizes of notated measures (normal, large, and small) and in his principle of grouping normal and small notated measures together to form compound measures (see pp. 266-67). In keeping with his stated principle of relying upon musical feeling rather than strict rules, Wiehmayer provides no basis for determining the number of normal or small measures that should be grouped together to form a larger metrical unit. But some of his analyses demonstrate an awareness of the importance of the facts of musical rhythm in the determination of such grouping. In Example 161 (see p. 272), for instance, he evidently bases most of his analyses upon the principle that

the beginning of a repetition of a pattern of durations implies the beginning of a new metre as in Examples 161a-c, e, and g.

Wiehmayer's principle of "logical accentuation," like Lussy's "expressive accentuation," provides for accents contrary to those implied by the metre (see p. 272). Wiehmayer's theory emphasizes more than any of the others that the system of metrical accentuation need not always be followed in performance. Yet, if it is true, as he also says, that the individuality of logical accentuation is emphasized only by contrast with the underlying metrical scheme, then it follows that this scheme must be made audible in some way. If the facts of the music were so organized as to make audible Wiehmayer's assumed metrical accents by various kinds of contrasts, it would be unnecessary for the performer to supply them. But it is seldom that the facts of music provide in a specific way the various emphases of triple, double, and single accentual weights that are presented in Wiehmayer's system; it would be necessary for the performer to supply these various weights of metrical accent if they were to be heard at all. Therefore, the performer must supply both metrical and logical accents, giving priority to the latter; such a procedure seems to be implied in the markings of Example 162 (see p. 274). Unlike Lussy, Wiehmayer presents no rules for the determination of logical accents, evidently assuming that the performer will rely upon musical feeling.

All of the treatises studied make reference to "irregular" measures such as those of five and seven parts, and all but two unconditionally accept their usefulness. Weber considers them disagreeable and

suggests that they be reserved only for special effects (see pp. 32-34), while Hauptmann calls them "artificial," "inorganic," and "metrically unhealthy." He considers them "little suited to the time measurement of a whole piece" (see pp. 53-54). Such criticisms as these need not concern us, first, because these measures are now completely acceptable, and second, because it is not the notated measure but the musical facts it contains that are of primary importance.

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According to the viewpoint stated at the beginning of this chapter and referred to in the above comparisons and criticisms, it is invalid to consider the notated measure a fact of musical rhythm. Most of the theories studied in which there is a differentiation of metrical weights within the measure either require or imply that these weights be rendered by accents supplied by the performer. But it is an obvious fact that performers vary considerably in matters of accentuation; good performances differ not only from poor ones, but from each other as well. It is no doubt true that many performers of the past and present have consciously attempted to follow accentual systems like those of the theories we have studied, but this fact makes such accentual systems no less interpretational. Electronic studies of musical performances, made by Carl Seashore and other psychologists of music, cast serious doubt upon the assumption that the measure symbolizes for the performer an accentual system which he

renders through modifications of intensity or duration.[19]

As has been stated above, the musical facts in most compositions of the eighteenth and nineteenth centuries normally combine to create a contrast, and thus an emphasis, at the bar line. To be sure, the bar lines are not always emphasized by the musical facts, but in most compositions of that period the emphasis is frequent enough to establish and maintain the listener's expectation of regular accentuation. If the term "metrical" is used to mean "regular accentuation," then such music could be said to have "metrical rhythm." But metre in this sense is the conception of regularity of accent which has been derived from the facts of the music, rather than a preconceived system of accentuation that is imposed upon the musical facts as is the case in all of the theories studied. This principle of deriving metre from the musical facts rather than imposing it upon them is of less significance in music of the eighteenth and nineteenth centuries than it is in that of the twentieth century. In the latter there is frequently no correspondence between the placement of the bar line and the factual contrasts; bar lines in ensemble music are often

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19. Reports of such electronic studies of musical performance are found in: Carl E. Seashore (ed.), Objective Analyses of Musical Performance ("University of Iowa Studies: Studies in the Psychology of Music, Vol. VII; Iowa City, 1936). For references in that volume to the electronic measurement of the performance of the metrical accent, see: Harold G. Seashore, "An Objective Analysis of Artistic Singing," pp. 118 ff.; Arnold M. Small, "An Objective Analysis of Artistic Violin Performance," pp. 210 ff.; M. T. Henderson, "Rhythmic Organization in Artistic Piano Performance," pp. 292 ff. Carl E. Seashore summarizes the results of the studies reported in that volume in his Psychology of Music (New York, 1938), pp. 199-285.

employed merely as a matter of convenience to keep the performers together. But even in the study of music of the eighteenth and nineteenth centuries the principle of deriving regularity from the musical facts rather than imposing it upon them is of significance in evaluating the preconceived notions of metre. The theories studied state, generally, that the bar line means stress, and an analysis of musical facts will generally support this notion. The bar line is usually placed at points of emphasis created by notes of greater length, by dynamic accents, harmonic changes, etc. But most of the theories studied also present a hierarchy of accents of varying weights within the measure, and this hierarchy is often unsupported by the musical facts.[20] Thus, a theory which presents a hierarchy of weights within the measure is invalid from the standpoint of factual analysis.

The Motive

Of the treatises studied in Part I, only Lussy's, Riemann's and Wiehmayer's include extended discussions of the motive, which in Lussy's treatise is called the incise, or "section." Marx refers to the motive only in passing, and it is not mentioned in the treatises by Weber, Hauptmann, and Westphal.

The general nature of the definition of the section in Lussy's

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20. Walter Piston in Counterpoint (New York, 1947), p. 27, asserts the danger of applying a hierarchy of varying weights within the measure to most music.

theory (see pp. 104-105) and the motive in those by Riemann (see p. 232) and Wiehmayer (see p. 281) indicates the attitude either stated or implied by all three that the motive is determined more by musical feeling than by principle or rule. Lussy attempts more than the others to establish principles for the determination of the section in his list of fourteen "cases in which great composers generally make use of sections in instrumental music" (see pp. 105 ff.). Some of these sections are determined by the facts of rhythm but most of them by Lussy's musical feeling. The first of Lussy's fourteen cases in which sections are employed, illustrated by Example 51a (see p. 107), is an instance in which he heeds the obvious implication of the facts of rhythm in dividing the music into sections according to the repetition of a short pattern of durations and melodic pitches. Apart from interpretational matters, a listener would group the first two sections, and possibly the third, as Lussy has done in that example. Such a grouping would take place in the listener's mind even if the entire passage were played staccato or legato, without Lussy's performance indications. The analyses of Examples 51b and c also would seem to follow the dictates of the facts of music, but these examples are by no means as clear as Example 51a. If Example 51b were played entirely staccato or legato, the listener would have a choice, after the first two notes, of understanding it in terms of upbeat or downbeat groupings. It would only be the performer's choice, and his execution based on that choice, that would cause the listener to understand the grouping in one particular way. The same criticism would apply to Example 51c; here

again, the completely staccato or legato performance would leave open to the listener both upbeat and downbeat possibilities of interpretation. So far as factual knowledge is concerned, we know that Example 51b objectively presents a repeated long-short pattern and Example 51c a short-long pattern. We do not know how a given performer or listener might consciously or unconsciously group these objective patternsn. Hugo Riemann, for instance, would certainly interpret Example 51b in terms of upbeat motives, beginning with the second note of the first measure. Thus, the matter of motivic determination is largely subjective and interpretational.

Riemann's conception of the motive is closely related to his theory of the measure and its subdivisions, hence the terms measure-motive and subdivision-motive presented in his Dynamik. Regarding the dynamic and agogic life of the motive, Riemann says that its principal and most satisfactory form is the internally accented, as opposed to the initially or terminally accented form. He prefers the internally accented motive because it includes the complete cycle of organic growth and decline, whereas the others include only growth or decline. But the dynamic and agogic life to which Riemann refers is a life supplied by the performer, not by the musical facts, and thus his theory is interpretational rather than factual. In his treatment of "melodic and harmonic dynamics" (see pp. 215 ff.), he emphasizes the importance of the factual elements of harmony and melody in determining the borders of motives; yet, the bar line is still the factor governing the dynamic and agogic life of the motive. Riemann carries his study of the motive still further into the

realm of personal interpretation when he introduces the principle of motive-crossing (see p. 238). His analysis of Example 138 (see p. 238) is not only based upon a highly personal interpretation of the musical facts, but it is also based upon hypothetical musical facts of which he considers the composer's version to be a variant. This is a dangerous precedent in a theory of rhythm; once the possibility of introducing hypothetical music as a technique of analysis is admitted, the way is open for the theorist to distort completely the composer's intention, as would especially be the case were this technique employed for the analysis of twentieth-century music.

According to Wiehmayer's theory, the motive, or "smallest organic unit of music" (see p. 281), is determined primarily by the durations of tones; melody and harmony play a secondary role. Wiehmayer follows Riemann in accepting the upbeat form of the motive as the most natural, but unlike Riemann he also affirms the aesthetic importance of the downbeat form. Wiehmayer and Westphal both relate the quantitative feet of ancient Greek metrics to music, but the relationship is different in the two treatises; Westphal relates only the more generalized "species" of feet to the measure and beat (see p. 151), as is illustrated in Examples 82 and 83 (see pp. 161 and 164), while Wiehmayer relates the ancient feet to the specific durations of the tones in a motive, as shown in Example 169 (see p. 282). Wiehmayer distinguishes four different lengths of motives on the basis of their relation to the sound-foot and measure; the absence of rules or principles for the determination of motives is

consistent with his general approach of relying upon musical feeling rather than rule. The music of Examples 169 and 170 (see pp. 282-83) is well suited to the analysis of motives in terms of metrical feet. But passages in which there is a wider variety of durations in a more complicated arrangement would not lend themselves so readily to such analysis without the introduction of numerous modified forms of feet. For this reason Wiehmayer includes in his theory such modifications as incomplete, over-complete, dissolved, and figuration motives. An instance in which a single type of foot is employed, with modifications, to analyze eight measures is shown in Example 153b (see p. 260). That example is said to be composed of eight spondaic feet of which four are "tied," one is "dissolved," and only three are simple spondees. In more complicated passages, with a considerable variety of time values, Wiehmayer's labeling of motives by means of the metrical feet and their modifications could become extremely complex, personal, and of significance and value only to the individual analyst.

Larger Rhythmic Units

All of the theories studied in Part I consider such structures as phrases, periods, and in some instances even larger units to be within the province of rhythm or metre. The various treatises apply different terms to these larger units. Weber speaks of them only as "higher rhythms," while Hauptmann refers to them as "large metrical structures." Marx refers to three units larger than the measure; in order of increasing

size, they are the "section," "phrase," and "period." He applies the term phrase to groups of three or four measures concluded by a cadence; he says that a phrase may be divided into two sections, and his examples show the section to be composed of a group of two measures, constituting half of a phrase (see Example 21b, p. 23). He presents an example of a three-measure phrase (see Example 20a, p. 22) but does not indicate whether it too may be divided into sections. The period is composed of two or more phrases. The second phrase of a two-phrase period is a "counter-phrase" to the first; in periods of more than two phrases the second and subsequent phrases are similar to or derived from the first.

Lussy's term "rhythm" designates a musical unit which he defines as comparable to a line of poetry (see p. 83). According to his analyses the rhythm is usually similar to Marx's section, as in Example 38 (see p. 94), but it is sometimes comparable to Marx's phrase, as in Example 49 (see p. 104). Lussy's term for the next largest unit, composed of a group of rhythms, is "phrase." Example 49 is an eight-measure phrase composed of two four-measure rhythms.

Westphal, in maintaining his analogy between modern music and ancient metrics, carries the principle of higher levels of structure farther than do any of the other theorists. His term "colon," like Lussy's rhythm, is comparable to a line of poetry (see pp. 146 and 155 ff.). The colon is not determined in terms of measures, but rather in terms of feet. He says that a colon may include as many as six feet in the trochaic and dactylic species and three feet in the ionic species.

But, as we have pointed out above (see p. 303), four dactylic feet could be expressed by four measures of simple 4/4 or by one measure of compound 4/4. Examples 78a-c (see p. 155) illustrate three cola of four feet each, expressed by one, two, and four measures. Most of the cola in Westphal's musical examples consist of one measure as in Examples 80 and 81 (see pp. 159-60) or of two measures as are most of those in Example 82 (see p. 161). Thus, Westphal's cola are similar to Lussy's smaller rhythms and to Marx's sections. The next largest unit in Westphal's theory is the period, which is a group of cola. He does not present an extended explanation of the period, but his musical examples show periods of various lengths, ranging from two cola of one measure each (see Example 81) to four cola of two measures each (see Examples 82 and 83). The "system" or "strophe" in Westphal's theory is a group of periods. An entire exposition of a sonata form, for instance, can be a strophe, as is Example 82. A strophe and its repetition is a syzygy, and still larger structures are designated by the term pericope.

In his System Riemann refers only to two sizes of units at the level above the measure. The larger of these two he calls Satz or Periode, using the two terms synonymously. Theoretically, this is a unit of eight measures, although it can be expanded or contracted by a few measures. The smaller of the two units is the Halbsatz or half-period which has the theoretical length of four measures, and is thus comparable to Marx's phrase and to the largest of Lussy's and Westphal's rhythm and colon. The half-period, depending upon its relation to the period, is

termed Vordersatz or Nachsatz, comparable to the terms antecedent and consequent. In his Dynamik Riemann uses the term "phrase" for a unit roughly equivalent in duration to Lussy's "rhythm" and Westphal's "colon," but his theory of the phrase in this treatise is not as highly developed as is the treatment of the period in System.

Wiehmayer speaks of three higher levels of grouping: the phrase, phrase group, and period. There are three sizes, small, normal, and large, for each of these levels; thus, there is some overlapping of terminology for the various units. Wiehmayer's phrases contain from one to four normal measures and could be equal to Marx's section or phrase, Lussy's rhythm, Westphal's colon, and Riemann's Halbsatz; Wiehmayer's period could equal any of these units, but it could also extend beyond them, even to the level of Westphal's strophe. Wiehmayer says that units larger than the largest period are properly the study of form, rather than of metre.

The following table indicates the approximate relationship among the various terms for larger rhythmic units used in the treatises studied in Part I. The terms are classified from 1 to 6, from the lowest to the highest level. Riemann employs only two terms for larger rhythmic units while Westphal employs six.

TERMS USED FOR THE LARGER RHYTHMIC UNITS						
Levels	1	2	3	4	5	6
Marx	Section	Phrase	Period	------	------	------
Lussy	Rhythm	Rhythm	Phrase	------	------	------
Westphal	Colon	Colon or Period	Period or Strophe	Strophe	Syzygy	Pericope
Riemann	-----	Halbsatz	Satz	------	------	------
Wiehmayer	Phrase	Phrase or Phrase group	Phrase group or Period	Period	------	------

* * *

If musical rhythm is defined in a general sense as the order of time in music, the smallest as well as the largest units of musical order fall within its scope. Curt Sachs has pointed out that the term rhythm could be applied to such large units of organization as the ABA of a da capo aria or even to the four movements of a symphony.[21] But to facilitate the study of music it is useful to make a division between the smaller and larger units of organization. Any line of demarcation that is drawn between these smaller and larger units, to differentiate the area of study known as rhythm from that known as form, will be to some extent arbitrary. But the field of psychology provides a basis for making at least a general distinction. Studies in the psychology of rhythm by

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21. Op. cit., p. 17.

Fraisse have shown that under laboratory conditions the longest series of beats that can be perceived as a unit has a duration of four to five seconds.[22] But Fraisse emphasizes that this is the maximum duration, the "threshhold"; at this duration a listener's perception is unstable. He says further that in actual practice, i.e., in music or poetry, rhythmic groupings would have a duration of from one to three seconds, a conclusion that has also been either confirmed or implied by the studies of Robert McDougall,[23] J. E. W. Wallin,[24] and Charles Sears.[25] Carl Seashore says that the psychological wave of attention varies from two to ten seconds, and that in listening to poetry or music we adjust the strain of attention to fit the regularly recurring accent.[26] Curt Sachs states that modern psychology has found twelve seconds to be the maximum filled duration of which we can be both distinctly and immediately aware."[27] While Sachs gives no source for this statement, he is probably referring to the duration of the wave of attention which he sets at two seconds longer than does Seashore. It is of course true that the psychologist in the

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22. Op. cit., pp. 16-17.

23. "The Structure of Simple Rhythm Forms," The Psychological Review: Monograph Supplements, IV (1903), 309-411.

24. "Researches on the Rhythm of Speech," Studies from the Yale Psychological Laboratory, IX (1902), 1-142.

25. "A Contribution to the Psychology of Rhythm," American Journal of Psychology, XIII (1902), 28-61.

26. Psychology of Music, pp. 140-41.

27. Loc. cit.

laboratory deals with carefully controlled stimuli which are usually far from the sounds of actual music, and it is a moot question as to whether his specific conclusions should be employed in the study of musical rhythm. But there is doubtless a general relation between laboratory and practical situations, and it is more reasonable to base a division between the areas of rhythm and form upon the available psychological information than to make a purely arbitrary division.

While recognizing that in a general sense the term rhythm may be employed in reference to the relations between all units of musical organization, it would nevertheless be useful to employ the concept of rhythm in a more limited sense to refer only to the order of time within the span of immediate perception. Psychological evidence does not provide a clear and simple answer to the question of the span of immediate perception, but it provides grounds upon which one may safely reject the larger structures treated by the theories studied in Part I. The highest level of rhythmic structure consistent with the maximum psychological wave of attention as defined by Seashore is that of one or several measures (depending upon notation), lasting about ten seconds. This higher level could conceivably correspond to the second level indicated in the table on page 320. A lower level of rhythm, dealing with the moment to moment, tone to tone rhythmic relations, would in most cases be within the bounds of the time unit of one to three seconds which Fraisse and others have termed the practical limit of rhythmic grouping.

Weber's, Hauptmann's and Riemann's theories of the higher levels of grouping are expansions of their theories of the measure. Weber says that the construction of the larger rhythms is perfectly similar to that involved in the structure of measures, except that it is on a larger scale; Hauptmann says that large metrical structures are exactly similar in derivation and accentuation to small ones. But it is only in Riemann's System that the details of the transferrence of the theory of the measure to that of the higher level are explained in terms of analyses of musical examples.

The principle of the upbeat measure-motive and subdivision-motive is transferred to the higher levels of grouping in Riemann's assertion that a first element, including a measure or group of measures, is a beginning, and a second element is an answer or conclusion, metrically heavier than the first (see p. 231). Thus, all periods will theoretically have upbeat beginnings, and each subdivision of each period will likewise have an upbeat beginning. While all theorists whose treatises were studied in Part I brought into consideration the upbeat beginning of both small and large structures, none of the others adopted it to the virtual exclusion of the downbeat form as did Riemann.

The transferring of Riemann's theory of the measure to larger units leads to his principle of Vierhebigkeit with its assumption of a symmetrical accentual structure as a theoretical norm to be used for analysis (see pp. 239 ff.). Riemann analyzes half-periods and periods that do not have the assumed normal structure as modifications of that

norm. This principle of analysis is similar to that of introducing hypothetical music as an aid in analysis, as Riemann did in his treatment of motive-crossing. The introduction of a hypothetical length of which the actual music is considered a variant is also found in the treatises by Lussy. The latter states that regular rhythms are those of two and four measures, and that irregular rhythms are created from regular ones by means of contraction, prolongation, repetition, sequence, and echo (see p. 95).

Lussy's approach is similar to Riemann's from the standpoint of the derivation of irregular groupings of measures, but Riemann's is more detailed in its addition of the metrical weights of measures, not included in Lussy's theory. In Riemann's analyses of irregular groupings of measures, he accounts for both the number of measures and their metrical weights; he introduces such concepts as the period that begins on a measure with a metrical weight other than that of the first, the measure with a double meaning from the standpoint of metrical weight, repetitions of metrical weights, and the assumed omission of measures of certain metrical weights.

Weber does not mention irregular structures at the higher level, and Hauptmann mentions them only in passing; the latter affirms their validity but does not explain their derivation. Westphal accepts them without referring them to regular or normal lengths. Wiehmayer calls attention to phrases of three, five, and seven measures in Example 161b, d, and f (see p. 272), but in none of these examples does he introduce an

assumed normal phrase-length. In Example 168a-b (see p. 280) Wiehmayer indicates a phrase-crossing in which one beat or measure has a double meaning, an analytical approach that is similar to Riemann's; likewise, Wiehmayer's discussion of the four possible ways of disturbing the symmetry of a metrical structure indicates an approach similar to Riemann's and Lussy's. But Wiemayer differs from Riemann in asserting that the concept of a regular norm from which structures of irregular lengths are derived is permissible only when such regularity is a norm for the piece under consideration and has been previously established.

Summary

The theorists whose treatises were examined in Part I reflect, in various ways, certain trends in nineteenth-century music education. Marx and Weber each attempts to summarize, in a single treatise, the various branches of music: melody, harmony, rhythm, form, etc. Such treatises, showing a tendency toward regimentation in music education, began to appear in considerable number in the nineteenth century when formalized, systematic group instruction in theory and composition became more common than it had been in previous periods.[28] Neither Marx nor Weber contributed new theoretical propositions in their treatises, nor did they intend to do

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28. Theodore Dubois, "L'enseignement musical," Encyclopedie de la musique, Albert Lavignac, Fondateur (Paris, 1931), Pt. 2, Vol. VI, pp. 3437-71. Ernest T. Ferand, "Komposition," MGG, VII, col. 1443. Paul Henry Lang, Music in Western Civilization (New York, 1941), p. 973.

so; rather, they attempted to present the essentials of theory and composition as it was taught at an elementary level.

Unlike Marx and Weber, the remaining theorists whose treatises were examined in Chapters II-VI attempted to make original contributions to the theory of rhythm. Hauptmann, a practical musician as well as a teacher of theory and composition, is firmly rooted in nineteenth-century thought in his use of the Hegelian dialectical system. Hauptmann's treatise is a highly successful work within its philosophical framework. Lussy, a noted teacher of piano in Paris, reflects the nineteenth-century tendency toward regimentation in music education in his prescription of numerous specific rules for performance; he also reflects the spirit of scientific inquiry, an empirical spirit growing stronger in the nineteenth century, in his assertion that the rules he sets forth are derived from the observation of the best performances and performing editions of his time. Lussy's work suffers from its tendency toward rigid regulation of performance practice, but it is nevertheless useful for its thought-provoking interpretations. Westphal is the only author whose treatise was studied in Part I who was not primarily a musician; he was a scholar of classical philology. His treatise reflects insufficient acquaintance with the art of music, but it exerted an important influence upon the later and more successful work by Wiehmayer. Westphal's conviction that to use ancient Greek metrical principles in analysis and performance is to follow laws of eternal validity places him closer to the ideals of the eighteenth than the nineteenth century. Riemann, a teacher of pianoforte and theory

in the Conservatories of Hamburg and Wiesbaden and Professor of Musicology at the University of Leipzig, is the most important and prolific scholar whose works were studied in Part I. His treatise, like that of Hauptmann from which he drew inspiration, is remarkable for its logical consistency. But his basic premises, especially the concepts of Auftakt and Vierhebigkeit, are such that his rigorous consistency often lead him to interpretations that contradict the facts of music. Wiehmayer's career as a pianist and teacher of pianoforte at the Conservatories of Leipzig and Stuttgart is more like Lussy's than that of any of the other men whose treatises were studied in Part I. But in his treatise Wiehmayer only mentions Lussy in passing; he relies most heavily upon theories proposed by Marx, Hauptmann, Westphal, and Riemann, although he disputes much of Riemann's theory. Wiehmayer's treatise may be seen both as a synthesis of the other theories and as representative of a trend away from the highly systematic approach in its frequent emphasis on musical feeling rather than on strict rules or rigorously consistent application of basic principles.

CHAPTER VIII

A CONTRIBUTION TO THE THEORY OF RHYTHM FOR THE STUDY OF TWENTIETH-CENTURY MUSIC

Musical Rhythm and Continuity

The definition of musical rhythm adopted at the beginning of Chapter VII, rhythm is order in time, must now be further clarified. It was pointed out in Chapter VII (see pp. 298 ff.) that all of the treatises studied in Part I considered regular measurement to be essential to musical rhythm.[1] We rejected that notion in favor of a broader conception that would include rhythm organized in a free, unmeasured, purely emotional manner as described in the quoted passage by Curt Sachs (see p. 300). But we have not yet touched upon one of the most important qualities of rhythm, that of continuity or flow.[2]

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1. For other references to this conception of rhythm, see: Henry Cowell, "Rhythm," Collier's Encyclopedia (New York, 1957), XVII, 19. Karl W. Gehrkens, Music Notation and Terminology (New York, 1914), p. 82. M. L. Glynn, Rhythmic Conception of Music (New York, 1907), p. 2. Percy Goetchius, The Material Used in Musical Composition (14th ed.; New York, 1913), p. 1.

2. For references to the concept of rhythm as continuity, see: Gisèle Brelet, Le temps musical (Paris, 1949), I, 296. Calvin S. Brown, Music and Literature (Athens, Ga., 1948), p. 15. Jaques-Dalcroze, Rhy., Mus., and Ed., p. 238. Ludwig Klages, Vom Wesen des Rhythmus (Kampen auf Sylt, 1934), p. 10. Susanne K. Langer, Feeling and Form (New York, 1953), pp. 126-27. Sachs, op. cit., pp. 13 ff.

Rhythmic flow is not a smooth, uninterrupted quality, but a continuity that is divided, articulated, or limited in some way, yet respected. The continuity of musical rhythm is a stream of varying tensions that constitutes a kind of durational experience not unlike Henri Bergson's metaphysical "real duration" (la durée réelle). Bergson's philosophy of duration has exerted an important influence on the aesthetics of music, and certain elements of his thought are particularly useful for the understanding of musical time and continuity.[3] In the first paragraph of the following quotation Bergson describes the process of intuition by which one seizes from within the real duration; in the second paragraph he gives an account of real duration that is strikingly close to a description of musical continuity.

> When I direct my attention inward to contemplate my own self..., I perceive at first, as a crust solidified on the surface, all the perceptions which come to it from the material world.... Next, I notice the memories which more or less adhere to these perceptions and which serve to interpret them.... Lastly, I feel the stir of tendencies and motor habits--a crowd of virtual actions, more or less firmly bound to these perceptions and memories.... But when I draw myself in from the periphery towards the centre, if I search in the depth of my being that which is most uniformly, most constantly, and most enduringly myself, I find an altogether different thing.

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3. Bergson's philosophy has formed an important part of the sections on time and rhythm in the following writings on aesthetics to which I am indebted: Brelet, op. cit., pp. 46 ff., pp. 345-71. Charles Koechlin, "Le temps et la musique," La revue musicale, VII (1926), 45-62. Langer, op. cit., pp. 104-32. Gabriel Marcel, "Bergsonisme et musique," La revue musicale, VI (1925), 219-29; an English translation by Susanne K. Langer is included in her Reflections on Art (Baltimore, 1958), pp. 142-51. Victor Zuckerkandl, Sound and Symbol, trans. Willard R. Task (New York, 1959), pp. 201-64.

> There is, beneath these sharply cut crystals and this frozen surface, a continuous flux which is not comparable to any flux I have ever seen. There is a succession of states, each of which announces that which follows and contains that which precedes it. They can, properly speaking, only be said to form multiple states when I have already passed them and turn back to observe their track. Whilst I was experiencing them they were so solidly organized, so profoundly animated with a common life, that I could not have said where any one of them finished or where another commenced. In reality no one of them begins or ends, but all extend into each other.[4]

Bergson's description of this "continuous flux," this "succession of states" which "extend into each other" is a description of the existence

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4. An Introduction to Metaphysics, trans. T. E. Hulme (New York, 1912), pp. 9-11.

> Quand je promène sur ma personne ... le regard intérieur de ma conscience, j'aperçois d'abord, ainsi qu'une croûte solidifiée à la surface, toutes les perceptions qui lui arrivent du monde matériel.... J'aperçois ensuite des souvenirs plus ou moins adhérents à ces perceptions et qui servent à les interpréter.... Et enfin je sens se manifester des tendances, des habitudes motrices, une foule d'actions virtuelles plus ou moins solidement liées à ces perceptions et à ces souvenirs.... Mais si je me ramasse de la périphérie vers le centre, si je cherche au fond de moi ce qui est le plus uniformément, le plus constamment, le plus durablement moi-même, je trouve tout autre chose.
>
> C'est, au-dessous de ces cristaux bien découpés et de cette congélation superficielle, une continuité d'écoulement qui n'est comparable à rien de ce que j'ai vu s'écouler. C'est une succession d'états dont chacun annonce ce qui suit et contient ce qui précède. A vrai dire; ils ne constituent des états multiples que lorsque je les ai déjà dépassés et que je me retourne en arrière pour en observer la trace. Tandis que je les éprouvais, ils étaient si solidement organisés, si profondément animés d'une vie commune, que je n'aurais su dire où l'un quelconque d'entre eux finit, où l'autre commence. En réalité, aucun d'eux ne commence ni ne finit, mais tous se prolongent les uns dans les autres.

"Introduction a la métaphysique," La pensée et le mouvant (5th ed., Paris, 1934), pp. 206-08.

of the individual, a description of experienced time. This is not time perceived as the succession of separate events in terms of which ordinary affairs are organized; it is not time as measured spatially by the clock. Rather, it is interior time perceived as indivisible, yet divided; as continual, yet articulated. Thus, two logically opposed conceptions are united in the experience of real duration, which may be regarded as the prototype of musical time. The flowing succession of musical states or tensions creates a particular mode of experienced time, musical time, that resists the intrusion of the artificial but familiar time of the clock.

The continuity of musical rhythm may be understood as a unified, perceptual flux which is analyzed by the mind as a series of individual events, or as arising from the activity of the mind by which separate events are related and grouped together. While the conception of musical rhythm as analogous to real duration employs Bergson's notion of the simultaneity of multiplicity and unity, we do not intend to be thoroughly Bergsonian. We shall adopt what Bergson would term a spatialized concept of time and succession for the purposes of analysis, while Bergson rejects both analysis and the spatialization of time.

> Real duration is what we have always called time, but time perceived as indivisible. That time implies succession I do not deny. But that succession is first presented to our consciousness, like the distinction of a "before" and "after" set side by side, is what I cannot admit. When we listen to a melody we have the purest impression of succession we could possibly have,--an impression as far removed as possible from that of simultaneity,--and yet it is the very continuity of the melody and the impossibility of breaking it up which make that impression upon us. If we cut it up into distinct notes, into so many "befores" and "afters," we are bringing spatial images into

> it and impregnating the succession with simultaneity: in space, and only in space, is there a clear-cut distinction of parts external to one another. I recognize moreover that it is in spatialized time that we ordinarily place ourselves. We have no interest in listening to the uninterrupted humming of life's depths. And yet, that is where real duration is....[5]

The value of Bergson's contribution to the understanding of time and thus to the field of music aesthetics cannot be denied; but we choose to accept his insights in this area as descriptions of perception rather than to follow him all the way to the rejection of analysis, to the rejection of conceptual thought in favor of metaphysical intuition, and to the final echo of Heraclitus in his assertion that "whether it is a question of the internal or the external, of ourselves or of things, reality is

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5. "The Perception of Change," The Creative Mind, trans. Mabelle L. Andison (New York, 1946), p. 176.

> La durée réelle est ce que l'on a toujours appelé le temps, mais le temps perçu comme indivisible. Que le temps implique la succession, je n'en disconviens pas. Mais que la succession se présente d'abord à notre conscience comme la distinction d'un "avant" et d'un "après" juxtaposés, c'est ce que je ne saurais accorder. Quand nous écoutons une mélodie, nous avons la plus pure impression de succession que nous puissions avoir,--une impression aussi éliognée que possible de celle de la simultanéité,--et pourtant c'est la continuité même de la mélodie et l'impossibilité de la décomposer qui font sur nous cette impression. Si nous la découpons en notes distinctes, en autant d'"avant" et d'"après" qu'il nous plaît, c'est que nous y mêlons des images spatiales et que nous imprégnons la succession de simultanéité: dans l'espace, et dans l'espace seulement, il y a distinction nette de parties extérieures les unes aux autres. Je reconnais d'ailleurs que c'est dans le temps spatialisé que nous nous plaçons d'ordinaire. Nous n'avons aucun intérêt à écouter le bourdonnement ininterrompu de la vie profonde. Et pourtant la durée réelle est là.... "La perception du changement," La pensee et le mouvant, pp. 188-89.

mobility itself. That is what I was expressing when I said that there is change, but that there are not things which change."[6]

Musical Rhythm and Psychology

The psychological process by which a series of stimuli is perceived as rhythmic has long been the subject of a controversy between motor theories, based on recurrent bodily processes and involuntary muscular response to stimuli, and mental theories of pattern perception. While the details and relative merits of these theories need not concern us here,[7] certain conclusions of psychologists working in the area of the perception of rhythm relate to our study.

The principle known as subjective rhythm, one that is commonly accepted by psychologists, may be summarized as follows: Stimuli that are repeated identically at equal intervals of time tend to be subjectively organized into groups of two, three, or four. Once objective contrasts are introduced into the series of stimuli in the form of a repeated pattern of intensities or durations, a subject will modify his perception

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6. Ibid., p. 177. Qu'il s'agisse du dedans ou du dehors, de nous ou des choses, la réalité est la mobilité même. C'est ce que j'exprimais en disant qu'il y a du changement, mais qu'il n'y a pas de choses qui changent.
Ibid., p. 189.

7. For a summary and bibliography of these theories, see: J. L. Mursell, Psychology of Music (New York, 1937), pp. 149-69; and Edwin G. Boring, Sensation and Perception in the History of Experimental Psychology (New York, 1942), pp. 583-87.

of the rhythmic groups accordingly.[8] These conclusions are supported by experiments of the late nineteenth and early twentieth centuries in which the stimuli were either sounds[9] or flashes of light.[10]

The principle of expectation, mentioned in Chapter VII (see pp. 301-302, is supported by theories of emotion by John Dewey,[11] R. P. Angier,[12] and H. D. Aiken.[13] This principle is basic to Leonard Meyer's recent treatise on the aesthetics of music, Emotion and Meaning in Music.[14] According to the theory of emotion based upon the principle of expectation, "emotion or effect is aroused when a tendency to respond is arrested

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8. Fraisse, op. cit., pp. 9-10.

9. Thaddeus L. Bolton, "Rhythm," Amer. Journ. Psych., VI (1894), 145-238. Ernst Meumann, "Untersuchung zur Psychologie und Aesthetik des Rhythmus," Philosophische Studien, X (1894), 249-325, 393-430. Christian A. Ruckmich, "The Rôle of Kinaesthesis in the Perception of Rhythm," Amer. Journ. Psych., XXIV (1913), 305-59. Raymond B. Stetson, "A Motor Theory of Rhythm and Discrete Sensation," Psychological Review, XII (1905), 250-70, 293-350.

10. Kurt Koffka, "Experimental-Untersuchungen zur Lehre vom Rhythmus," Zeitschrift für Psychologie und Physiologie der Sinnesorgane, LII (1909), 1-109. Ruckmich, loc. cit.

11. "The Theory of Emotion," Psychological Review, I (1894), 553-69; II (1895), 13-32.

12. "The Conflict Theory of Emotions," Amer. Journ. Psych., XXXIX (1927), 390-401.

13. "The Aesthetic Relevance of Belief," Journal of Aesthetics, IX (1950), 301-315. See also Bissell, op. cit.

14. Chicago, 1956. Meyer's excellent application of the principle of expectation and of certain laws of Gestalt psychology has been of considerable value for this study, although little of a specific nature has been derived from his treatment of rhythm.

or inhibited."[15] We are not concerned here with the principles of emotion, but only with that of expectation itself. Meyer says, regarding "tendencies to respond" as musical expectation:

> If tendencies are pattern reactions that are expectant in the broad sense, including unconscious as well as conscious anticipations, then it is not difficult to see how music is able to evoke tendencies. For it has been generally acknowledged that music arouses expectations, some conscious and others unconscious, which may or may not be directly and immediately satisfied.[16]

The principle of expectation is supported by certain principles of Gestalt psychology. The law of Prägnanz, a basic tenet of Gestalt psychology, is formulated by Kurt Koffka, one of the leaders of this school, as follows:

> Psychological organization will always be as 'good' as the prevailing conditions allow. In this definition the term 'good' is undefined. It embraces such properties as regularity, symmetry, simplicity and others....[17]

The tendency of the mind toward regularity, symmetry, and simplicity of organization is further emphasized in the Gestalt "law of good continuation," a corollary of the law of Prägnanz. The law of good continuation is the generalization that "a perceived element, such as a line, tends to continue in its established form: e.g., the arc of a circle tends to be

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15. Ibid., p. 14.

16. Ibid., p. 25.

17. Principles of Gestalt Psychology (New York, 1935), p. 110. See also Meyer, op. cit., pp. 86-87.

perceived as continuing to finish the circle."[18] This law pertains to spatial and temporal organization, including music.[19] Meyer elaborates on the law of good continuation as follows: "The perception of a line or motion initiates a mental process, and it is this mental process which, following the mental line of least resistance, tends to be perpetuated and continued."[20] He comments further on the application of both laws to the perception of accents in music: "A tone or group of tones may appear to be accented, not because of any particular distinction which it possesses per se, but because a previously established grouping tends to perpetuate itself, making this type of organization the simplest."[21]

In the psychological experiments cited above (see 334, footnotes 9 and 10), as well as in those by Herbert Woodrow,[22] it was established that the most important objective accents functioning as determinants of rhythm are those of intensity and duration. Woodrow also concluded in his research on the role of pitch in rhythm, that an accent of intensity tends to be interpreted as the beginning of a rhythmic group and an accent of

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18. Horace B. and Ava C. English, A Comprehensive Dictionary of Psychological and Psychoanalytical Terms (New York, 1958), p. 228. See also Koffka, Principles, p. 153.

19. Ibid., pp. 433-34, 437-39.

20. Op. cit., p. 92.

21. Ibid., p. 104.

22. "A Quantitative Study of Rhythm," Archives of Psychology, XIV (1909), 5-66; "The Rôle of Pitch in Rhythm," Psychological Review, XVIII (1911), 54-77.

duration as the ending of a group; but a change of pitch creates neither group-beginning nor group-ending tendencies. In his experiments he does not reject the notion that a repeated series of pitches will be understood as a repeated group, in fact he assumes this notion at the outset; but his experiments indicate that no single pitch, whether the highest or lowest, consistently creates a group-beginning or group-ending effect.

None of the experiments cited was performed in a musical context, and their conclusions are not all suitable to be transferred directly to the analysis of music. A composition is, of course, a more complex series of stimuli than are those used in the psychological laboratory. But certain general conclusions reached by psychologists can be successfully used for musical analysis. In the present study we shall accept the principles of subjective grouping and expectation and the laws of Prägnanz and good continuation. We shall also accept the conclusion that accents of intensity and duration tend to be more important determinants of musical rhythm than changes of pitch. But we shall not accept, for musical analysis, Woodrow's conclusions concerning the group-beginning and group-ending effects of accents of intensity and duration, as there are too many variables in musical rhythm for this conclusion to be consistently and validly applied. Woodrow's conclusion regarding the inability of pitch change to create a group-beginning or group-ending effect could be taken to imply that pitch change cannot provide an accentual effect. We shall reject this implication in favor of the notion of the accentual effect of pitch change in certain contexts, a notion that has met with acceptance among musicians (see pp. 349 ff.).

The Analysis of Musical Rhythm

Accent and Unified Group

In the following analyses of musical rhythm the term "accent" will be used, as it has been above, in a general sense widely accepted in writings on musical rhythm. Meyer's statement regarding the broad use of this term is typical:

> Basically anything is accented when it is marked for consciousness in some way. Such mental marking may be the result of differences in intensity, duration, melodic structure, harmonic progression, instrumentation, or any other mode of articulation which can differentiate one stimulus or group of stimuli from others....[23]

In our analyses we shall deal with accents of duration, intensity, timbre, harmonic progression, and melodic change of pitch.

Another factor influencing rhythmic organization, to be included in our analyses, is that which we shall call the "unified group." (We shall not use the term "motive" for reasons to be made clear in the course of our analyses.) The unified group is a succession of tones that tends to be perceived as a unit for reasons of duration, pitch, intensity, timbre, or style of performance. Typical examples of the unified group are: (1) The pattern of pitches repeated identically or approximately in an ostinato or a melodic sequence; (2) A repeated pattern of durations; (3) A series of notes set off from its context by a sudden change of dynamics, instrumentation, legato performance in a staccato context, staccato performance in a legato context, etc. The unified group differs

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23. Op. cit., p. 103.

from the accent in that the latter calls attention to a single note in the rhythmic continuity as more important than others in its context, while the former calls attention to a succession of notes. The concept of the unified group is helpful for analysis of music of the past, but it is particularly useful for the study of twentieth-century music.

The analyses in this study will be based as much as possible upon the facts of musical rhythm, both accents and unified groups, as notated by the composer. Thus, only notated dynamic accents, legato performance marks, etc., will be considered. But no matter how carefully one may proceed on the basis of facts, a purely objective procedure for the analysis of musical rhythm is impossible. When the subjective element enters the process of analysis, as it inevitably will, we shall adhere to the psychological principles set forth above, giving alternate analyses where genuine ambiguity exists.

We do not intend to present a comprehensive theory, valid for all historical periods and styles, nor do we intend to prescribe specific rules to be followed in analysis. Our purpose is to set forth a point of view toward the analysis of rhythm, to illustrate the application of basic principles, and to provide a classification for certain aspects of rhythmic organization in twentieth-century music. To facilitate the explanation of our approach, we shall begin with the analysis of music of the eighteenth and nineteenth centuries before turning to the more complex examples of twentieth-century music.

Agogic Accent

The accent effected by a note that is longer in duration than others in its context is frequently termed the "agogic accent" and will be so-termed in our analyses. This use of the word is a modification of its meaning as found in the writings of Riemann. The latter reserved the term for the slight irrational lengthening, supplied by the performer, of the note falling at the strong point of what he termed the measure-motive or subdivision-motive. While Riemann's meaning of the term is still used, the modification of its meaning which we shall employ is also common.[24]

In the analysis of a melodic line, the longer of any two successive notes may be termed an agogic accent. The latter tends to restrain or delay the rhythmic flow in contrast with shorter notes which tend to accelerate it. A note is an agogic accent if it is: (1) Preceded and followed by shorter notes; (2) Preceded but not followed by a shorter note; (3) Followed but not preceded by a shorter note. In the first of these positions the agogic accent tends to be more effective than in the other two, as it contrasts with both of its neighboring notes. In the second position the accent tends to be more effective than in the third, for in the former its tendency to restrain or delay the rhythmic flow may

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24. For references to the use of the term as employed in this study, see: Willi Apel, "Accent," Harvard Dictionary of Music (Cambridge, Mass., 1947), p. 6. Harold F. Atkisson, Basic Counterpoint (New York, 1956), p. 13. Earl Bigelow et al., Creative-Analytical Theory of Music (Chicago, 1949), II, 20. A. H. Fox-Strangways, "Time," Grove, VIII, 473. Jacques Handschin, "Akzent," MGG, I, col. 265. Walter Piston, Harmony (New York, 1944), p. 47.

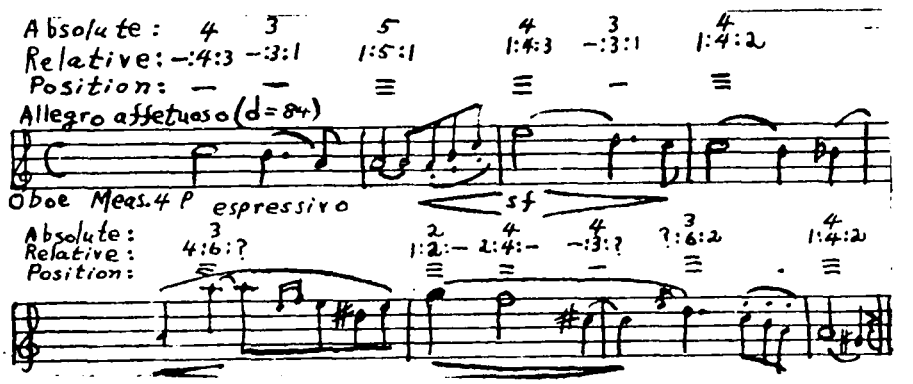
be perceived immediately upon hearing the note performed; in the latter position this tendency is understood only after the following note has been played.

The determination of the relative weights of agogic accents is an extremely difficult task. It is doubtful if any formula could be devised that would accurately determine the relative weights of agogic accents in all possible contexts. A general principle serving as a useful guide for analysis is to consider the weight of a given agogic accent to be dependent upon three facts, in the following order of importance: (1) The "absolute" or notated length of the note; (2) The relative length of the note as determined by the ratios between the length of the agogic accent and its shorter neighboring note or notes; (3) The position of the note, i.e., the effectiveness of the accent according to the hierarchy of three positions set forth above. While neither a binding nor comprehensive rule is intended, it may be generally stated that, all other things being equal, one agogic accent is of greater weight than another: (1) If it is of greater absolute length; (2) If it is of the same absolute length but of greater relative length; (3) If it is of the same absolute length but in a more effective position.

The above principles of the analysis of agogic accents are illustrated in Example 171 (see p. 342). The absolute lengths of agogic accents are designated according to the number of eighth-note values they contain. The ratios between the lengths of agogic accents and their neighboring note or notes are designated either in eighth-note or

sixteenth-note units. The positions, in decreasing order of effectiveness, are indicated by three, two, and one dash.

Example 171
Schumann: Piano Concerto in A Minor, Op. 54, Movt. 1.



The first note of the melody has an absolute length of four eighth notes. The designation of the relative-length ratios begins with a dash, as there is no preceding note, and the ratio between the agogic accent and the following note is 4:3. The position is the least effective, as there is no preceding note. (For our present purpose we shall analyze this example as it stands, without considering the introduction which precedes it in the score.) The second note is also an agogic accent in the least effective position; its absolute length is less than that of the first note, but its relative length is slightly greater. The next agogic accent is the heaviest one of the example; its absolute and relative lengths are greater than any other, and its position is the most effective of the three possibilities. The fourth agogic accent, like the first, is four eighth notes long, but it is of greater weight than the first because of

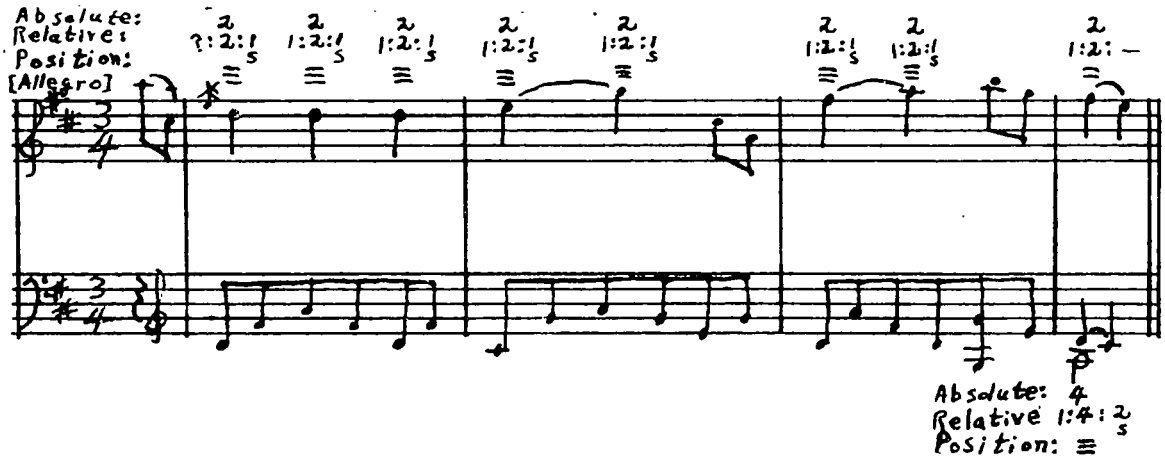
its more effective position. The remaining agogic accents have been analyzed in a similar manner. The analyses of the agogic accents of measures 5 and 7 are questionable because of the indefinite time values of the grace notes. In measure 5 the first agogic accent would be slightly shorter than three eighth notes if time were taken from it to perform the grace notes; on the other hand, if the two grace notes were played together with the following note as a triplet of sixteenth notes, the second agogic accent of measure 5 would be shifted to the following note. The grace note of measure 7 would probably borrow time from the note preceding it.

In the first four measures of Example 171 the agogic accents at intervals of two or four quarter notes establish a regular pattern of emphasis which will tend to be continued subjectively throughout the remainder of the passage, despite the objective accents that contradict it in measures 5-7. There are no agogic accents that satisfy the listener's expectation in measures 5 and 7; only a light accent does so in measure 6, but a heavy accent at the beginning of measure 8 tends to reaffirm the regular pattern of emphasis.

In Example 171 agogic accents were analyzed in terms of the melodic line alone; in that excerpt the harmony parts generally follow the duration patterns of the melody. But in a composition of two or more voices that are rhythmically different, whether in homophonic or contrapuntal texture, it is necessary to take into account the motion of all of the voices to determine the agogic accents. In the melody of Example 172

the first quarter note is an agogic accent because its length is greater than that of the preceding grace note. (A question mark is used for the same reason as were those in the analysis of Example 171.)

Example 172
Mozart: Piano Sonata in D Major (K. 284), Movt. 3, Var. XII.



But the eighth notes sounding in the accompaniment are also responsible for the agogic effect of the quarter note. Thus, the "s" under the last number of the designation of the relative-length ratio indicates that the length so designated sounds simultaneously with the agogic accent.

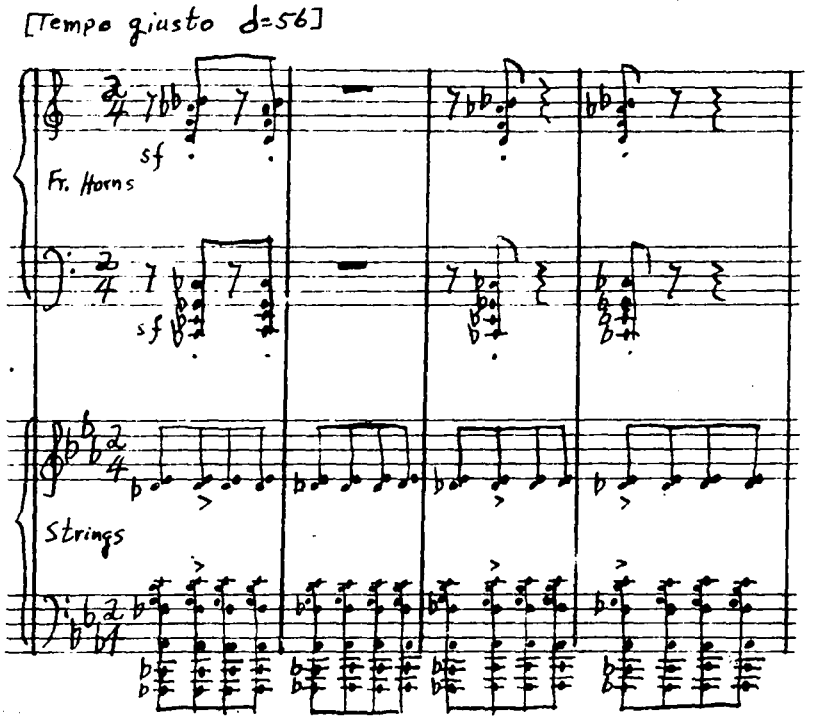
In Example 172 the agogic accents are responsible for the regular pulse at quarter-note intervals, while the organization of the quarter notes into groups of three results from the effects of harmonic rhythm and unified groups, to be discussed below.

Dynamic Accent and Accent of Timbre

Accents of intensity, or "dynamic accents," are seldom notated with such clear distinctions among the various accentual weights as are agogic accents, and from the standpoint of interpretation in performance, of course, there is apt to be a great variety of intensity. We shall consider a dynamic accent to be any stress of intensity, whether it be notated by one of the traditional accent signs, by a sudden change to a higher dynamic level, or as the culmination point of a crescendo; the type last mentioned is present in Example 171 (see p. 342), measures 3 and 5. In each instance the dynamic accent occurs simultaneously with an agogic accent, thus further intensifying that point in the music.

A dynamic accent can also be effected by the addition of more notes to the texture; in orchestral music this type of dynamic accent is frequently an accent of timbre as well. In Example 173 (see p. 346) the dynamic accents of the string parts are reinforced by the added intensity and timbre of the French horns.

Example 173
Igor Stravinsky: Le sacre du printemps. No. 13.



Harmonic Rhythm

Walter Piston has defined harmonic rhythm as "The rhythmic life contributed to music by means of the underlying changes of harmony"; he has termed its two main features "frequency of harmonic change and the rhythmic quality of that change."[25] Regarding rhythmic quality, Piston designates certain root progressions as strong and others as weak, and he

25. "Harmonic Rhythm," Harvard Dictionary, p. 319; Harmony, p. 46.

speaks of longer time values as rhythmically heavy in contrast to shorter values. He considers the "agogic element" to be first among the factors influencing the rhythmic quality of the harmonic change;[26] this is the element of harmonic rhythm that we shall employ in the analyses of our study.[27] The agogic accent in harmonic rhythm is one of the most important factors that create a tendency toward regular grouping in music of the eighteenth and nineteenth centuries. Harmonic rhythm is still important in the rhythmic organization of much twentieth-century music, although in some contemporary works its effect is negligible.[28]

The rhythmic structure of Example 171 (see p. 342), analyzed above in terms of agogic and dynamic accents, is further clarified by the analysis of the agogic accents of its harmonic rhythm shown in Example 174 (see p. 348).

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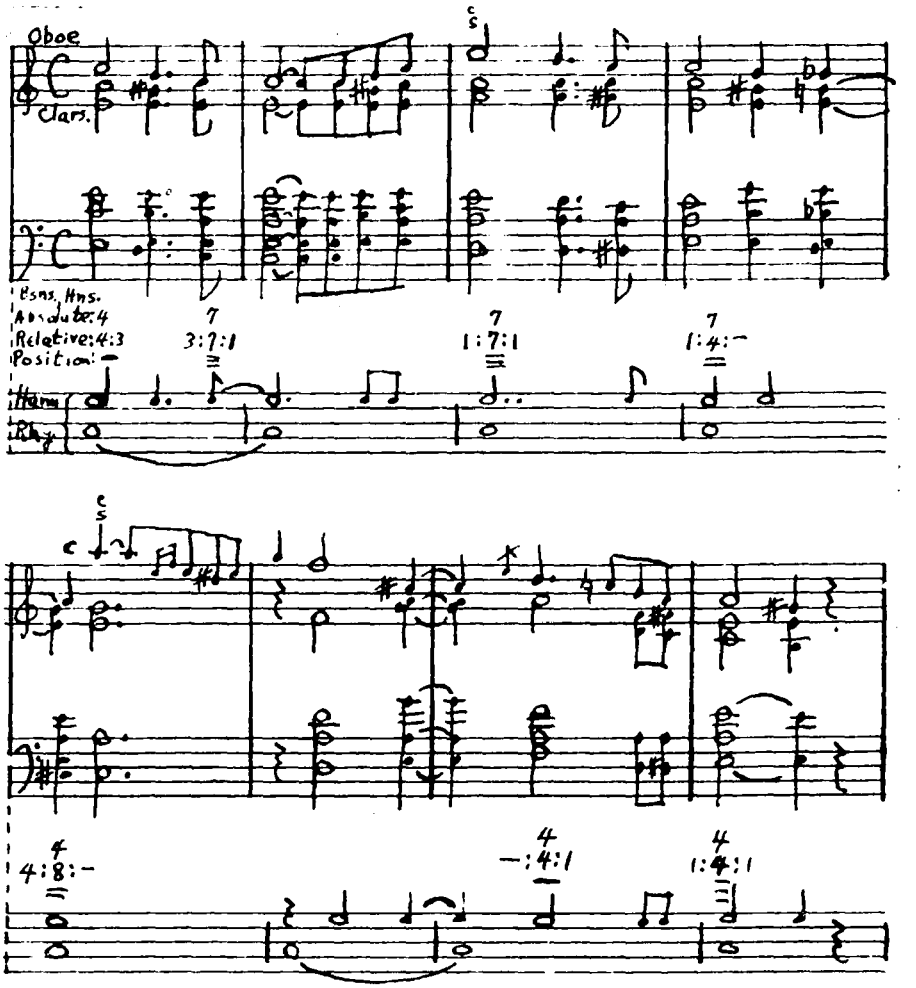
26. Ibid., p. 47.

27. For a penetrating study of this single element of harmonic rhythm in Beethoven's symphonies, see: Jan LaRue, "Harmonic Rhythm in the Beethoven Symphonies," Music Review, XVIII (1957), 8-20.

28. William W. Austin, "Harmonic Rhythm in 20th-Century Music" (Unpublished Ph.D. dissertation, Harvard University, 1950).

Example 174



Two possible analyses are shown; the upper analysis treats every root change as essential, while the lower one considers certain root changes as non-essential. The lower analysis shows only two agogic accents in the harmonic rhythm, at the beginnings of the first and sixth measures; these underline the agogic accent at the first note of the melody and supply an accent at the beginning of the sixth measure in compensation for the absence of agogic accent in the melody. According to the upper, more de-

tailed analysis of harmonic rhythm, the regularity established by the agogic accents of the melody is contradicted at the end of the first measure. Another contradiction by the harmonic rhythm of the agogic accents in the melody occurs at the beginning of the fifth measure; since the harmonic change takes place at the beginning of the measure, the agogic accent of the harmonic rhythm supports the listener's tendency to continue subjectively the regular pattern of grouping established in the first four measures.

The function of harmonic rhythm in Example 172 (see p. 344) is to create a pattern of grouping in units of the duration of a dotted half note.

Melodic Accents of Pitch

Woodrow, in his psychological experiments cited above, found that a change of pitch was of little importance in creating a group-ending or group-beginning effect. Yet, it seems clearly evident in a melodic context that at least two types of pitch change tend to create an accentual effect: All other things being equal, (1) a note that is higher or lower than its neighboring notes will tend to stand out as an accent, and (2) a note that is preceded by a skip will tend to be understood as carrying a greater accentual effect than one taken by stepwise motion. A note that is higher in pitch than its neighboring notes is sometimes termed a

tonic accent."[29] But to avoid possible confusion between the use of the term "tonic" in this sense and in the more common harmonic sense, we shall employ the term "contour accent"; thus, we shall refer to upper and lower contour accents, as well as upper and lower skip accents. The attention devoted heretofore to the so-called tonic accent (see footnote 29 below) and to the effect of tension, energy, or climax created by higher notes as opposed to lower ones suggests the assumption that higher notes are of greater accentual significance than lower ones. While this assumption has not been experimentally verified, it often yields convincing results when employed in musical analysis. We shall, therefore, adopt the principle of considering upper contour and skip accents to be of greater weight than lower; in general, we shall consider larger skips to be of greater accentual weight than smaller ones. But two points must be remembered when dealing with accents of pitch: (1) Lack of support for their rhythmic effect on the part of experimental psychology forces us to consider them rhythmically less important than agogic and dynamic accents; (2) Accents of pitch are bound up with melodic and harmonic principles of intervallic relationships. It is possible, for instance, that in a certain melodic-harmonic context an ascending skip of a perfect fourth would create an accent of lesser weight than an ascending skip of a major third, while in

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29. For this use of the term "tonic accent," see: Apel, loc. cit. Fox-Strangways, loc. cit. François Michel, "Accent," Encyclopédie de la musique (Paris, 1958), I, 241. For a treatment of accents created by notes that are either higher or lower than their neighbors, see: Jens Rohwer, Tonale Instruktionen (Wolfenbüttel, 1951), pp. 336 ff.

another context the reverse would be the case. Since an investigation of the principles of intervallic relationships in twentieth-century melody would carry the present study too far afield, we shall follow, in general, the above-stated principles of analyzing accents of pitch where such principles seem valid, while recognizing their tentative nature.[30]

Example 171 (see p. 342) offers several instances of melodic accents of pitch. The weight of the first note of measure 3 is increased by its upper contour and skip accents, and the weight of the second note of measure 5 is also increased, its skip accent tending to be of greater weight than that of the first note of measure 3 because of the greater size of the skip. The first descending skip of Example 171 is in measure 5, preceding the first grace note. The first note of measure 6 has neither an agogic nor dynamic accent, but the contour and skip accents compensate in part for their absence and tend to lend support to the subjective continuation of the regular system of accentuation established in measures 1-4. The subsequent contour and skip accents may be analyzed in a similar manner.

The Unified Group

The unified group, as pointed out above (see p. 338), is a

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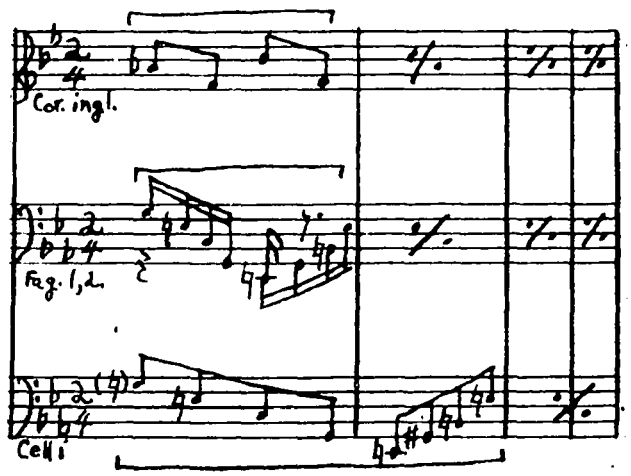
30. Paul Hindemith touches briefly upon the manner in which harmonic tendencies modify the effects of tension and relaxation in ascending and descending intervals, respectively, in the fifth chapter of his treatise Unterweisung im Tonsatz (Rev. ed.; Mainz, 1940), Vol. I, published in an English translation by Arthur Mendel as The Craft of Musical Composition (Rev. ed.; New York, 1945), Vol. I.

succession of tones that tends to be perceived as a unit for reasons of duration, pitch, intensity, timbre, or style of performance. In Example 175 the unified groups, enclosed in brackets, are recognized as such by virtue of their repetition. When a succession of tones is identically

Example 175
Stravinsky: Le sacre. No. 14.



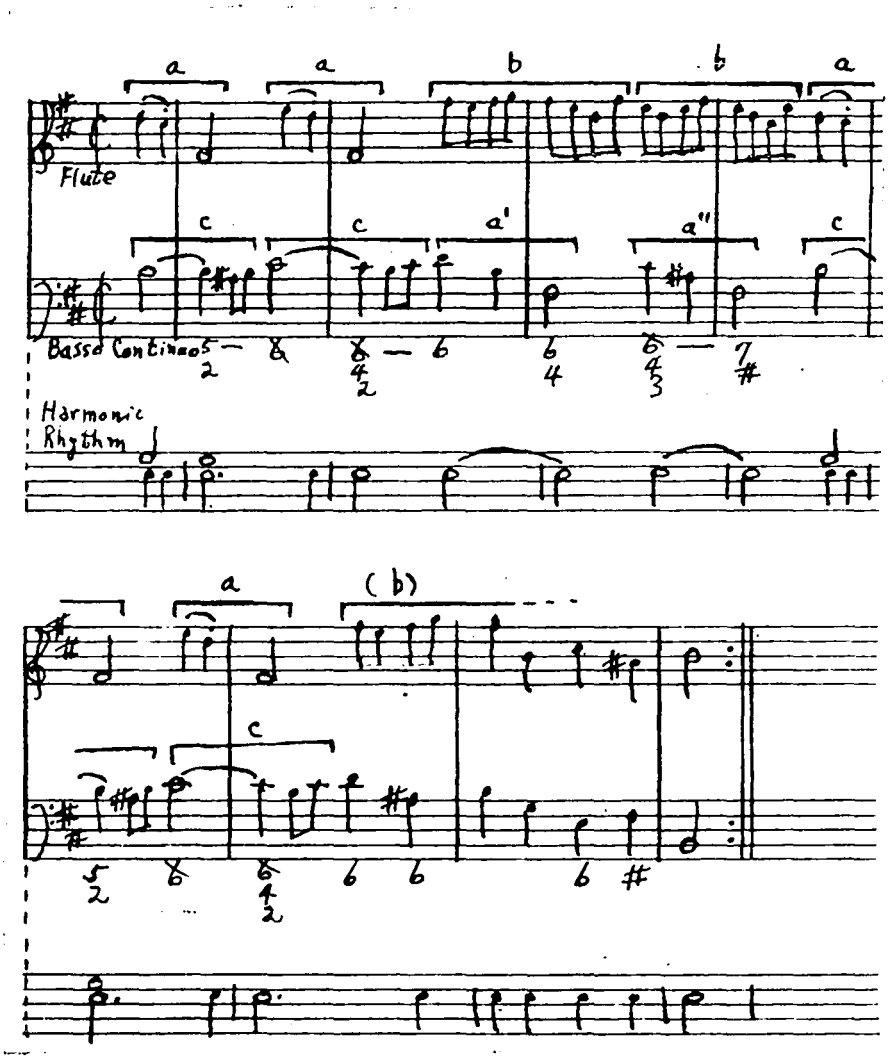
repeated, the first presentation of the succession often fails to provide the listener with sufficient data for him to understand it as a unit; after subsequent statements of the succession, the listener becomes aware of a repeated unit and tends to expect it to continue. The brackets enclosing the unified groups in Example 175, and in subsequent examples, indicate the length but not the accentuation of the group; i.e., the brackets are not intended to imply that the groups they enclose are either initially

or terminally accented. In Example 175 the cello part, which is a slightly modified augmentation of the bassoon parts, exhibits a contour accent at every bar line and thus helps to create a regular system of accentuation. Likewise, there are contour accents at quarter-note intervals in the bassoon part. Since every note in all parts is taken by skip, the skip accent is less important than the contour accent. In the English horn part every note is a contour accent if the analysis is carried out in terms of eighth notes; but in this line there is a strong possibility that the listener would compare the first and third notes of the group (a'-flat and b'-flat), and consider the higher of the two as a contour accent. If this were the case, the accentuation of the English horn part would differ from that of the bassoon parts, although the unified groups of both parts would be of the same duration. The regularity of grouping established by the unified groups and accents of Example 175 is suddenly interrupted at the end of these four measures by a passage that is rhythmically similar to Example 173 (see p. 346) and that could be interpreted in terms of the subjective continuation of regular grouping and accentuation.

As has been pointed out above, approximate as well as exact repetitions of pitches are unified groups. In Example 172 (see p. 344), for instance, the second measure in the lower voice is a modified repetition of the pattern of the first measure. Thus, the effect of grouping in units equal to the dotted half note, also established by the harmonic rhythm as noted above (see p. 349), is reinforced by the repeated pattern of pitches.

In Example 176 (see p. 355) all of the brackets enclose unified groups of repeated patterns of pitches and durations. The unified groups, each equal to a whole note in duration, create a tendency toward regular grouping. Until the third full measure the agogic, contour, and skip accents of the two voices (those cited in Example 176 are representative of the rhythmic organization in the rest of the orchestra) are so evenly balanced that they do not indicate a clear tendency toward either a weak-strong or strong-weak interpretation of the succession of half-note beats. But the analysis of the harmonic rhythm clarifies the accentuation by indicating an agogic accent at the beginning of each of the first two full measures. (Alternate readings of the harmonic rhythm are given where ambiguity arises as a result of the motion of the omitted parts.)

Example 176
J. S. Bach: Suite No. 2 for Flute and Strings, Movt. 3.



A series of short unified groups, similar in structure, may be considered collectively as a longer group, providing the latter contrasts with its immediate context. Thus, the unified groups enclosed in brackets in Example 176 may be taken together to form groups at a higher level: the first two statements of a in the flute part form a longer group

because of their similarity and their contrast with the groups labeled b; likewise, the two statements of b and the last two of a form longer groups. In the basso continuo part, groups at a higher level are formed by the first two statements of c, the statements of a' and a'', and the last two statements of c.

So far we have examined unified groups created only by repeated patterns of pitches and durations; these are the types most frequently encountered. The remaining types, those created by intensity, timbre, or style of performance, will be clarified in the course of the subsequent analyses.

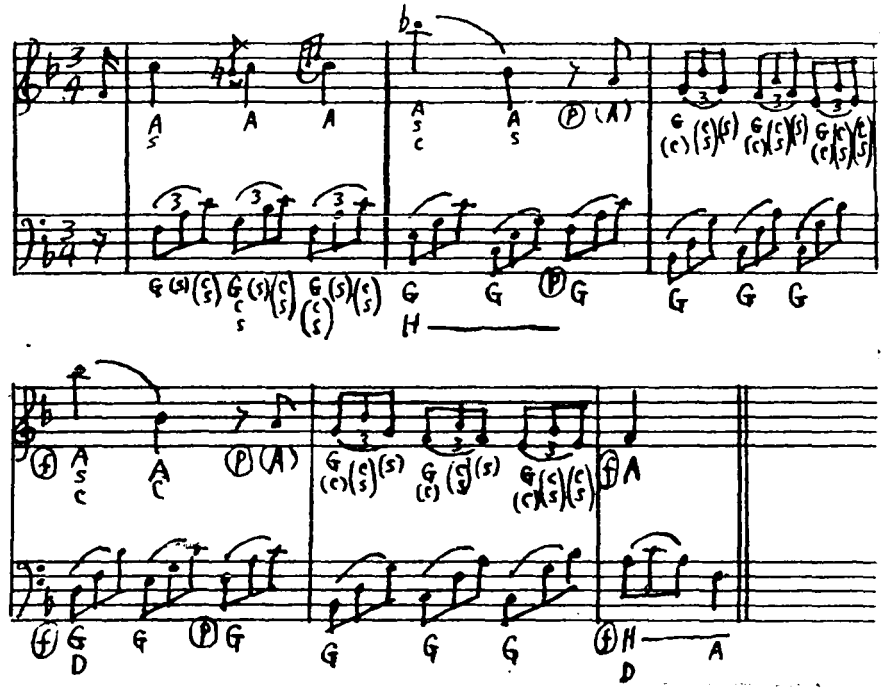
Collective Accentuation

In the above explanations of the various kinds of accents, we have made some general observations regarding relative accentual weights: (1) Accents produced by notes of greater length or intensity are more important to rhythmic organization than those created by changes of pitch. We have accepted this general conclusion on the basis of evidence presented by experimental psychology (see p. 336). (2) Agogic accents vary in their accentual weight, according to their absolute length, relative length, and position (see p. 341). (3) The greater the intensity of the dynamic accent, the greater its accentual weight. (4) The hierarchy of agogic accentual weights may be applied to the agogic accents of harmonic rhythm. (5) Upper contour and skip accents are of greater accentual weight than lower; in general, the wider the skip, the heavier the skip

accent. In none of the hierarchies of accentual weights have we attempted to determine specific evaluations of accents. There has been no intention to answer questions as to whether agogic or dynamic accents are twice, three times, etc. as important as accents of pitch. Such questions could be answered neither with reference to a given style nor to a given composition with the slightest promise of validity. Beyond the general hierarchies of accentual weights listed above, we shall only state that the more accentual elements employed at a given point in a passage of music, the greater will be the tendency toward accentual effect.

Each type of accent treated in the foregoing pages, with the exception of the accent of timbre, is present in Example 177.

Example 177
Mozart: Piano Sonata in C Major (K. 279), Movt. 2.



The collective effect of these accents explains, in so far as the facts of rhythm can explain, the rhythmic effect of the music. Symbols for the various kinds of accents in Example 177 are placed beneath the staves. "A" means agogic accent, "D" dynamic accent, "S" skip accent, "C" contour accent, "H" agogic accent of harmonic rhythm, and "G" unified group (placed at the beginning of each group). All symbols pertain to the music on the staff under which they are found, except for those of harmonic rhythm and dynamics which pertain to both voices and are placed under the lower voice. The relative values of agogic accents are not indicated. Their absolute values are approximately the same, although the grace notes will shorten those of measure 1, and the last note of measure 4 is only one-half the length of most of the others.

The contour and skip accents are indicated in the accompanying voice only in the first measure; the subsequent measures may be analyzed accordingly. These contour and skip accent symbols are placed in parentheses, as such analysis is of questionable validity in this context. Each group of eighth-note triplets functions more as a chordal accompaniment than as a melodic line, and in such analysis the "melodic accents of pitch" are applied to a line that is not essentially melodic. Other possibilities for the analysis of the accompaniment are to analyze only the lowest notes as a continuous line, or to consider the lowest notes as one line and the highest notes as another line. In the third and fifth measures of the upper staff, a melodic pattern is used which is in some respects similar to that just discussed in the accompaniment. These

groups of triplets might better be analyzed as an ornamented descending line, or as two parallel descending lines, rather than as a series of contour and skip accents as the symbols in parentheses indicate.

The agogic accents and unified groups of Example 177 are chiefly responsible for the regular quarter-note pulse. The first beat of measure 1 is further accented by an ascending skip, and the beginning of measure 2 by a large ascending skip, a contour accent, and an agogic accent of the harmonic rhythm. The second beat of measure 2 is preceded by a descending skip which, however, seems to be of less accentual importance than the preceding ascending skip. Thus, the first two measures clearly establish regular quarter-note beats that are grouped in units of three by stronger accents at bar lines. This grouping will tend to be subjectively continued by the listener, as it is not contradicted by subsequent accents.

Factual and Interpretational Analysis

The foregoing analyses differ from those typical of the treatises studied in Part I in their insistence upon the observation of the facts of music with only a limited degree of subjective interpretation. Little was said in our analyses about subtleties of performance such as dynamic accentuation and shading, slight irrational separation between certain notes, and minute expressive modifications of tempo; neither do our analyses attempt to group notes into motives. In Example 171 (see p. 342) we observed and related the various types of accents but did not

venture an opinion as to whether the second and third notes of the example should be grouped with the first or with the fourth note. Likewise, in Example 172 (see p. 344) we indicated the agogic accentual effects of the quarter notes and their tendency to be grouped in threes as a result of the harmonic rhythm and the unified groups in the accompaniment. But we did not attempt to determine, as the theorists of Part I might have done, whether the second and third quarter notes should be grouped with the first note of the first measure or considered upbeats to the beginning of the second measure.

Problems of motive determination are apt to be more subjective, more matters of personal opinion, and lend themselves more to the danger of distorting the rhythmic organization than the limited interpretations set forth in our analyses. Bergson's description of the continuous flux of real duration, which "is a succession of states, each of which announces that which follows and contains that which precedes it," and his further comment that while experiencing these states "they were so solidly organized, so profoundly animated with a common life, that I could not have said where any one of them finished or where another commenced," (see p. 330) may be profitably applied to a consideration of the determination of motives in musical rhythm. A descriptive analysis is apt to be more accurate if it emphasizes continuity and points of articulation, peaks of the rhythmic waves within the continuity, than if it attempts to create specific dividing lines as does the motivic approach accepted by most of the treatises studied in Part I. Thomas Taig well expresses the

disadvantage of attempting to partition by analysis that which in its very nature is continuous:

> In dealing with sound-rhythm it is particularly necessary to emphasize continuity, because the study and description of the experience involves analysis and the great disadvantage of analytical systems is that they concern themselves with trees rather than with wood. Students of music too often think of bars, prosodists fix their attention on feet or time-periods and forget that such systems are no more than convenient instruments by the aid of which artists and scientists try to measure rhythmic progression and translate it into written characters. The pulsations of rhythmical sound, like waves on still water, move forward by imperceptible changes, one passing into another by insensible gradations. The motion once established who shall say where the wave begins or ends?
>
> Let the continuity be forgotten, however, and it is easy to slip into that tiresome discussion as to the exact position of the dividing lines. Very soon we come to believe that such lines are essential to the rhythm and not merely to the analysis....[31]

Our analyses avoid the problem of trying to determine the position of dividing lines between motives and other similar units by eliminating them from the analytical procedure. But we hasten to add that, while we consider motive analysis a matter of personal musical feeling, we do not consider it an unimportant activity for the performer; on the contrary, it is of great importance to him. His conception of the motives and larger units of a composition can make a vast difference in the aesthetic effect of his performance; thus, every performer is obliged to consider such matters carefully. But styles and techniques of rhythmic organization cannot be adequately described and compared in such subjective terms;

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31. Rhythm and Metre (Cardif, 1929), pp. 15-16.

description and classification require a study of the facts of rhythm with the most limited subjective interpretation possible.

A few words remain to be said of the relation between the unified group and the motive, lest the former be mistaken for the latter. Our analysis of unified groups occasionally appears to be an analysis of motives, as is particularly the case in Example 176 (see p. 355) which seems similar to the type of motive analysis employed by Riemann. But there is a difference between the concepts of the unified group and the motive. Unified-group analysis is applied only to a series of notes that tends to influence rhythmic grouping as a result of its being set apart from its context for certain factual reasons; the motive, on the other hand, is usually conceived as a unit of meaning which may or may not be set apart from its context for factual reasons. All music could be divided into motives, but all music does not have what we term unified groups.

The Classification of Twentieth-Century Music According to Rhythmic Organization[32]

Metrical, Polymetrical, and Nonmetrical Rhythm

The analyses of the facts of rhythm and the implied subjective grouping in the preceding examples of this chapter have shown that in

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32. Rhythmic organization from the standpoint of compositional procedures or specific devices will not be treated. For information concerning some of the most notable ones, see: (continued on page 363)

those examples regular organization prevails. Even a passage like Example 173 (see p. 346), in which the accents are irregularly organized, may be interpreted in terms of a regular system of grouping if it is preceded by a regularly organized passage such as that shown in Example 175 (see p. 352).

The kind of organization that we have discovered in these examples corresponds in a general way to the preconceived notions of metre found in the treatises studied in Part I. We did not, of course, find support in the facts of music for the systematic differentiation of weights of the various parts of the measure implied by the preconceived notion of metre as presented by such theorists as Marx and Hauptmann. But the facts usually reveal sufficient objective reason for the listener to continue subjectively a feeling of regular pulse or beat. This kind of rhythm we shall term "metrical," and we shall use the term "metre" to refer to the system of regularity that has been abstracted from the facts of the music. Thus, metre is not determined from the time signature or the positions of the bar lines. In most music of the eighteenth and nineteenth centuries the metre will coincide with the regular arrangement of

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(continued from p. 362) Pierre Boulez, "Propositions," Polyphonie, II (1948), pp. 65 ff. Henry Cowell, reviews of compositions by Pierre Boulez, John Cage, and Morton Feldman in "Current Chronicle," Musical Quarterly, XXXVIII (1952), 123-24. Robert Craft, "Boulez and Stockhausen," in Score, No. 24 (1958), pp. 54-62. Hermann Heiss, Elemente der musikalischen Komposition (Heidelberg, 1949), pp. 10-39. Olivier Messiaen, Technique de mon langage musical (Paris, 1944), pp. 14 ff. Gerhard Nestler, "Betonungsrhythmik und musikalische Form," Melos, XVII (1951), 309-14. H. H. Stuckenschmidt, "Synthesis and New Experiments: Four Contemporary German Composers," MQ, XXXVIII (1952), 353-68. Karl H. Wörner, Neue Musik in der Entscheidung (Mainz, 1954), pp. 232-42.

bar lines, but it will do so less frequently in music of the twentieth century.

A composition may be said to have two or more metrical levels if it exhibits systems of regular emphasis at two or more intervals of duration. Example 172 (see p. 344), for instance, exhibits metrical organization at the levels of the eighth note, quarter note, and dotted half note. These three levels we shall term beat-subdivision, beat, and metre. Thus, metre is a grouping of beats and beat is a grouping of still smaller units.

We shall consider the beat of music the perceptible pulse, supported by the facts of rhythm, which could be used as a conductor's beat. Thus, the determination of the beat is to some extent a relative matter. The individual must decide, on the basis of tempo and the facts of rhythm, which perceptible unit he will consider the beat. Then if the grouping of those beats is regular, he will consider that grouping to be the metre. While the determination of the beat is relative to the individual, there are seldom more than two different units that would meet the requirements set for the beat. If two or more different units meet these requirements, then two or more analyses must be considered equally valid. In most instances the alternate analyses are not strikingly different from the standpoint of classification.

It is important to note that for the purposes of our analysis the beat must be a perceptible unit, supported by the facts of music, rather than merely a convenient unit for counting the durations. Some music, especially in certain styles of the twentieth century, does not

have a perceptible beat; in such instances a conductor or performer will often adopt a certain time unit which he calls the beat, but which would not be so termed in our analyses, for the purpose of counting or measuring the durations of the time units to be played.

It has been pointed out above that the notion of meter is inseparable from that of regularity, and that various metrical levels are considered to exist if various systems of regular emphasis are exhibited by the facts of rhythm. If there is a regular system of emphasis at the level of the beat but no higher system of grouping, then the beat, because it is the highest level of regularity, will take the place of the metre.

The perceptible units that we call beats may be either equal or unequal in length. In some twentieth-century music the only perceptible pulse supported by the facts of music at the level of the beat is a pulse recurring at unequal intervals of time; such music will be said to have "unequal" beats. If the unequal beats are regularly grouped, the organization will be called "metrical rhythm with unequal beats." If they are not regularly grouped, the rhythm will be classified as "nonmetrical."

In twentieth-century music two or more different systems of regularity at the level of the metre are sometimes employed simultaneously. This is usually effected by a combination of ostinato figures of different durations. Such organization will be termed "polymetrical" and will be considered further in reference to specific examples below (see pp. 392 ff.).

The following classification of music according to rhythmic

organization, derived from the above considerations, will be treated below: (A) Metrical rhythm organized by (1) the regular grouping of equal beats, (2) the regular grouping of unequal beats, and (3) equal beats with no clear tendency toward a higher grouping. (B) Polymetrical rhythm. (C) Metrical-Nonmetrical rhythm, i.e., rhythm that is metrical at the level of the beat but nonmetrical at the higher level, as the regular beats are irregularly grouped. (D) Nonmetrical rhythm organized by (1) unequal beats with irregular grouping, (2) unequal beats with no clear tendency toward a higher grouping, and (3) such freedom of accentuation that there is no clear tendency toward the establishment of a perceptible beat.[33]

Another possible class of music according to rhythmic organization is free rhythm, referred to above (see pp. 300 and 328), in which the time values are not counted but are determined from a purely emotional standpoint. Such rhythm is not characteristic of twentieth-century art music of the West; but the last type of nonmetrical music mentioned, that with no clear tendency toward the establishment of a perceptible beat, can seem unmeasured to the listener, particularly when great flexibility of tempo is employed.

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33. Classes A1-2, C, and D3 form parts of Wiora's classification of European folk music according to rhythmic organization in his Chapter VII, "Der Beitrag der europäischen Volksmusik zur Musiklehre: zur Lehre vom Rhythmus," op. cit., pp. 186-97; Wiora restricts his analysis and most of his commentary in that chapter to folk music. His Chapter VI, "Von Herder zu Bartok," pp. 134-78, includes commentary on the influence of the rhythm of folk music on that of twentieth-century art music but does not include analyses of specific examples.

The following musical examples, for the sake of brevity, have been chosen chiefly from chamber music. They exhibit the kinds of rhythmic complications found in both orchestral and keyboard works.

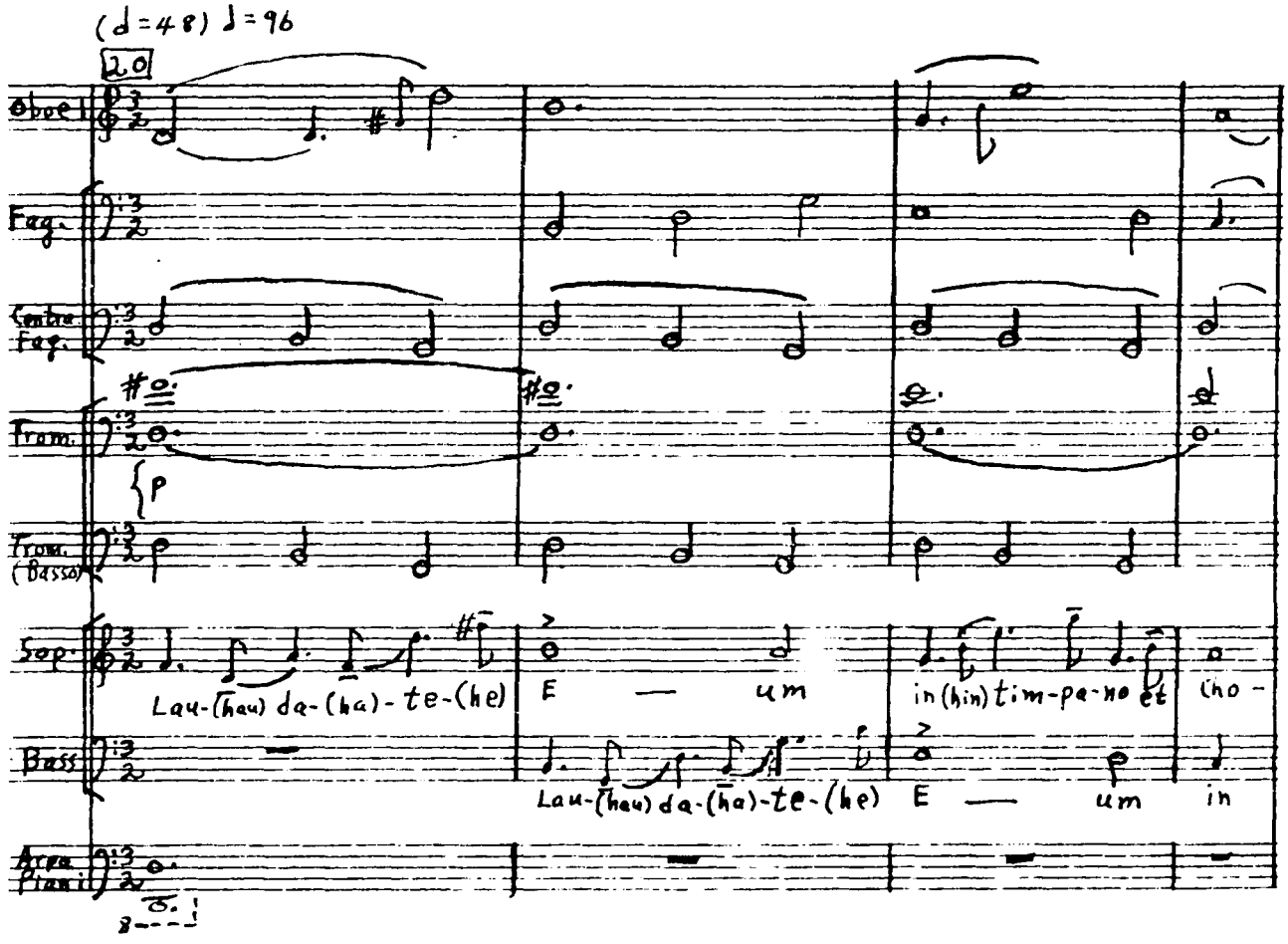
Metrical Rhythm: Regular Grouping of Equal Beats

This type of rhythm is closer to that most common in the eighteenth and nineteenth centuries than are the other types to be treated. It is seldom, either in music of the last two centuries or in that of the present, that such rhythm is employed for more than a few measures without accentual contradictions of the basic metrical structure. The contradictions are often effected by light accents which may be understood as syncopations or "displaced" accents. Sometimes, however, the contradictions are so strong as to effect a momentary suspension of the metre or a change of metre. Example 171 (see p. 342) illustrates a passage of nineteenth-century music in which the contradictions may be understood as syncopations, and Examples 178-180 (see pp. 368 ff.) are twentieth-century instances of the regular grouping of equal beats with light accentual contradictions. In Example 178 the half note is the beat presented by the facts of music, and half notes are grouped in threes by agogic accents, dynamic accents, and unified groups (especially the ostinato in the bass trombone and contra-bassoon parts). There are contradictions of this basic metre, such as the stresses on the eighth notes in the voice parts, and the agogic, skip, and contour accents of the oboe part on the third beat of measure 1 and on the second beat of measure 3; but such contradic-

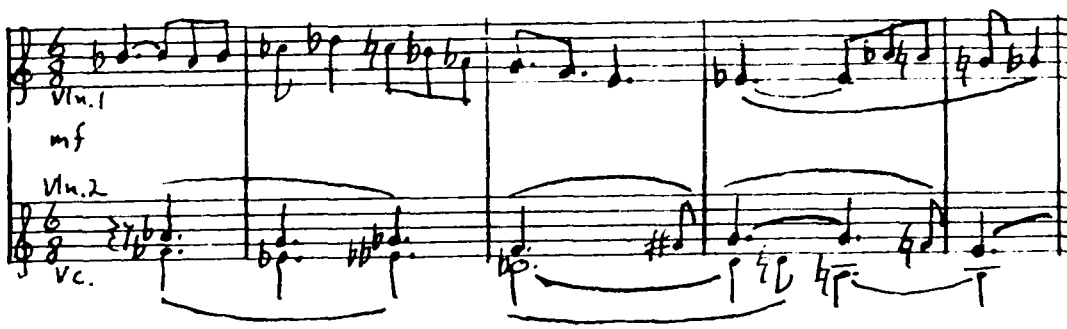
tions are mild in comparison with the strong factual support for the basic metre.

In Example 179 (see p. 369) a perceptible eighth-note beat is established in the first two measures of the first violin part. The subjective continuation of this beat may be easily accomplished, as it is

Example 178
Stravinsky: Symphonie de Psaumes, Movt. 3.



Example 179
Bela Bartok: Sixth String Quartet, Movt. 3.

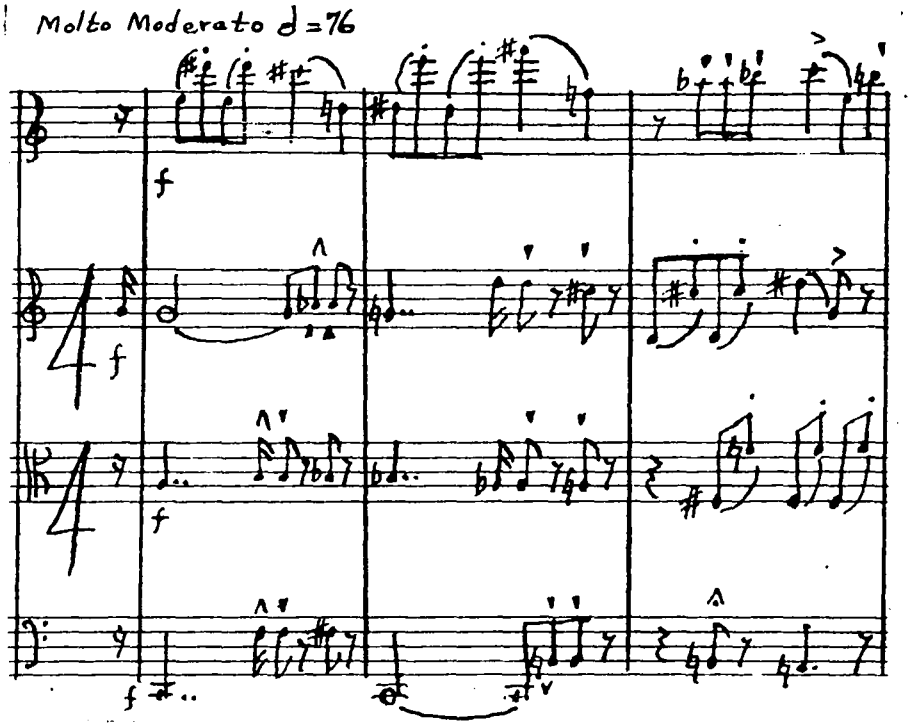


well supported by the facts; the only contradiction, a slight one, occurs in the third measure of the first violin part. The beats are easily understood as grouped in threes; the first three notes of the second violin and cello establish this grouping, and their later motions do not contradict it. The second note of measure 2 in the first violin part is an agogic and contour accent contradicting the metre, but the contradiction is not strong. There is also factual support for considering the dotted quarter note as the beat and the grouping of two of these as the metre, since the longest agogic accents occur on the first beats of measures 1, 3, and 4. But the objective support for this metrical unit is not as strong as for that of three eighth notes.

Example 180 (see p. 370) establishes its beat and metre by agogic accents, dynamic accents, and unified groups, created by repeated patterns of pitches and durations. At the beginning of the first violin

part the eighth notes are grouped as two pairs by repetition of the pitch pattern, and these two pairs, taken together, form a unit of a half note in duration.

Example 180
Arnold Schoenberg: String Quartet III, Op. 30, Movt. IV.

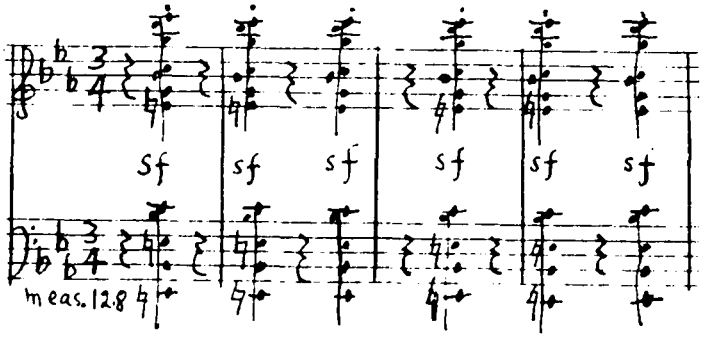


The following quarter notes complete the pattern of pitches and durations which is then repeated in the next measure. The second measure's approximate repetition of the first creates another unit of grouping equal in length to the whole note. The latter is emphasized as the principal unit of grouping by the agogic accents in the three lower voices at the

beginnings of the first two full measures. The quarter notes in the first violin part are emphasized by notes performed martelé followed by rests in two of the lower voices. Thus, whether the beat is considered to be the quarter or the half note (the composer designated the tempo in terms of the latter), the first two measures are traditionally metrical in their regular grouping of beats with emphases at the bar lines. In the third measure the second violin continues the repetition of the pitch and duration patterns established earlier by the first violin; the other voices confirm the grouping at quarter-note intervals, although there is no confirmation of the accent at the bar line. The subsequent measures (not quoted) include further contradiction of the metrical structure, followed by a strong confirmation of it.

Instances in which accentual contradictions of the basic metre are so strong that they nearly or completely suspend the basic metre for a few measures are present in much music of the eighteenth and nineteenth centuries and are particularly numerous and well known in the works of Beethoven and Brahms. In a passage from the first movement of Beethoven's Third Symphony, shown in Example 181 (see p. 372), the full orchestra plays strong dynamic accents on quarter notes separated by quarter-note rests. This passage is preceded and followed by traditional 3/4 metre, although the preceding measures are strongly syncopated. While it is quite possible that Example 181 could be understood as a series of syncopations of the basic metre, confirmation of that metre has been momentarily suspended; some listeners, following only the accents of the passage,

Example 181
Beethoven: Symphony No. 3, Movt. 1.



might understand it as a momentary change to 2/4 metre.[34]

In twentieth-century music that is organized in terms of a regular grouping of equal beats, accentual contradictions functioning to suspend or nearly suspend the basic metre for a few measures are apt to be more complex than are those in music if the eighteenth and nineteenth centuries. Example 182 (see p. 373), more typical of Schoenberg's treatment of the regular grouping of equal beats than Example 180 (see p. 370), establishes a metre at the beginning, suspends or nearly suspends it by numerous accentual contradictions, and then returns to a clear statement of the metre. The music of Example 182 immediately follows a molto ritardando and begins a new tempo. The first two measures establish a quarter-note beat: the dynamic accent in the first measure of the viola part is followed a quarter note later by the lower contour accent of the

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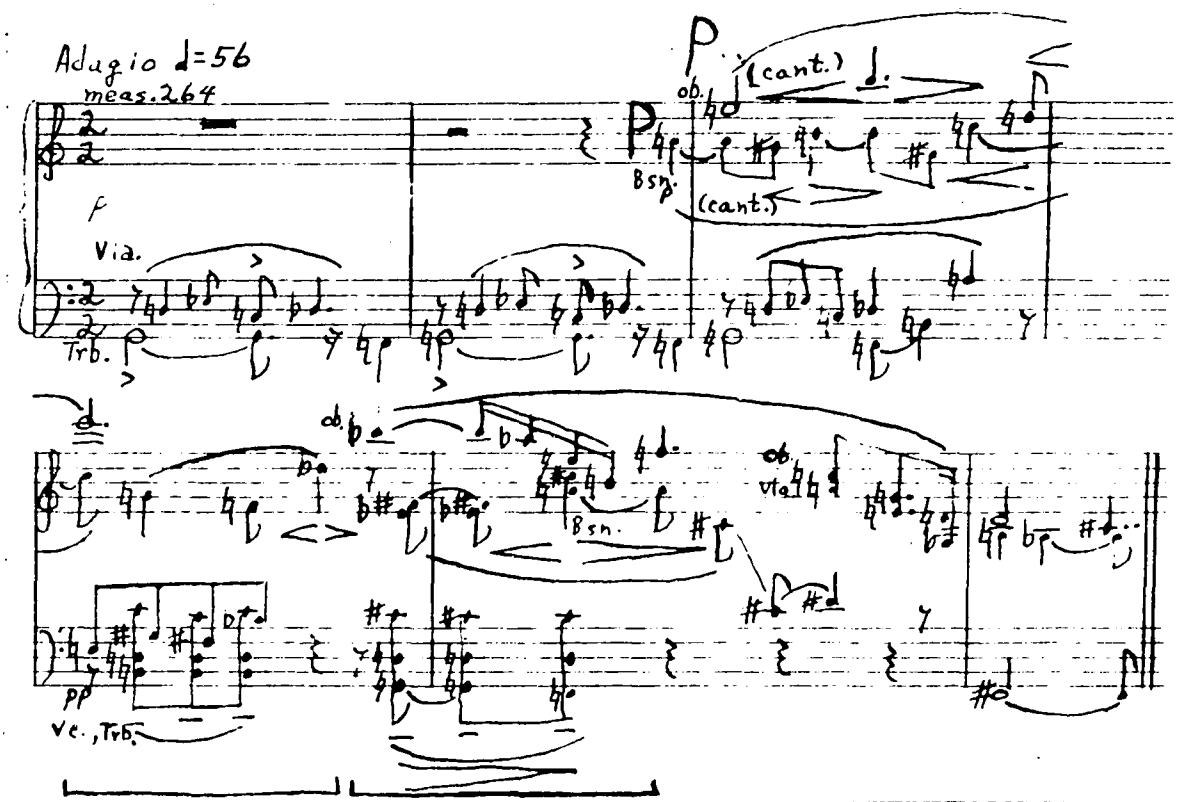
34. Curt Sachs, in op. cit., p. 329, considers this passage a momentary change to 2/4 metre.

Example 182
Schoenberg: Concerto for Piano and Orchestra, Op. 42.



trombone, which is in turn followed by an agogic accent in the trombone at the beginning of the second measure. The beats of the metre established in the first measure are not entirely clear, as they are contradicted by the agogic accents of the first and fourth notes in the viola part, but they are clear enough to form a listening possibility that is strengthened by subsequent emphases at quarter-note intervals. The quarter-note beats are grouped in fours by the agogic and dynamic accents of the trombone,

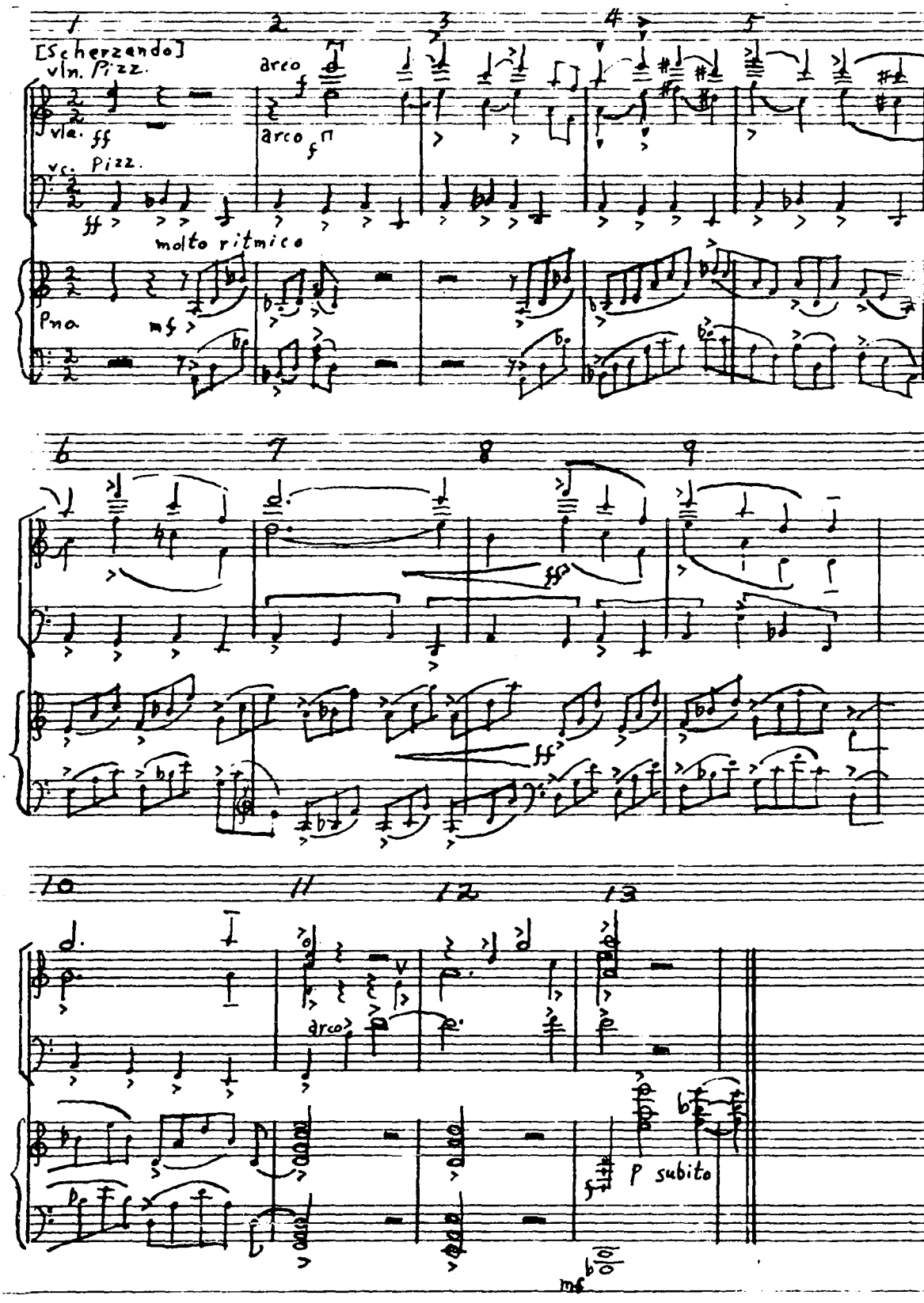
and by the repetition of the first measure which functions as a unified group of pitches and durations. Although the agogic accent of the first note of the bassoon contradicts the expected accent at the bar line, that expectation is satisfied by the agogic accents in the trombone and oboe parts. There is an accent on every beat of the third measure, but there are also contradictions of the first, third, and fourth beats by agogic accents tied over the points where accents are expected. Although the first beat of the fourth measure is heavily accented in the oboe part, this measure reveals less confirmation of the basic metrical structure than does the third. The pattern of three eighth notes in the cello and trombone parts, beginning on the second eighth note of measure 4, is approximately repeated at the end of measure 4 and the beginning of measure 5. In each case this three-note pattern begins an eighth note after the agogic accent in the oboe part, and, together with the oboe, it could be heard as a unified group contradicting the metre, as indicated by brackets added below the example.

In the fifth measure there is no accent on the first beat, the second beat is contradicted by the bassoon but accented by the oboe, the third beat is contradicted by the oboe, and the fourth beat is accented by the oboe and viola. The sixth measure tends to re-emphasize the metre. While the entire passage could be heard in terms of a regular grouping of equal beats with strong syncopations, such a metrical structure is somewhat weakened in the third measure and might be abandoned in the fourth and

fifth measures by some listeners, depending upon the strength of their subjective continuation of the basic metre.

Example 183 (see p. 376) is another passage in which heavy accents contradict and tend to suspend momentarily the basic metre. The two measures prior to the beginning of Example 183 establish a quarter-note beat in quick tempo and a regular grouping of four beats as the metre. In the first six measures the cello plays an ostinato of eight quarter notes that subdivides into two groups of four quarter notes; thus, it conforms to and tends to perpetuate the established metre. In measures 7-9 the cello retains the quarter-note beat, and in measures 7-8 it also retains the pattern of pitches used as an ostinato; but the quarter notes are grouped in threes, as indicated by the dynamic accents and the brackets supplied by the composer. In the piano part the contradictions of the beat and beat-grouping are weak in the first few measures, becoming stronger in measure 5 and still stronger in measures 6-10. The dynamic accents, repeated pattern of pitches, and legato groupings tend to establish a metrical unit of three eighth notes until measures 9-10 where the unit is extended to four eighth notes. The violin and viola parts begin the example with a strong syncopation of the established metre; there is no further strong contradiction of the metre in these parts until measures 5-6 where groupings of three quarter notes are indicated by dynamic accents and bowing marks. In measure 7 the violin and viola confirm the metre again by a strong agogic accent; they contradict the metre again in measures 8-9 by groupings of three quarter notes, but confirm it in measures 10-12.

Example 183
Robert Palmer: Piano Quartet, Movt. 3, Letter C.



Throughout Example 183 there is strong support for the quarter-note beat; thus, the groupings of eighth notes in the piano part may be understood as syncopations of the beat. But the support for the quadruple grouping of quarter notes is not as strong as for the beat. The strongest negations of the quadruple metre occur in measures 8-9. In measure 7 the violin and viola parts have emphasized the quadruple metre by an agogic accent, but the cello has begun its triple grouping of quarter notes. In measures 8-9 the cello continues the triple grouping and the violin and viola also employ a triple grouping which begins two beats later than that of the cello; thus, in these two measures there is a strong tendency toward a suspension of the quadruple metre. The latter is re-established in the last three measures of the example.

Metrical rhythm organized by the regular grouping of equal beats is the basis for all jazz, whether it be that of the early New Orleans "two-beat" style, of the "swing" style most characteristic of the late 1930s and 1940s, or of the more recent "bebop," "cool," and "progressive" styles. The history of jazz shows a growing increase in the complexity of expression of its metrical basis, or "infrastructure," to use André Hodeir's term,[35] played by the rhythm section in ensemble jazz. In the most recent styles, there is frequently a tendency toward the decomposition of the infrastructure brought about by strong accents between beats played separately by the various members of the rhythm section. The

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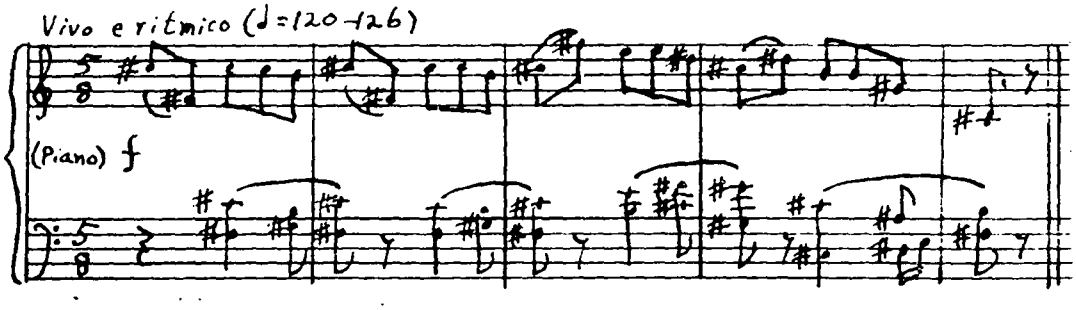
35. Jazz: Its Evolution and Essence, trans. David Noakes (New York, 1956), pp. 197 ff.

"superstructure" (the rhythmic-melodic articulation of the phrase by a soloist or an ensemble) in recent jazz has also become extremely complex in its often fragmentary style, its sudden and unexpected breaking off of phrases and motives, and its more complex type of beat-subdivision and accentuation. Yet, even in the most complex jazz of recent times there is seldom a total negation of the quadruple grouping of equal beats.[36]

Metrical Rhythm: Regular Grouping of Unequal Beats

The first two measures of Example 184 constitute a unified group and its repetition. The measures consist of two beats each: the first beat comprises two eighth notes that form a group by virtue of the legato performance mark; the second beat, of three eighth notes in duration, begins with an agogic accent in the left hand. This grouping of two unequal beats per measure is carried out consistently in the subsequent measures.

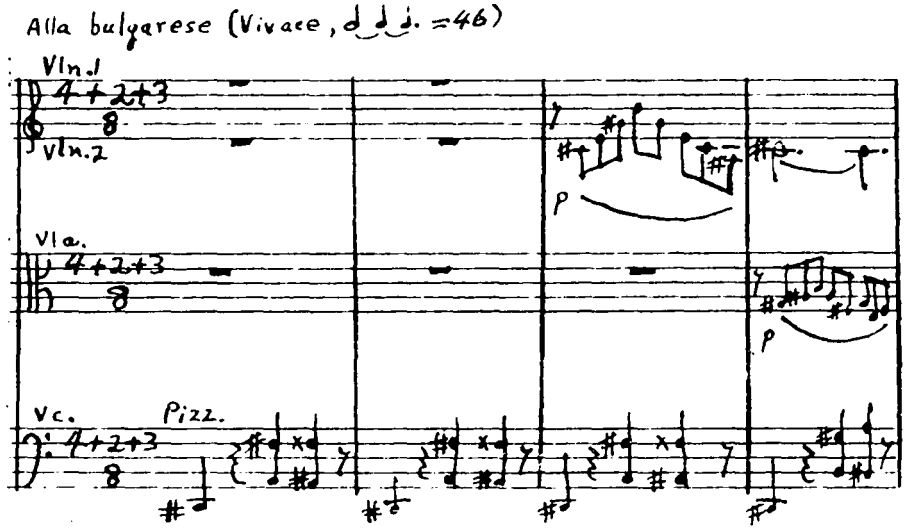
Example 184
Halsey Stevens: Quintet for Flute, Violin, Viola, Violoncello, and Piano, Movt. 2.



36. For a full discussion of the rhythm of jazz, (continued on page 379)

Example 185, like the preceding example, presents a unified group with repetitions. The first beat, of four eighth notes, is set apart from the others by virtue of its lower pitch, becoming a contour accent at the beginning of each measure. When the other parts enter they emphasize the metre by agogic accents at the bar lines.

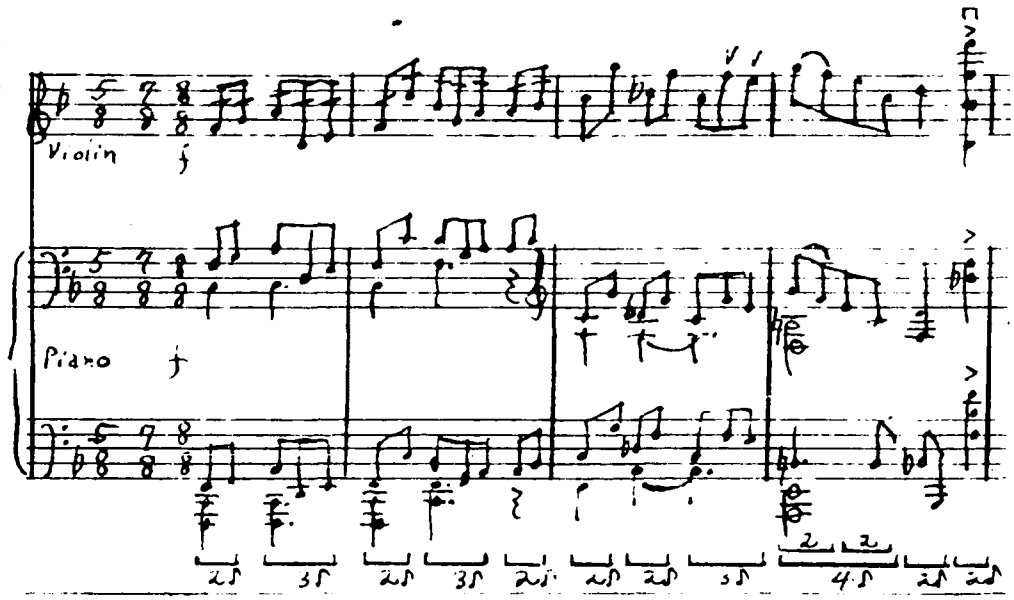
Example 185
Bartok: Fifth String Quartet, Scherzo.



(continued from page 378) see Hodeir's Chapter XII, "The Phenomenon of Swing," pp. 195-209, and Chapter XIII, "The Evolution of Rhythmic Conceptions," pp. 210-23. For examples, see Hodeir's selective "Discography," pp. 283-89. Two collections of recordings illustrating the history of jazz are: Classic Jazz (5 discs; Riverside, 12-112/116) and Encyclopedia of Jazz (4 discs; Decca, DX-140).

Example 186 employs a long series of unequal beats which are not regularly grouped in the four measures that are quoted. But these four measures are employed as a single metrical unit which is repeated, clearly

Example 186
Serge Prokofieff: Sonata for Violin and Piano, Op. 80, Movt. 4.
(Edited with special annotations by Joseph Szigeti.)

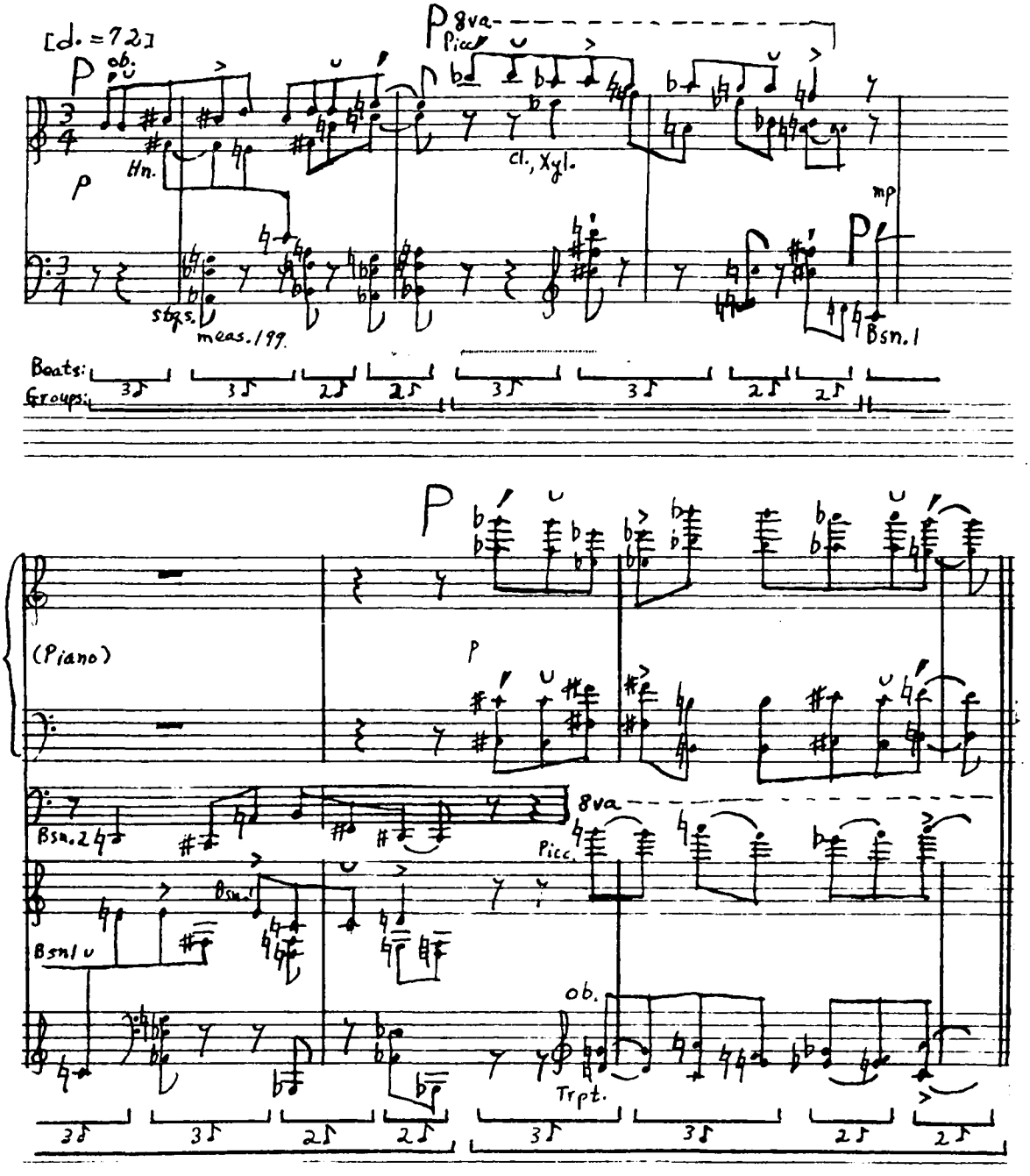


and without interruption, four times in the music that immediately follows. This four-measure pattern recurs frequently, with only minor interruptions, throughout the first section of the movement. Although the grouping of units as long as this borders on the area of formal rather than rhythmic structure, the quick tempo and strong accent at the end of the group make it reasonably easy for the listener to understand the entire group as a single metrical unit.

The beats of Example 186 are indicated below the lower staff by brackets and numbers to show the durations in eighth notes. The first four beats tend to establish an expectation of a regular grouping of two beats of unequal length, and this expection lends emphasis to the beginning of the fifth beat which is not objectively accented. The first two beats of measure 3 are emphasized by agogic accents and a repeated pattern of pitches in the melody. The beginning of the third beat of measure 3 is not emphasized by an agogic accent, but the first note of the beat tends to be understood as the beginning of another repetition of the pattern of pitches used in the first two beats of that measure. The first beat of the last measure could be considered a unit of four eighth notes because of the heavy agogic accents; but that unit tends to subdivide, as marked, because of the legato performance of the first two notes which sets them apart from the second two, and because of the tendency toward subjective grouping in units of two or three eighth notes, resulting from previous grouping. The last two beats are emphasized by agogic accents, and a dynamic accent is added to the final beat.

Example 187 (see p. 382) is a more complex instance of the regular grouping of unequal beats than are the preceding examples, as it includes more contradictions of beats. The first beat of the example is emphasized by a dynamic accent, indicated by the mark that Schoenberg uses to designate an accent comparable to that of a "downbeat." The second

Example 187
Schoenberg: Concerto for Piano and Orchestra, Op. 42.



beat is marked by a dynamic accent in the oboe part and by dynamic and timbre accents at the entrance of the strings. The note tied over the bar in the French horn part is an agogic accent contradicting the accents of the beats. The third and fourth beats are stressed by the eighth-note chords in the string parts; the fourth beat is also emphasized by agogic and dynamic accents. Analysis similar to that used for the first group of beats may be applied to the subsequent beats, although contradictions become increasingly evident in the fourth and fifth notated measures. In measure 4, contradictions are present in the agogic accent of the first note of the second bassoon, and in the second dynamic accent of the first bassoon. The agogic accents tied over the bar line from measure 5 to measure 6 in the trumpet, oboe, and piccolo parts contradict the accents of the piano. Another contradiction of the accents of the unequal beats is the tendency of the repeated notes of the melody to be understood as unified groups. If such a tendency were to predominate, the entire example would be understood as a series of quarter-note beats in groups of five. Timbre is an important influence in grouping the beats of Example 187: the oboe plays the "principal part" (marked "P") in the first group, the piccolo in the second, bassoon in the third, and piano in the fourth.

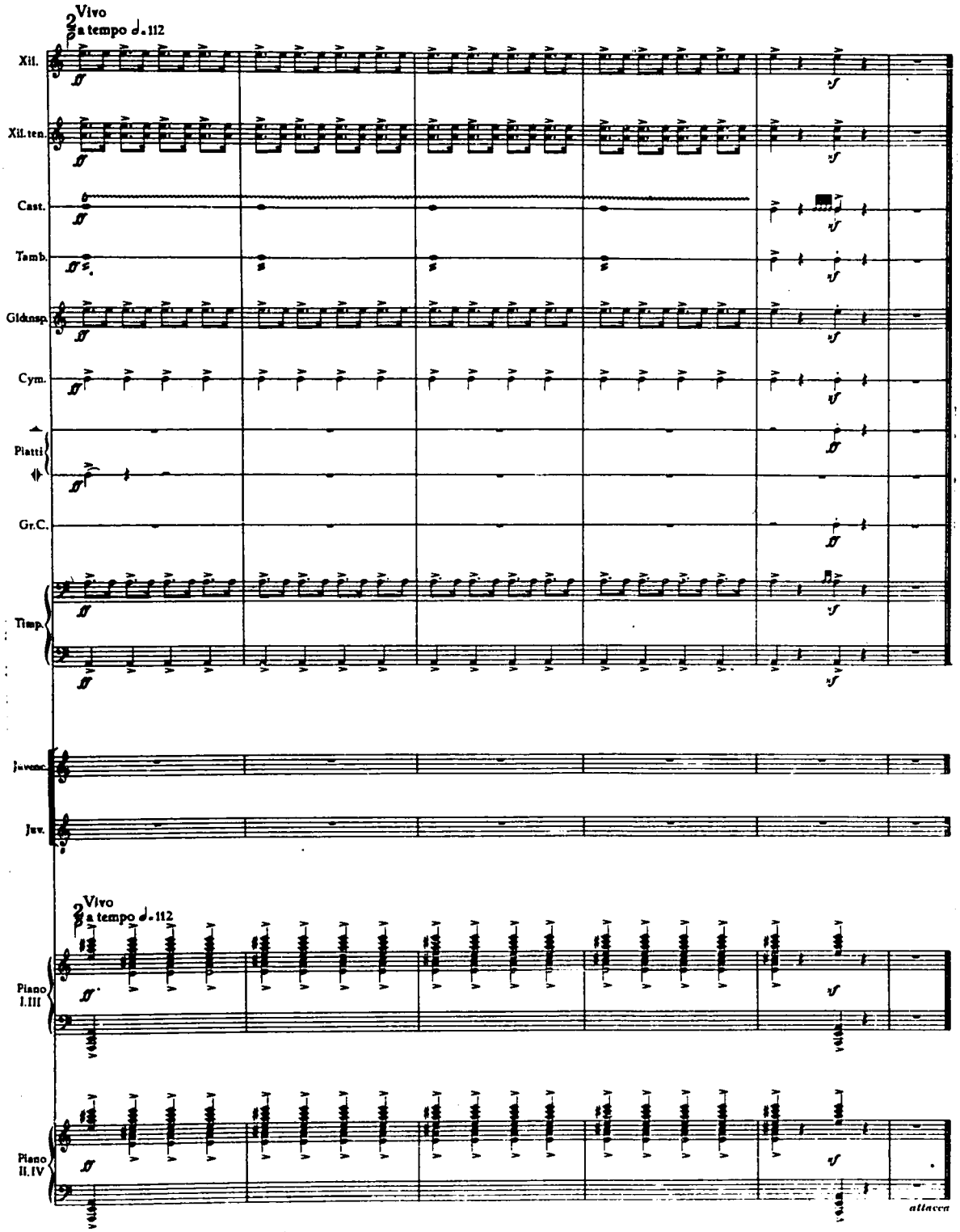
Metrical Rhythm: Predominance of Equal Beats

It was pointed out above that a series of equal beats will take the place of metre when no regular grouping of beats is presented by the musical facts. It is seldom that a series of equal beats occurs in music

without a tendency toward a higher grouping. Even when such a series exists in the musical facts, the listener will tend to group the beats into larger units, as has been verified by experimental psychology (see p. 333). Yet, in the absence of factual data for determining the manner in which a listener would tend to group a series of equal beats, the latter will be classified as metrical rhythm in which equal beats predominate.

The few measures preceding Example 188 (see p. 385) comprise a molto tenuto ending on a fermata just prior to the first measure of the example. These measures provide little reason to support an assumption that the listener will subjectively continue a certain unit of grouping. The last two notes of the example imply a system of duple grouping of quarter notes, but it is questionable whether this grouping could significantly influence, in retrospect, the listener's understanding of the preceding four measures. The first note of the example is accented by the pianos and cymbal, but no pattern is established, as the accent is not repeated. The composer's time signature and bar lines would tend to create duple and quadruple groupings for the score-reader; likewise, anyone who watched a conductor using two beats per measure would tend to understand the passage in that manner. But these are not factual elements, i.e., they are not accents of the type discussed above; they are purely subjective accents. It is, of course, true that this passage, and every passage that we classify and analyze in this chapter, would require further consideration if interpretational analysis were our purpose. Performers tend to play accents at bar lines, and in this instance it is quite possible

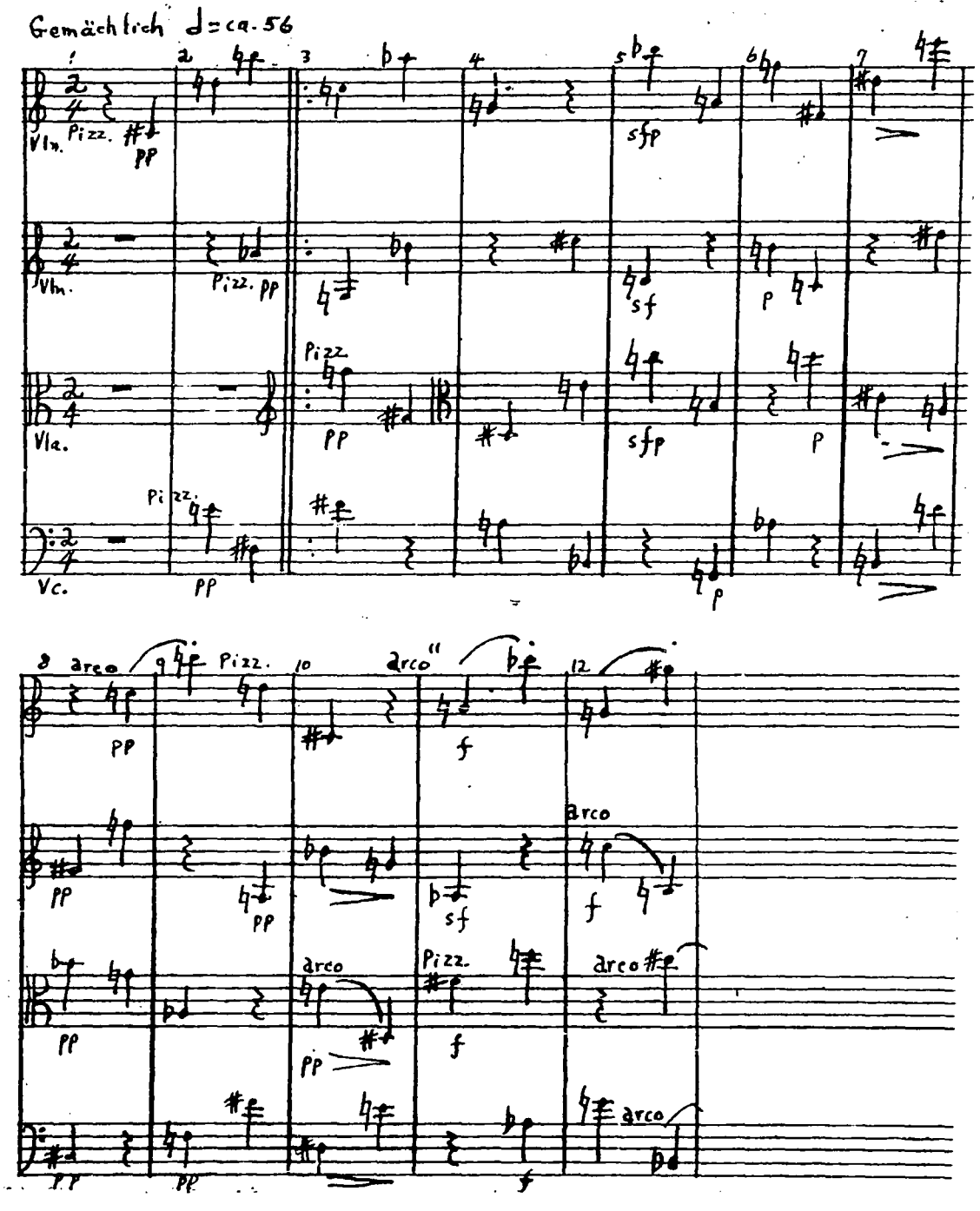
Example 188
Carl Orff: Catulli Carmina, "Praelusio."



that a performance would present a quadruple grouping of quarter notes; on the other hand, some conductors might insist that all of the quarter-note values in the first four measures of this passage be played with exactly the same duration and intensity. But it is not the purpose of our analyses to decide how the work should be performed, a matter about which there could be a variety of valuable opinions, but only to observe the facts of rhythm and to derive from them a classification for the music. Thus, Example 188, with no factual differentiation between the accentual weights of the quarter-note values except at the beginning and end, must be classified as metrical rhythm with equal beats predominating over factual grouping.

In Example 189 (see p. 387) there are more factual possibilities for the grouping of equal quarter-note beats than in Example 188, but the factual elements of grouping are not strong. In the first three measures of the example there is a gradual increase in dynamic accentuation created by the addition of voices, from one voice in the first measure to four at the beginning of the third measure. There are dynamic accents on the first beats of measures 5 and 11, and groupings of notes are created by bowing marks in measures 8-12. In measures 10-12 the regularity with which the duple grouping of bowed notes occurs begins to establish a metrical structure at the level of the half-note duration, although this grouping is strongly contradicted immediately thereafter by conflicting bowed groupings. A vague grouping is established by means of repeated patterns of pitches, such as the descending intervals in the first violin

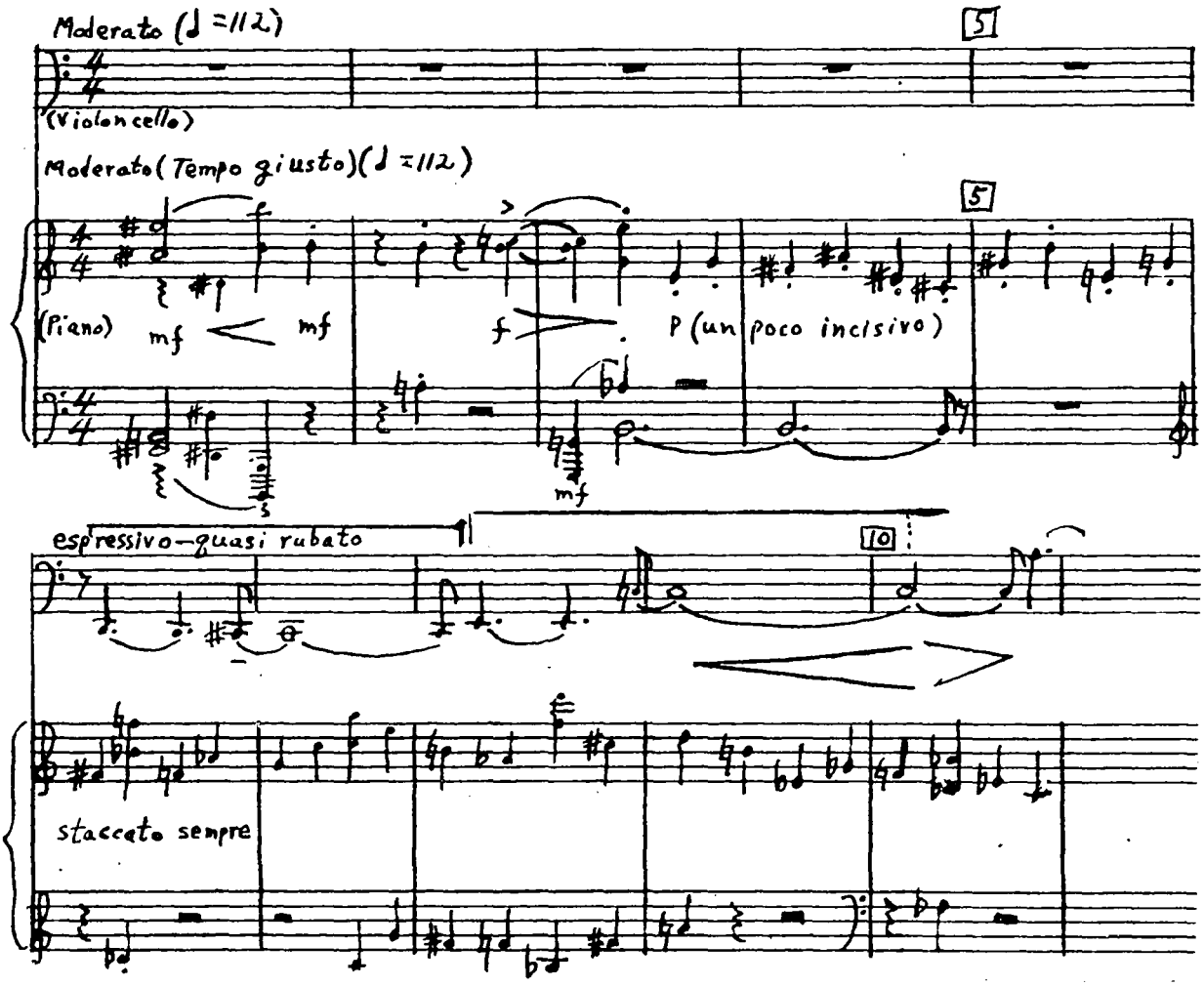
Example 189
Anton Webern: String Quartet, Op. 28, Movt. 2.



part from the end of measure 2 to the beginning of measure 3, and from the end of measure 3 to the beginning of measure 4. But there is no strong, consistent unit of grouping until measures 10-12. Thus, while this example is by no means as simple as Example 188, its first nine measures belong within the same classification, as its equal beats predominate over its vague grouping tendencies.

In the first measure of Example 190 (see p. 389) there is clearly a duple grouping of quarter-note beats; if the agogic accent of the first beat prevails over the dynamic, contour, and skip accents of the third beat, there is a duple grouping of half-note units. But in measures 2 and 3 there are contradictions of the accentuation of the first measure. Because of the heavy accentuation in the first measure, it is probable that the accents of measures 2 and 3 will be understood as syncopations. But the fact that after the first measure there is no heavy accent at the bar line in the remainder of this example makes questionable the assumption that the strong accent at the beginning of the first measure will be subjectively continued by the listener. (Whether or not it is continued by the performers is, of course, an interpretational matter which might be decided differently by different performers.) It is possible that a duple grouping of quarter notes might prevail throughout the example, as such grouping is supported by the accents of measure 1 and by the dynamic accent created by the addition of notes in the piano part on the third beats of measures 7 and 8; but the grouping confirmed at those points is contradicted by similar accents on the second beats of measures 6 and 10.

Example 190
Elliott Carter: Sonata for Violoncello and Piano, Movt. 1.

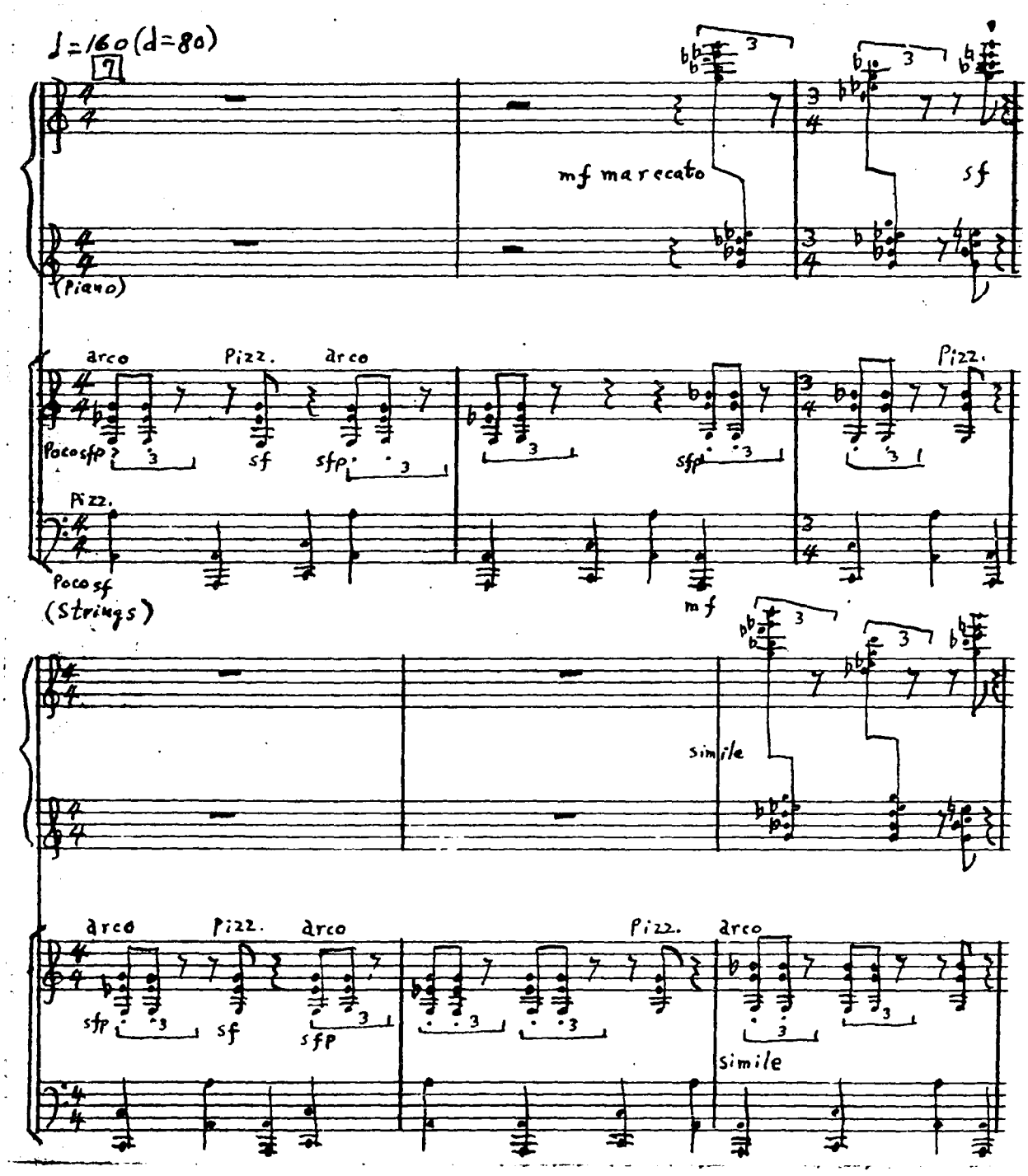


The cello part does not confirm any of the accents that might effect a grouping of beats, nor does it confirm the accents of the beats. The agogic accents of the cello are easily understood as syncopations of the

equal beats, because the latter are strong and consistent. While the accents of the cello part do not confirm a duple or quadruple grouping of beats, they might seem to create a grouping of eight beats by an approximate repetition of time values in measures 6-10, indicated by the brackets which we have added above the cello part; but the repetition is only approximate, and the pattern is not continued in the music that follows the example. Thus, Example 190 is a border-line case: it could be considered an instance of the regular grouping of equal beats or of equal beats tending to prevail over the grouping possibilities. We have chosen to place it in the latter classification because of the questionable influence of the factual elements of grouping.

Example 191 (see p. 391) shows even clearer factual elements of grouping than does the preceding example. The ten measures prior to Example 191 have established a duple grouping of quarter-note beats by means of an ostinato played in the lower register by the first clarinet. But the grouping effect of that ostinato tends to be superseded by that of a dynamically heavier one, a pattern of three quarter notes in length, in the cello and bass parts of Example 191. Still heavier than the new ostinato, however, are the irregular dynamic accents in the upper voices; these tend either to confirm the equal beats or to be understood as syncopations of them, and to prevail over the triple grouping of the ostinato. It is, of course, true that a listener watching a conductor or a score might tend to group the beats of this example in units of three and four, according to the notated measures; it is also true that the performers

Example 191
Stravinsky: Symphony in Three Movements, Movt. 1.



might supply accents at the bar lines. But to take such matters into consideration would lead us beyond our purpose of analyzing the factual accents of the music. Example 191, like Example 190, is a border-line case: from the factual viewpoint, it may be analyzed either as an instance of the triple grouping of equal beats with heavy accentual contradictions, or an instance in which a regular beat prevails over the various possibilities of grouping.[37] We have chosen the latter of the two analyses because of the predominance of the irregular accents over the regularity of the ostinato and the ease with which the irregular accents may be interpreted as confirmations or syncopations of prevailing quarter-note beats.

Polymetrical Rhythm

The simultaneous use of two or more metres, which we have called polymetrical rhythm, is not new in twentieth-century music but is often considerably more complex in music of the present than in that of the past. Example 192 (see p. 393) is an instance of polymetrical rhythm based on the hemiola, a rhythmic relationship found in many styles of the past and one that Brahms frequently employed. In the first two full measures of this example there is clearly a duple grouping of quarter-note

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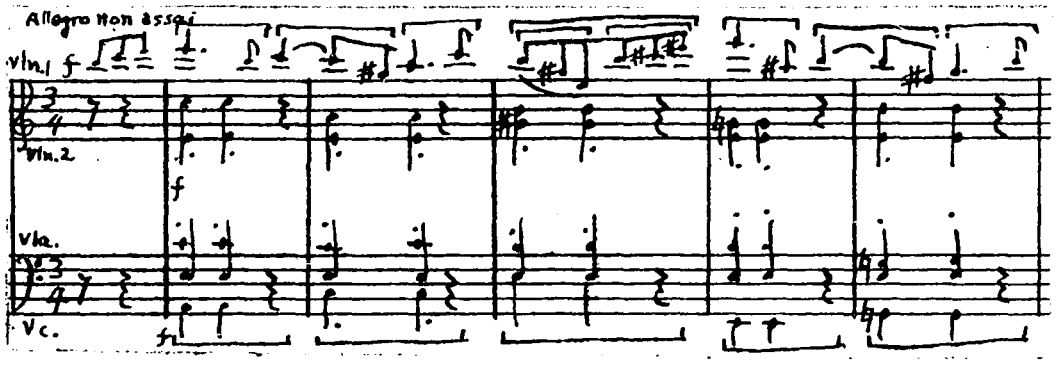
37. Arnold Elston, in "Some Rhythmic Practices in Contemporary Music," MQ, XLII (1956), 322, believes that one function of the bar lines in that example is to shift the metrical weight irregularly among the three notes in the ostinato to avoid the possible predominance of triple metre in that part.

Example 192
Brahms: String Quartet No. 2, Op. 51, No. 2, Movt. 4.

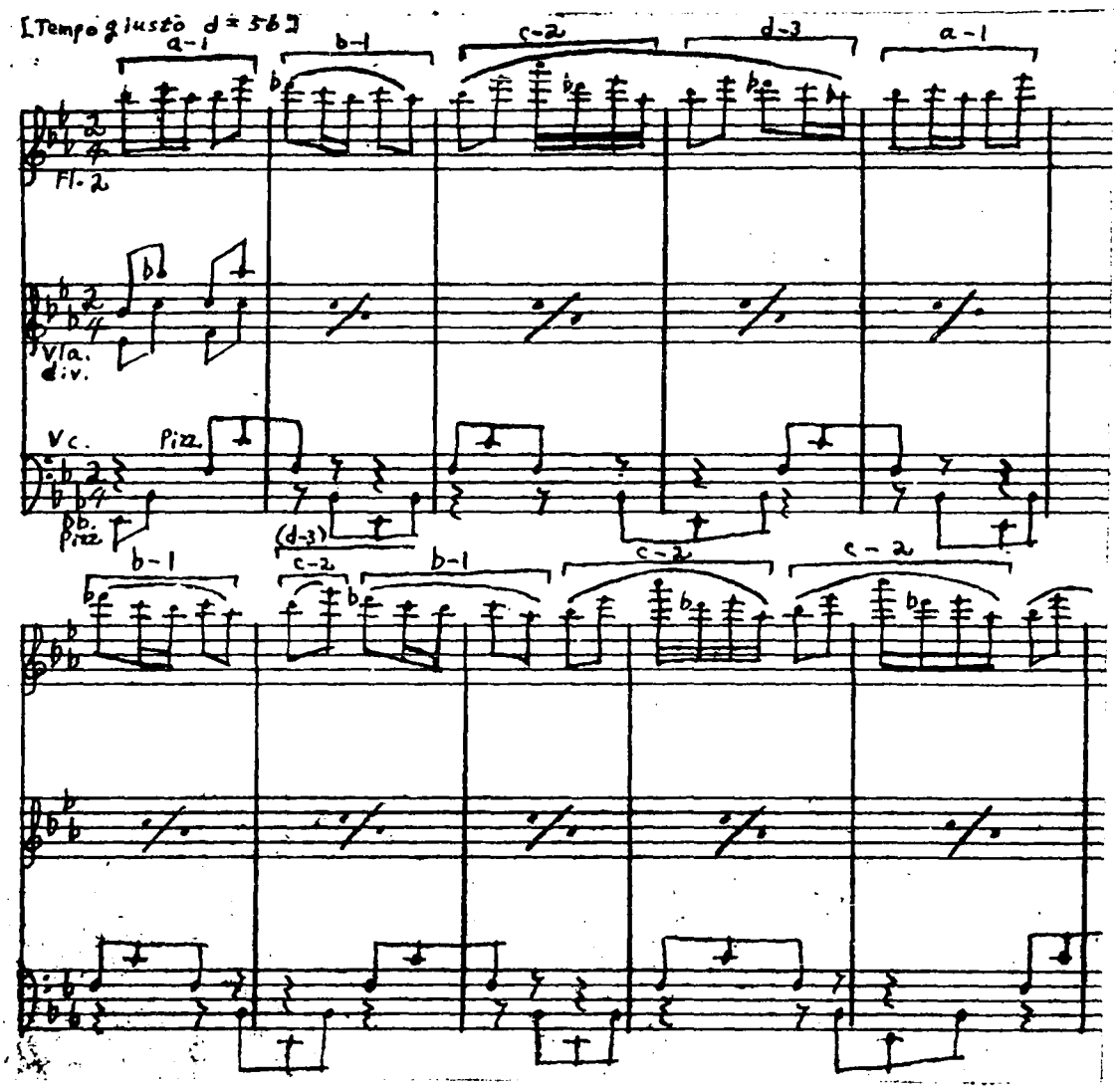


beats in the melody and a triple grouping in the accompaniment, but the last three measures tend to affirm the triple metre with syncopations. At the beginning of the third full measure an accent would be subjectively supplied in the melody as a result of the preceding system of grouping. The coincidence of this accent with the beginning of the accompaniment pattern in that measure and a similar coincidence of the melodic accent with the beginning of the accompaniment pattern on the first beat of measure 4 tend to strengthen the triple metre; thus, the last two agogic accents of the melody tend to be understood as syncopations rather than as accented notes of an independent metre.

In music of the twentieth century, as in that of the past, polymetrical rhythm is seldom employed throughout an entire composition. A given polymetrical organization is usually retained only for a few measures, before and after which the rhythmic organization might be metrical or nonmetrical. Polymetrical rhythm in the twentieth century is

usually created by the simultaneous use of ostinato patterns of different lengths, as are most of the examples to be cited below. Two metres are used simultaneously in Example 193: an ostinato of six eighth notes in the cello and bass parts, and another of four eighth notes in the second

Example 193
Stravinsky: Le sacre, No. 28.

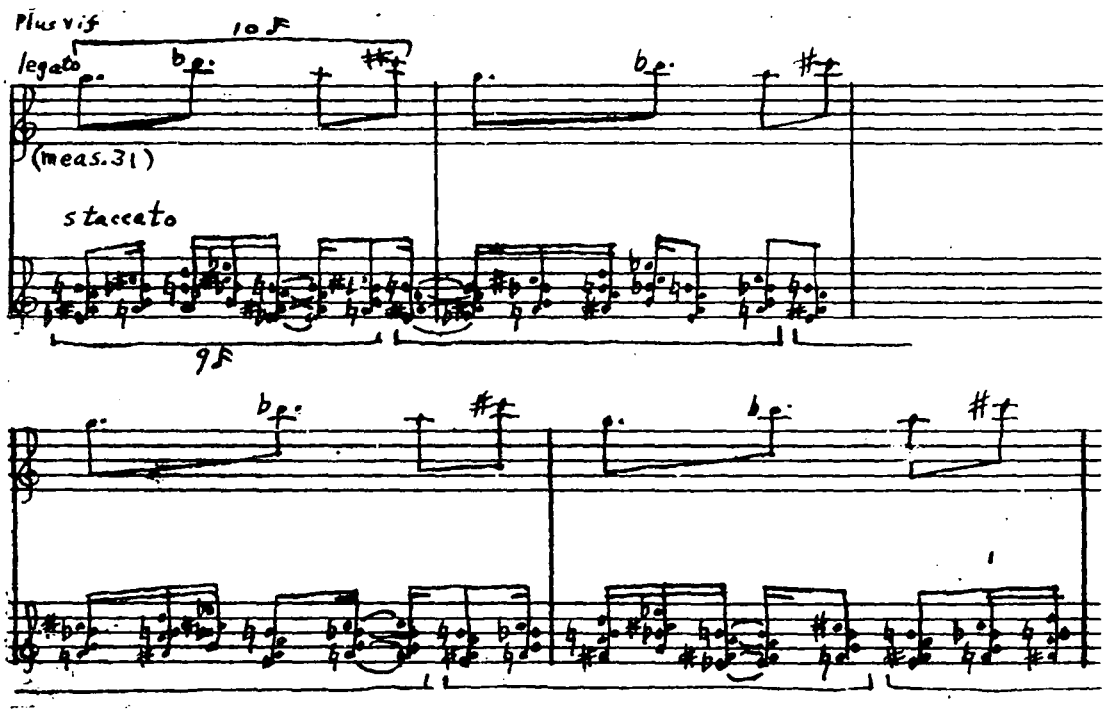


violin part. In a sense it might be said that there is only one large metrical unit in this example, since the two "meet" at intervals of twelve eighth notes; i.e., the vertical combination of notes in the ostinatos at the beginning of the fourth measure is the same as that at the beginning of the first measure. In fact, if any two ostinato figures of different lengths are repeated enough times, they will eventually "meet" in this manner. But from the standpoint of the influence of these objective patterns upon subjective grouping, it is doubtful if the tendency would be as strong to group in units of twelve eighth notes as in units of four or six. Of the two metres present, that of four eighth notes is the strongest, as it is reinforced by other instruments (timpani, trombones, and clarinets, not quoted), while the metre of six eighth notes is present only in the cello and bass parts. A slight tendency for the listener to perceive the first eighth note of the measure as stronger than the others is created by a trilled eighth note in the E-flat clarinet (not quoted), reinforcing the first melody note of the flute in measures 1, 2, 5, and 6. The metre of four eighth notes is further confirmed by the pattern of durations in the flute part. The brackets over the notes of the flute part are labeled with letters to differentiate patterns of pitches, and with numbers to differentiate patterns of durations. Thus, measure 1, 2, 5, and 6 all use duration pattern 1 in the same relation to the ostinato of four eighth notes, and thereby support that metre. From measure 7 to the end of the example, the relation between the flute melody and the ostinato of four eighth notes is changed by the omission of the expected

second half of c-2. This change does not modify the duration of the metre, as the patterns are still equal to four eighth notes in duration; but it tends to modify the listener's understanding of the location of the chief accent within the metre of four eighth notes.

Example 194 employs two systems of regularity of different lengths: ten sixteenth notes in the right hand and nine sixteenth notes in the left hand. The example is typical of Messiaen's technique in its

Example 194
Olivier Messiaen: La Nativité du Seigneur, Movt. 4, "Le Verbe."



"addition and subtraction of the dot" in the upper voice.[38] Example 194 is the beginning of the passage using this polymetrical structure; nine repetitions of the upper voice and ten of the lower voice are required to arrive at the original relation between the voices. Messiaen repeats the upper voice only eight times, completing the series, and stopping just short of a repetition of the first measure of the example.

Three metres are presented in Example 195. The cello establishes a metre of three eighth notes by means of dynamic accents and repeated patterns of pitches and durations. While the first three statements of this metre form an ostinato, the fourth retains only the dynamic accent and duration pattern, and the fifth slightly modifies the original ostinato. The second violin and viola parts establish a metre of four sixteenth notes by means of the repeated pattern of pitches in sequence. The first violin presents a two-measure unit of pitches and durations, repeated in a modified form; the two statements of the two-measure unit create an expectation of a similar unit to follow, but this expectation is not satisfied in the subsequent passage (not quoted). Of the three metres in Example 195, that of four sixteenth notes and that of two measures tend to be understood together in the relation of a quarter-note beat and a whole-note metre, respectively, while that of three eighth notes remains distinctly separate.

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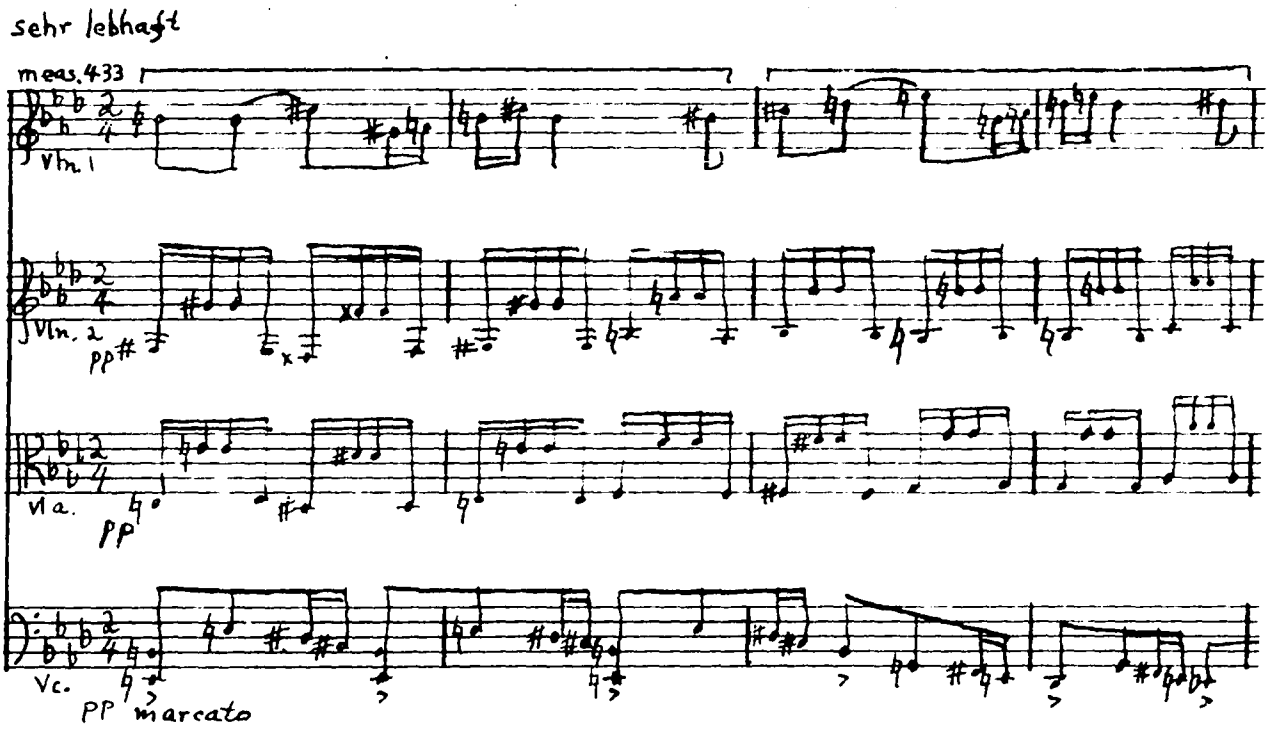
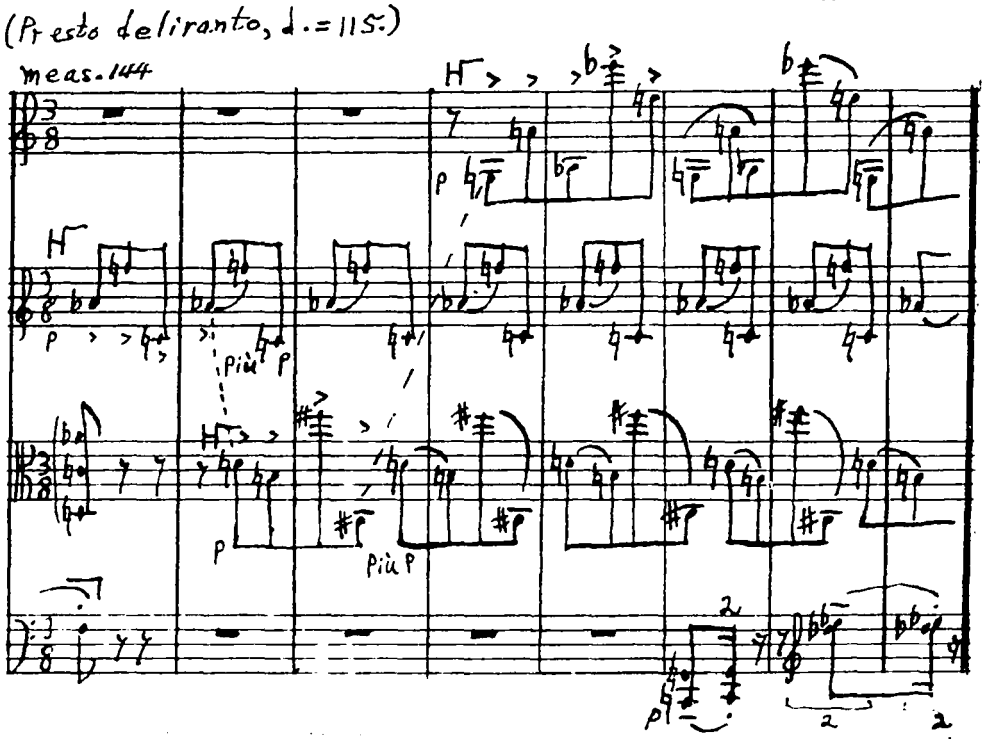
38. For a discussion of this technique, see Messiaen, Technique of My Musical Language, p. 18.

Example 195
Paul Hindemith: String Quartet, Op. 10, "Finale."



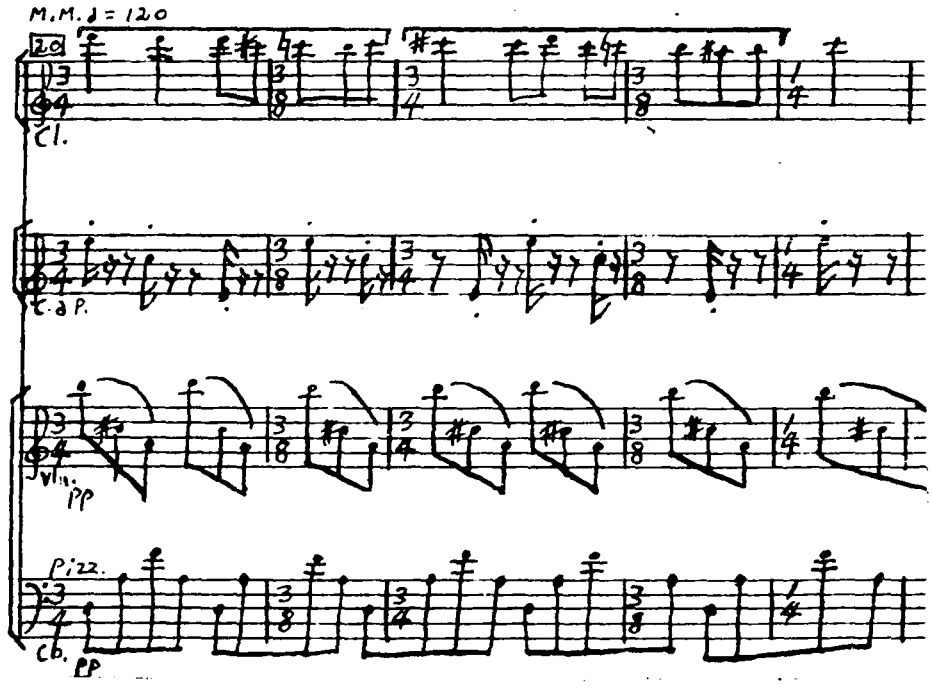
Example 196 (see p. 399) presents three different metres with durations of three, four, and five eighth notes; each metre is created by an ostinato. The cello enters in measure 6 of the example and continues as a nonmetrical voice. The three metrical voices enter one at a time, and the sign indicating the Hauptstimme, or principal voice, is placed at each entry of a new ostinato. While these factors tend to aid the listener's perception of the separate metres, the overlapping of voice ranges tends to hinder such perception.

Example 196
Alban Berg: Lyric Suite for String Quartet, Movt. 5.



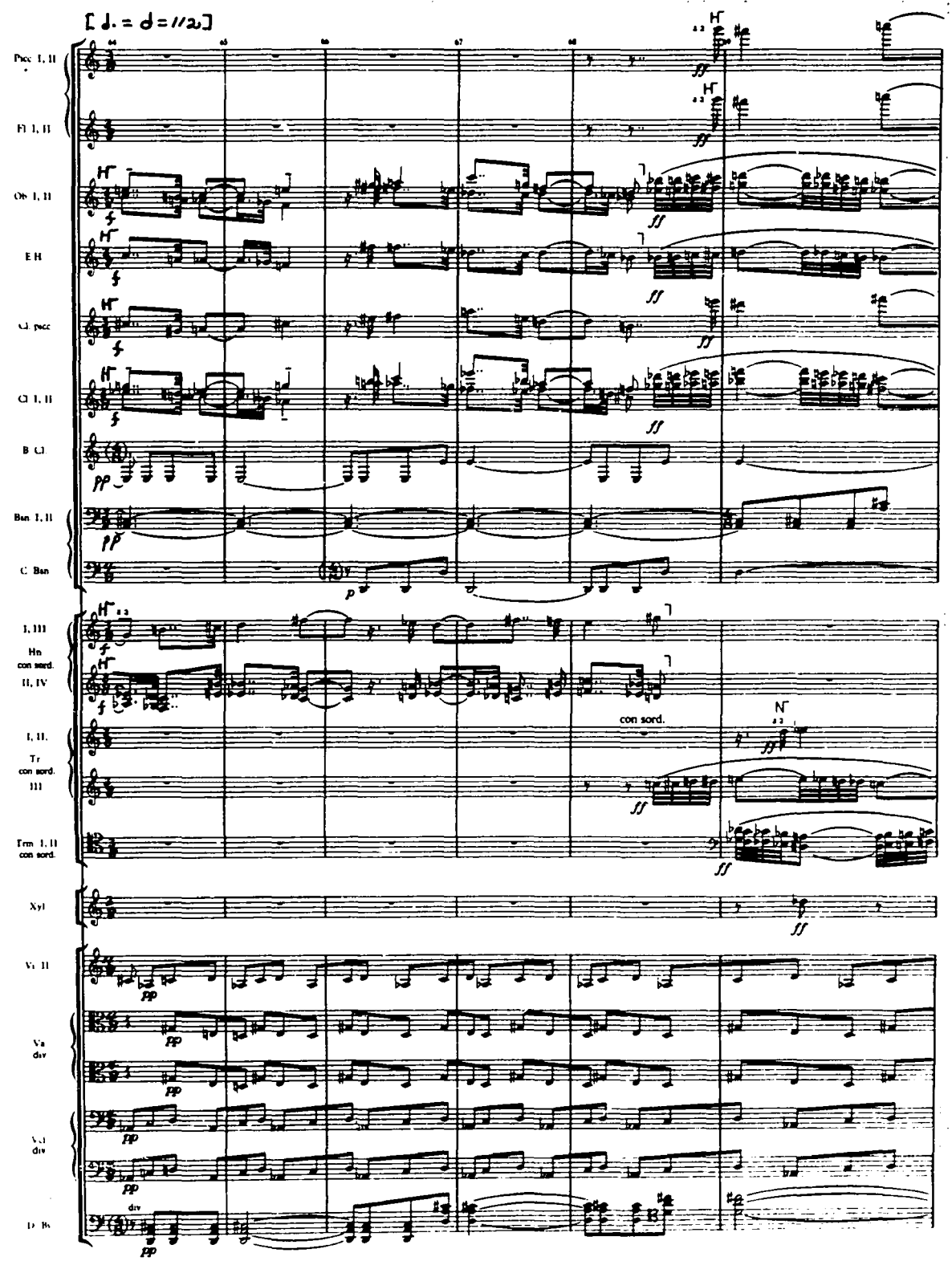
Example 197 (see p. 400) presents four different metres simultaneously. Those in the bass, violin, and cornet parts are ostinatos of four, three, and six eighth notes in duration. The clarinet part presents a statement of a succession of pitches and durations of nine eighth notes in length; this succession is then repeated a semitone lower in a slightly modified form.

Example 197
Stravinsky: Histoire du Soldat, "Petit concert."



Example 198 (see p. 401) is polymetrically organized from the objective viewpoint, but its polymetrical effect is questionable. There are groupings of eight eighth notes in the double bass, bass clarinet, and bassoon parts, and overlapped groupings of three eighth notes in the other string parts. These voices all have the 4/8 time signature. Most of the wind instruments, however, employ a 3/8 time signature in which the measures are equal in duration to those with the 4/8 signatures. In the French horn parts there is a grouping of two eighth notes in the 3/8 measures, which overlaps a similar grouping by the oboes, English horn,

Example 198
Schoenberg: Five Pieces for Orchestra, Op. 16, New Version, Piece No. 1.



and clarinets. But it is questionable whether, at its quick tempo, this passage (which is representative of the music preceding and following it) will be understood as polymetrical. It is possible that it will be understood as a series of regular beats and syncopations, resulting from the heavier dynamic level of the wind instruments playing overlapping units of two eighth notes, or that it will be heard as a nonmetrical passage with no decisive beat.

Metrical-Nonmetrical Rhythm: Irregular Grouping of Equal Beats

The term "metre" may refer to regularity at the level of the beat and of the grouping of beats (see pp. 364 ff.). Music classified within the present category is that which is metrical at the level of the beat, but nonmetrical, i.e., irregular, at the level of the grouping of beats. While such rhythmic organization is frequently employed in the twentieth century, it is not peculiar to that period. In music of the nineteenth century, for example, particularly in that of the Russian composers whose works were influenced by Russian folk music,[39] this type of rhythm is sometimes employed. Example 199 (see p. 403) is an instance of a nineteenth century use of metrical-nonmetrical rhythm. The regular quarter-note beats are grouped in units of two and three. The principal

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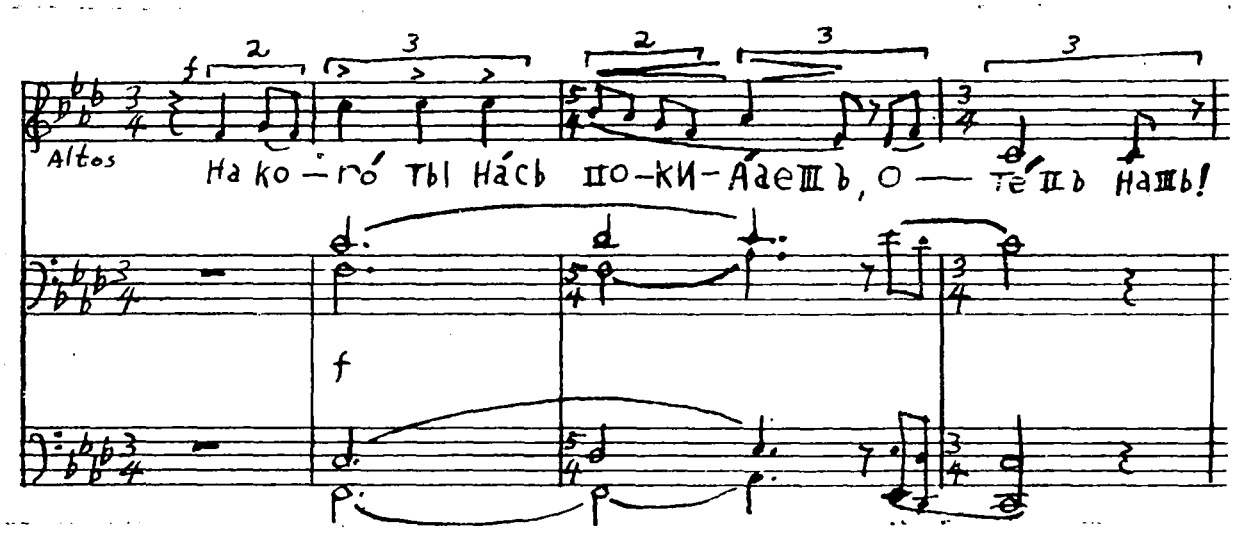
39. M. D. Calvocoressi, Modest Mussorgsky (London, 1956), pp. 234, 243-44, 257-59.

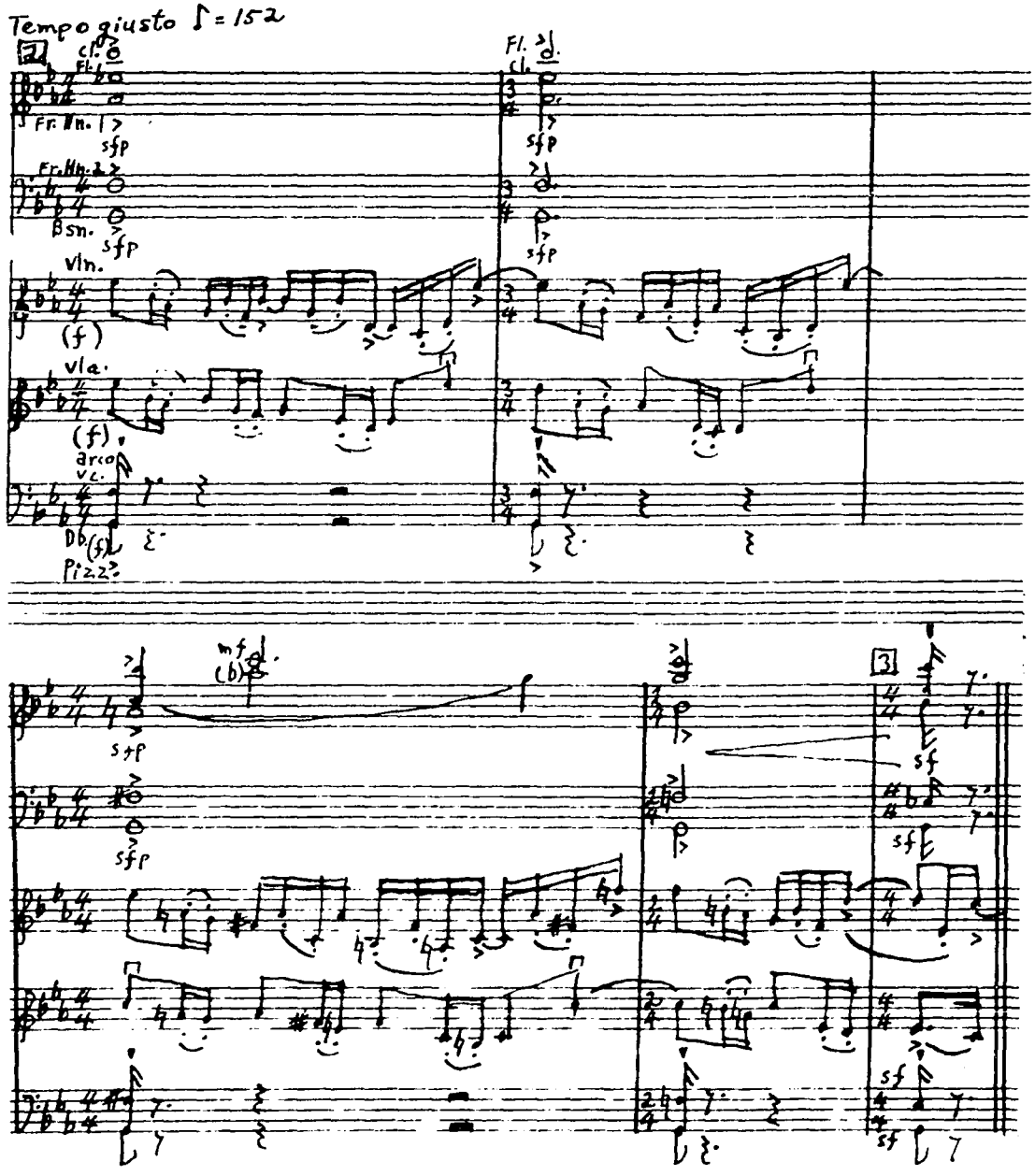
Example 199
Moussorgsky: Boris Godounov, Prologue.



accent of the second measure falls at the beginning, where the agogic dynamic, and skip accents coincide with the beginning of the accompaniment. The principal accents of the text have been marked above it; the first and third beats of measure 2 carry textual accents. The third measure is divided into units of two and three beats, the beginning of each unit coinciding with a change of harmony. The beginning of the first unit of measure 3 is set apart from the preceding one as it is the beginning of a slurred group; the beginning of the second unit is emphasized by an agogic accent and an accent of the text. The last group begins with an agogic accent.

In Example 200 (see p. 404), if the quarter note is assumed to

Example 200
Stravinsky: Concerto en mi b ("Dumbarton Oaks"), Movt. 1.

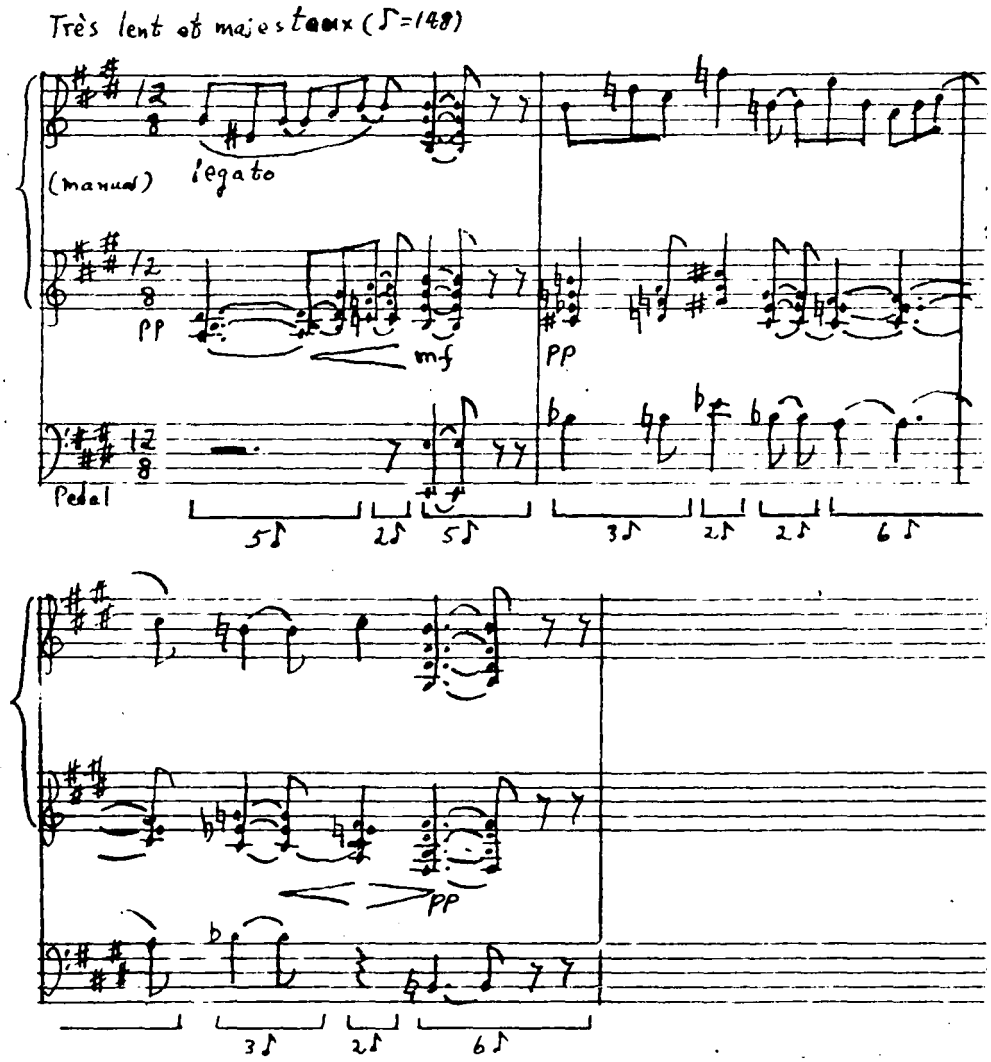


(London: Schott & Co., Ltd. [c. 1938].)

be the beat on the basis of agogic accents in the viola part and the tendency established by the preceding passage, then the regular beats are grouped by dynamic and agogic accents into units of four, three, four, and two, following the notated measures.

In Example 201 the eighth-note beats are irregularly grouped, on

Example 201
Messiaen: L'Ascension, quatre méditations symphoniques pour orgue, Movt. 1.

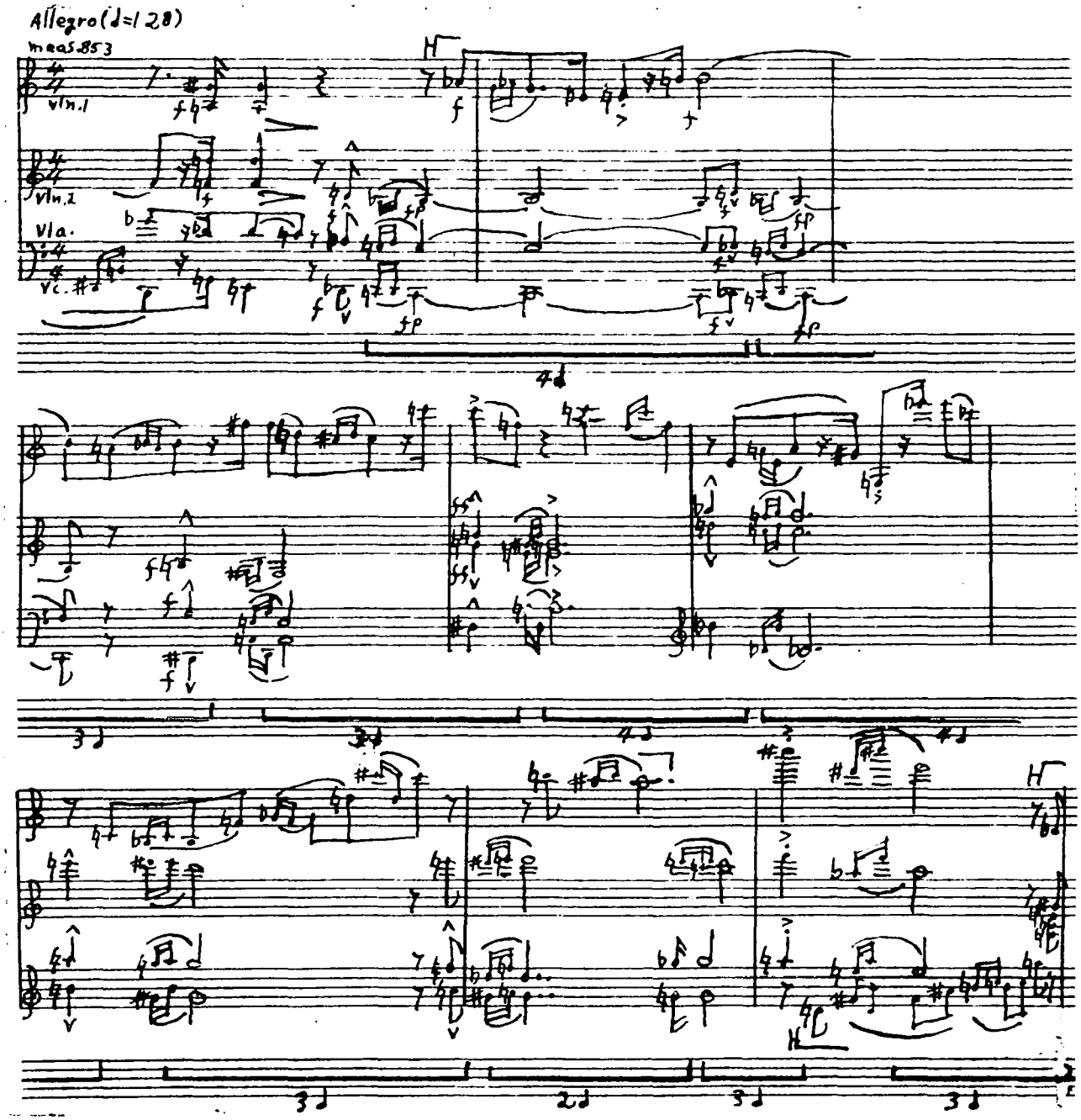


the basis of agogic accents, into units as indicated in the brackets added beneath the lowest voice.

Example 202 (see p. 407) is preceded by music that establishes an expectation of quarter-note beats, but not of a regular grouping of beats. The expectation of equal beats is satisfied by the accents of the example, and the beats are irregularly grouped by agogic and dynamic accents as indicated by the brackets added below the cello part. The brackets begin at the long agogic accents, as they are considered to be of greater importance than the dynamic accents that precede them. To include the entire pattern of pitches as it is used in the modified repetitions, each bracket could begin with the note preceding the agogic accent; such analysis would not alter the metrical-nonmetrical classification of the passage.

A few words are in order regarding the differentiation between the classification of Examples 189-191 (see pp. 387, 389, and 391) and the present classification. In Examples 189-191 the equal beats are not of equal accentual weight, but the heavier accents are considered too light and inconsistent to establish a grouping of beats. In each example of the present classification, the irregular accents are heavy, creating a strong tendency to group the beats into irregular higher units.

Example 202
Schoenberg: Fourth String Quartet, Op. 37, Movt. 4.



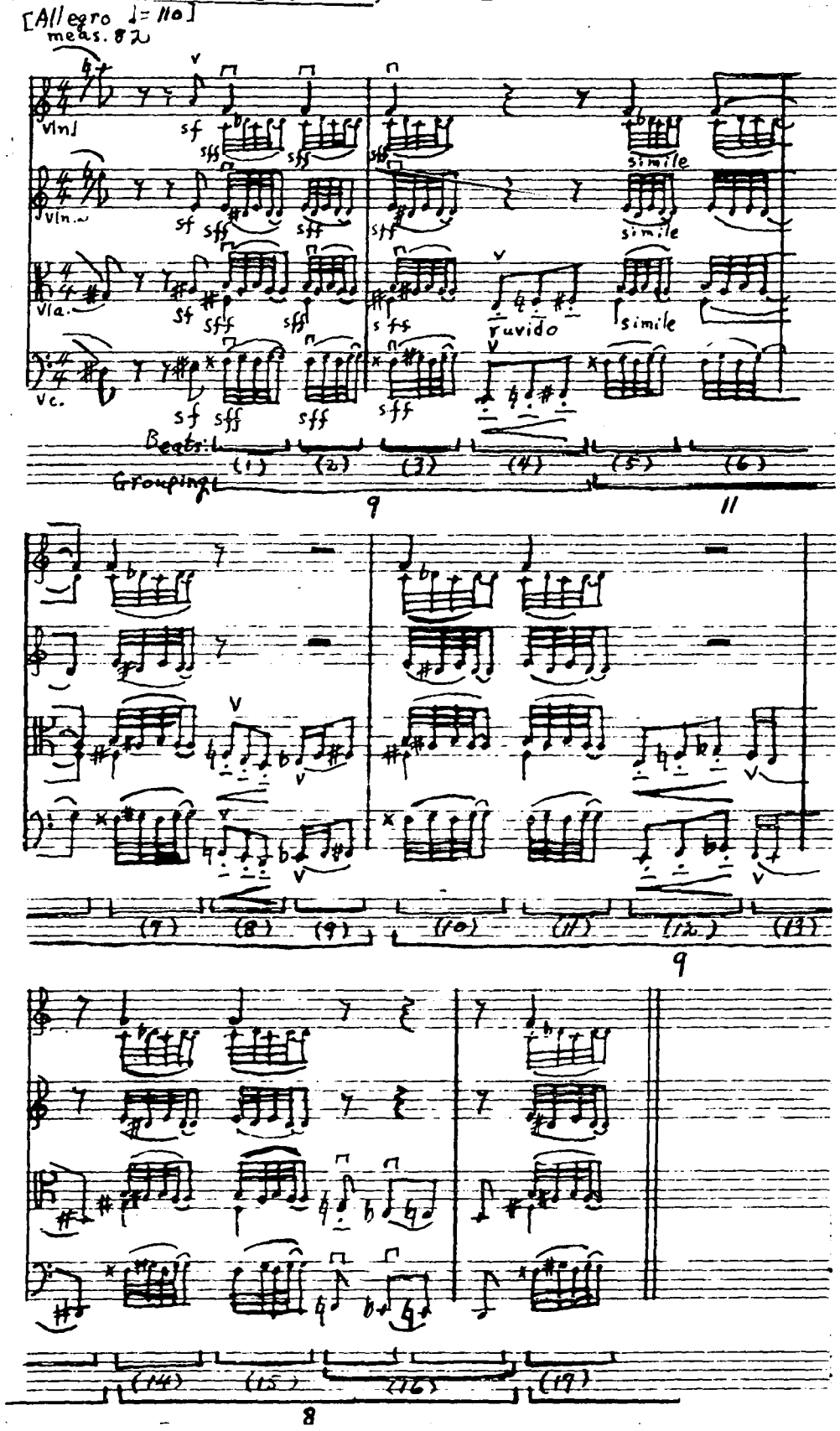
Nonmetrical Rhythm: Irregular

Grouping of Unequal Beats

The music of Example 203 (see p. 409) is preceded by a few measures in which the rhythm has been nonmetrical with no perceptible beat confirmed by the facts of music. In the middle of the first measure of the example there begins a passage in which unequal beats are grouped irregularly (see brackets below the cello part). Each of the first three beats is equal to two eighth notes in length; the beats are established by dynamic accents and a repeated pattern of pitches and durations. The three eighth notes of beat 4 form a unified group because of their similarity of duration, range, and style of performance, contrasting with what immediately precedes and follows. Beats 5-7 are like 1-3, beats 8-9 form a unit which breaks into two parts as a result of the dynamic accent and bowing mark of beat 9, beats 10-11 are like 1-2, beats 12-13 are similar in character to beats 8-9, beats 14-15 are like 1-2, and beat 16 forms a unit for the same reasons as do beats 3, 8-9, and 12-13; beat 16 tends to break into two equal parts because of the established tendency to understand beats as units of two or three eighth notes. The alternation of two types of figures, the type of beats 1-3 alternating with the type of beat 4, creates a succession of grouping of beats that is irregular, equal to nine, eleven, nine, and eight eighth notes, as indicated by the lower brackets labeled "Grouping."

Another possible interpretation of this passage is to treat it as a series of syncopations of the regular quarter-note beat that is

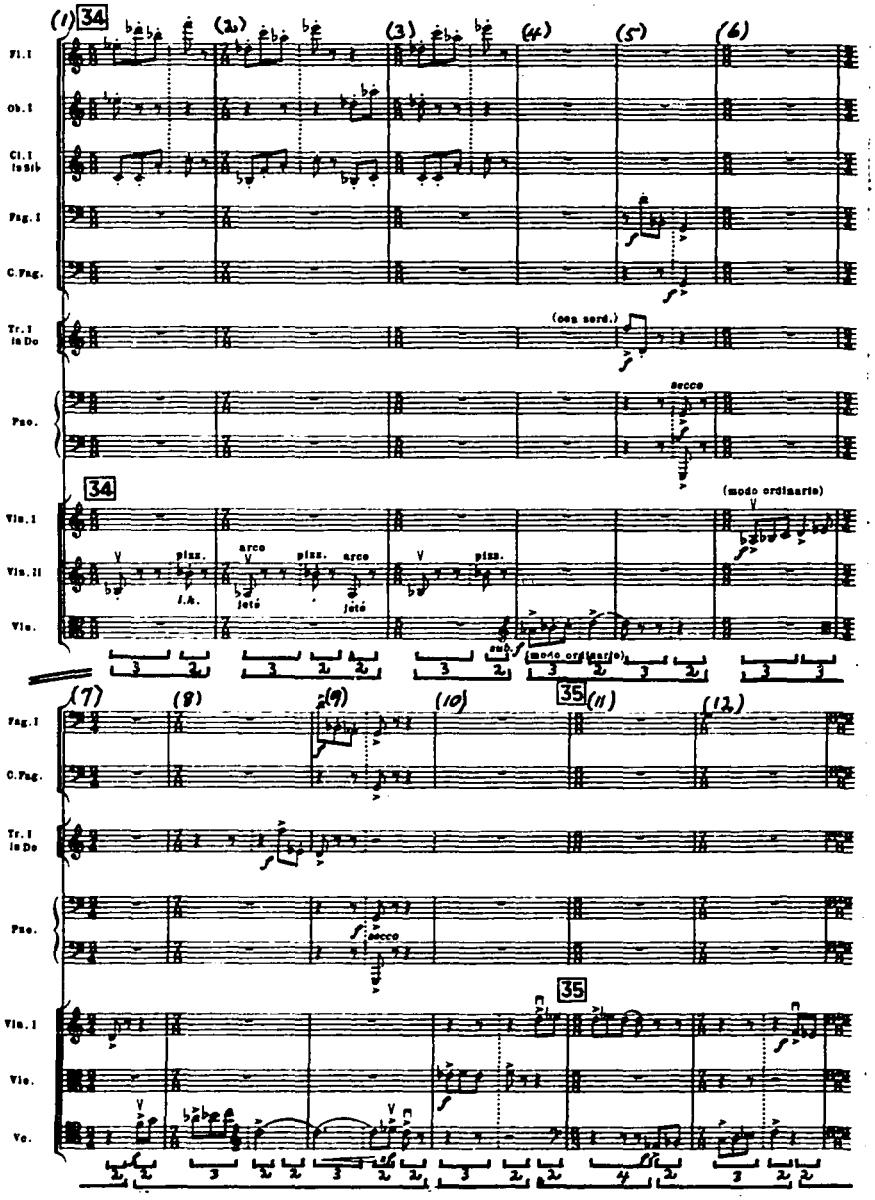
Example 203
Bartok: Fourth String Quartet, Movt. 1.



established by beats 1-3. Thus, the third eighth note of beat 4 would be considered the beginning of a new beat, subjectively accented; beats 5-7 would be considered syncopations, etc. But this interpretation of the total passage of ten measures, of which Example 203 is only the beginning, would necessitate the interpretation of more beats as strong contradictions, or syncopations, than as confirmations of the subjective regularity. The interpretation of this passage as nonmetrical, organized in terms of the irregular grouping of unequal beats, has more support in musical fact than has the metrical interpretation.

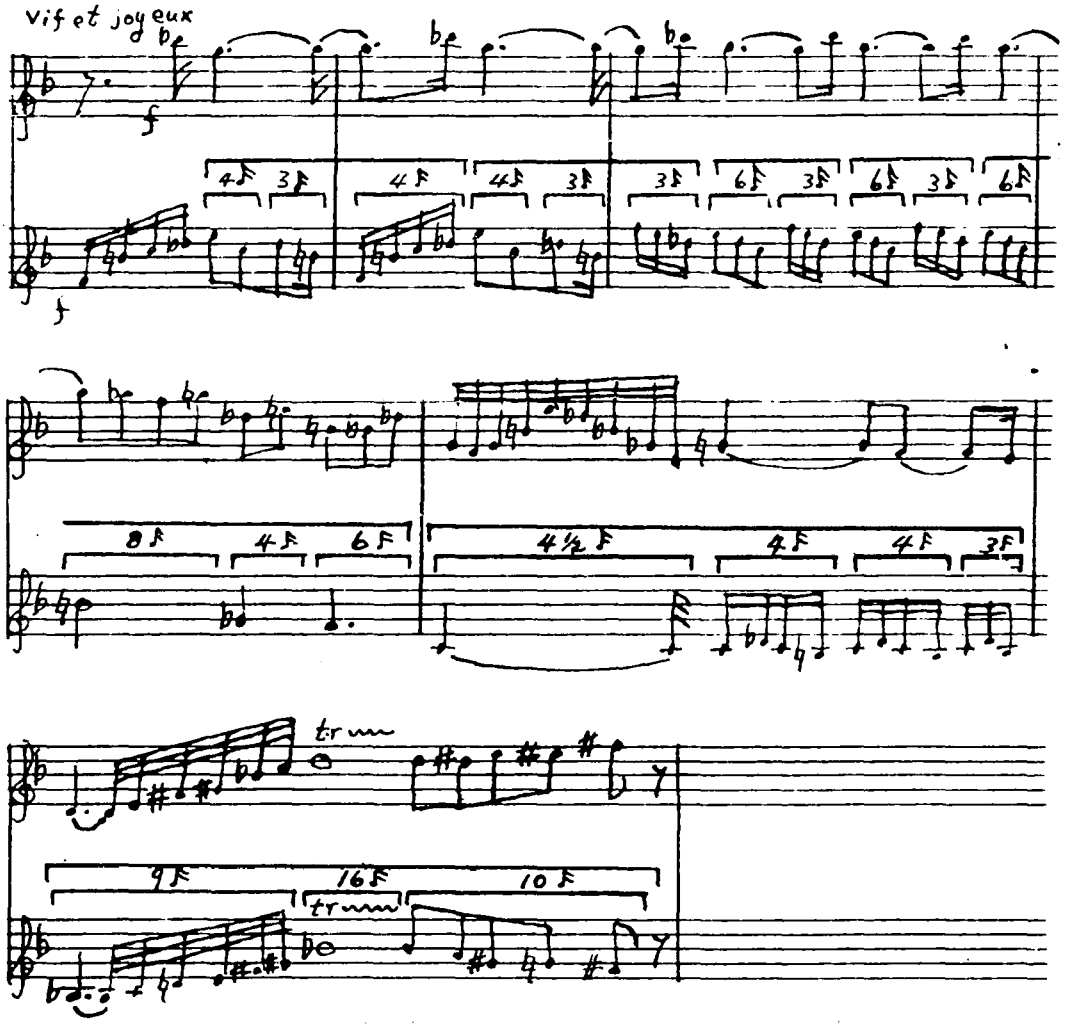
Example 204 (see p. 411) employs a series of unequal beats, emphasized by dynamic and agogic accents, which are grouped irregularly by means of the modified repetition of patterns of pitches. Each of the first three measures comprises a grouping of unequal beats, as the brackets added below the score indicate; measures 4 and 5 comprise a unit which is repeated in a modified form in measures 6 and 7. The second beat of measure 7, with its ascending melodic line, begins another modified repetition of the pattern first stated in measures 4 and 5; this modified repetition extends through measure 9. The first two beats of measure 10 form a unit which is melodically derived from the end of measure 9, and this unit is then repeated in the next two beats which form another unit. The final grouping of beats is another modified repetition of the pattern of pitches first used in measure 4.

Example 204
Aaron Copland: Short Symphony No. 2, Movt. 3.



In Example 205 the beats and beat groupings are indicated between the staves. The durations of all beats are stated in terms of the

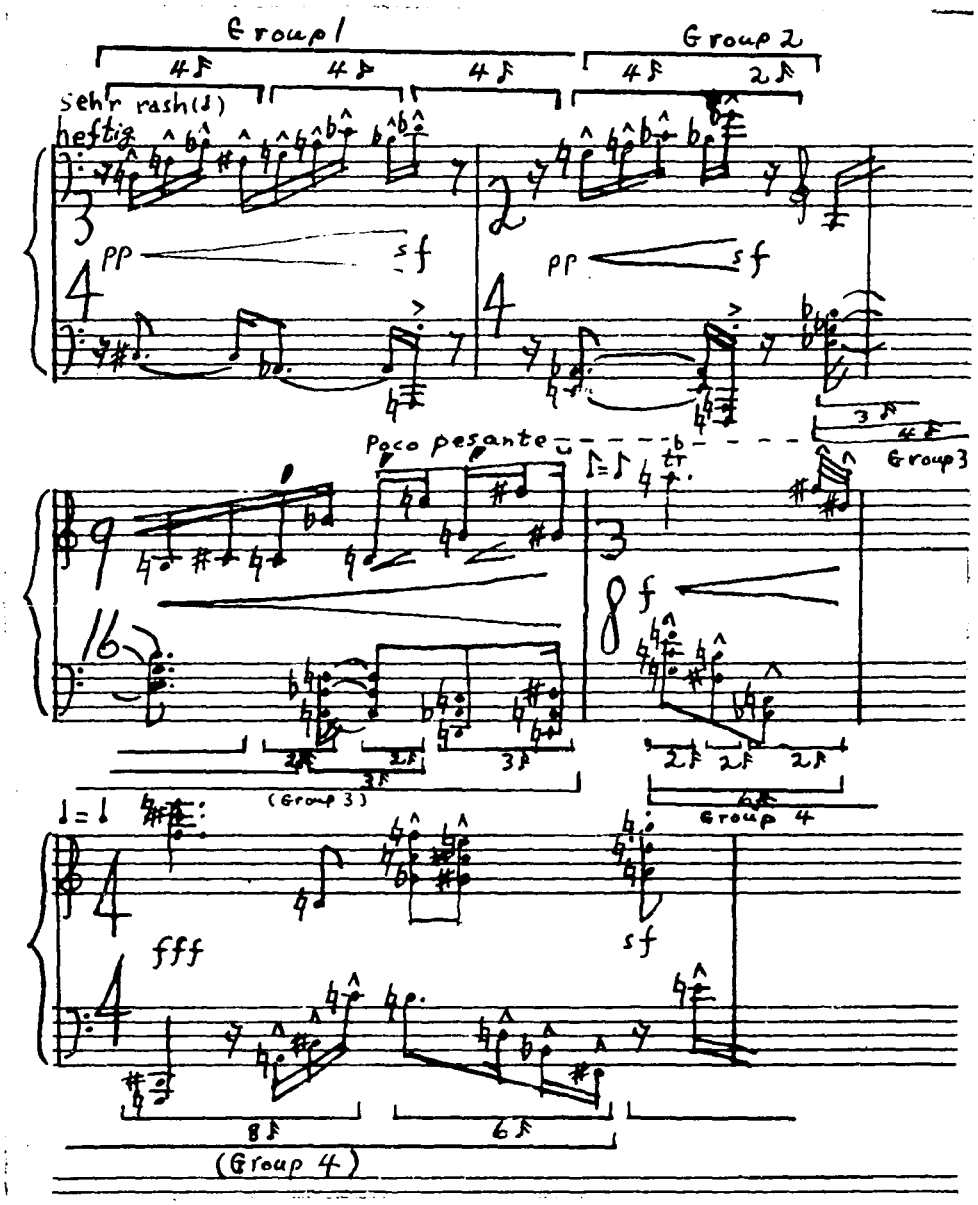
Example 205
Messiaen: La Nativité du Seigneur, Movt. 6, "Les Anges."



sixteenth-note unit. Unified groups, accents of pitch, and agogic accents are responsible for the differentiation of the beats and beat groupings of various lengths; the brackets indicating beats and beat groupings begin with the first agogic accent of the example as the first point of emphasis.

In Example 206 (see p. 414) the first two beats, each of four sixteenth notes, are differentiated by agogic accents in the lower voice; the beginning of the third beat is stressed by a dynamic accent. These three beats, labeled "Group 1" in the example, are understood as a unit that is distinct from the beats labeled "Group 2" for three reasons: (1) They are unified by a crescendo that reaches its peak at the end of the group; (2) They are unified by the essentially ascending line in the upper and descending line in the lower voice; (3) The rests occurring in the last beat of the group tend to separate the first three beats from those that follow. The second group of beats is a modified repetition of the last two beats of Group 1; but the second beat of Group 2 is only half as long as the preceding beats. Since each of the first four beats of the example is four sixteenth notes in length, an expectation of equal beats has been aroused. But the succeeding irregular accents are so strong that it is difficult to consider them syncopations of a regular beat. There are two possible analyses of beats on Group 3: (1) According to agogic accents there are beats of four, three, and three sixteenth notes; (2) According to the dynamic accent marks in the upper voice, the first beat contains three sixteenth notes, and each of the next two contains two sixteenth notes. The analysis chosen depends upon the importance attributed

Example 206
Schoenberg: Five Piano Pieces, Op. 23, Piece No. 2.

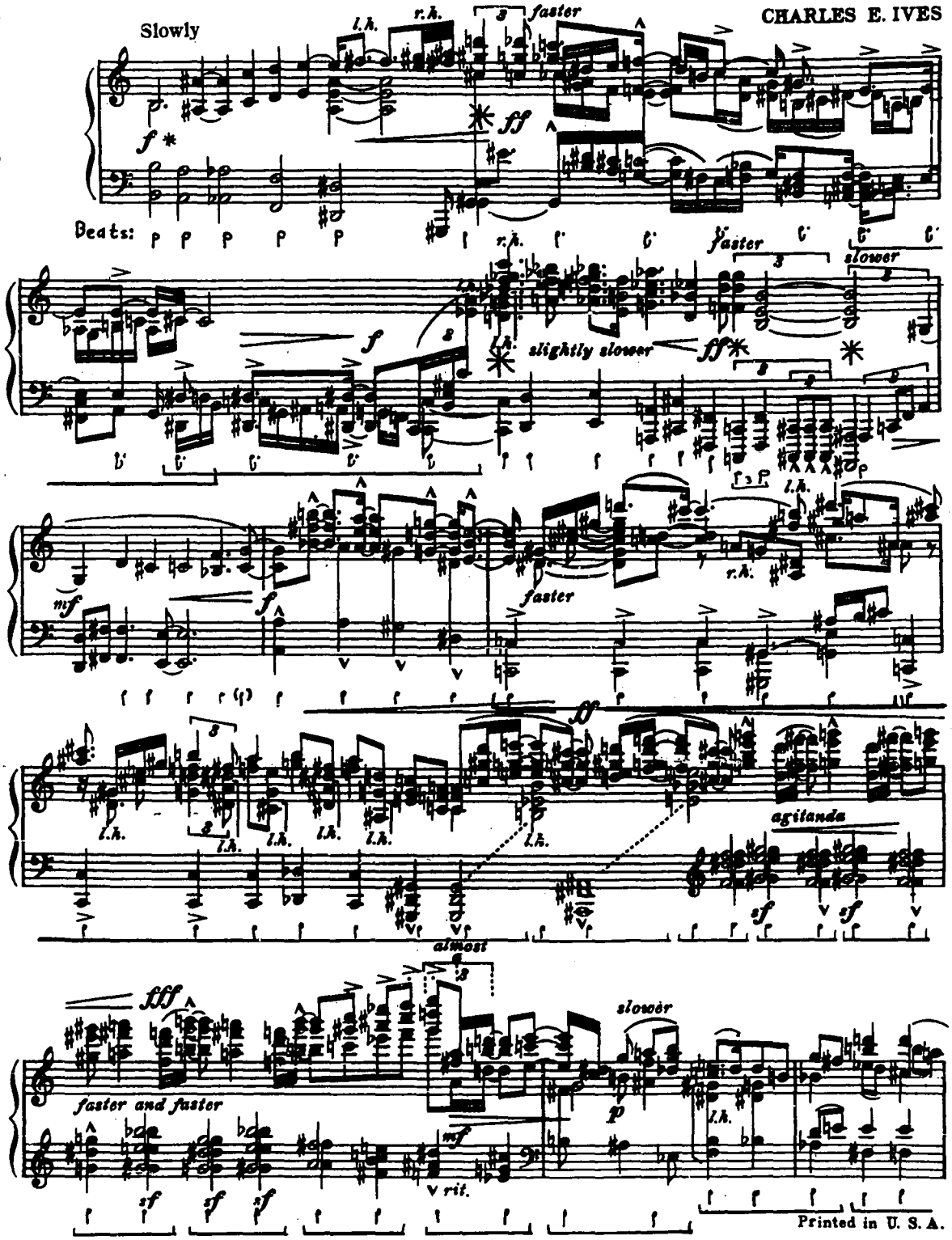


to the dynamic accents in the upper voice. The second and third of the dynamic accent marks are followed immediately by short crescendo marks which tend to function as dynamic accents contradicting and weakening the grouping effect of the accent marks. Thus, the grouping according to agogic accents is likely to prevail. Group 3 is unified by the crescendo that extends throughout the third notated measure. Group 4 begins with a beat of a dotted quarter note in duration which might be understood as three quick eighth-note beats. This is followed by a beat of eight eighth notes in duration, determined by agogic, dynamic, and pitch accents. The last beat, determined by the agogic accent in the lower voice, is six sixteenth notes in duration. Group 4 is unified, as are the preceding groups, by the crescendo which reaches its peak at the beginning of the 4/4 measure and retains the peak of intensity throughout that measure.

Example 207 (see p. 416) is the most ambiguous of those presented in this classification. The composer's notation and his explanation of the manner in which the movement is to be performed indicate that considerable freedom of tempo is desirable, a factor complicating the matter of relative beat durations. Yet, as it is notated, the example contains beats of unequal lengths and irregular grouping tendencies, although the latter are sometimes vague. The beat durations are indicated below each brace of staves. Although the grouping of beats is uncertain in the first brace, the highest point of dynamics and pitch occurs at the point marked by an asterisk between the staves. The entire first brace, except for the last two beats, may be understood as a single unit

Charles Ives: Second Pianoforte Sonata, "Concord, Mass., 1840-1860."

I. "Emerson"

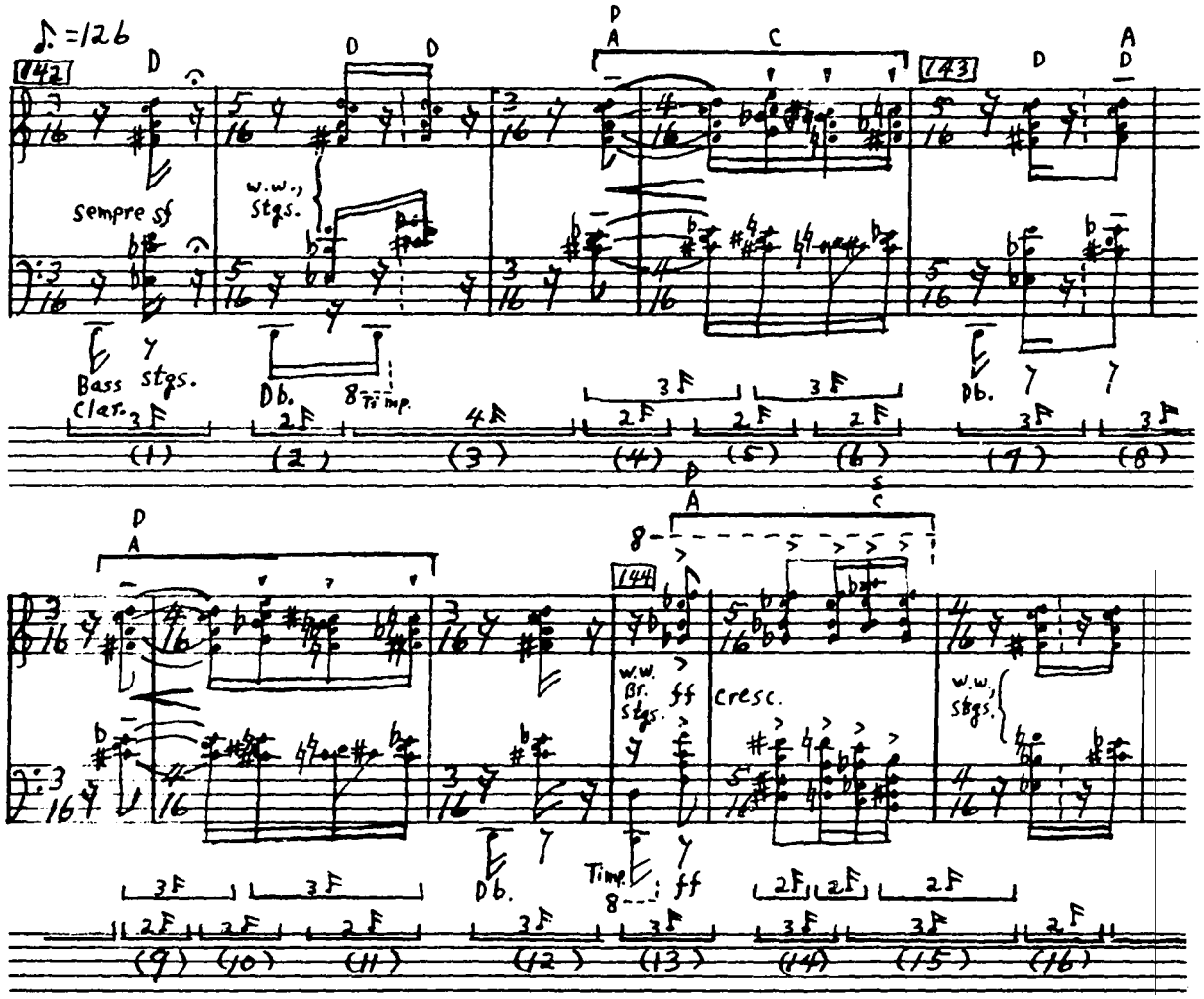


comprising all the notes of the melodic curve; or it may be understood as two units, the second of which begins at the highest point. The beats enclosed within a bracket at the end of the first and beginning of the second brace form a unified group that overlaps with its repetition, also bracketed, in the second brace. The three asterisks between the staves of the second brace are high points of accentuation and dynamics that would tend to influence grouping, although the particular units of grouping are not clear. Likewise, grouping is not clear at the beginning of the third brace, but it becomes clear where the brackets so indicate, as a result of another repetition of the unified group heard earlier; the group is then repeated in a modified form at the end of the third and beginning of the fourth brace. From the middle of the fourth brace to near the end of the example there is a regular grouping of equal beats effected by repeated patterns of pitches and durations. The last complete bracket of the example embraces three beats for objective reasons, although the predominance of duple grouping might well be subjectively continued.

Nonmetrical Rhythm: Predominance of Unequal Beats

In Examples 208-211 (see pp. 418-425) unequal beats tend to predominate over the grouping possibilities, as did equal beats in Examples 189 to 191 (see pp. 387, 389 and 391). Example 208 is a reduction of a passage from the first edition of Le sacre; dotted bar lines indicate places where Stravinsky added bar lines in his revised edition of 1943. The first two sixteenth notes of the example are followed by a sixteenth

Example 208
Stravinsky: Le sacre, "Danse Sacrale."



rest extended by a fermata. Thus, the first two notes are presented to the listener as a unit. That unit and its approximate repetitions in the following notated measure are understood as a unified group with repetitions. The brackets designating beats, beneath the score, enclose the unified groups of the first three beats; in each of these beats the heaviest accent falls on the second note of the beat. Beats 4-6, of two sixteenth notes each, admit of an alternate analysis which would group the notes into two units of three sixteenth notes each, although the preferred analysis is that of three beats: beat 4 begins with an agogic accent, beat 5 begins on the first note of the fourth notated measure where the crescendo reaches its peak, and beat 6 begins on the third note of the fourth notated measure. Beat 6 is so designated by virtue of an accent that would tend to be supplied by the listener as a result of the subjective continuation of the preceding beats of two sixteenth notes in duration. The alternate analysis of beats 4-6, according to which there are two groups of three sixteenth notes, is so designated on the basis of the contour accent (marked "C") on the second note of the fourth notated measure; but this alternate analysis is not preferred, since agogic and dynamic accents tend to be of greater weight than accents of pitch. Beats 7-13 are analyzed as follows: beat 7 is another repetition of the unified groups of beats 1-3, beat 8 is emphasized by dynamic and agogic accents, beats 9-11 are similar to those of beats 4-6, and beats 12-13 are similar to beats 1-3 and 7. Beat 14 begins with an agogic accent, and beat 15 begins with a contour and skip accent. The strong influence of the agogic

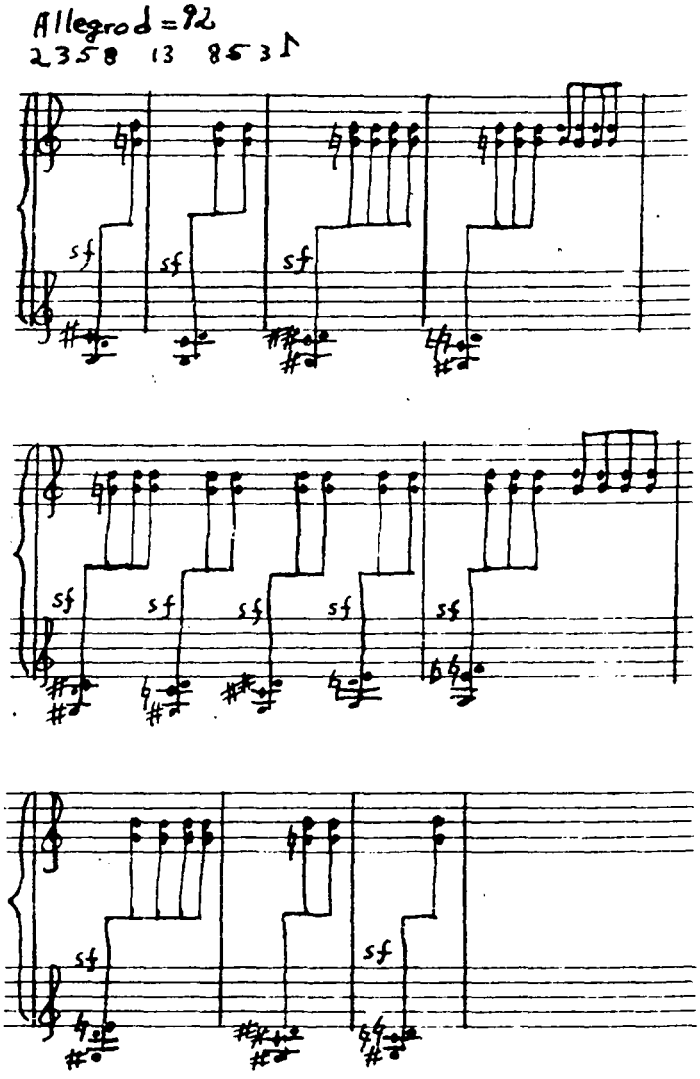
accents at the end of beat 13 and the beginning of beat 14 might create a tendency to group the notes of beats 14 and 15 as three beats of two sixteenth notes each; but grouping in terms of two beats of three sixteenth notes each is preferred, since this grouping follows the factual accents. Beat 16 is similar to beat 8.

Although this example has been classified as a series of unequal beats with no higher grouping, a slight tendency toward irregular grouping might be created by the repetition of the pitch and duration pattern marked by a bracket above the top staff in measures 3-4 and 6-7. Likewise, the pattern of durations and pitches bracketed in measures 9-10 is subsequently repeated.

In Example 208, as in some of the preceding examples, a listener reading a score or watching a conductor would have a tendency to understand most of the strong accents as syncopations. Yet, the factual evidence does not support the assumption that the listener will know, from purely aural data, where the bar lines are drawn; he will only know where the accents occur.

In Example 209 (see p. 421) the factual accents create one beat in each of the first four measures, three beats in measure 5, and one beat in each of the last four measures. A higher level of grouping would consider the entire example, except for the last measure, to be a single unit. The composer has indicated just below the tempo marking this level of grouping in what might be considered his time signature (2358 13 853 eighth notes). The entire composition is composed of repetitions of this

Example 209
Boris Blacher: Ornamente für Klavier, Op. 37, Movt. 5.



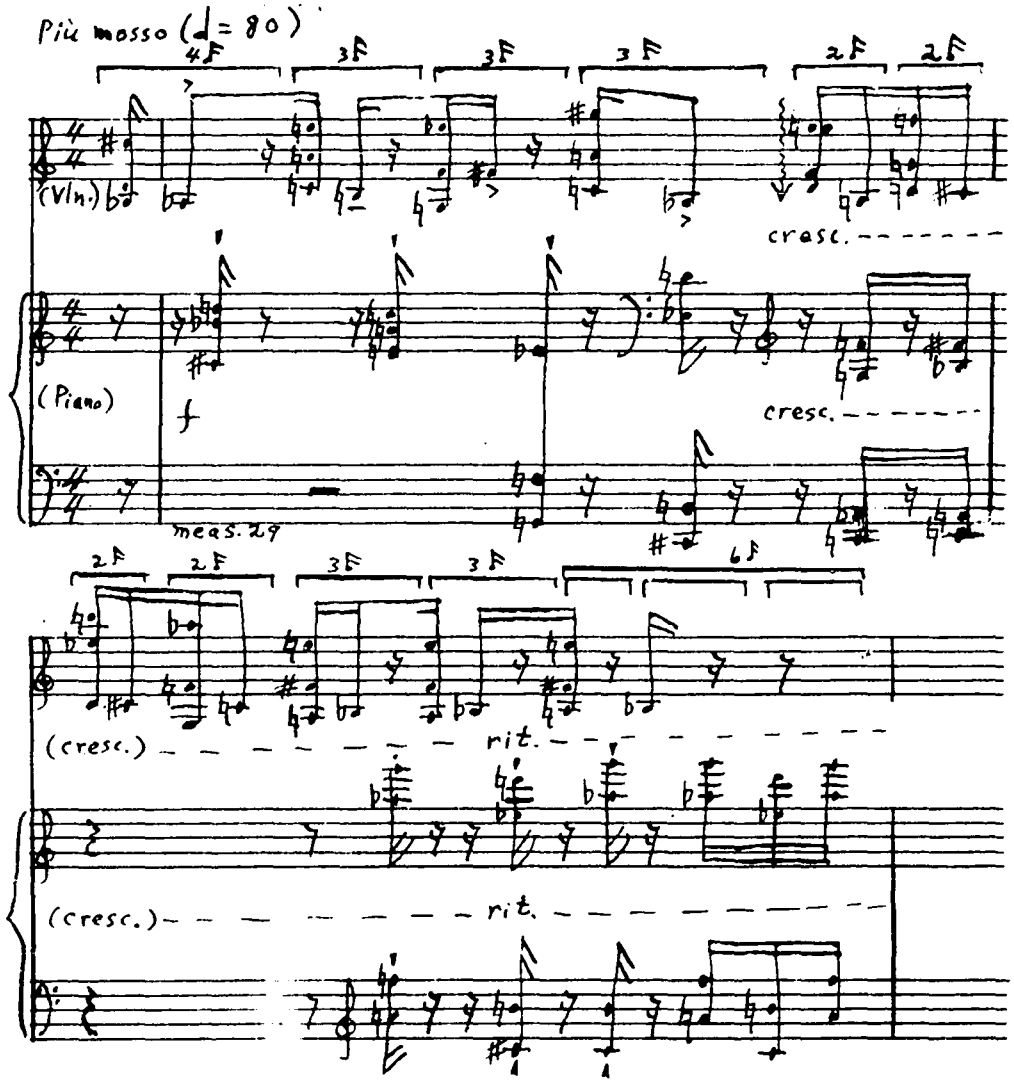
pattern. But grouping at this level exceeds what is normally considered the "present" (see pp. 320 ff.) and is thus more appropriately termed "form" than "rhythm."

From the standpoint of subjective accentuation, it is possible that measure 3 would be considered analogous to the first two measures taken as a single unit and thus be divided into a beat having the duration of two eighth notes followed by one of three eighth notes. Likewise, it is possible that measure 4 would be subjectively divided into two or more beats; but here the determination of the division is less certain. The two-plus-three grouping of eighth notes might be carried into measure 4, and then be followed by an additional group of three eighth notes; there is no factual support for grouping the notes of measure 4 into two units of four eighth notes each, although there might be a tendency for the performer to add an interpretational accent at the beginning of the second group of note-stem connections.

It is of interest to note that the composer, in his preface to the group of pieces from which Example 209 is drawn, speaks of his use of "variable metres" (variable Metren) in the compositions. He is, of course, using the term "metre" in a different sense than that which we have adopted. For him metre evidently means regular or irregular measurement rather than a regular grouping of beats; the latter conception of metre is closer than the former to those stated or implied in the treatises studied in Part I.

Example 210 (see p. 423) is preceded by a passage that does not establish an expected pattern of grouping. The unequal beats of the example are created by dynamic accents and modified repetitions of patterns of pitches and durations, enclosed in brackets added above the

Example 210
Schoenberg: Phantasy for Violin, Op. 47.



score. The last beat of the example, indicated as a unit of six sixteenth notes in length, might be understood as a series of three shorter beats as indicated by the lower level of brackets.

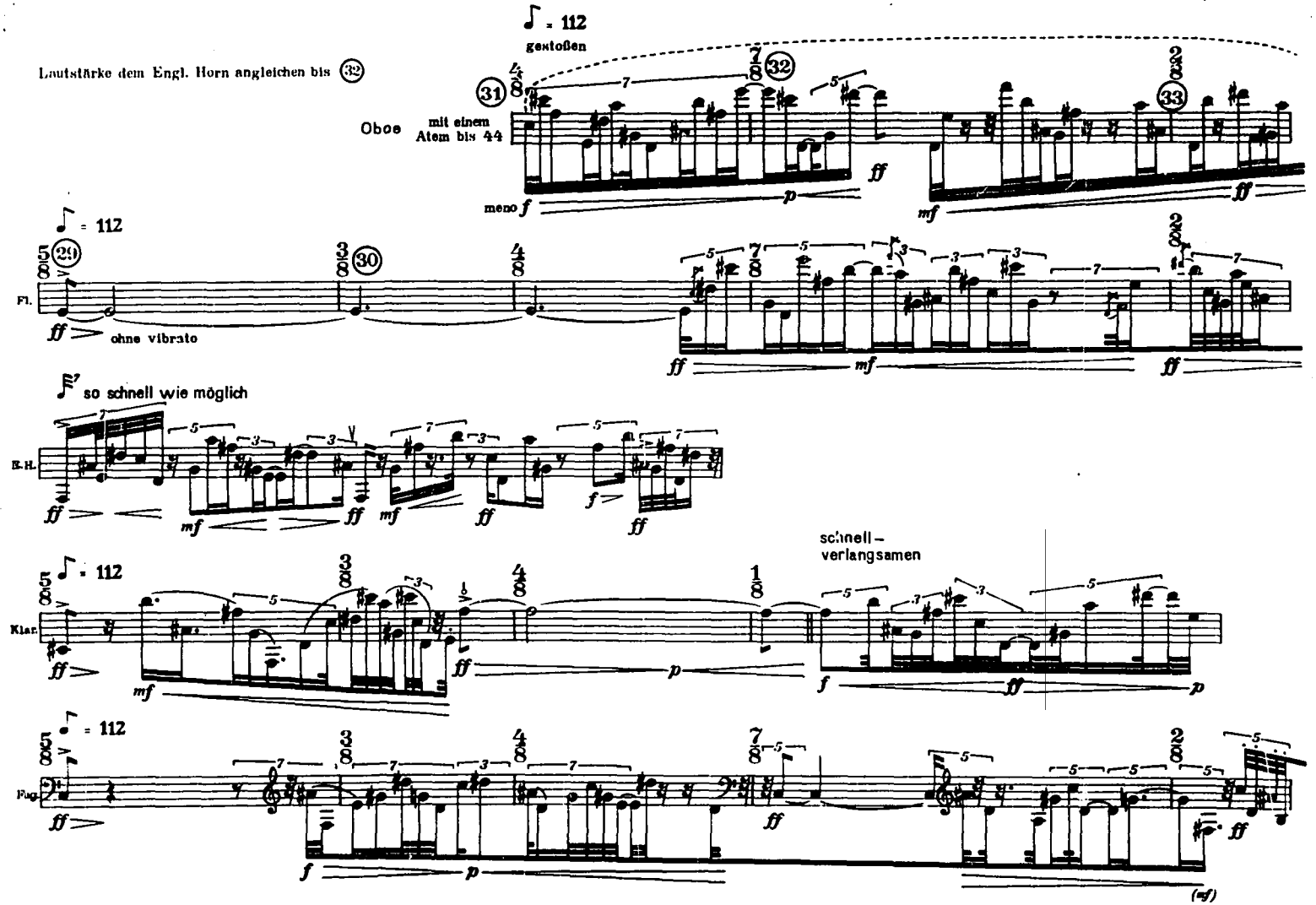
Nonmetrical Rhythm: Free Accentuation and Absence of Perceptible Beat

In the examples of this classification such freedom of accentuation is employed that there is no clear tendency toward the establishment of a perceptible beat. In some of the examples there are vague tendencies toward the establishment of irregular beats, but these tendencies are made uncertain by contradictory accents. In most cases the music must be "counted," or "measured," for the performers to keep together, but the units employed for such measurement are not aurally perceptible.

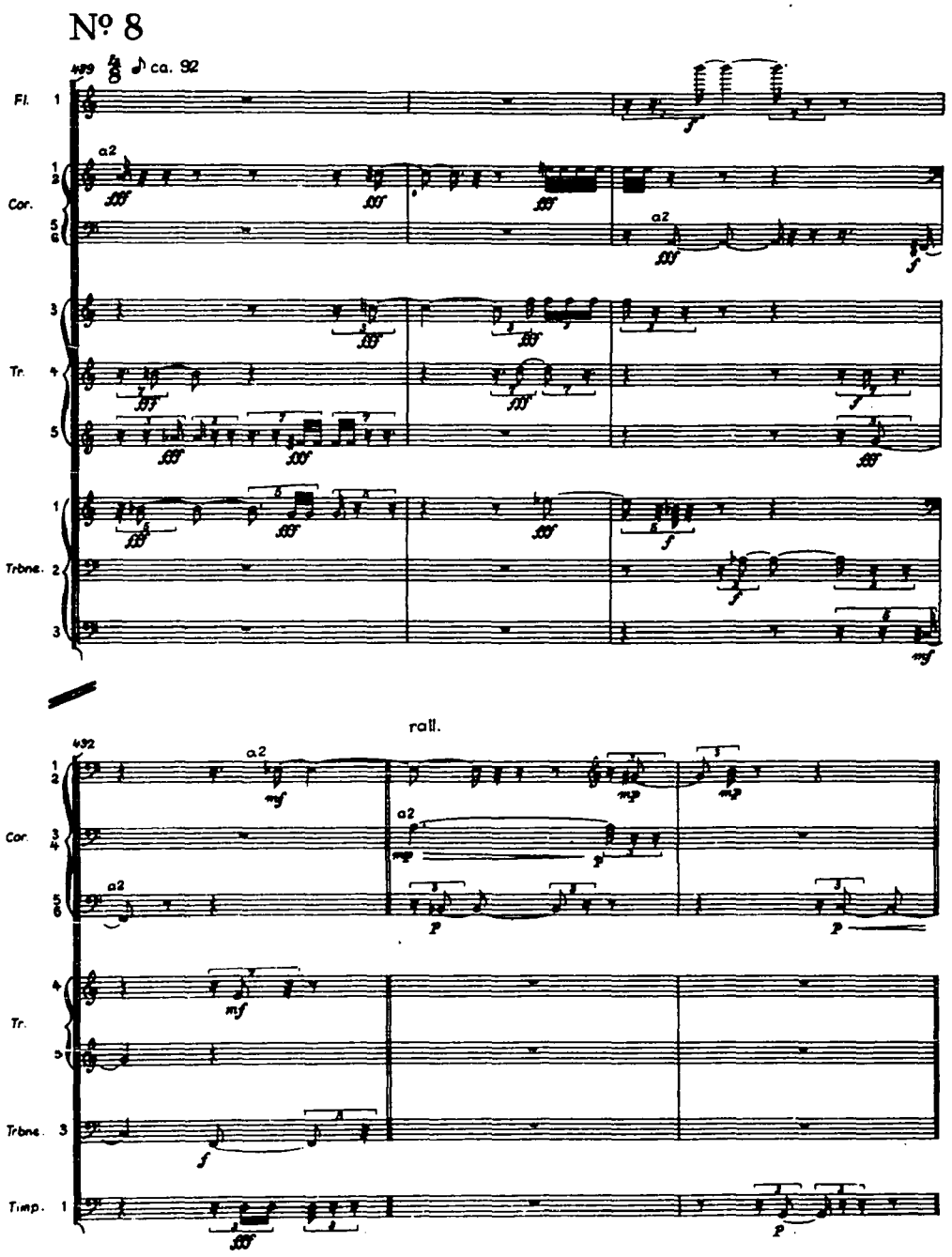
In Example 211 (see p. 425) the composer establishes the tempo as M.M. 112 for the eighth note in all parts but that of the English horn; the tempo of the latter is determined by the maximum speed at which the performer can render a group of seven thirty-second notes. It would be difficult, indeed virtually impossible, to find clear factual reasons in this passage to support the assumption that the listener would hear either regular or irregular beats; the total effect of the combined voices is one of free accentuation.

Example 212 (see p. 426), like the preceding example, affords virtually no factual reasons to support the assumption that the music would be understood in terms of beats.

Example 211
Karlheinz Stockhausen: Nr. 5 Zeitmasse für fünf Holzbläser.



Example 212
Luigi Nono: Il canto sospeso, No. 8.

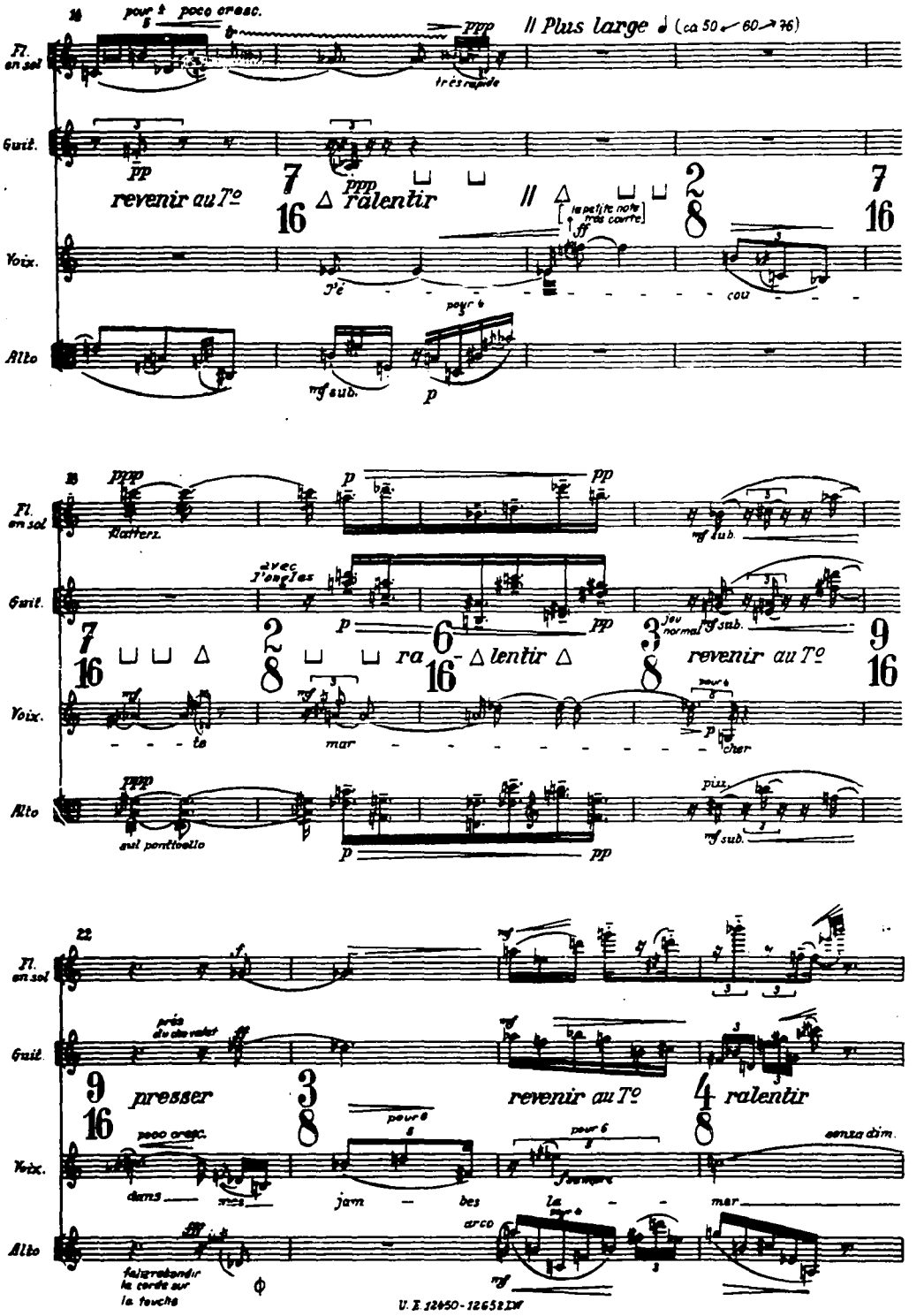


Example 213 (see p. 428) presents more possibilities for the assumption of a perceptible beat than do the two preceding examples. It might be argued that the long notes of measures 2 and 3 are beats, that measure 4 comprises a beat, that a beat begins at measure 5, that the beginning of a beat follows the rest in the voice part in measure 6, etc. But such "beats" are by no means as strong and decisive as are those of the examples used to illustrate the preceding classes of music according to rhythmic organization.

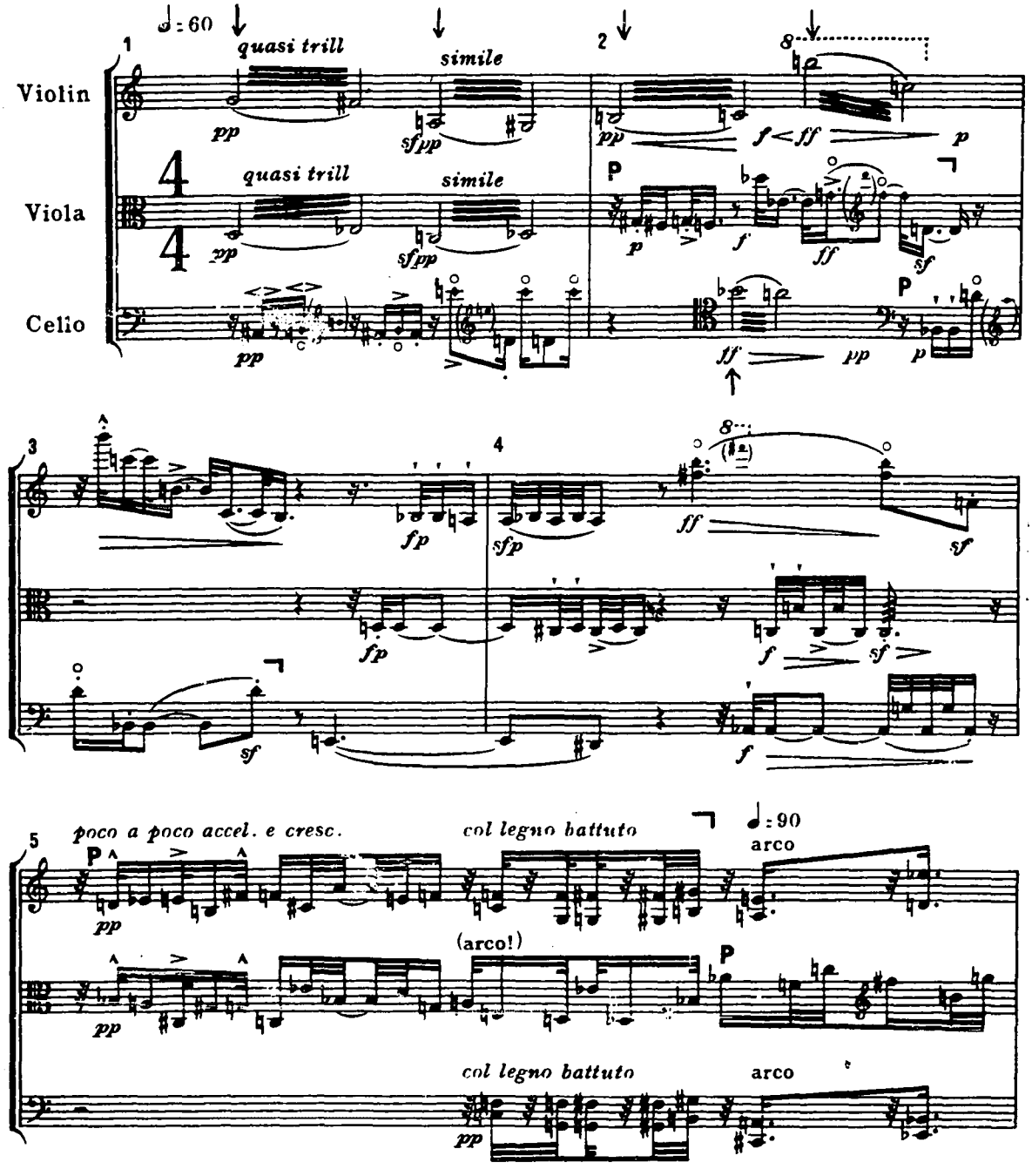
An analysis of Example 214 (see p. 429) might assume that the trilled notes support perceptible beats as indicated by the arrows added above the violin and below the cello part in the first two measures; but the principal parts, the cello in the first measure and the viola in the second measure, present irregular patterns that tend to predominate over the possibilities of beats. In the succeeding measures there are no strong tendencies toward organization in terms of beats until the last two notes of the violin and cello parts.

Examples 215-217 are not as free as are the preceding examples in this category. Example 215 (see p. 430) does not employ strong, decisive beats; yet, if each of the short groups of notes is considered a beat, by virtue of its being a unified group, then the passage is organized by unequal beats. Example 216 (see p. 430), which carries a programmatic label by the composer, is no doubt intended to be as free as the song of a bird. But if the agogic accents were considered beats, the passage would have, like Example 215, a series of unequal beats. Curt

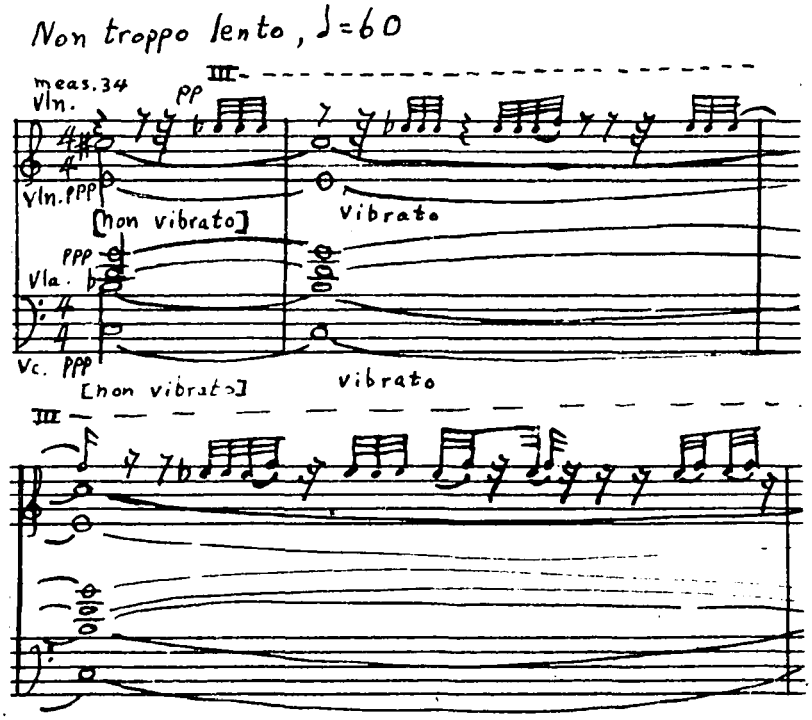
Example 213
Pierre Boulez: Le marteau sans maître, Movt. 5.



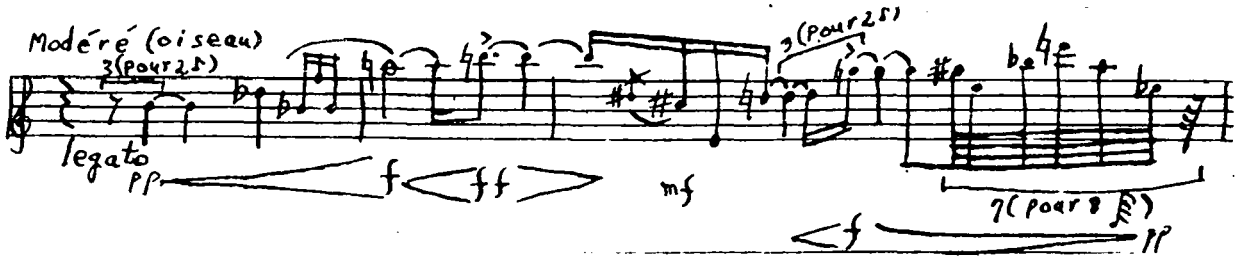
Example 214
Schoenberg: String Trio.



Example 215
Bartok: Fourth String Quartet, Movt. 3.

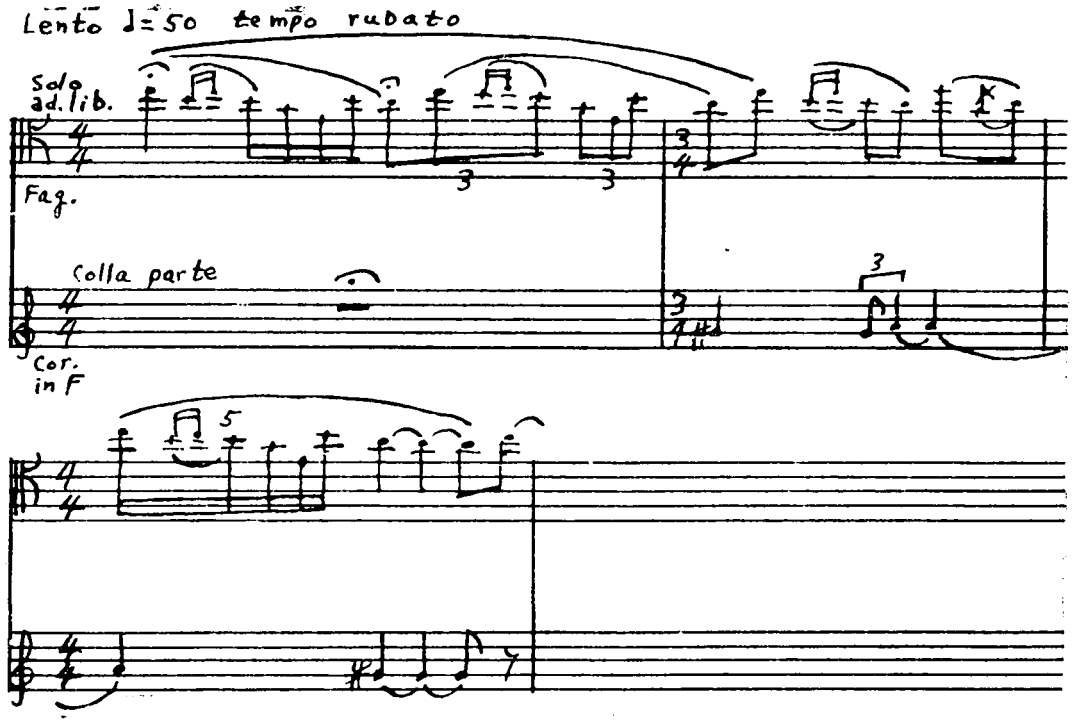


Example 216
Messiaen: Messe de la Pentecôte pour Orgue, "Communion" (Les oiseaux et les sources).



Sachs considers Example 217 to be an instance of "free rhythm";[40] yet, once again, agogic accents might tend to create a perception of unequal beats. These last three examples lie on the border line between non-metrical organization by unequal beats and nonmetrical organization in which there is no perceptible beat.

Example 217
Stravinsky: Le sacre (Beginning).



40. Op. cit., p. 371.

The Question of the Measure in Twentieth-Century Music

The above analyses and classification of examples of twentieth-century music do not take into consideration the notated measure. In some instances bar lines are located at the points of greatest objective accentuation or at points where a subjective accent will tend to be supplied by the listener as the result of the subjective continuation of a previously established system of accentuation. Such instances are found in Examples 178-80 (Stravinsky, Bartok, and Schoenberg; see pp. 368-70) and 182-85 (Schoenberg, Palmer, Stevens, and Bartok; see pp. 373-79). In these examples the bar line is employed in a manner similar to that of most music of the eighteenth and nineteenth centuries. In other examples measures vary in length and thus depart in that respect from the normal procedure of the eighteenth and nineteenth centuries, but they frequently mark off rhythmic units based upon accents or unified groups and thus are supported by facts. This is especially the case in Examples 200 (Stravinsky, see p. 404), 204 (Copland, see p. 411), and 209 (Blacher, see p. 421).

But other examples are more puzzling. The question of the meaning of the notated measure is a particularly difficult one when the facts of rhythm demonstrate little or no support for the composer's choice of bar-line placement. This is true of Examples 187 (Schoenberg, see p. 382), 191 (Stravinsky, see p. 391), 201-203 (Messiaen, Schoenberg, and Bartok; see pp. 405-409), 208 (Stravinsky, see p. 418), 210-17 (Schoenberg, Stockhausen, Nono, Boulez, Schoenberg, Bartok, Messiaen, and Stravinsky; see pp. 423-431). If a composer retains a given measure length throughout

the passage, as is the case in Examples 187 (Schoenberg, see p. 382), 201-203 (Messiaen, Schoenberg, and Bartok; see pp. 405-409), 210 (Schoenberg, see p. 423), 212 (Nono, see p. 426), and 214-15 (Schoenberg and Bartok, see pp. 429-430), it might be assumed that the measure is purely for the purpose of counting, of measuring the time units to be played, with no implication of a subjective or objective accent at the bar line. But when the lengths of measures change, as they do in Examples 191 (Stravinsky, see p. 391), 208 (Stravinsky, see p. 418), 211 (Stockhausen, see p. 425) and 213 (Boulez, see p. 428), it might be assumed that the composer intends the measures to imply note groupings. Whether or not the performer chooses to supply accents on notes at the bar lines is a purely interpretational matter, one that cannot be included in the kind of analysis and classification undertaken here. But there are instances in which the performer is given little or no opportunity to supply such accents, particularly where there are rests or extremely short notes at the beginning of the measure, or notes tied over the bar line so as not to lend themselves readily to accentuation. In such instances the bar lines are "concealed" from the standpoint of factual accentuation.

The question of the effect of the bar line is extremely difficult to answer when the bar line is objectively concealed, as it often is in the music of Stravinsky. In regard to a Stravinsky composition with unequal measure lengths and bar lines concealed by rests, it might be argued that one could record two performances of the same notes, copied out with different lengths of measures, so that an oscilloscope could

detect some sort of performer's interpretations that clearly distinguished the two, and so that sensitive listeners, acquainted with Stravinsky's style though not with the particular piece in question, could grasp the down-beat rests in the performance of the composer's version. Experimentation would be required to test the validity of that argument. An experimental investigation into the question of concealed bar lines in music with frequently changing measure lengths might result in a valuable contribution to the understanding of such notational procedures, although it seems unlikely that such an investigation would support the above hypothetical argument. If one were to reject that argument, one might well ask why composers use concealed bar lines in music with frequently changing measure lengths. A possible answer is that the concealed bar lines have meaning only for the performer and the score reader, and that the composer intends to work against the traditional down-beat feeling of the bar line, even where that feeling has no support in actual sound or in the subjective continuation of an accentual pattern. Such an answer implies that an important part of the intended aesthetic effect of the music depends upon the listener's subjective interpretation of notational elements, rather than upon musical facts; the listener reading a score must supply the down-beat feeling at the bar lines, while the listener depending solely upon the sound of the music will fail to grasp that part of the intended effect.

In an attempt to come to an understanding of the various styles of twentieth-century music, it is of fundamental importance to proceed by

relying heavily upon the musical facts and by constantly questioning the validity of previous theories; in the present study an effort has been made to proceed in this manner. The type of analysis which we have undertaken is useful for the description of styles and for performance. Our analyses indicate, for instance, that the bar line in much twentieth-century music raises serious questions of interpretation which we have left to the performer to answer. Yet, it is important to note that in certain styles more interpretational questions are raised than in others; Stravinsky's use of bar lines, for example, tends to raise questions more often than Bartok's. Thus, such analysis helps to distinguish and describe various rhythmic styles of twentieth-century music, and, since it brings into sharp focus questions of interpretation, it is also a useful preliminary to the performer's experimentation and decision in the most subtle and personal matters of rhythm.

Summary

One of the most important qualities of rhythm is that of articulated continuity. Musical rhythm is a stream of varying tensions that constitutes a kind of durational experience similar to Henri Bergson's notion of "real duration" which he describes as a "continuous flux, a succession of states," which "extend into each other" so that it is impossible to say where any one of them begins or ends. The continuity of musical rhythm may be understood as a unified, perceptual flux which is analyzed by the mind as a series of individual events, or as arising from

the activity of the mind by which separate events are related and grouped together.

The following principles and laws set forth by psychologists working in the area of the perception of rhythm are accepted by the present study: (1) The principle of subjective rhythm; (2) The principle of expectation; (3) The Gestalt law of Prägnanz; (4) The Gestalt law of good continuation. Psychological experiments in the perception of rhythm tend to support the assumption that the most important objective accents functioning as determinants of rhythm are those of intensity and duration, an assumption accepted in the present study.

The purpose of the analyses in this chapter is to set forth a point of view toward the analysis of rhythm, to illustrate the application of basic principles, and to provide a classification for certain aspects of rhythmic organization in twentieth-century music. The analyses are based as much as possible upon the facts of musical rhythm, accents and unified groups, as notated by the composer. An accent of duration, intensity, timbre, harmonic progression, or melodic change of pitch calls attention to a single note in the rhythmic continuity as more important than others in its context. A unified group calls attention to a succession of notes that tends to be perceived as a unit for reasons of duration, intensity, timbre, pitch, or style of performance. Typical examples of the unified group are the ostinato, melodic sequence, repeated pattern of durations, and series of notes set off from others in its context by a change of performance style, dynamics, or instrumentation.

An agogic accent is a note that is longer in duration than others in its context. The relative weights of agogic accents are extremely difficult to determine, and it is doubtful if any formula could be devised that would accurately determine the relative weights of agogic accents in all contexts. A useful guide for agogic accent analysis is to consider the weight of the accent to be dependent upon three facts, in the following order of importance: (1) The "absolute" or notated length of the note; (2) The relative length of the note as determined by the ratios between the length of the agogic accent and its shorter neighboring notes; (3) The position of the note, according to whether it is in the most effective position (preceded and followed by a shorter note), the next most effective position (preceded but not followed by a shorter note) or the least effective position (followed but not preceded by a shorter note).

A dynamic accent is any stress of intensity, whether it be notated by one of the traditional accent signs, by a change to a higher dynamic level as the culmination point of a crescendo, or by the addition of more notes to the texture. The last type, in ensemble music, is frequently an accent of timbre as well. The weights of dynamic accents are more difficult to determine than are those of agogic accents, as there are seldom such clear distinctions presented in the notation.

The element of harmonic rhythm employed in the analyses of this study is the agogic element, which Walter Piston considers to be first among the factors influencing the rhythmic quality of the harmonic change.

The principles of agogic accent analysis are applied to the agogic element of harmonic rhythm.

Two types of melodic pitch change are treated as accents in the analyses of this chapter: (1) Contour accent, a note that is higher or lower than its neighboring notes; (2) Skip accent, a note that is preceded by a skip. In general, upper contour and skip accents are considered to be heavier accents than lower ones, and larger skips are considered to impart greater accentual weight than smaller ones. But the accents of pitch must be treated as tentative because of the lack of support on the part of experimental psychology and the possible modification, resulting from the melodic-harmonic context, of the effects of these accents.

In the application of the principles of analysis presented in this chapter, little is said about the subtleties of rhythm in performance, as these tend to be subjective matters. Rather, our analyses are intended to be descriptive, clarifying and relating the points of articulation within the rhythmic continuity. While we believe that styles and techniques of rhythmic organization cannot be adequately described and compared in subjective terms, we recognize the importance of subjective analysis for the performer. His personal interpretation of motives and larger units of a composition can make a vast difference in the aesthetic effect of his performance. While every performer must consider such matters carefully, they are not within the scope of the present study.

In our classification of twentieth-century music according to rhythmic organization, the term "metrical rhythm" refers to rhythm in

which facts reveal sufficient objective reasons for the listener to understand the rhythm as regularly organized. A composition may be said to have two or more metrical levels if it exhibits systems of regular emphasis at two or more intervals of duration, such as the regular beat and the regular grouping of beats. In our analyses the beat is considered to be the perceptible pulse, supported by the facts of rhythm, which could be used as a conductor's beat. The perceptible units which we call beats may be either equal or unequal in length.

The classification of twentieth-century music according to rhythmic organization presented in this chapter is as follows: (A) Metrical rhythm organized by (1) the regular grouping of equal beats, (2) the regular grouping of unequal beats, and (3) equal beats with no clear tendency toward a higher grouping. (B) Polymetrical rhythm, in which two or more metres are used simultaneously. (C) Metrical-Nonmetrical rhythm, i.e., rhythm that is metrical at the level of the beat but nonmetrical at the higher level, as the regular beats are irregularly grouped. (D) Nonmetrical rhythm organized by (1) unequal beats with irregular grouping, (2) unequal beats with no clear tendency toward a higher grouping, and (3) such freedom of accentuation that there is no clear tendency toward the establishment of a perceptible beat.

Since the analyses and classification of examples in this chapter are based upon musical facts, they do not take into consideration the notated measure. Among the examples analyzed, the musical facts lead us to assume three different uses of the bar line: (1) To indicate points of

greatest objective accentuation in music with measures of equal or unequal lengths, or to indicate points at which the listener will tend to supply a subjective accent as the result of the subjective continuation of a previously established system of accentuation; (2) To facilitate counting, or measuring the time units to be played, with no implication of a subjective or objective accent at the bar line; (3) To indicate note groupings in music with objectively concealed bar lines when measures of unequal lengths are employed. The last of these three uses of the bar line is the most puzzling. Two possible answers to the question of the effect of objectively concealed bar lines in music with changing measure lengths are: (1) In some way not yet fully understood, the down-beat feeling is communicated, in sound, to the listener. Experimentation is needed to test the validity of this answer. (2) The bar lines have meaning only for the performer and the score reader who must subjectively supply the down-beat feeling at the bar lines, a feeling which the listener depending solely on the musical sounds will fail to grasp.

In the analyses of this study an effort has been made to rely heavily upon the musical facts and to question the validity of previous theories. Such analysis as has been undertaken here is useful in distinguishing and describing various rhythmic styles of twentieth-century music and in focusing the performer's attention upon questions of rhythmic interpretation prior to his decision in the most subtle details of a rhythmically satisfying performance.

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List of abbreviations:

ADB Allgemeine deutsche Biographie. 56 vols. Leipzig: Duncker & Humblot, 1875-1912.

AJP American Journal of Psychology.

GD Grove's Dictionary of Music and Musicians. Eric Blom (ed.). 9 vols. 5th ed. London: Macmillan, 1954.

MGG Die Musik in Geschichte und Gegenwart. Friedrich Blume (ed.). Vols. 1- . Kassel: Bärenreiter Verlag, 1949-.

MQ Musical Quarterly

OAMP Objective Analyses of Musical Performance. Ed. Carl Seashore ("University of Iowa Studies: Studies in the Psychology of Music," Vol. VII). Iowa City: The University Press, 1936.

PR Psychological Review

RM La revue musicale

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