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SOME RHYTHMIC THEORIES COMPARED AND APPLIED IN AN ANALYSIS OF
EL DECAMERON NEGRO BY LEO BROUWER

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November, 1991

A Thesis submitted to the Faculty of Graduate Studies and Research
in partial fulfillment of the requirements of the degree of
Master of Arts in Music Theory

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Abstract

In the first section of this thesis rhythmic theories of Leonard Meyer and Grosvenor Cooper, Wallace Berry, William Benjamin, Joel Lester, Fred Lerdahl and Ray Jackendoff, and Jonathan Kramer are discussed. Each theoretician's treatment of meter and grouping is compared. The appropriateness of each theory as an analytic tool for the analysis of *El Decameron Negro* by Leo Brouwer is evaluated.

The analysis itself concerns a section of music in which written meter changes at almost every barline. Within the measures binary and ternary rhythmic groups occur in the context of a continuous pulse. The analysis explicates the metric organization of the section. Suggestions are given for a performance which will project the underlying organization of the section of music.

Sommaire

Les théories rythmiques de Leonard Meyer et Grosvenor Cooper, Wallace Berry, William Benjamin, Joel Lester, Fred Lerdahl and Ray Jackendoff, et Jonathan Kramer relatives au chiffrage des mesures et au regroupement des notes en motifs rythmiques sont exposées et comparées dans la première partie de cette thèse. L'appréciation de la pertinence de chacune de ces théories comme outil d'analyse du *El Decameron Negro* de Leo Brouwer est effectuée.

L'analyse proprement dite porte sur un extrait musical dans lequel le chiffrage change presqu'à chaque mesure. Dans ces mesures, des groupes rythmiques binaires et ternaires se présentent sur une pulsation continue. La thèse met en évidence l'organisation métrique de l'extrait. Des suggestions sont apportés pour que l'interprétation de l'extrait musical en question reflète l'organisation métrique sous-jacente.

Acknowledgements

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SOME RHYTHMIC THEORIES COMPARED AND APPLIED IN AN ANALYSIS Of *EL DECAMERON NEGRO* BY LEO BROUWER

Introduction

My subject is the comparison of theories of meter, the analysis of the rhythmic and metric structure of a piece, and how such an analysis can influence a performer's interpretation of the piece. *El Decameron Negro* (composed by Leo Brouwer in 1981 for solo guitar) contains inventive metrically varied rhythmic structures which shall be the subject of a discussion of meter, phrasing, and the relationship of rhythmic analysis to performance.

An analysis of a musical texture characterized by rapid metric change is an apt point of departure for a discussion of phrase and metric structure. The following contributors to the analysis of rhythm and meter will be cited in this discussion: Grosvenor Cooper and Leonard Meyer, *The Rhythmic Structure of Music* (1960); Wallace Berry, *Structural Functions in Music* (1976); Maury Yeston, *The Stratification of Rhythm* (1976); Benjamin Boretz, "In Quest of the Rhythmic Genius," (1972); Carl Schachter, "Rhythm and Linear Analysis: A Preliminary Study," (1976), "Rhythm and Linear Analysis: Durational Reduction," (1980); Fred Lerdahl and Ray Jackendoff, *A Generative Theory of Tonal Music* (1983); William E. Benjamin, "A Theory of Musical Meter," (1984), Joel Lester, *The Rhythms of Tonal Music* (1986), and Jonathan Kramer, *The Time of Music* (1988).

Discussion of the relationship of analysis to interpretation is rendered difficult by the fact that the basic vocabulary about music and its structures, particularly rhythmic structures, is under continuous revision. Therefore a section of this paper will be devoted to a comparison of the usage of basic terms as they occur in the writing of the major theorists.

To avoid ambiguity I will incorporate Ingmar Bengtsson's basic distinctions into this enquiry.[1] Bengtsson distinguishes between three forms of musical existence: music as notation, as experience ,and as physical event. In other words, a musical event such as a pitch, motive or harmony can be considered as it is notated, as it is experienced and as it is measured and recorded by a laboratory instrument. It is clear that notation is not essential to the existence of music, but the repertoire studied here is a notated repertoire. Furthermore it is assumed that notation is an incomplete code which contributes to the performance while not defining it.

I will base my analysis of the rhythmic structure of the musical example on the written score. The results of this procedure will thus be limited by the information contained in the notational system. I will attempt to draw conclusions concerning the performed and/or perceived rhythms based on analysis of the notated rhythms.

Rapid change in written meter is the most remarkable element of style particular to *El Decameron Negro* . In the second movement of *El Decameron Negro* the meter changes at almost every barline. Declamatory sections, whose pulse is quite free, are contrasted with more rapid sections which are characterized by a regular and clearly articulated pulse. The rapid succession of different metric structures is unusual in tonal music. I will show that metric variation is a significant compositional technique in this work.

The limits of rhythmic analysis

There are differing opinions as to the limits of investigation into rhythmic structure. Theories vary in the degree to which rhythmic events are conceived of as distinct from other musical events. Two opposing positions, one formulated by Cooper and Meyer

(1960) and the other by Benjamin Boretz (1971) and Wallace Berry (1976), shall be discussed here.[2]

Boretz argues that duration is not a parameter which is perceived directly in isolation; instead, duration is always the duration of something.[3] Thus, the study of durations in music is of necessity dependent on the definition of the things in music which have duration. It is all the "things" in time that are the subject of rhythmic analysis, and those "things" are the music itself in its entirety. Consequently the rhythmic analysis of a piece is an analysis of all the events of the piece as they occur in time. Berry also adopts this all-inclusive position at the beginning of his discussion of rhythm and meter.[4]

The logical consequence of this line of thought is the elimination of rhythmic analysis per se because all music analysis is rhythmic. Yet theorists persist in selectively defining the elements with which they characterize musical entities in order to describe the influence of temporally defined patterning.

One such theorist is Carl Schachter.[5] Schachter discriminates between the durational and harmonic aspects of some musical examples. He demonstrates that the neutralization of the durational component in a musical example puts the activity of the harmonic component into relief. Conversely Schachter's neutralization of the harmonic component demonstrates the articulatory power of durational differences. Thus, while examples of rhythmic activity are inseparable from that which is rhythmical, rhythm can be shown to be conceptually independent of other attributes of a musical example. To do so, Schachter must specify that which is being analyzed rhythmically: certain classes of tonal events, including octave equivalence, scalar functions, and dissonance resolutions. His temporal distinctions concern the measurement of clock-time which he calls durational rhythm, and his analysis of tonal periodicities which he calls tonal rhythm. I cite Schachter here because of his defence of rhythmic analysis per

se. His analytic techniques are not suited to music with rapidly changing meter.

A position which facilitates rhythmic analysis by defining certain rhythmic concepts as well as musical contextual attributes was put forth by Meyer (1956) and by Cooper and Meyer (1960). The perception of pulse, accent, and consequently meter are related to musical contextual features defined in terms of motivic and harmonic structure.

It is Cooper and Meyer's belief that an analysis of the accentual and grouping structure of a piece will aid the interpreter in choosing a particular interpretive strategy for any specific phrase. The present study shares that assumption. (Berry [1976] also orients his investigation towards the development of strategies for the interpreter, although his explanations of rhythmic phenomena are embedded in more exhaustive descriptions of musical content.)

Cooper and Meyer: Pulse, Beat, and Meter

Meyer (1956) and Cooper and Meyer (1960) are forerunners of current researchers in music perception because they attempt to formulate a theory of musical structure which assimilates a theory of perception.   Cooper and Meyer appropriate basic rules of grouping from the Gestalt school of psychology and apply them to aural stimuli to explain and substantiate grouping procedures.   Their discussion begins at the surface level with metric and submetric rhythmic groups and expands to include entire movements.   An essential part of their theory concerns the relationship between the different levels of scale, but initially I will discuss their treatment of metric units such as the beat, its divisions, and the measure and its multiples.

In the first sentence of the first chapter of their study Cooper and Meyer state: "To study rhythm is to study all of music."[6] One would be mistaken in assuming that Cooper and Meyer agree with Benjamin Boretz's position. (See page 3 of this thesis.) One page later they proceed to define rhythm as the grouping of strong and weak beats. They state: "Rhythm may be defined as the way in which one or more unaccented beats are grouped in relation to an accented one."[7] Both grouping and accent are phenomena of experience, and as such they are part of the experience of listening to (and playing) music.   The consideration of musical rhythm strictly in terms of grouping and accent focuses the attention of the analyst on the experienced foreground or, in Cooper and Meyer's terminology, the primary rhythmic level.

Experiential criteria define what Cooper and Meyer call the "primary rhythmic level."[8]   The primary rhythmic level is the level "on which beats are felt and counted,"[9] a definition in terms of perception.   Subdivisions of the beats represent a sub-primary or inferior rhythmic level and multiples or aggregates of the units of rhythmic organization (measures, hypermeasures,) at the primary

rhythmic level are on a "superior rhythmic level."[10] Each of these
levels is considered to be an "architectonic" level. Because the
concepts of accent and grouping are derived from events on the
primary rhythmic level the reader's attention is directed to the
surface of the music. A weakness of this theory is the application
of concepts appropriate to the primary level to larger spans of time.

Cooper and Meyer describe the metric (as distinguished from
the rhythmic) hierarchy as architectonic also. They compare 3/4 and
6/8 meter in terms of architectonic levels, describing the primary
level in terms of the number of beats per measure (6/8=two beats
and 3/4=three beats) and the inferior level in terms of the
subdivision of the beats (one beat in 6/8=three eighths, one beat in
3/4=two eighths). Metric units on any given level can be combined
with metric units on the same level to make higher level metric
units. It is possible to have an equal number of metric subdivisions
at each level or a different number of subdivisions at each level.
There is no stated rule or limitation concerning the number of units
on any given level, and consequently no generalization is made at
this point which governs the relationships between the
architectonic levels.[11]

A distinction is made between three modes of temporal
organization: pulse, meter and rhythm.[12] Tempo is mentioned as a
modifier of the three modes, but they claim it is not in itself a mode
of organization. Tempo is the factor (along with musical content)
which determines the primary rhythmic level, but tempo is not a
level in itself.

The role of mental activity: Pulse, meter, rhythmic group

Cooper and Meyer's descriptions of pulse and rhythm are
descriptions of experiences of musical foreground or surface; in so
far as they are describing musical experience they are addressing
Bengtsson's experiential perceived mode of music. Cooper and Meyer
describe an abstract idealized form of pulse event which rarely

occurs as a physical event in music. Pulse is formed from the "regularly recurring, precisely equivalent stimuli" that one associates with mechanical devices.[13] The necessity of an absolutely regular physical stimulus is almost immediately compromised in the ensuing discussion: a stimulus is not necessary for the sense of pulse to exist. Rather, it is the idea of regularity which is important." A sense of regular pulses.tends to be continued in the mind.even though the sound has stopped."[14]

In this theory memory functions in a way which renders the continuous presentation of the pulse stimulus unnecessary for the continued sense of pulse. Memory may also play a role in the interpretation of uneven stimuli as participating in a transition towards (or away from) a uniform pulse chain. Cooper and Meyer describe a situation in which the regularity of a pulse train (whether of perceived pulses or physical stimuli is not specified) is temporarily compromised. The listener, when perceiving the section of the pulse train which does not coincide with a previously established (expectation of) tempo, tends to hear the pulses as pointing towards a re-establishment of the regular tempo.[15] This description of a mental activity displays protention, retention, retroactive evaluation, and expectation. It shows the importance which Cooper and Meyer ascribe to mental processes in the perception and experience of pulse.[16]

The perception of accent is a mental activity which may occur in the absence of physically measurable variations in the intensity of the sound stimulus. Listeners tend to organize groups of recurring equal stimuli (pulses) into patterns of accent and unaccent. The examples of pulses given by Cooper and Meyer are the ticks of clocks or the clicks produced by trains moving over uneven rails. Listeners organize these sounds into "structured groups"[17] by imposing a pattern of accentuation. It is because of this tendency to impose patterns of accentuation that Cooper and Meyer claim that

pulse (which is unaccented and without hierarchy) rarely occurs in music.

For Cooper and Meyer pulse is the pre-requisite "sense" of regular motion which is then richly complicated by the perception of accent and grouping to create both meter and rhythm.[18] The use of the word "sense" implies the existence of pulse on a perceptual or experiential level; pulse may be suggested by physical stimuli, but it is mental activity (which may be independent of acoustic stimuli) that gives rise to the sense of pulse.

The importance of mental activity and its independence from physical stimuli is emphasized when Cooper and Meyer discuss accent and grouping. Firstly, rhythm is defined as the way in which an accented beat and one or more unaccented beats are grouped.[19] The creation of accents and the creation of groups are defined in terms of mental activity rather than measurable physical characteristics, "... accent is a relational concept"[20] by which a "... stimulus (in a series of stimuli) ... is marked for consciousness in some way."[21] When Cooper and Meyer address grouping they are even more direct: "Rhythmic grouping is a mental fact, not a physical one."[22]

Although Cooper and Meyer have incorporated a musically sensitive conception of mental activity into their description of musical processes use of terms is sometimes ambiguous. Cooper and Meyer describe pulse as both a regular physical stimulus and as a mental construct or expectation. I wish to make it clear that a "sense of regular pulses"[23] which is a product of mental activity is not a description of music or musical surface, but a description of a kind of readiness for music perception. As such it is a delicate, nuanced description, but not a description of music. Accent is also both a physical phenomenon, manifest in measurable variation of (for example) intensity, and a mental phenomenon, dependent on mental processes and independent of physical stimulus; because accent is the factor which determines both meter and rhythms,

pulse, meter, and rhythm are all to some extent independent of physical stimuli.

Initiation and duration

Cooper and Meyer consider pulse to be the subjective regular division of time into equal and undifferentiated segments, with or without the support of an objective stimulus. The time spans are initiated by pulses such as ticks of a clock or metronome, but Cooper and Meyer do not distinguish between the initiating stimulus or tick and the segment of time between the ticks. "The ticks of a metronome or a watch are pulses or beats."[24] Pulse in this sense is more a description of tempo than of a particular sonic event.

Meter and rhythmic group

Meter consists of "the awareness of the regular recurrence of accented and unaccented beats"[25] without a definitive grouping of the unaccented beats. When the beats have a definite grouping (which has been described previously as a mental act, not a physical one) a particular rhythm such as a dactyl or an iamb exists. (Both Meyer[26], and Cooper and Meyer[27] adopt the poetic system of accent notation and apply it indiscriminately to notes of various durations as well as measures, hypermeasures and sections.) In this description of meter, regularity of accent is a requirement. If regular repetition of rhythmic patterns is not necessary for meter to exist, then there is nothing to separate rhythm from meter; that distinction is a fundamental part of Cooper and Meyer's thesis. The definition of meter as *recurring* accentual patterns proves to be an inadequate characterization of metric practice in *El Decameron Negro* , where the meter changes at almost every measure.

There is a similarity to the conditions for creating meter and rhythm; both require accented notes. Meter requires accented and unaccented beats which derive their status from accented and unaccented notes. Rhythms acquire their identity from the accentual status of the notes also. Cooper and Meyer describe the principal criteria for grouping behaviour (the formation of rhythmic groups) as proximity and separation, similarity and difference.[28] "Thus if we have a series of evenly spaced beats and every third one, beginning with the first, is accented, the rhythm will be dactylic"[29]. Not only will there be a dactylic rhythm, but the recurring pattern creates a ternary meter. The conditions necessary for the establishment of meter (regularly recurring accent) are the same as the description for the creation of a particular rhythmic group, blurring the distinction between the two. The distinctions between meter and rhythm, and the types of accent necessary to each would be clearer if Cooper and Meyer's terminology was more precise.

The confusion in terminology is caused by a lack of distinction between the musical signal (the note), the perception of the musical signal, and abstract musical organization. The sense of pulse is the result of an act of organization in which perceptual categories are established. Time spans and the initiation points of time spans are aspects of the organizational structure, not the musical signal. Notes are actual sounds which may or may not fit the organizational structure. Cooper and Meyer are no strangers to these distinctions but their discussion of them is confusing. Their usage of the words pulse, beat and note is sometimes interchangeable, leading to lack of distinction between the organizational categories and the actual musical signal.

Pulse, beat, note, and accent

It is not clear what is accented: a pulse, a beat or a note. Cooper and Meyer define beat as an accented pulse in a metric context.[30] Later, in the discussion of rhythmic grouping and accent they discuss the accentual status of notes which are of different durations, while continuing to call the notes beats.[31] Notes may vary in length while pulses are either initiation points of regular time spans or the time spans themselves. If pulse and note are used interchangeably, the importance durational regularity is put into question.

Another problematic area is the description of accent, its causes and experiential status. Cooper and Meyer do not distinguish between the expectation of accent and the experience of an accent which is inherent in the heard musical structure.

If a meter is firmly established by several bars of music in which tonic accents, durational accents, harmonic changes, dynamics, or timbral changes all contribute to metric clarity, then a firm expectation of metric continuity will influence the perception of otherwise unaccented notes occurring on the first beats of

succeeding bars "...where a clear structural parallelism exists between equivocal organizations and unequivocal ones, the latter may serve to determine the organization of the former".[32] That is, until the meter is truly incompatible with the musical content that musical content will be perceived as metrically consistent with the preceding measures.

Metric accent (the accent which occurs by definition on the first beat of a bar) is thus either the result of physical phenomena which establish the metric context, or the result of mental activity which causes the listener to ascribe accentual status to the physical stimulus because of expectation. In the second instance the accent does not necessarily reside in the acoustic signal as a measurable difference in intensity. Merely by being present a note may support (not contradict) an existing metric structure calling for an accent in that location. Cooper and Meyer make no distinction between accents whose primary cause is the signal and accents which are the result of the listener's expectation of accent recurrence.

The lack of distinction between types of accent and their provenance may engender other criticisms. Schachter has described Cooper and Meyer's notation for accentual patterns as overly reductionistic. Firstly, all different types of accent on any given architectonic level are notated with the same two symbols, and secondly, the same two symbols are used on all architectonic levels, where the character of accent changes.[33] Within this criticism of notation is a more serious critique of the recursive nature of rhythmic structure defended by Cooper and Meyer. A purely recursive accentual structure would repeat accent patterns on each architectonic level without changing the nature of the accents at any given level. If, however, the character of the accent changes at different levels then a symbolic system which does not reflect those differences is inadequate.

In *El Decameron Negro* metric accents do occur at the beginning of every measure. I must alter the definition of the term metric accent to allow for the fact that the measures change in length. The expectation of accent is developed in the listener on the basis of motive and register recognition: a motive is repeated at the beginning of each phrase, and all opening motives begin with the lowest note of the guitar, a note which is heard nowhere else in the phrases. Eventually the listener associates that note and the opening motives with the beginning of a measure regardless of the duration of the preceding measure. In this situation expectation may be a retroactive procedure similar to the process of recognition.

Wallace Berry: Pulse, Impulse, and Meter

In *Structural Functions in Music* [34]   Wallace Berry introduces the concept of meter in a manner very different from that of Cooper and Meyer. Like Cooper and Meyer he assumes the existence of a series of pulses as necessary for the perception of "musical effect"[35] although his definition of pulse is more complex. At the start Berry is aware of the necessity of distinguishing between mental activity which prepares musical perception and the musical stimulus itself. *Impulses* are musical stimuli and *pulses* are mental events which are referential as mental imagery to articulate the time continuum.[36]   The sensation of pulse prepares the listener to perceive impulses (notes) as partaking of a pulse stream and as projecting both a tempo and accentual pattern. The predisposition to interpret events as partaking of a certain tempo is what Berry considers to be the basis for the perception of the rhythmic relations of events.[37]

Impulses are objectively measurable acoustic events, and they are grouped with or differentiated from each other. A sense of pulse is a predisposition to interpret events as falling within durational categories which correspond to note values. A set of perceptual categories with defined parameters could be called a perceptual grid. Berry makes a clear distinction between the subjectively generated perceptual grid and the signals which are interpreted according to the grid. Accent (one parameter of differentiation) does not occur at the level of the perceptual grid, but is an attribute of individual signals. Berry avoids confusion by always distinguishing between the subjectively generated sense of pulse and the musical signal and its attributes. He attributes all accentual qualities to the impulses of music, not the perceptual grid (the sense of pulse).

Berry's discussion of meter begins with a reference to accent. For Cooper and Meyer as well as for Berry it is necessary that accents delineate the beginnings of metric units.   Hereafter the

similarity ends. Cooper and Meyer's concept of meter requires a regularly recurring accent for the establishment of meter; furthermore, this regularity occurs at the sub-primary level, by dividing the beat on the primary metric level into equal units, or at higher metric levels, by compounding measures into larger metric units and always maintaining a recurring accentual structure. Cooper and Meyer do not specify the degree of regularity necessary to maintain the metric organization. They imply that inequality or "vertical metric dissonance" results in a weakening of the primary metric level. Irregularity of distance between accents (at any level) compromises the metric structure which is based on equal repetition.[38]

Berry differs from Cooper and Meyer in what he considers variety of distance between accents to be consistent with metric structure. What Berry shares with Cooper and Meyer is the assumption that metric units are delineated by an accent which initiates the metric unit. Berry specifies that meter consists of units which are initiated by accent-delineated groupings without requiring that the relationship between the groupings be one of repetition. Meter, for Berry, is "only one of numerous manifestations of grouping"[39] and is subject to fluctuation.[40] In *El Decameron Negro* the rhythmic groups are accent initiated and can thus be considered metric units. The metric units are of unequal length. The relationship between them is not one of repetition. The explication of that relationship is the subject of the analytic section of this thesis (refer to footnote 72 for Berry's statement on musical style and metric fluctuation). It is important to note that metric fluctuation occurs on a single level of meter.

Berry the relationships between different levels of meter to be of importance in understanding the rhythmic structure of a piece. The accentual patterns may change on different levels such that lower level regularity does not necessarily limit the upper levels to exact unit repetition. In other words, a piece of music is often both

metrically regular and metrically irregular at different levels. (Jonathan Kramer explores the conditions producing a level of metric irregularity with a higher level of metric regularity.)

The most profound difference between Berry's and Cooper and Meyer's positions is to be found in their respective definitions of rhythm.[41] As has been stated earlier, Cooper and Meyer define rhythm as the grouping of unaccented beats around a single accent into configurations such as end-accented, middle-accented or beginning-accented groups. While Cooper and Meyer initially claim that to study rhythm is to study all of music, their method narrows to a study of accent and grouping.

In contrast Berry describes four types of rhythmic event. The first type encompasses the perception of tempos. Two types of tempo are described: the "pulse-tempo" is defined as the rate of pulse succession, and it has to do with the perceptual grid against which the impulses are projected; this is roughly equivalent to Cooper and Meyer's primary rhythmic and/or primary metric level. The "activity-tempo" is defined as the degree of eventfulness,[42] and as such can be freely determined according to the context and the nature of the significant events in the impulse train. By definition the pulse-tempo is considered to be regular for identifiable spans of time, and modifications to the pulse tempo are important parameters of change in the musical structure. Activity-tempo is determined by the identification of the activity; any musical example has several different activity tempos, and their relationships form an important part of the rhythmic analysis of a piece.

The second type of rhythmic event which Berry discusses involves the occurrence of pattern or motive.[43] Pattern or motive refers to any configuration of attack and change which repeats and which can be seen to be a significant event. The recurrence of the pattern or motive becomes an aspect of rhythmic form.

Patterns of accentuation such as the rhythmic modes as defined in the formulae applicable to poetic feet are examples of configurations which may delineate one aspect of rhythmic form. Berry emphasizes the importance of this type of motivic analysis at "more immediate levels of structure."[44] This aspect of Berry's approach to rhythmic analysis appears to incorporate the most important aspect of Cooper and Meyer's theory and apply it where it is most revealing, on the surface, at the primary rhythmic and metric level.

Berry's third type of rhythmic event is described by a profile of element-changes.[45] Changes in pattern and changes to the rate and degree of change are considered as events in themselves. The word profile refers to potential graphic representation of those events. Parameters such as attack frequency, pitch change, harmonic rhythm or the rates of change in any of those parameters can be the subject of a profile of element-changes.

The fourth type of rhythmic event which Berry describes is grouping. Berry's description of grouping is very wide. Grouping is the partitioning of the musical stream by associations among events. The nature of the association varies with the musical context. Berry considers meter to be only one aspect or type of grouping in music. There are several types of associations which group events:[46]

a) Class-affiliated element events[47] tend to be associated. Affiliations can be with other events belonging to the same tonal system, other events participating in the same kind of textural activity or other events which share an attribute such as timbre, attack, or some other contextually defined quality.

b) Tendency-affiliated events tend to form groups. Tendencies toward intensification or tendencies towards relaxation can be described in terms of rates of change in event-tempo, progressive

shortening of unit length and intensification of timbral and dynamic qualities. Events which share the same well defined tendency belong to an event-stream.

c) Grouping occurs according to the linear function of pitch structures, when contrapuntal motions create event affiliations. Extra-musical factors such as the setting of text or other programmatic procedures may group elements. Formal phraseology functions to delineate groups in terms of phrase, motive, cadence.

d) The final grouping factor mentioned by Berry is the grouping expressed in accent-delineated meter. Berry describes the effect of an accented note on surrounding unaccented notes as "absorptive"[48] in the sense that the influence of an accented note pervades or absorbs other notes. To the extent that the unaccented notes are subsumed by the accented note the weaker notes are part of the accent delineated group. Patterns of absorption or influence are associated with regular meter, and Berry illustrates the nature of the metrically influenced accents by using notation based on conductor's gestures. The groups described with these criteria are the same as Meyer's rhythmic groups.

In a section entitled "Impulses and their functional differentiations"[49] Berry describes the different metric functions of impulses equivalent to the beat of accentually delineated metric units.[50] The impulse falling on a downbeat is equivalent to an initiative impulse, the impulse falling on the last beat of a metric unit is equivalent to a conclusive impulse, and the impulses falling on the beats between the initiative and conclusive impulses are reactive impulses, so called because they react to and absorb the energy of the initiative impulse. An anacrusis is an anticipatory impulse, so called because it is attached to and an intensifier of the initiative impulse without belonging to it. The last impulse of a metric unit may be either a conclusive impulse or an anticipatory impulse.

Accent

It can be said that Cooper and Meyer's system is devised to represent the overall accentual structure of a piece of music; their system of notation describes configurations of accent and unaccent on the primary level, and these configurations are treated as individual elements themselves. The same symbols are used to represent accents on higher architectonic levels. The schematic representation of the accentual status of long spans is identical to the schematic representation of individual events (notes) on the primary level. In Berry's system accent is considered to be a quality of an impulse, and as such is confined to the specific location of a particular event on the primary level. Berry outlines features which can create accent, beginning with various parameters that are subject to increases: increased volume, higher pitch, faster tempo, greater dissonance, distant harmonic progression, etcetera. Another factor leading to intensification of accent is the presence of a preceding anticipatory impulse or upbeat. Contextual factors also include the presence of an ornament on the initiative impulse, or the presence of ornamental prolongations of the initiative impulse. Motivic participation in a context of intensification via reiteration also create accent. Berry describes processes which may occur over significant spans of time to intensify accent but the accent itself is not attributed to the whole span of time but rather to the single event which is the culmination of the process.

Accent for Berry always occurs at a specific place because of the confluence of specific factors. The piece can be viewed from the surface or from the highest level possible, but the accentual definition always refers to specific impulses. This conception of accent and the processes which may intensify an accent are used to evaluate the comparative strength of accents within a piece. Berry seeks to identify the fundamental downbeat or most important accent of a piece, its turning point. This higher level analysis is not concerned with reducing a piece to an abstract accentual

configuration as in the method of Cooper and Meyer. Rather, Berry seeks to ascertain the point at which rhythmic processes converge, as well as to describe the profiles of activity leading to and away from that point.

The conceptual basis of Berry's theory allows the analyst to develop a mental representation of the frequency of events on multiple levels throughout the span of a piece. The variety of the categories has as a consequence that there is no single representation of an entire piece but many, and therefore another level of analysis consists in studying the relationships between the different rhythmic components of a piece. Berry specifies certain aspects of change as normative and structural. Examples include tempo changes, changes in harmonic rhythm, changes in the duration of metric units. The profiles of these changes and their relation to each other are not mentioned in the system devised by Cooper and Meyer.

The prominent aspect of Cooper and Meyer's theory is the use of syllabic accentual configurations as representations of musical surface. The representations define only two states and do not visually represent profiles of increasing or decreasing tension or activity. Berry puts the profiles of activity and change in a far more prominent position as elements of rhythmic structure. His concept of accent is not tied to an abstract schematic representation; it is on the contrary linked to events (impulses) which are to be identified within the musical texture. Thus it is possible to create a single visual representation of a piece using Cooper and Meyer's symbols, while it is necessary to create several diagrams to represent the different profiles of activity which Berry's theory describes. In addition, for Berry the accentual structure is represented by actual notes from the score with symbols that represent the impulse functions such as anticipation, continuation, conclusion or initiation. Berry believes that activity profiles will

converge on a single primary accent towards which all activity is anticipatory and from which all activity is recessive.

Comparison of terms

1. Pulse

Cooper and Meyer: equal, undifferentiated regularly recurring sound or sense of same.

Berry: sense of regularity, functions as a perceptual grid.

2. Beat

Cooper and Meyer: pulse in a metric context; also the note or tone itself.

Berry: perceptual unit corresponding to the perceived pulse of the meter.

3. Impulse

Cooper and Meyer: term not used by Cooper and Meyer.

Berry: equivalent to tone or note. An event or stimulus which is perceived against the perceptual grid of pulses and beats.

4. Meter

Cooper and Meyer: regularly recurring accent in a pulse stream; regular.

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Cooper and Meyer: grouping of weak beats around a single accented beat; in practice, refers to notes of varied duration, not beats.

Berry: wide definition including rates of change, relations of configurations, location of accents and the progressive and recessive events which surround them.

6. Goal

Cooper and Meyer: reduction of piece to a syllabic accentual pattern.

Berry: location of fundamental accent to which all is progression and from which all is recession.

Lester: narrative discussion of relations of accents, grouping, and form.

Joel Lester: Meter and Hypermeter

In *The Rhythms of Tonal Music*, Joel Lester[51] compares the narrow and the all-inclusive conceptions of rhythmic theory, and he clearly chooses the latter.   As it is necessary to specify the events which are to be subjected to rhythmic analysis, Lester begins with a brief outline of four event families which are in his opinion part of the study of the rhythm of a piece.

The first event family is that of durational patterns, broken into subgroups: the durational patterns of individual parts, textures and the changes of harmony and acoustic features such as timbre, articulation or dynamics.   The second event family is that of accents and the meter formed by the accents, viewed from the level of the note, the measure and larger units.   The study of larger units is undertaken from two perspectives: first, the study of phrase accentuation and hypermeter, and   again the study of accents and meter and their effect on musical form.   The third family of events is that of grouping or segmentation, involving the study of motives and phrasing.   Lastly there is a section on musical continuity and flow.[52]   I will concentrate on Lester's treatment of pulse, beat, accent and meter and compare his use of those basic terms to that of Cooper and Meyer, and Berry.

Lester introduces the concept of pulse when discussing the establishment of the metric hierarchy.   He characterizes the passage of pre-musical time as "undifferentiated flow."[53]   In fact, time passage is differentiated by experience.   What is at issue here is the particular partition of time in the way we call musical.   Musical structures are characterized by an interplay of proportions in reference to a standard of temporal regularity; a sound stimulus is perceived within the framework of that standard.   Lester characterizes the establishment of that standard as the establishment of a pulse.   He gives a brief description of the scale of difficulty in perceiving a pulse according to the clarity of presentation. When the activity is continuous and regular, the pulse

is explicit. All the units of the pulse are not required for the pulse to be perceived, although some units are necessary. Thus notes of varying durations are capable of establishing a pulse which corresponds to the smallest subdivision in the passage. A meter is produced when a pulse and a grouping of those pulses is projected via accent.[54] Lester is using the term pulse to refer to an actual sound stimulus, although he is aware of the role of subjective pulse and pulse maintenance as a mental activity independent of actual stimulation.

Meter is defined by Lester in terms almost identical to those of Cooper and Meyer: "a stream of beats or pulses, and an organization of those beats or pulses into accented or unaccented ones..." produce meter.[55] The implication is that metric structure is predominantly regular although Lester does allow that metric change occurs. The debate is not over the existence of metric change, because many examples can be found, but whether such change weakens metric structure. Lester, by not addressing this issue, seems to say that while metric structure is predominantly regular, it can be irregular and still be metric.[56]

Like Cooper and Meyer, Lester pairs words pulse and beat, although Lester brings some clarification to his usage. For Lester, pulse refers to perceived regularity at any level of a metric structure, while beat refers to the divisions of the bar at the level at which one counts,[57] what Cooper and Meyer called the primary metric level. Lester refines the definition of beat by incorporating in the definition the inequalities of duration inherent in performance practice. Beats are traditionally defined as time-spans of equal duration which form a measure. Lester remarks that the equal duration of times spans in a measure is consciously altered in situations where there is a fermata, accelerando or rallentando; thus the actual equal duration of the time-spans is not necessary for the beat to maintain its identity. Lester's refined definition of beat is as follows: "Beats mark off functionally equivalent spans of

time."[58]   Functionally equivalent in Lester's terms means of equal written duration.   While beats may have equal written value, performance alters the actual duration.

The definition of meter is further clarified when Lester discusses hypermeter.   Lester restates his definition of meter, "an organization of pulses that are of functionally equivalent duration."[59]   This definition does not require that measures be of equal length; only the pulses are defined in that way.   Lester's discussion of unambiguous hypermeter hinges on the possibility of applying the definition of meter recursively to larger units.   If a measure is considered to be a pulse in a hypermetric situation, then measures must be of equal length to function as a pulse.   For unambiguous hypermeter to exist, firstly, there must be measures of equal length which function as pulses (in the hypermeasure), and, secondly, there must be contiguous groups of equal numbers of those measures to form hypermeasures.[60]   Although Lester begins with a limited definition of conditions for meter, when he describes a hypermetric situation he is required to assume that measures are of equal length;   that requirement only applies when hypermeter exists. If recursive organization is a fundamental aspect of meter formation than it is necessary to have measures of equal length.[61] Since Lester does not believe in the correspondence between hypermetric structure and phrase structure   he does not consider phrases of unequal length   to be metrically organized (on a hypermetric   level).[62]

Lester discusses another hypothesis concerning recursive organization of meter: that there are parallels between the pattern of beat accents within the measure and measure accents (accented beats within a hypermeasure) within a phrase.   Lester concludes that the hypothetical   recursive relationship between beat and measure is not a necessary condition because beat grouping is far more regular within measures than measure grouping is within phrases.

Lester describes too much irregularity in phrase structure to allow them to be represent hypermeter.[63]

The analysis of *El Decameron Negro* which occupies the second part of this thesis does not draw on Lester's work pertaining to metrical organization. Lester's definitions of meter and hypermeter require that measures be of equal duration, and the Brouwer example has very few consecutive measures with the same length.

Lester's discussion of accent begins with a critical exposition of some conceptions of rhythm. Lester's criticisms are addressed primarily to Cooper and Meyer. First Lester mentions the "failure to distinguish between accent as an aspect of performance and as an inherent quality ...."[64]. Secondly, he notes that accents caused by stress and other factors are not adequately differentiated.[65] Thirdly, he criticizes their appropriation of accentual notation which is borrowed from poetic scansion.[66] Lester restates Schachter's argument that accentual structure is far more varied than the representational potential of the poetic scansion formulae. In conclusion Lester discusses the factors which separate metric accents from all other types.[67]

The distinction Lester makes between accent in performance and accent as an inherent quality is important, especially in the context of his general definition of accent: a point of emphasis which is marked by an event of musical initiation.[68] In Lester's discussion it is assumed that the events of musical initiation are acoustic events in a performance, that the performance takes place outside the listener and that the musical form (with its inherent qualities) also exists outside the listener. Neither of these conditions are always met in musical situations.

In the case of a listener who is hearing an unfamiliar piece of music the musical stimulus is an acoustical one originating in the listener's environment. In that case, description of the musical process must include the interaction of the vibration, the ear and

the mind. Without a performer to generate a signal, there can be no
signal to perceive. Thus it could be argued that in that situation all
accents are dependent on performance.[69]

Such a conclusion focuses on the signal at the expense of the
process of perception. Events of musical initiation are formed in
the mind of the perceiver when there is a confluence of factors,
among which are a signal and a predisposition to understand or even
expect the signal. The confluence of factors does not have to be
temporal in the case of a signal originating in the mind of the
perceiver and in the case of metric accent.

Lester makes an exception to his rule of requiring event
initiation for accent when he discusses the metric accent.
Concerning the metric accent, he states that "no event need mark it
off" because it is "in part a psychological phenomenon."[70] Once a
metric organization is established metric accents occur on the
downbeat even if there is silence at that point. The distinction
which Lester makes between performed and intrinsic accents is
embodied in his distinction between metric and all other accents.
The difference between performed and inherent accent may be
blurred if one requires performance to be an acoustic event. Lester's
description of musical events does not give sufficient attention to
the role of mental processes or to different musical situations such
as reading, performing and imagining music. The concept of varying
levels of musical competence (Serafine, 1988) may influence the
concept of inherent accent.

Lester discusses the differences between stress accents and
other types. What is at issue is the role of dynamic accent as
initiator of the metric unit. Cooper and Meyer have defended the
proposition that dynamic stress is insufficient to alter an
established metric structure. They cite data demonstrating that
note placement and duration are stronger indicators of metric
position than dynamic strength, and that, therefore, dynamic accent
is not to be confused with metric accent. Current research[71] into

exact performance practice supports this position. Lester gives another illustration of the inferior strength of dynamic accent when he discusses the nature of transcriptions. A transcription can entirely change the sound signal of a piece, even to the extent of removing all dynamic accents (in the case of the organ or harpsichord). Yet the musical identity of the piece remains stable. Lester concludes that the accents inherent in metric organization and pitch structure are more important than dynamic performance variations. The role of accent caused by temporal placement is not discussed sufficiently in this section; it may be that note placement is more important than note intensity in establishing meter.

Lester's description of non-metric accent is not dissimilar to that of Berry. Like Berry, Lester separates the time points, or the perceptual grid in which time points are represented, from the events which are associated with specific points. Also, like Berry, Lester considers the accent to mark an initiation. Their differences reside in their consideration of the nature of meter. Meter is considered by both writers to be an aspect of grouping although Lester considers the difference between regular metric grouping and grouping by initiative accent to be significant. For Berry the act of partition by initiation produces a metric unit, and succeeding initiative accents all produce metric units whether or not the units are of equal length. Berry does not consider the expectation of repeated accentual patterns to be essential to metric structure; such regularity may be an attribute of a particular musical example but is not intrinsic to meter.[72] Although Lester's definition of meter does not explicitly make equal measure lengths necessary, his discussion of hypermeter makes it clear that he considers regularity of unit length to be essential to meter; he considers analysis of hypermetric units of uneven durations to be non-metrical.

Brouwer's *El Decameron Negro* is a piece in which fluctuant metric structure is the rule rather than the exception. Lester's conception of meter as consisting of units of equal duration is of limited value in producing an analysis of such a piece.

Comparison of terms

1.Pulse

> Cooper and Meyer: equal, undifferentiated regularly recurring sound or sense of same.

> Berry: sense of regularity, functions as a perceptual grid.

> Lester: the sense of the smallest perceivable value in the musical example; often inferior to the beat.

2. Beat

> Cooper and Meyer: pulse in a metric context; also the note or tone itself.

> Berry: perceptual unit corresponding to the perceived pulse of the meter.

> Lester: functionally equivalent spans of time in a metric context.

3. Impulse

> Cooper and Meyer : term not used by Cooper and Meyer; equivalent to tone or note.

> Berry: event or stimulus which is perceived against the perceptual grid of pulses and beats.

> Lester: term not used by Lester; corresponds to event.

4. Meter

Cooper and Meyer : regularly recurring accent in a pulse stream; regular.

Berry: partitioning of units by accents of initiation; fluctuant.

Lester: partitioning of units by accents of initiation; regular.

5. Rhythm

Cooper and Meyer: grouping of weak beats around a single accented beat; in practice, refers to notes of varied duration, not beats.

Berry: wide definition including rates of change, relations of configurations, location of accents and the progressive and recessive events which surround them.

Lester: wide definition; including accent structure, grouping structure, metric and hyper-metric structure.

6. Goal

Cooper and Meyer: reduction of piece to a syllabic accentual pattern.

Berry: location of fundamental accent to which all is progression and from which all is recession.

Lester: narrative discussion of relations of accents, grouping and form.

William Benjamin: Accent, Time-Point, and Time-Span

William Benjamin's article[73] contains a discussion of the uses of meter as well as his conception of the way rhythm perception is organized. Benjamin allots a portion of his discussion to defining what meter is and another portion to discussing the requirements for the determination of meter.

Benjamin does not include such terms as pulse or beat in his definitions of basic terms; the first element of his discussion of terms is the distinction between grouping and meter determination. Grouping is defined as "the organization of events ... without reference to accent."[74] Benjamin uses "grouping" to refer to the experience of coherence within a measure. To distinguish between grouping of events (on the primary level) and the grouping of time-spans at higher levels, Benjamin uses the same term with quotation marks. "'Group'" or " 'grouping'" refers to the joining together of measures or other long spans, and "group" or "grouping" refers to structures inside the measure, on the primary rhythmic level. Although Benjamin considers the experience of coherence (grouping and 'grouping') to be independent of accent,[75] he discusses cases in which partitioning by accent and grouping are indistinguishable because certain groups are formed with initiative accents.[76] He does not want to overstate his case in claiming that grouping is independent of accent.

The concept of grouping as a process independent of accent separates Benjamin's theories from those of Cooper and Meyer, Lester, and Berry. Berry considers accents to initiate groups, and accents to be the result of change in any of a multitude of parameters: dynamic level, harmonic change, rate of change or attack, registral change, and so on. Lester defines accent as an event of musical initiation, and he also specifies certain accent parameters.[77]

The accented musical event can create a group boundary. Cooper and Meyer's application of the Gestalt principals of grouping produces definitions of group adherence in terms of parametric change: differences in lengths, intensity, register, timbre, harmony, and so on. Changes in those parameters create initiative accents. Cooper and Meyer define rhythmic groups as consisting of unaccented notes in relation to a single accented note; Berry discusses the "absorptive" function of accented impulses on the surrounding impulses: the role of accent in grouping is primary for these authors.

To defend the concept of grouping as independent of accent Benjamin argues that although all groups have accents of some kind, not all groups begin with their strongest accent.[78] (Where groups have initiative accents, partitioning by group and by accent is indistinguishable.) Benjamin also uses the argument of scale: accent may be influential in grouping, but not in 'grouping.' An accented event (for example, a note or harmonic change) occurs at a specific time point, and accent is attributed to the initiation of that event, on the primary level. Since accents are attributed to certain points in time rather than to time-spans, accents do not function to influence coherence in 'groups.'[79]

Groups and 'groups' have an infinite variety of possible configurations and lengths whereas meter is by definition regular. Benjamin favors the "strict constructionist" conception of meter of Yeston (1976), Komar (1971), and Lerdahl and Jackendoff.[80] Benjamin separates the determination of meter from the perception of grouping because of his adherence to a conception of meter as strictly regular and repetitive, while grouping is highly variable. Grouping is considered to be the result of attributes of notes and highly fluctuant whereas the meter is dependent on the perception of equivalence classes of durationless time points and is repetitive. Metric position is a criteria for the creation of equivalence classes.[81] The time points which exist at the initiation of the

downbeats form a class as do the time points at the initiation of all second beats, third beats, etcetera. Benjamin ascribes varying levels of strength to time-points in the metric hierarchy but he does not attribute accent on the basis of metric placement. On the contrary, metric structure is "substantiated" by (1) accent and (2) grouping.[82] Accent is a quality ascribed to time points and not time spans.[83]

There is an ambiguity in the conditions for the determination of meter set forth by Benjamin in his discussion. Benjamin states that a function of meter is to contribute to the perception of group structure[84]; in the section entitled "The Material Foundations of Meter",[85] Benjamin lists the following conditions for the meter to contribute to the definition of grouping structure: "(1)There are, with enough frequency, more pronounced accents at the partitioning points of some metric level than at intervening points; *(2) there are enough groups, each of which begins at one metric partitioning point and extends to the next; and* (3) the measures at one metric level are 'grouped' in a regular (cyclic) way by grouping over their course, so that a deeper level of meter is generated."[86] Section 2 is italicized to emphasize a moment of potentially circular logic: a function of meter is to contribute to the perception of group structure and a function of group structure is to substantiate meter. The point can be clarified by stating which comes first. Initially grouping can function to establish meter, and once meter is established it can contribute to the perception of grouping.

Benjamin believes that meter is a nested structure. Beats make measures, and the measures themselves are units; in a long musical example the measures and groups of measures would be grouped in the same way the beats within a measure are grouped, forming a nested hierarchy based on the equal division of the time continuum. At the level of phrases Benjamin considers equal length to be metrical and asymmetrical construction to be non-metrical.

The number of nested structures in use in western music is very limited, and as a consequence metric determination is a process of assigning one of only a few metric organizations to a musical object. Grouping on the other hand is as variable as music itself. Benjamin is aware that the information used to determine meter is "based, in some part, on a perception of accent."[87] The involvement of accent in the definition of meter requires that Benjamin distinguish between accent and metric strength. .

This is found in Benjamin's distinction between the "formal aspect" and the "material aspect" of meter.[88] The formal aspect of meter refers to the partitioning of time into spans of uniform length. The material aspect refers to the pattern of accents which substantiates the metric organization. For instance, a metric organization of four bar phrases is characterized by a formal organization in which the time-point marking the beginning of each downbeat is strong because of its position in the metric organization. Note that the time-point is of no duration and has no phenomenal existence. The material aspect of a four bar phrase cannot be discussed without discussing four bars of music. Within the hypothetical four bars of music some accents must coincide with the formal accentual structure of meter to substantiate it.

Benjamin turns the discussion to the nature of accent. Benjamin accepts Berry's list of accents and enlarges it by the addition of the concept of parametric shift[89] as a creator of accent. Benjamin presents the notion of channels on which the music is received, and the concept of image shift on a channel. If the harmony changes on the harmony channel, the new chord is accented even if it is not louder, because of the change in harmony. The channel metaphor establishes parameters as well as a conception of communication; the message comes in on a given appropriate channel. There is a harmony channel which registers changes in harmony, a timbre channel which registers changes in timbre, a

melody channel which registers different aspects of melody such as conjunct or disjunct motion, motivic repetition, and so on.

Benjamin attempts to weight different categories of accent in order to produce a gradation of accentual strength. Harmonic change (parametric change on the harmony channel) is given the most importance. Using that criterion, among others, Benjamin analyzes a brief melody by Mozart and finds that the strongest accents do not divide the melody into equal time spans: accentual structure does not coincide with metric structure. Benjamin begins his accentual analysis by labelling accents as either light, medium or strong. Then a list of weighted accent-causing factors is proposed, and the accentual characteristics of all notes are quantified according to the weighted list.

Benjamin presents the following argument: the pattern of accents, when analyzed in terms of level of strength, does not mark out time-spans of equal duration similar to the formal metric structure. Accentual strength is varied in asymmetrical fashion and creates a non-metric partitioning of time. In Benjamin's example medium strength accents do not always fall on down-beats: "time-span formations determined by accents of a certain level--accents at or above a certain strength--are not necessarily, and indeed not normally, metric levels; there is typically little correspondence between the levels of an accentual hierarchy and those of a metrical hierarchy; and that the interaction of the two hierarchies is often rich and complex."[90]

Although the time spans between the strongest accents in Benjamin's example are not symmetrical, every downbeat has an accent which does substantiate metric structure. If a listener attributed importance only to the strongest accents perhaps the sense of meter would be weakened. There is no proof that such discrimination occurs. Benjamin's assertion concerning the perception of accent gradations is not supported with experimental evidence.[91]

Benjamin supports the idea that there are two fundamental ways in which musical time is partitioned: by grouping, a function of event affiliation and separation, and by accent. Although he claims that grouping is independent of accent Benjamin accepts that on the primary level the material aspects of accentual structure may not be separable from grouping. Certain parametric changes create accents and also initiate groups. In those cases it is moot to argue whether the partitioning is a function of accent or grouping because accent and grouping are common attributes of the same phenomena. However on higher levels ("grouping") where measures are grouped, it is the structure of larger units and the number of downbeats contained in each group which substantiates metric organization. Accents are only effective in forming metrically organized spans of time on the primary rhythmic level. On higher levels symmetrical durations ('groups') formed by harmonic affiliation or motivic content are more likely to be isolated as substantiating factors of meter than are accents. The issue of the levels of meter belongs more specifically to the section in which Benjamin addresses the nature and functions of metrical hierarchies.

Benjamin discusses meter from the perspective of what it does. He presents three functions for meter: first, meter enables time to be kept without reference to an external time-keeping source, and facilitates the perception and performance of music. Second, the metrical time sense sharpens the perception of group structure by enhancing the perception of phrase durations and enabling the perceptions of phrase length to be compared to the expectations of phrase symmetry. Third, and most important, meter organizes "an underlying continuum of time-points into equivalence classes by means of partitioning ... on several levels."[92] It is telling that Benjamin ascribes the function of keeping time to meter. For Berry as well as Cooper and Meyer that function is allotted to pulse.

I understand Benjamin's third function in the following way: first, the organization of the continuum of time-points refers to metric awareness or the formal aspect of meter. Second, the levels of meter can be hyper-metrical or sub-metrical. Level may be understood as 'lower' in the direction of succeeding shorter durations and as 'higher' in the direction of succeeding longer durations. The metric structure places a contextual quality on each beat of each measure; thus all downbeats share downbeat quality, but they differ according to the measure which they initiate.

Benjamin introduces the concept of the "psychological content" of meter which he considers a necessary component of metric structure. "Psychological content"[93] refers to the sense of distance separating a beat from the preceding and succeeding downbeats. Benjamin believes that there must be an expectation of a particular temporal distance between the previous downbeat and the following downbeat, and that this must remain constant. The psychological content is expressed as the sense of recurring equal length of measure or large or small metric unit. "Psychological content" is defined quite narrowly and it seems to refer specifically to the expectation of continued equivalence classes.[94]

As stated earlier, Benjamin endorses the strictly regular definition of meter; Benjamin discusses the "necessity of meter's being regular."[95] Benjamin discusses irregular measure lengths in a Stravinsky melody and concludes that because the psychological functions of meter are not fulfilled when the measure length changes frequently, the partitioning of time is essentially non-metrical.[96] Benjamin develops a formulaic analysis of time-spans in the Stravinsky melody and accepts that there could be "psychological purposes"[97] to formulaic construction. My analysis of durational patterns in *El Decameron Negro* uses the same notational style as Benjamin uses for the Stravinsky melody.

In the section entitled "Irregularities of Meter"[98] Benjamin is
concerned with irregularities in hypermeter, although he does not
use the term. This discussion is based on the recursive concept of
meter which is typified by the notion that the measures of a phrase
are enmeshed in a relationship with each other similar to that which
unites the beats in a measure. Note that Benjamin's purpose is not
to replicate the accentual structure of the measure at the level of
the phrase, as is sometimes the case. Rather, the concern is with
the recursive nature of the equal temporal divisions which Benjamin
considers the essential attribute of metric organization.

Benjamin quickly notes that long phrase structures are often
of unequal lengths, and when they are not there is reason to question
the metric nature of the structure on that level. Benjamin takes two
typical situations, the first, where a four bar phrase is followed by
a phrase of three bars, and the second where a four bar phrase is
followed by a phrase of five bars. He considers that the first is an
example of elision and the second an example of expansion. In the
first case a transformation has occurred in which one measure
functions both as the last measure of the first phrase, and the first
measure of the second. Benjamin proposes that the phrases remain
metric because the "structure ... relies on a metric way of
thinking"[99] and the measures should be counted with a
transformation:

1,2,3,4;1,2,3,4;

1,2,3,4;1,2,3,4; etc.

In the example the eighth measure is both a 4 and a 1; equivalency classes are compromised because one measure is in two classes. In the contrasting example of the expanded five measure phrase,the five measure phrase would include a 1,2,3,4 and (.), that is, a measure with no number.

1,2,3,4,1,2,3,4,1,2,3,4,(.),1,2,3,4......

The equivalency classes are not exclusive nor are they all inclusive.

Benjamin wishes these transformed phrases to be considered metrically and he defends his position by referring to specific processes as past of "a metric way of thinking." He is referring to the process of transforming strictly equal durations to unequal durations according to specified processes, overlap and elision.[100]

Benjamin presents two other types of phrase alteration which he considers to be metrical despite asymmetrical phrases lengths. The notion of composed in fermata or ritardando and composed in accelerando involve the continuous sense of a stable metric structure in which there are fluctuations in tempo. This notion=of durational differences in functionally equivalent units is also discussed in Lester, and is used by Lester to clarify his notion of beat to mean functionally equivalent, rather than equal, in duration. (Lester refers to performed as opposed to composed fermats.)

In the final section Benjamin discusses metric depth. Metric depth and higher levels of meter come close to meaning the same thing. Higher levels of meter refer to larger chunks of music which are in metrical relations with each other, based on group structure and 'group' structure. Metric depth refers to the way in which a piece may be considered as sectional according to divisions punctuated by underlying harmonic or otherwise structural events.

Benjamin argues against the metricality of the underlying structure because he believes that the sense of arrival, contrast and drama are to be had only at the expense of the regularity of deep levels of metric regularity.[101] Large levels of metric regularity are substantiated by normative, expected lengths (based on the principle of repetition).[102] The variety of lengths in the components of large structures is taken as an indication of liberty in regard to the deeper levels of the formal metric organization.

Benjamin has argued for the necessity of a conception of meter which partitions time equally against which other musical forces are contrasted. In *El Decameron Negro* there is durational equality at the level of the pulse of the piece, the eighth note, but its variety of grouping patterns and measure lengths are such that it is clearly non-metrical according to Benjamin's definition.

Lerdahl and Jackendoff: Phenomenal Accent, Structural Accent, Metric Accent

Lerdahl and Jackendoff[103] define grouping structure as representing the elemental coherence in music: that which coheres is a group. The most fundamental grouping requirement is contiguity:[104] the silence between sounds functions to separate the sounds and render them non-contiguous. Therefore, phrases separated by silences form groups. Lerdahl and Jackendoff refine the definition of grouping by separating the essential characteristics of all groups from the typical characteristics of some groups. The essential characteristics of all groups are enumerated in the Grouping Well-Formedness Rules,[105] while the characteristics of some groups are set forth in the Grouping Preference Rules.[106]

Groups are divisible into smaller groups, but the partitioning must be complete and contiguous. Lerdahl and Jackendoff consider the partitioning of musical sound into groups to be fundamentally hierarchical.[107] One group may exist in isolation, but several groups imply a hierarchical structure because the groups form a larger group. The levels of grouping can continue to the level of the piece itself, which is the largest group.

Metrical structure consists of a particular organization of time points into a metrical hierarchy; the listener chooses a particular metric hierarchy on the basis of sufficient phenomenal accents falling on metrically strong beats. Lerdahl and Jackendoff make explicit the distinction between time point, an abstract moment with no duration, and time-span, the duration between time-points. In their usage "beat" refers only to time points or the attack points of notes and never to the time-span between points or to the time span occupied by a note.[108]

Lerdahl and Jackendoff believe that the metrical hierarchy consists in the periodic alternation of strong and weak beats as illustrated by the dot diagram.[109]

beats

(quarter notes) • • • • • • • • •

(half notes) • • • • •

(whole notes) • •

The periodic nature of meter is apparent in the even spacing of events on each level, and the periodic nature of the interaction between any two levels. The recursive nature of the relationship of metric levels is fundamental to this conception of metric structure, just as the recursive nature of levels of grouping is to grouping structure. The dot diagram could represent notes of any value provided they were in the same ratio to each other.

Strong and weak beats are differentiated in the metric structure according to the number of levels on which a beat is represented. Metrically strong beats are metrically accented. Lerdahl and Jackendoff intend the metric accent to be distinct from the phenomenal accent. A phenomenal accent is an event at the musical surface which gives stress to a moment in the musical flow: attack points, harmony changes, contrasts, leaps, long notes, etc. A metric accent is any beat that is relatively strong in its metric context. The third type is the structural accent, an accent caused by the melodic-harmonic points of gravity in a phrase, especially the cadence. Structural accents mark the initiating event and the terminating event in a phrase or an arc of tonal motion. The final resolution in a cadence is the second of two structural accents of a phrase. The first structural accent would occur at the point where melodic and harmonic events initiate the phrase.[110]

Structural accent in its general sense is an attribute of the organization of the written or sounding music or its groups. In a more specific sense structural accent is used to indicate the significant accents of initiation and completion, especially cadences, in large group structure. When accents are physically present they achieve phenomenal status. The clearest example of phenomenal accent is the accent of stress, although accents of discontinuity, articulation change, timbral change or harmonic change have an acoustic and phenomenal existence without obligatory dynamic change.

In Lerdahl and Jackendoff's theory of meter the experience of meter is characterized by the awareness of accentual differentiation at all levels that are metric. For instance, the level of the measure is felt as metric because the different levels of accentuation of the beats are clearly perceived. A higher order of metrical organization may occur at the level of the measure if groups of measures are felt as coherent in which the initiation point of one of the measures is felt as stronger than the initiation points of other measures in the group. Metrical organization is considered to be a predominantly local phenomenon because the beginnings of very large groups are separated by sufficiently large spans of time that the accentual qualities of the initiation points are not compared by the average listener. It is the perceptual awareness of comparative strength of accent which is necessary for the experience of metrical structure. Lerdahl and Jackendoff assert that metrical organization is a predominantly local phenomenon because accent differentiation over long spans of time is so difficult. In addition, hypermetric units are generally phrases which have a strong tendency to vary in length.[111]

The ways in which groups are formed are described in some detail in the Grouping Preference Rules, but they may be summarized in terms of two factors: proximity and similarity. Proximity refers to distance on one of several possible parameters of which time and

pitch are the most obvious. Similarity refers to the degree to which an event shares a particular quality with another event. Similar events or close events tend to belong to the same group. This approach is a refinement of Cooper and Meyer's application of the Gestalt preference rules governing visual perception. The well-formedness rules describe the nested hierarchy of grouping structures and their contiguous nature. However, two exceptions to the well-formedness rules are described: the first, group overlap, in which the last event of one group also functions as the first event in a succeeding group, and the second, elision, in which overlap is also accompanied by the suppression of events in one of the groups.

Hypermetrical structure is characterized by equal time-spans between strong beats of the hypermeasures. Lerdahl and Jackendoff consider that certain unequal hypermetrical time-spans can be considered metric if their differences in length are the result of alterations of phrases which would normally be equal in length. The exceptions to the Grouping Well-Formedness Rules are based on the concepts of overlap and elision. Lerdahl and Jackendoff treat hypermetrical time-spans as groups and accept as metrical unequal lengths based on elision or overlap. This procedure is similar to what Benjamin calls "metric way of thinking."[112]

The discussion of metric irregularity and metric deletion is concerned with levels above that of the measure and is limited to a consideration of the shortening of hypermetric units. Lerdahl and Jackendoff briefly discuss music which replicates the rhythmic freedom of spoken language, music with regular patterns of metric change at the level of the measure, and music in a free recitative style. Such music can be considered metrical if the Metrical Well-Formedness Rules are altered. The strict version of the well formedness rules is as follows:

MWFR 1 requires that attack points fall on beats at the fastest level of the piece,

MWFR 2 requires that beats on a given level be beats at all faster levels,

MWFR 3 requires that on any level strong beats be separated by one or two weak beats, and

MWFR 4 requires that the tactus and all larger metrical levels consist of beats equally spaced throughout the piece.

This strict vision of meter does not allow for large scale variation. A recitative, a non-measured motet and a Macedonian folk song are presented in which local levels of metrical organization are present although barlines are not present or are unevenly distributed. Lerdahl and Jackendoff assert that such music can be considered metric if the third and fourth Metric Well-Formedness Rules are omitted, permitting the uneven spacing of strong beats throughout the piece. In the case of music in which measures are constructed according to a formula, as shown in Benjamin's analysis of a Stravinsky excerpt,[113] Singer's analysis of Macedonian dance music[114] or this analysis of Brouwer's *El Decameron Negro,* the formula takes the place of MWFRs three and four.

In Lerdahl and Jackendoff's theory regular metric structures as defined by the Metric Well-Formedness Rules are mental constructs against which the musical source is projected. Preference rules define certain types of events which tend to establish a metric hierarchy. The attention is focused on rules which represent the listener's intuition in regards to metric structure. In Lerdahl and Jackendoff's theory the competent listener knows the potential metrical patterns as well as rules for matching patterns to the source. Further, a similar body of rules for group formation is used by the listener to match the stimulus with typical grouping structures. The organization of grouping structures permits more

variety than the organization of metrical structures, but the process
resides in the perceiver who applies rules to the musical source in
order to partition it into hierarchical structures according to
various rule systems. Lerdahl and Jackendoff describe a process for
forming groups and another for determining meter in order to
demonstrate the differences and interactions between these two
distinct organizations.

A potentially confusing overlapping of concepts in Lerdahl and
Jackendoff's theory concerns the role of harmony as one of (1) the
factors creating group boundaries, (2) the factors creating accent,
and (3) the factors influencing metric structure. Harmonic change
may be identified with group boundaries and it is identified as a
factor in structural accent; it is identified as one of the strongest
factors associated with the establishment of meter. Metric
Preference Rule 5 states a preference for metrical structure in
which a relatively strong beat coincides with the attack of a
harmony which is of relatively long duration. If harmonic affiliation
is considered a quality then harmonic change could be considered a
grouping factor, although the grouping preference rules[115] make no
mention of harmony. On the hypermetric level harmonic affiliation
becomes more significant in grouping than on the primary rhythmic
level.

Lerdahl and Jackendoff's vocabulary describes the interaction
of the listener and the musical source. Their definition of terms
maintains a division between a listener's perceptual set and the
musical signal. This can be seen in the way Lerdahl and Jackendoff
separate mental activity and acoustic phenomena in their discussion
of the three types of accent. Only one type of accent is overtly and
necessarily dependent on an acoustic signal while the others may be
the result of subjective mental activity alone. Structural accent is
a result of the categorizing or partitioning the musical stream
according to certain criteria, only one of which is dynamic change.
Metrical accent is determined after matching phenomenal accents to

a perceptual grid, but the grid itself is a pre-existing category system which exists independently of the immediate acoustic signals. Accent has a perceptual manifestation but is considered both as an attribute of time-points which are an abstraction and cannot have phenomenal characteristics, and as a phenomenal event.

The attribution of accentual status to points of time rather than spans of time is common to Lester, Berry and Benjamin as well as Lerdahl and Jackendoff. The latter use the word "beat" in a narrow sense to indicate only the time-points and not the spans between them. In this respect they differ with Lester who labels the spans as beats.

Lerdahl and Jackendoff consider the perception of grouping structure to be independent of accent although certain grouping criteria, as mentioned above, can be seen to be dependent on phenomenal accent. They take the approach that such double function is coincidental and does not negate the independence of grouping structure and metric structure.

Metric regularity is defined in a very strict fashion. Exceptions to durational equality at the hypermetric level are explained in terms of transformational procedures in which an underlying metric structure is posited. However Lerdahl and Jackendoff do not insist that all irregular structures stem from a regular model. In addition they allow the possibility of metric structures which are regular at a very local level and irregular on the level of the tactus. Such an admission seems to contradict the assumptions inherent in much of their analysis of common practice music while admitting of a larger definition of meter in the analysis of music with rapid changes of meter such as *El Decameron Negro.* Although Lerdahl and Jackendoff accept the principle that music with fluctuant measure length can be metrical they do not present any analytic tools with which to analyse such music.

Jonathan Kramer: Duration and Meter

Jonathan Kramer's *The Time of Music* (1988)[116] includes a section devoted to the theory of meter. The subject of the book is the nature of musical time. Kramer addresses questions as diverse as how duration is perceived, how form is perceived, whether or not temporal proportions and metric hierarchies are perceived, and whether certain temporal re-orderings implied by the musical organization are experienced. Kramer's work is of particular interest to me because he includes certain types of metric irregularity in his definition of meter. I will briefly discuss Kramer's use of the word *time* before moving to a discussion of his ideas about meter.

Kramer argues for the existence of several different types of time in musical pieces. He understands the determination of the type of time of a piece to be a goal of analysis. I understand time to be unchanging and undescribable, but more importantly, not categorizable or attributable to music. Although Kramer's descriptions of musical time have enriched the discourse I consider them to be descriptions of different attitudes or different modes of perception associated with particular pieces of music.

I believe Kramer is actually discussing expectations which are stimulated in the listener in certain types of musical experience. The nature of these expectations is implied in the title Kramer gives to each category of musical time: in one group, goal-directed linear time, non-directed linear time, multiply-directed linear time, and in the opposite group, moment time and vertical time. The word "directed" in the descriptive titles of the first group implies certain types of narrative expectations while the second group titles reflect comparatively fewer narrative expectations. Differences in musical form and temporal perception are not differences in time itself but rather differences in the content of experience.

The concept of duration is prominent in Kramer's treatment of meter. Although Kramer distinguishes objectively measured durations from the subjective duration, he will often use *time* when *measurable duration* is what is intended. Often the substitution of the word "duration" for the word "time" clarifies Kramer's discussion.[117]

Kramer's descriptions of altered time experience are examples of experienced altered sense of duration, and never altered sense of temporal sequence; he respects the integrity of the flow of the musical stimulus in the specious present. It is simpler to consider the changes in temporal order in Kramer's analyses as changes in the structure of expectations or aesthetic experience rather than as changes in actual order (an ending before a beginning is not possible). For instance, the temporal re-ordering inherent in flashback construction is an ordering of events which are portrayed in a work of art. The portrayal itself has a set temporal sequence of events even if the time of the events portrayed is reordered. The structure of narrative may involve reordering of plot time, but the structure of the narrative itself remains sequential.

Meter

Kramer presents the elements of his definition of meter gradually. The first requirement is "... a succession of time points (as opposed to time-spans) of varying intensity or degree of accentuation."[118] The contradiction between the perceptual non-existence of time points and the perceptual experience of "intensity or degree of accentuation" is addressed by Kramer in the following manner: He claims that the perception of metric structure (accented time-points and so on) is dependent on cues from the musical signal.[119] As an illustration, Kramer cites studies which demonstrate that measurable differences in duration, intensity and articulation that communicate metric structure are present in musician's performances.[120] These studies demonstrate how the

physical musical stimulus (controlled by the performer) conveys information about metric structure. Descriptions of a non-physical metric structure (and non-physical metric accents) which are communicated by physical events are common to Cooper and Meyer, Benjamin, and Lester. Berry is the only theorist who attributes accentual quality exclusively to *notes*, rather than *locations* in the temporal grid.[121]

Kramer introduces the notion of meter as an expression of motion. He claims that the infinite series of non-durational time-points are subject to categorization, and that meter "singles out certain time-points ... for musical significance ...." and "varying degrees of accentuation."[122] Thus, variation in accentual quality of time-points creates the feeling of motion. Later Kramer states that metric motion is an illusion, and that the rhythmic grouping of events is that which creates the sense of motion.[123] Kramer adheres to a theory of metric structure involving ungrouped non-durational time-points which are imbued with "relative degrees of accentual strength."[124] He holds that motion is an attribute or consequence of the grouping of rhythmical events in the musical stimulus.

Accent

Kramer defines three classes of accent: stress accent, rhythmic accent and metric accent.[125] Each type has a particular role in Kramer's conception of meter. Lerdahl and Jackendoff use the term *stress accent* to identify a particular category of phenomenal accent. Their conception of phenomenal accent is inclusive of all events at the musical surface that "give emphasis or stress to ... the musical flow,"[126] and in their conception of musical experience the metric structure of a piece is deduced from the patterns of phenomenal accent.[127] Kramer does not intend his usage of the term *stress accent* to take on the meaning of phenomenal accent. Kramer attributes very little strength to stress accent, and does not

make it a primary determinant of metric structure. The other types of accent are hierarchically more important for Kramer.

Rhythmic accent is defined by Kramer as "a point of initiation or arrival or neither", a point of stability or focus of a rhythmic group[128]. In the next paragraph Kramer distinguishes metric accent from rhythmic accent by stating that metric accent "must be a point of initiation-but not necessarily of a rhythmic group." [129] Thus, four bar hypermeasures begin with metric accents but not necessarily with rhythmic accents. For Kramer the distinction between hypermeasure and phrase is important. The phrase will involve rhythmic accents, the hypermeasure will begin with a metric accent and the rhythmic and metric accents will not necessarily coincide.[130] In Chopin's Prelude in A Major,[131] a piece with four bar hypermeasures, the metric accents occur at the inceptions of measures 1, 5, 9, and 13. The phrases within those hypermeasures have rhythmic accents (initiations, cadences, points of focus) at measures 3, 7, 11, and 15.

Kramer extends his differentiation of metric and rhythmic accent by specifying that *beats* are time-points. In other words a beat has no duration but it coincides with the beginning of a time-span. Metric accent is a quality of beats (or time-points) which is experienced but not perceived. *Pulses* are the events that occur at or near beats.[132] Rhythmic accents are attributed to pulses which form groups. (The reader will note that pulses are characterized as notes by Cooper and Meyer, but that Wallace Berry considers pulse to be a durationless time-point; *impulse* for Berry is the same as *pulse* for Kramer.)

The distinction between phenomenal (including stress) accent on the one hand and rhythmic and metric accents on the other might be made in terms of process. All structural attributes inherent in the latter two types of accent are conveyed to the listener via the musical signal. The phenomenal accents of the musical signal are eventually converted to rhythmic and metric accents depending on

the mental processing of the listener. The distinction between the two types of accent could therefore be at the level of processing.

Kramer argues for the experiential existence of accented durationless time-points, or metric accent, by stating that metric accent is a mental phenomenon. His argument applies equally well to all accents because all accents are the result of the interaction of mental processing and a signal which originates in either physical vibrations sensed by the ear (or the imagination).

Kramer's conception of metric regularity is based on the relationship of metric levels. He presents a diagram of hypermetric reduction showing that metric irregularity on one level does not necessarily negate regularity on another (higher) level.

```
e x                                             x

d x                           x                 x

c x           x               x       x         x

b x   x   x   x   x   x   x   x   x             x

a x x x x x x x x x x x x x x x x x x x
```
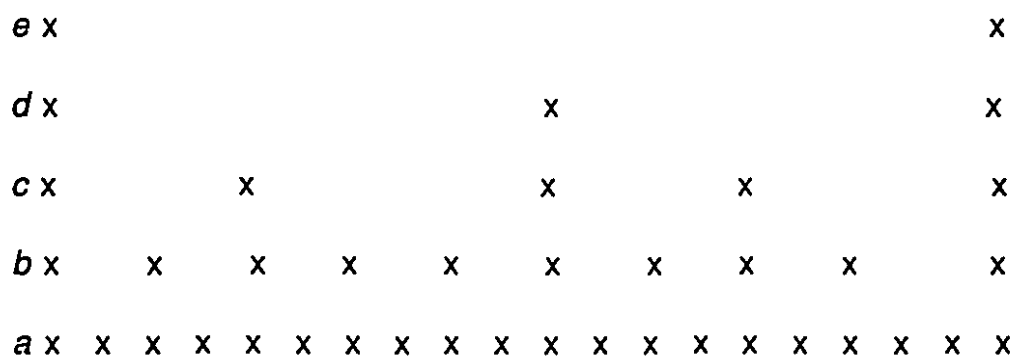
At level a the durations are regular, and at level b they are regular except at the end. Kramer defines regularity in terms of the elapsed number of beats at the next shallower level.[133] Level a by itself has no metric definition. Level b is irregular because there are examples of measures at level b with three and two beats. Level c is irregular because there are measures at level c with two beats and three beats (beats meaning two or three measures at level b between beats at level c). Level d is regular because each measure at level d contains two measures at level c. The durations of measures are different at levels c and d but duration is not the criterion for regularity.

The traditional definition of metric regularity requires that there be the same number of beats and durations between accented beats. Kramer produces several examples in which metric irregularity occurs at individual levels of a hypermetric structure while higher levels remain regular. Regularity is not conceived of in terms of duration between strong beats but rather in terms of the number of weak beats between strong beats.

Kramer's theory of hypermeter describes an element of hypermetric regularity in music which has regular meter on the primary level and irregular durations on the hypermetric level. His metrical and hypermetrical reductions do not (and were not meant to) explicate music in which measure length at the primary level varies frequently.

In the following analysis of *El Decameron Negro* by Leo Brouwer motivic repetition and development are the primary criteria determining metric organization. The units revealed would be described as non-metric by all the cited theorists except Wallace Berry. Alteration of the Metric Well-Formedness Rules of Lerdahl and Jackendoff would also permit irregular measure lengths to be viewed as metric.

These theories have provided me with the basic tools for the following analysis. Although Wallace Berry considers meter to be irregular at some levels none of the theories of meter fully addresses the metric irregularity that is a basic characteristic of Brouwer's piece.

Analysis of *El Decameron Negro*

Overall description of the excerpt

"La Huida de Los Amantes por el Valle de Los Ecos."

The movement as a whole is divided into five principal sections which are delineated by changes in tempo and texture. The overall pattern is slow-fast-slow-fast-slow (see Figure 1, below).

Figure 1

Sections of *El Decameron Negro*

The five sections of *El Decameron Negro* as defined by tempo/pulse change. The second and fourth sections are comparatively rapid with a steady pulse; the other sections are comparatively slow without a steady pulse. The letters refer to rehearsal marks in the score.

A   B   C   D   E   F G   H   I

10 meas.   11 meas.   8 meas.   30 meas.   7 meas.
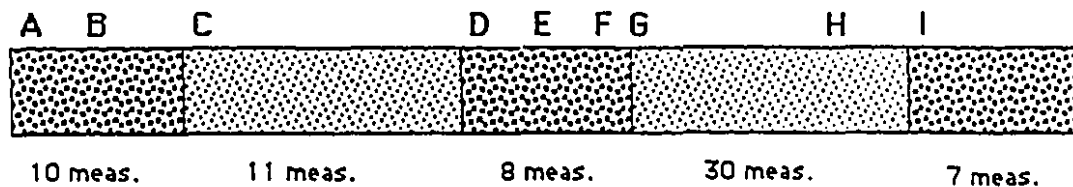
Legend:

A = Declamato Pesante

B = Presage

C = Premier Galope de los Amantes

D = Presagio

E = Declamato

F = Recuerdo (Tranquillo)

G = Por el Valle de los Ecos

H = Retorno

I = Epilogo

The sections are marked as follows:

a) the first section (slow) encompasses the music marked "Declamato pesante" (rehearsal A) and "presage" (rehearsal B);

b) the second section (rapid), "Primer Galope de los Amantes," poco a poco accelerando (rehearsal C);

c) the third section (slow), "Presage," "Declamato," and "Recuerdo Tranquilo" (rehearsal D, E and F, respectively);

d) the fourth section (rapid) and the subject of this analysis, "Por el Valle de los Ecos" (rehearsal G) and "Retorno" (rehearsal H);

e) the fifth section (slow), "Epilogo (rehearsal I)," a slow section based on material from the first "Presage" section.

In the slow sections each gesture ends with a long note. These long notes separate the gestures due to the rapid rate of decay of the classical guitar. Whether or not the interpreter is rigorous in the execution of the note values and sparing in the use of rubato, the listener may find it difficult to perceive a steady pulse. The slow tempo, the rapid decay and the long final notes all contribute to the dissolution of the sense of pulse at the end of each gesture. In contrast the resonant eighth notes or triplets of the rapid sections project a strong pulse continuously from motive to motive. The shifts between the two textures delineate the five sections of the movement.

Metric variation is the salient feature of the movement as a whole, occurring in both the slow and fast sections. Such metric variety in both pulsed and relatively unpulsed sections indicates an unusual use of the bar line. In even metered music, the bar line signals a recurring pattern of accent. In "La Fuite des Amants par la Vallee des Echoes" the bar lines enclose individual gestures. As the gestures increase in length due to extensions to the core motive, so

do the measures. Sections are delineated by cycles of additive construction leading from short measures to longer ones.

The first three measures of the movement begin with the same motivic core, each succeeding measure becoming longer than the preceding one. The second and third measure contain additions to the fundamental core. (See mm. 1-3, Example 1A)

Each of the five sections is an example of this additive procedure. A core motive is presented in a succinct short form and succeeding measures repeat the gesture with continuations which become longer and more complex. When a maximum amount of length and complexity is achieved a new section begins.

Example 1A

Description of "Por el Valle de los Ecos"

"Por el Valle de los Ecos" (rehearsal G) is the longest rapid
section of the movement.   Within this section phrases consist of
statements and echoes.   The musical echoes are clearly defined with
a metric structure which functions to delineate them.   The first
measure of this section shares its motivic material with the first
measure of the movement.   All phrases which begin with the motivic
material are developed with the additive procedures established in
the first three measures of the movement.   This section also has
several structural attributes which set it apart from the
surrounding music.

Formal structure

This section is formally unique when compared to the first
three sections of the movement because for the first time in the
movement there is a repetition of significant length.   In "Por el
Valle de los Ecos" there is an initial section, Part A, a contrasting
section, Part B, and a restatement of the initial section with a
different conclusion,   Part C.   The second presentation of the opening
material is reduced in length and   leads to a coda.   The first three
sections of the movement contain no sectional repetition.

Phrase structure

The structure of the statements is different from the
structure of the echoes.   The statements are constructed with a core
motive and successively longer continuations.   The echoes, while
dependent on the material presented in the statements, are not
constructed in the same fashion.   The echoes repeat certain parts of
the preceding statements according to a formula.   Thus an echo taken
out of context would lose the meaning it has as an echo.   (This is the
nature of the echo: it must follow something of which it is a
representation or repetition.)

At this point I will discuss "Por el Valle de los Ecos" in detail. The music to which I am referring occurs between rehearsal letters "G" and "I." The music within that span is divisible into three parts which I will refer to as A, B, and C. Part A begins at "G" and is eleven measures long. In the twelfth measure a new core motive is presented, and that is where I consider Part B to begin. Part B continues to the letter "H," at which point the C section begins with the marking "Ritorono." I will use the following terms to identify particular spans of music. *Phrases* are divided into *statements* and *echoes*. *Statements* and *echoes* are divided into *parts*, the *opening* and the *continuation*. The *openings* are divided into *groups*. The *continuations* are divided into *segments* which may be divided into groups.

PHRASE

STATEMENT		ECHO	
OPENING	CONTINUATION	OPENING	CONTINUATION
GROUPS	SEGMENTS	GROUPS	SEGMENTS
	GROUPS		GROUPS
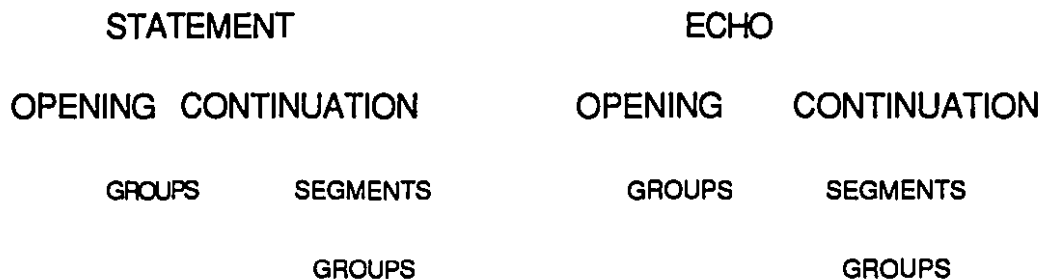
Measure length in statements and echoes

There are two procedures which result in the variety of measure lengths found in parts A, B, and C. The first procedure applies to the statements and involves additions to the core motive to create statements of successively greater length. The second procedure applies to the echoes and consists of a repetition of a part or segment of the statement. Statements display a gradual increase in length while echoes can remain constant in length. The structure of the echoes is independent of the length of the statements which precede them.

Echoes are constructed by repeating a fragment of the statement (which occurs at the end of the statement measure) followed by two repetitions of the final eighth note pair of the statement. In the A section (starting at "G") the length of the echoes remains constant while the length of the statements varies. The even-numbered measures of the A section (the echoes) do not share the variation of length which typifies the motivic development of the odd-numbered measures (the statements).

Harmonic structure

This entire section is written with a two note pedal on scale degrees one and five. This pedal is constant throughout the three sub-divisions of the section, and functions to emphasize a sense of harmonic stasis against which the motivic play is brought into relief. The development of the continuations is accentuated by the repetition of the core motive at the beginning of each phrase.

The core motives in parts A and B have distinct, different harmonic implications. The opening motive of all A statements begins with a low tonic pedal, and ascends to scale degrees one and five, effectively emphasizing the tonic harmony (Example 1). The core motive found in the B statements begins on the tonic and like the A opening motives includes a rising fifth; in this case the rising fifth ascends through scale degrees five and two, outlining the fifth of the dominant harmony (see Example 2). This suggests a simple tonic-dominant-tonic relationship in the organization of the statements within their sections. The A statements are initiated by a tonic harmony while the B statements emphasize the dominant chord (over a tonic pedal). Part C releases the tension built up during the B section by returning to the tonic harmony.

Harmonic motion from statement to echo

Notes of the tonic triad dominate the openings of A statements and notes of the dominant function are found with increasing

Examples 1 and 2

EXAMPLE 1

EXAMPLE 2

frequency towards the ends of those statements. A statements essentially move from I to V, and the echoes prolong V. In part B the tonic pedal which initiates every statement is functional in that it represents a true tonic harmony. Immediately after the tonic pedal the B statements move to V or in one instance to VI before emphasizing V at the end of the statement and throughout the echo.

Detailed discussion of gestures

As stated above, the excerpt is divided into three parts, A, B, and C. I shall refer, for example, to the first statement in the A section as "statement A1" or the third echo in the B section as "echo B3." The pairing of statement and echo produces a phrase, and consequently "Phrase C2" refers to the second statement and echo of part C. In addition, each statement and echo is divided into two parts which shall be referred to as "the opening" and "continuation." I shall refer to durations of phrases, statements or echoes, and parts of statements or echoes in terms of eighth note durations. The word "beat" refers to the duration of one-eighth note. I define the length of time spans in terms of eighth-note beats because all the time spans are multiples of eighth-note durations.

Statement A1

The role of the initial note E in all statements

Phrase A1 consists of two measures, the statement and the echo, five eighths and six eighths long respectively. All statements contain a core and a continuation. Some particularly long statements have a continuation with two segments as well. All begin with an initial low E which is separated notationally and registrally from the following eighth notes. The analyst must decide whether the low E is a pedal or whether it is part of the core motive. The notation suggests the former. However, earlier presentations of the motive in the opening measures of the movement include the initial low E as part of the motive and not as a

separate pedal. This prepares the listener to expect the low E to be a part of the motive and not separated from it.

I hear the melodic gesture as beginning with the low E, not with the second eighth note of each statement. I assume that the low E has a dual function, as a pedal and as the initial note of the opening motive of each phrase. I base my assumption on the aural experience of the motive, and on compositional precedence. See Example 3.

Harmonic stasis

The initial low E of each statement and the triplet sixteenth notes which accompany each eighth note form a triple pedal on the tonic and dominant. Consequently, the implications for harmonic change of any of the motives are weakened by a prolonged static tonic pedal.

Grouping and motivic analysis

Phrase A1 begins with a motive driving upward from low E to E below middle C to B a fifth above. See Example 4. These three notes are followed by D sharp, the highest note of the motive, and a return to B. The tonic accent and change in direction on the fourth note D# initiates a new group. The first four notes of the phrase establish an expectation of a ternary group (from accent to accent) which the listener expects to be repeated. The fourth and fifth notes of the statement are heard as the first and second notes of the continuation of that pattern. The listener expects a third unaccented note to complete the group but the beginning of the echo contradicts that expectation.

Echo A1

The first echo repeats the last pair of notes of the statement motive. Each repetition of D#-B (degree 7-5) emphasizes the D# through height and change of direction. The repetition of the D#-B

Examples 3 and 4

EXAMPLE 3

G Por el Valle de los Ecos

Rapido (galopante)

(eco) (como resonancia)

simile

resonante (eguale)

Psub. legato

pp

f

II. La Fuite des Amants par la Vallée des Échos

LA HUIDA DE LOS AMANTES POR EL VALLE DE LOS ECOS

LEO BROUWER
(1981)

A Declamato pesante

d. vibrar

EXAMPLE 4

A1

simile

resonante (eguale)

Psub. legato

pp

f

cell supports the division of the first measure into 3 + 2. The repetition of the D#-B figure also directs the listener to expect a binary rather than a ternary continuation of the phrase. See Example 4.

In this first case the echo has performed two functions: it has supported the perception of the opening motive as consisting of two parts, and it has instilled an expectation of regular binary rhythm through repetition of a two note cell.

Statement A2

<u>Grouping and motivic analysis</u>

Although echo A1 establishes binary grouping of eighth notes, this pattern is not continued because the second statement begins with a ternary group. The second statement opens with the same notes as statement A1 although the phrase A2 as a whole has significant alterations. I will mention the common elements first and then describe the differences. First, the parallelism: the opening motive of A1, the rising three note figure 1-1-5, is repeated in statement A2, and it leads to a segment where D# (degree 7) is prominent. Statement A1 establishes an accent on D# because the D#-B cell is echoed three times following the opening motive. See Example 5: A1 and A2. When a D# follows the opening motive in statement A2 the listener hears it as accented because of the precedent set in phrase A1. In the second statement the four notes following the opening motive include D#'s placed on the first and third note of the four note group; binary grouping is again established after a ternary opening motive. The grouping pattern of statement A2 can be summarized as 3 + 4 (2 + 2) in which the three is the opening of the core motive and the four an expansion of the corresponding continuation found in statement A1. In A2 there is a two note interpolation. Those two additional notes serve to further emphasize D# through upper neighbor ornamentation: degrees 7-8-

7-5 instead of the shorter 7-5 found at the end of phrase one. The second phrase has the same change of grouping as does the first. Each statement has a ternary opening motive followed by a binary concluding motive. The binary grouping of the latter part of each statement is supported by the following echo.

Echo A2

The echo of the second phrase is eight eighth notes long, two eighths longer than the previous echo. The increase in length of the echo corresponds to the increase in length of the statement. This is the only increase in echo length in part A.

Echo A2 begins by repeating the second part of the preceding statement. In this respect it follows the same procedure as the echo to phrase one. After repeating the continuation of the statement the echo repeats the last note pair of the statement twice. See Example 5.

It can be seen that this is the same procedure which was followed to form echo A1. However, because the second section of the first statement consisted of only two notes, the echo consisted of six notes: the repetition of the second section (two notes) and the repetition of the last pair of notes twice (four notes). This procedure applied to the echo of phrase two produces a repetition of the second section of the statement (four notes, D#-E-D#-B) and the double repetition of the last pair (four notes, D#-B-D#-B). Thus the structures of the echoes to phrase one and two are the same.

The two statements have established a pattern. The initial upward motive takes three eighths, and has done so twice. It has been established as a norm. The continuation of the opening statement is in binary meter in both phrases. The binary nature of the continuations is emphasized by the binary structure of the echoes. After two complete phrases there is an expectation of

Example 5

metric change and of inequality of motive durations in the different parts of the phrase.

The two statements have also established a kind of expectation concerning both the likelihood of expansion of the motive and the way in which such expansion is carried out. One expects that there will be additional notes added into the motive somewhere after the opening three or four notes.

Statement A3

The statement A3 is nine eighths long. The lengths of the first three statements are five, seven, and nine eighths, respectively. It appears that the expansion is by multiples of two. Generally speaking, a 9/8 measure is considered to represent three equal divisions of the measure, each beat containing three eighth notes. The traditional grouping is altered in this instance by the grouping procedure which was established in Phrase A1 and A2

An examination of phrase A3 shows that both the opening and the continuation of phrase A2 are retained intact, and that another pair of notes is added to the end of the phrase. These two notes emphasize the fifth degree of the scale by forming a neighbor motion which effectively prolongs scale degree five. The D#-E-D#-B motion emphasizes the D#-B interval with a neighbor motive. In that context the B-A-B neighbor motion with rhythmic accents on B proje ʰe A as the seventh of a dominant harmony. The A does not weaken the B because A has no function of its own; it does not on its own represent a pre-dominant function. See Example 6.

The grouping patterns and the pattern of statement expansion which are established in the two preceding phrases influence the listener to hear the third statement as nine eighth notes which are grouped 3 + 6 [(4 (2 + 2) + 2].

Example 6

The opening motive presented in statements A1, A2 ,and A3 consists of three notes. The continuation of the statements are all binary. The third statement continues the procedure of adding pairs of notes to the continuation.

Echo A3

The previous two echoes have been constructed by repetition of the continuation of the statement, followed by a double repetition of the last two notes of the statement. Echo A3 does not follow this procedure in all respects. In this echo the repeated block consists of only the last four notes of the statement, not the entire continuation. See Example 7. In the grouping pattern of statement A3 -- 3 + 6 [4 (2 + 2) + 2] -- the three represents the opening of the statement and the six represents the continuation. The block repeated in the echo is not the entire six note second half of the statement but rather the last four notes. This four note group supports the binary grouping of eighth notes established in the statement's second half. The four-note group makes the binary grouping unequivocal because a group of four eighth notes cancels the ambiguity inherent in a six-note group. If the full second half of the statement A3 had been repeated in the opening of the echo the ambiguity of the six-note duration's internal grouping (3 + 3 or 2 + 2 + 2) could not be resolved except through stress. The duration of echo A3 is the same as that of echo A2 because in each case a four-note block is repeated followed by a double repetition of the last note pair of the statement. The echo serves here as it has in the previous two phrases to emphasize the binary identity of the second group of notes within the statement.

The expansion in the A statements takes place in the continuations while the echoes (except for Echo A1) remain constant in their length and construction. The length of the opening blocks of the echoes remains constant causing material from the statement continuations to be regrouped when it reappears in the echo. For instance the grouping of the continuation of statement A3 is

Examples 7 and 8

EXAMPLE 7

EXAMPLE 8

6 (4 + 2) because of the repetition of the four-note continuation of A2 plus a two note extension. Echo A3 uses the last four beats of the continuation making a new group. This can cause a retrospective grouping of the continuation of A3. If the precedent of A2 is the primary factor, than the continuation of A3 is grouped 4 + 2. If the retrospective grouping caused by the echo is predominant, than the grouping of the continuation of A3 is 2 + 4. I consider the chronological grouping to be predominant while the retrospective grouping adds a rich ambiguity to the construction. See Example 7.

Phrase A4

Phrase four is consistent with the first three phrases: the statement section is increased in length by two eighth notes and the content of the echo is derived from the statement in the same manner as the previous phrases. However, the development of the statement is more complex than in statements two and three.

In statement A2 the additional length results from the interpolation of two notes, an upper neighbor to D#. In statement A3 a lower neighbor to B is added at the end of the statement. In statement A4 the passing or neighbor dissonances E and A which were heard in statement A3 are repeated with a rhythmic alteration. Embedding the dissonant notes in sixteenth note figures transforms the neighbor motions into accented dissonances or appoggiaturas; the accents reinforce the binary grouping at the end of the statement.

In statements A2 and A3 the previous statement is present with additions or interpolations. However, in statement A4 there is a two eighth note extension with a rhythmic transformation covering the last four eighth notes. Consequently, the last two eighth notes of statement A3 are condensed in the sixteenth note figuration of statement A4. See Example 8.

This extension influences the accentual structure of the statement in the same way that previous extensions do: by reinforcing the binary grouping of the continuation. As in the previous statements the opening motive is ternary and lasts three eighth notes, and the following material groups eighth notes in a binary fashion. The echoes of statements A2, A3, and in the current case, A4 , all repeat the last binary group of quarter notes of the statements. These repetition reinforce the binary grouping. See Example 9.

This procedure represents a departure from the purely additive nature of the development seen in the first three phrases. The extension of the sixteenth note motive over four eighth notes defines a cell which contains the extension of the phrase and the opening of the echo.

I have stated earlier that the tonic harmony is present in the core motive and the dominant harmony is emphasized in the continuations of statements. The harmonic implications of the opening E pedal tone apply only to the core motive. The harmonic shift towards the dominant is clarified in statement A4 with the addition of the new rhythmic motive. The notes A, B, and D# outline the essential dissonance of the dominant seventh chord. With the addition of the sixteenth note motive the last two notes of statement A3, A and B, become A, B and D#. The addition of D# permits the A and B to be incorporated into the new rhythmic motive and to express succinctly the dominant harmony. See Example10.

Examples 9 and 10

EXAMPLE 9

New Rhythmic motive

EXAMPLE 10

Echo A4

As is the case with the echoes of statements 1, 2, and 3, the echo of statement 4 is comprised of two parts, the first consisting of an integral repetition of the last four eighth notes of the statement. The second part of the echo consists of the double repetition of the notes found in the last quarter note span of the statement.

The increased length of the statements has resulted in the possibility of parsing the longer statements into three sections instead of two. The first statement, because of its shortness, (five eighths in length), can be heard as indivisible. However the echo functions retrospectively to divide it into two sections, the upward opening motive and the descending note pair. See Example 11.

The division of statement A2 is duple, the first part being the upward opening motive and the second part being the remaining four eighth notes. The identity of the continuation is supported by its repetition in the echo. It is because of the identity of this four note motive in statement A2 that statements A3 and A4 can be parsed into three sections: the opening motive, the four note central motive, and the extension. In statement A3, the extension is two eighth notes in duration, and in statement A4 the extension is four eighth notes in duration. Statement A2 is present in unaltered form in statements A3 and A4. This pattern is broken in the following statement.

Statement A5

Statement A5 presents a greater degree of change from one statement to another than has been the norm in the first four phrases. Until this phrase, each statement has increased in length by two eighth notes, creating durations of five, seven, nine, and eleven eighths. The pattern is broken in statement A5 because its

Example 11

duration is fifteen eighths, an increase over the previous statement of four eighth notes rather than two.

In addition to changes in the duration of the statement there are motivic changes as well. The material found between the opening motive and the extension is not held constant as it is in statements A2, A3 and A4. The change in statement A5 begins immediately after the first three notes which comprise the opening motive. See Example 12.

Brouwer has barred his eighth notes in such a way that the interior grouping of the notes is indicated visually. It is clear that in the twelve eighth notes of the continuation the ternary grouping is maintained. There are three ternary groupings of eighth notes including the opening motive. The sixteenth note motive is reintroduced. That rhythmic motive (two sixteenths plus an eighth) has strong binary implications and its reintroduction here signals a return to binary grouping for the duration of the last six eighth notes of the statement. The grouping of the statement is then 3 + 3 + 3 + 2 + 2 + 2. The introduction of the sixteenth note motive in the latter part of the statement divides the statement into a first part in ternary groups of eighths and a second part in binary groups with sixteenths. Thus, the overall grouping pattern is 9 (3 + 3 + 3) + 6 (2 + 2 + 2).

Since changes in grouping of this nature have not been seen in the previous statements (except for the change which occurs between the opening motive and the rest of the statement) it is appropriate to look at the contour of the new motive to see whether the melodic shape is neutral or active in establishing the grouping. I will discuss each group in the statement.

The initial ternary group is the opening motive which has been sufficiently repeated that its recognition is automatic. See Example 13.

Examples 12, 13, 14, and 15

EXAMPLE 12

NEW MID-SECTION

EXAMPLE 13

EXAMPLE 14

EXAMPLE 15

GR. 1

CONCLUDING GROUP, AS REPEATED IN ECHO.

The second group (A-F-A) and the third group (B-D#-B) (see Example 14) can be interpreted as ternary with the following consequence: the second group prolongs A, degree 4, and the third group prolongs B, degree 5. See Example 14 .

The fourth group is a binary group with an appoggiatura on D#. and this group (which occurred previously in statement 4) emphasizes the D#. See Example 15. Thus, the second, third and fourth groups of statement A5 emphasize the pitches A, B and D#. These are the pitches contained in the first sixteenth note motive in phrase 4. See Example 16.

Statements A2, A3 and A4 demonstrate the additive technique clearly because each of those statements repeats the previous statement with some additional material. Statement A5 departs from this strict practice by maintaining only the first three notes of the core motive and dropping the middle section of statement A4. In its place there is an expansion of the sixteenth note motive from A4. After the opening core motive the ternary groups prolong A, B and D#, respectively. The final two groups of statement A5 revert to binary grouping with emphasis on F#, A, B and D#, the dominant harmony.

The division of statement A5 is regular in that it is divided into two parts of three groups each. However the groups of the first part are ternary (three eighths long) and the groups of the second part are binary (two eighths long). Statement A5 is the longest and last statement of the A section, and it completes the first cycle of phrase expansion. The B section begins another cycle.

Echo A5

The echo to statement A5 is constructed as were the other echoes of the A section. The last four eighth notes of the statement are repeated followed by repetitions of the last two eighth notes.

Example 16
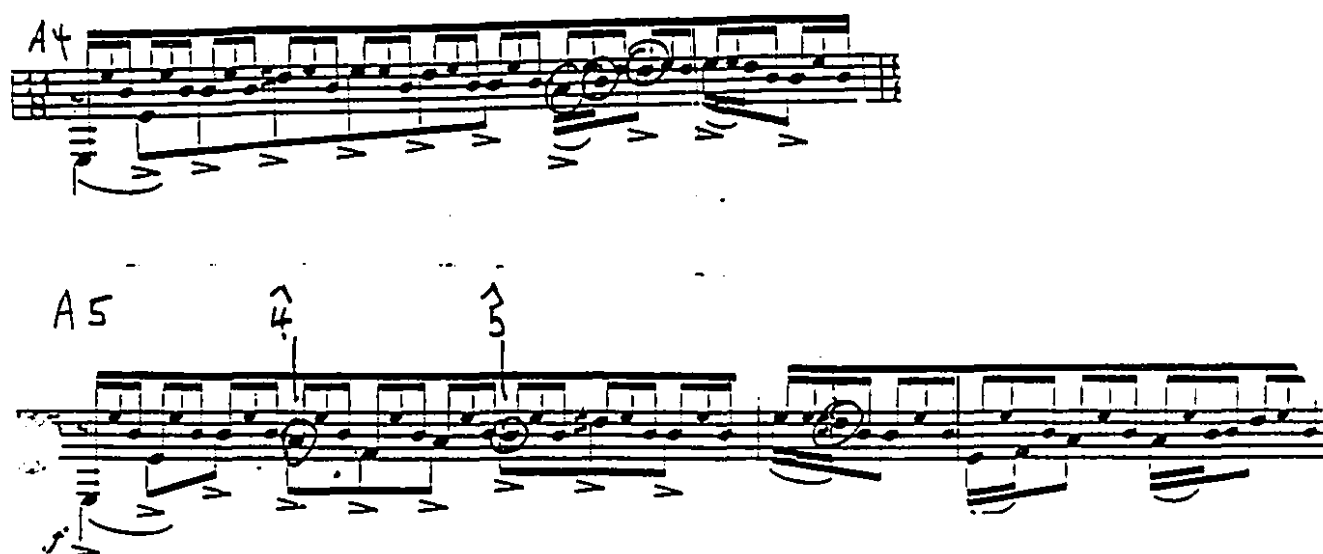
(I am referring here to time spans rather than actual notes. Here the gestures contain sixteenths and eighths.)

Ternary division of the excerpt as a whole

Two processes, one rhythmic and one harmonic, culminate in the fifth statement. The rhythmic process has been described as additive phrase development. The harmonic process is one of clarification of the dominant harmony in the statement continuations and the echoes.

There is a progression from weak to strong articulation of the dominant chord in the second part of each statement and consequently within the echoes of each phrase. This progression culminates in the echo of statement 5. Echo A1 contains B and D#, echo B2 contains B and D# with neighbor motion around D#, echo B3 includes A as well as B and D#, echo B4 adds a neighbor motion to the preceding motive, and echo 5 contains F#, A, B, and D#, the complete dominant seventh chord. The filling out of the dominant chord in the fifth echo is the culmination of a process of harmonic clarification which began in phrase 1.

B Section Statements and Echoes

In my discussion of the phrases of the B section I will number the phrases starting with B1, indicating the first phrase of the B section. See Example 17.

Within the B section there is no constant increment by which each statement is extended. There is even a reduction in length of the fifth statement compared to the fourth statement. The statements are 6, 8, 9,10, 8 and 10 eighth notes long, respectively.

B section echoes

Comparison of the echo lengths shows that the procedure for constructing the B section echoes varies. The echo lengths are 7, 8,

Example 17
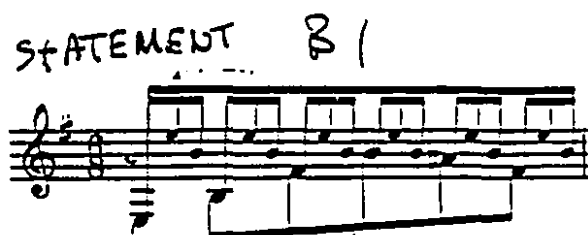
STATEMENT B1

7, 8, 7 and 10 eighth notes, respectively. I will describe a rule concerning incremental growth in statements in the B section as well as a rule governing alternation of echo lengths in the B section. Relationships of consecutive measure lengths will be shown to be less significant than the relationships between the statements and between the echoes themselves.

Statement B1

The first statement in the B section begins with the low E and two rising fifths. The opening motive of the A section statements is E-E-B and the opening motive of the B section statements is E-B-F#. The A section core motive is a rising fifth, a consonant interval. The B section core motive is dissonant because of the relation E to F#, the first and last notes. The core motive of the B section unfolds a potential dominant chord over a tonic pedal. See Example 18.

Although the core motives of statements A1 and B1 both contain three eighth notes, the overall lengths of statements A1 and B1 are not identical. The difference in length of the statements (five eighths vs. six eighths) is due to a difference in length in the continuations of statements A1 and B1. The continuation of statement B1 consists of three eighth notes, a high B descending through A to F# while the continuation of A1 is a note pair. (See Example 18.)

The six note statement has several potential grouping patterns. The most common subdivision of 6/8 time is binary and there are two reasons for adopting that grouping here. First, all the A statements begin with a three note core motive; second, the fourth note in statement B1 receives a tonic accent and changes direction, as do many of the continuations in the A section. The metric regularity (3 + 3) of statement B1 is in contrast with the irregularity (3 + 2) of statement A1. (See Example 18.)

Examples 18 and 19

EXAMPLE 18
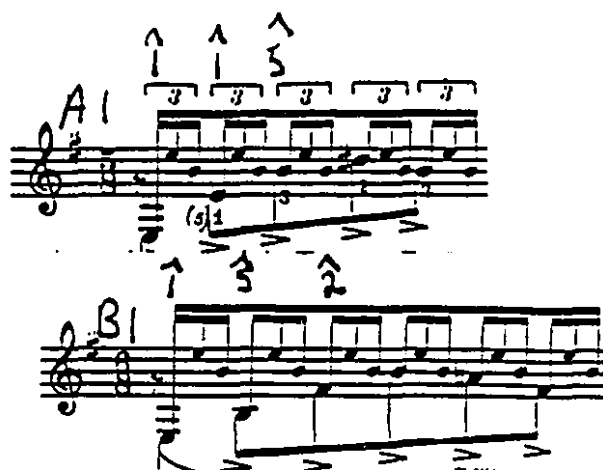
EXAMPLE 19
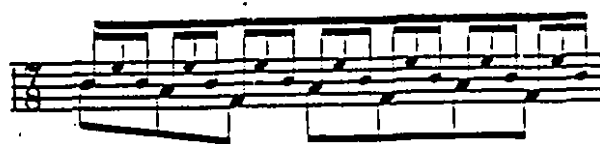
Echo B1

Within part A the echoes support binary grouping because of the binary aspect of their content. Echoes in part B do not have the same constancy of binary content because their length changes from an odd to an even number of eighths in phrases B1 to B6.

The echo of statement B1 begins by repeating the last three eighth notes of statement B1. This ternary group is followed by a double repetition of the last pair of notes in statement B1. See Example 19.

The structure of this B section echo is identical to the echoes of part A except for the length of the opening block. Like the A echoes, echo B1 opens with the repetition of the final group of notes from the statement. Following the group which initiates the echo there is a double repetition of the final note pair of the statement. The A section echoes repeated two or four eighth notes while the first B echo repeats a ternary group followed by a double repetition of a note pair. See Example 20.

The A section echoes serve to stabilize binary grouping patterns. Echo B1 is the carrier of metric change in the sense that it begins with a ternary group and terminates with a repetition of note pairs, a binary grouping. In this it is similar to the statements of the A section.

Statement B2

In statement B2 the previous statement (B1) is repeated and two notes are added at the end. This is the first example of gradual increase in measure length of the statements in the B section. See Example 21.

The influence of the binary division of the B1 echo leads the listener to divide statement B2 in a binary pattern also. In this case

See Examples 20 and 21

EXAMPLE 20

ECHOES
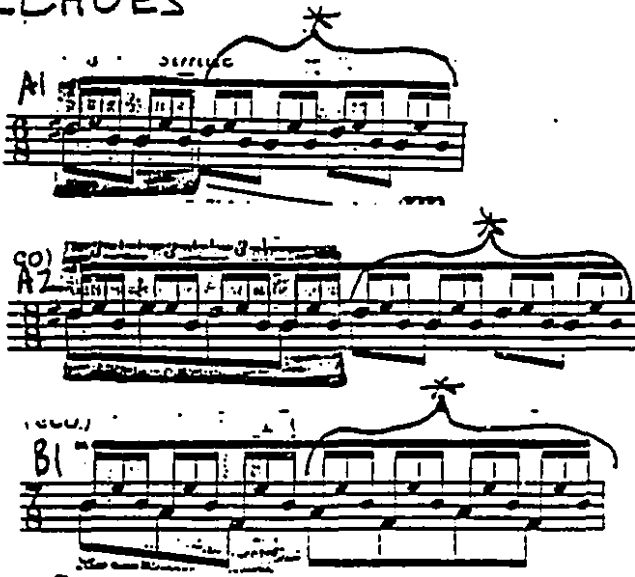
* Double
REPETITION OF
FINAL NOTE PAIR

▦ BINARY OPENINGS
   A ECHOES

▦ TERNARY OPENING
   Echo B1

EXAMPLE 21

STATEMENT

duple grouping causes a re-interpretation of the opening motive. In B1, the first half of the statement is heard as a ternary group which is balanced by a second group of three notes. B1 as a whole is a divided into two equal halves of three eighth notes each. Statement B1 is a binary division each part of which is a ternary group. Statement B2 is also a binary division each part of which is of equal duration; however, in this case the groups are binary. The grouping of B1 is 3 + 3, and the grouping of B2 is 4 (2 + 2) + 4 (2 + 2). See Example 22. The reinterpretation that takes place in the beginning of B2 occurs when the first group extends to the fourth note instead of to the third as in B1. The performer who knows the piece can adopt this procedure in order to project the additive grouping structure.

Echo B2

The binary grouping of statement B2 is further supported by echo B2. The duration of the second echo is eight eighth notes. The rule governing the construction of this echo appears to be the same as that for the echoes of the A section. The echo begins with the repetition of a final binary group of the preceding statement and continues with a double repetition of the final note pair of the statement. In Echo B2 the initial binary group is identical to the second group of the statement, the last four eighth notes of statement B2. This group of notes can be repeated by the performer in such a way that it will support the binary division of the statement into two equal groups, 4 + 4, and prepare the listener to divide the echo in the same way: 4 + 4 (2 + 2). Each statement and echo by itself allows can be grouped differently. This grouping reflects the choice of the performer who wishes to project the additive construction of the piece. See Example 23.

The difference in construction of the first two echoes of the B section should be noted: the first echo is seven eighth notes in

Examples 22 and 23

EXAMPLE 22

EXAMPLE 23

marcato (egvale)

duration, and the second lasts eight eighth notes. The difference is due to the length of initial motive in the echo.

Statement B3

The overall length of the third statement is nine eighth notes. There is an increase in length relative to the first two statements which were six and eight eighth notes long, respectively. The rate of increase is irregular, two eighths and one eighth. See Example 24.

The opening motive of statement B3 is one eighth note longer than that of B2. Starting at B2 each opening motive is one eighth note longer than its predecessor. The regularity of increase in length occurs at the level of the opening motive of the statements (and not the statement as a whole). See Example 25.

Statement B3 is divided into two sections of unequal length. The five note opening ascent is followed by a tonic and rhythmic accent on B. The accent marks the beginning of the continuation. The repetition of the sixteenth note rhythmic motive has the effect of placing two accents on alternate eighth notes, thus creating a binary grouping. See Example 26. The second half of the statement shows the same grouping as that of B2, two eighth note pairs. Statement B3 is notated to suggest grouping of 5 + 4 (2 + 2). See Example 26.

Statement B3 is the locus of a change in metric organization: an uneven group of notes which forms the opening motive is followed by an even group in the continuation of the statement. In this aspect statement B3 is similar to statements in the A section in which the opening motives and continuations were of different duration and had different grouping patterns. What seems more important in statements B2 and B3 is the evidence that Brouwer is establishing binary grouping at the end of each statement. This binary grouping occurs in B2 and B3 but not B1. Of equal importance is the evidence that an incremental system of expansion is being applied to the opening motives of each statement. In the A section the expansion

Examples 24, 25, and 26

EXAMPLE 24

EXAMPLE 25

EXAMPLE 26

occurs in the continuations while in the B section the opening
motives are expanded. The opening motives of statements B1, B2
and B3 are three, four and five notes long, respectively.

Echo B3

The duration of echo B3 is seven eighth notes--two less than
statement B3. The statements and echoes have individual rule
systems. The duration and structure of this echo is the same as that
of echo B1. Notated subgroups of three and four eighth notes are the
same in both instances. The last three eighth notes of statement B3
are repeated followed by a double repetition of the last two notes of
the statement. See Example 27.

In the B section the grouping of the opening of the echoes
alternates from binary to ternary, and this causes the echo to
support or contradict the grouping of the end of the preceding
statement. For example, although the continuation of statement B3
is four eighth notes long, echo B3 begins with the last three eighth
notes of the statement. This ternary grouping does not support the
binary continuation of statement B3. In the case of statement B3
the continuation is grouped as 2 + 2. The initial motive of the echo
is a shortened version of the continuation, the last three notes of
the statement. See Example 28.

The ternary opening of echo B3 is different from the binary
ending of statement B3. This is a departure in echo procedure
because the subgroup which is repeated in the echo does not occur in
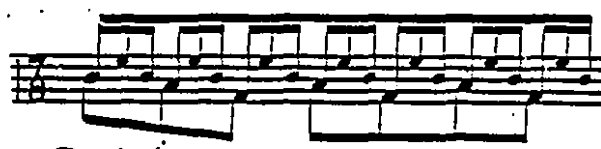unaltered form in the statement.

Harmonic content of phrases B1, B2, B3

The low E pedal tone articulates the beginning of each phrase.
Consequently every phrase begins on the tonic. The core motives of
the A and B sections open up over the pedal tone in ascending perfect
intervals. The A motive, E-B-E, is consistent with a tonic harmony
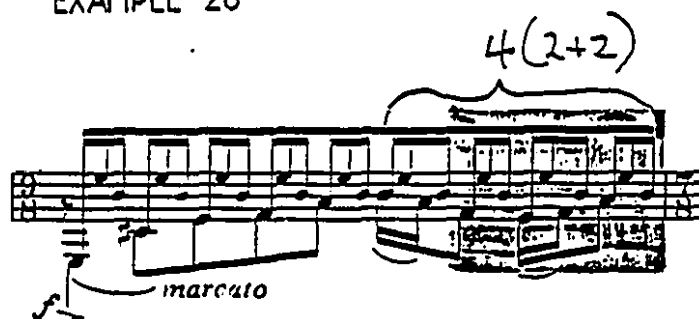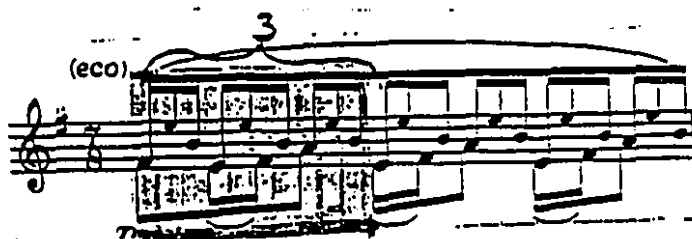
Examples 27 and 28

EXAMPLE 27

$$3 + 4(2+2)$$

$$3 + 4(2+2)$$

EXAMPLE 28

$$4(2+2)$$

marcato

even though the third of a tonic chord is absent. The core motive of statements B1 and B2, E-B-F#, suggests that the upper voice (F#) will resolve to the upper E. The continuations of the B statements and the B echoes emphasize notes which are contained in the dominant harmony. In this context the low E pedal articulates a return to the tonic and the continuations articulate movement towards the dominant. Statements B1 and B2 contain notes which are consistent with a move towards the dominant, but statement B3 is different.

The opening motive in statement B3 shares only the direction and general contour of the openings of B1 and B2. The statement can be read as moving towards a IV chord or a II7 . The opening motive of the statement-- C#, E, F#, A-- moves away from the tonic. Scale degree 6 (C#) is compatible with a pre-dominant function. The end of the statement emphasizes the note B in addition to F# and A, suggesting motion towards the dominant. See Examples 29, 30.
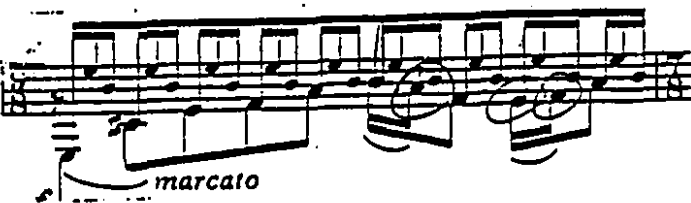
Statement B4

The overall length of the fourth statement is ten eighth notes, one more than statement B3. The notation suggests groups of 6 + 4. The partitioning of the statement is projected by the introduction of the rhythmic motive using two sixteenth notes and an eighth. When this motive is repeated it projects a binary organization of the second part of the statement. See Example 31.

The division of statement B4 continues the additive process present in this section. The opening motives of statements B1 through B4 have increased from three to six eighth notes in consecutive increments of one eighth note while the length of the continuations is stable. The continuations of B2, B3 and B4 are all four eighth notes in duration. See Example 32.
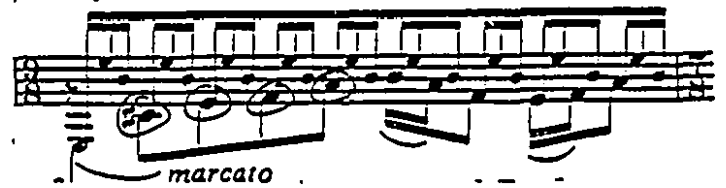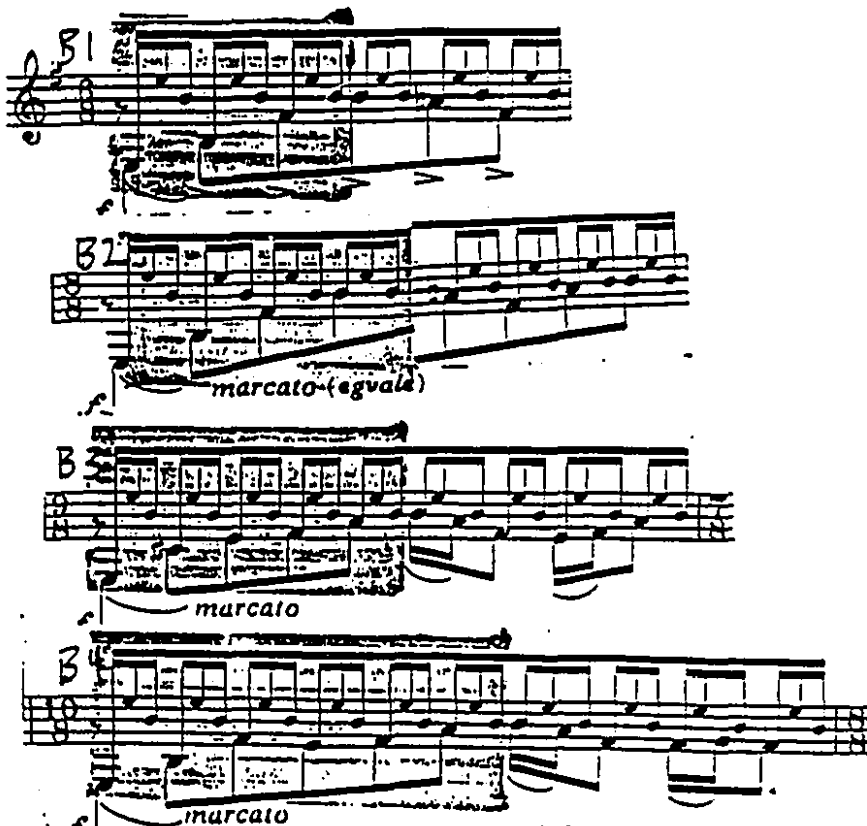
Examples 29, 30, 31, and 32

EXAMPLE 29

EXAMPLE 30

EXAMPLE 31

EXAMPLE 32

Divisions within statement B4

There is an initial division of each B statement into two parts:
the opening motive and the continuation. Further divisions within
the opening and the continuation are articulated by patterns of
grouping. An opening motive of six notes (as in statement B4) can be
grouped into three binary cells or two ternary cells without
effecting the overall division of the statement into opening motive
and continuation. If the eighth notes of statement B4 are grouped 6
(3 + 3) + 4 (2 + 2) then a metric change occurs on the level of the
eighth notes.

Example

(a) Groups   •   •

(b) Subgroups   •   •   •   •

(c) Eighth notes   • • • • • • • • • •

The first group (articulated on level a) contains two accents
(articulated on level b) which fall on the first and fourth eighth
notes on level c. The second group (articulated on level a) also has
two accents (articulated on level b) which fall on the first and every
third eighth note on level c. This interpretation locates the metric
change at the level of the grouping of the eighth notes.

A second interpretation of the grouping of statement B4 is
possible. The binary grouping of eighth notes in echo B3 may result
in a binary grouping of eighth notes in statement B4 producing the
following pattern: 6 (2 + 2 + 2) + 4 (2 + 2).

Example

(a) Groups   •   •

(b) Subgroups   •   •   •   •   •

(c) Eighth notes   • • • • • • • • •

Two groups are articulated at level a as before. Three subgroups
(articulated at level b) occur within the first group and two
subgroups contrast (articulated at level b) occur within the second
group of the statement. The eighth note composition of subgroups is
binary throughout the statement.   The metric change occurs at the
level of the subgroups rather than the level of the eighth notes. In
either case there are two groups at level a.

Echo B4

The structure of this echo is identical to the structure of echo
B2 as well as echoes A2 to A5. Echo B4 is eight eighth notes in
duration. The last four eighth note durations of statement B4 are
repeated followed by a double repetition of the last two eighth note
durations.

Echo variation in the B section

The pattern of alternating ternary and binary opening motives
is established in the first four echoes of the B section. Echoes B1
and B3 begin with a repetition of the last three eighth notes of the
preceding statement, an initial ternary grouping. Echoes B2 and B4
begin with the last four eighth notes of their respective statements,
a binary grouping. The continuations of the echoes are structurally
identical. Echoes B1 through B4 all apply the same procedure to
generate their last four eighth notes: a double repetition of the last
eighth note pair of their respective statements. The regularity of
the final repetitions provides coherence throughout the entire

section. The controlled variation of the openings keeps the listener off balance at first, and is ultimately a source of unity amid complexity. See Example 33.

Phrase B5

Length and division of statement B5

The length of statement B5 is eight eighths, two eighths less than the preceding statement. Statements B1 to B4 are six, eight, nine, and ten eighths long, respectively. Additive construction is not applied to the whole phrase since statement B5 is shorter than statement B4.

The opening of statement B4 is replicated exactly in the opening of B5 with the following difference: the time span of the motive E-F#-A is shortened via a rhythmic contraction producing the already familiar rhythmic motive, two sixteenths and an eighth. The sixteenth note motive is heard in this context as a binary group completing a five eighth note opening to statement B5, 5 (3 + 2). Two common precedents support this division: opening core motives in ternary grouping and the duple grouping of the sixteenth note motive. See Example 34.

However, five beats can be divided into two subgroups of 2 + 3 or 3 + 2, and either grouping can be defended. For instance, statement B5's proximity to the duple grouping of echo B4 favours an initial duple subgroup. If such proximity to previous or succeeding groups is the dominant criterion then the opening notes of B5 would be heard as a duple group, because of proximity to the duple grouping in the previous echo. The remaining three beats would then form a ternary subgroup because of their proximity to the ternary continuation of B5. The sixteenth note motive which usually signals duple grouping would in this case be embedded in a ternary sub-group.
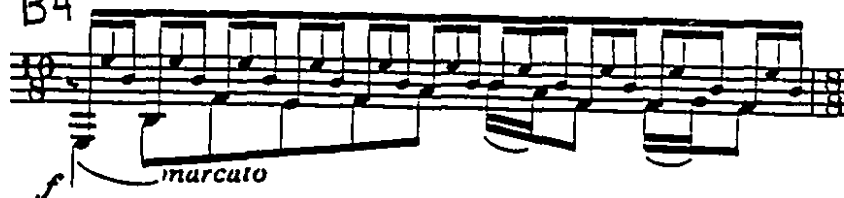
Examples 33 and 34

EXAMPLE 33

EB2
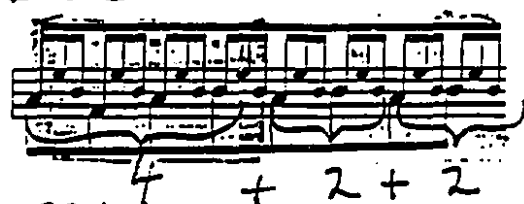
EB4.

EXAMPLE 34

B4

B5

Ternary conclusion of statement B5

The ternary continuation begins with a tonic accent on C#, the highest of the statement. The sixteenths form an ornament and prolongation of that note. The C# receives an accent because of its height and the change in direction of the motive. Subsequent repetitions of this ternary group define it as a motive, an expansion of the sixteenth note binary cell. This new motive fills three beats instead of two.

A ternary continuation is very unusual in this piece. The continuations of statements B2, B3 and B4 have all exhibited binary grouping, as is the case for all of the A statements except A5. (There is binary grouping of statement A5 at a level superior to the eighth note. Two ternary subgroups form a binary group.)

The echoes continue or alter the grouping patterns of their statements by repeating either a ternary or binary group from the final notes of the statement. The listener partitions the statement retrospectively to produce the fragment which initiates the echo.

Echo B5

The pattern of alternating binary and ternary openings in the B section is continued in echo B5. Echo B5 concludes with a double repetition of a binary sixteenth note pattern drawn from the concluding notes of the statement. The echo is regular in its construction. The final perfect fifth, F#-C#, shall be seen to important in retrospect, after examination of the sixth and final statement of the section. Example 35 shows the ternary group openings of echoes B1, B3 and B5. The echo continuations are binary. See Example 36.

Examples 35 and 36

EXAMPLE 35

Echoes B1, B3, B5.

3 + 4 (2+2)

EXAMPLE 36

B2

← 4 + 4 (2+2)

B4

Statement B6

Grouping

The duration of statement B6 is ten eighth notes. This is longer than the preceding statement (eighth eighths) and echo (seven eighths) and the same length as statement B4. The change in length in comparison to the preceding statement might signal a return to the strategy of additive construction through expansion of the opening of the statement. This is not supported by the phrase division as it is notated. The grouping of the statement B6 is characterized by an equal division, 5 + 5. Instead of an expansion of the opening motive as it appeared in statement B5 there is an exact repetition of it. Rather, the expansion takes place in the continuation. See Example 37.

The continuation of B6 is longer than the continuation of B5. There is a two note interpolation between the opening motive and the ternary continuation. The grouping of the entire statement is 5 (2 + 3) + 5 (2 + 3). The added notes render the second half of the statement equivalent to the first half in length. The opening and the continuation are equivalent in rhythmic asymmetry: both five beat sub-groups have changes in their internal grouping, from binary to ternary eighth note cells. See Example 38.

The sixth statement has a feeling of balanced complexity and tension. The tension increases with the length of phrase, particularly in this the last statement of the B section. The length of statement B6 is the culmination of the additive process of phrase development in this movement. One aspect of this development is evident when the lengths of B statements are compared.

Examples 37 and 38

EXAMPLE 37

REPETITION   EXPANSION

EXAMPLE 38

3   +   2   +   3   +   2

5   +   5

Lengths of B statements:

	Openings		Continuations
Statement B1	3	+	3
Statement B2	4	+	4
Statement B3	5	+	4
Statement B4	6	+	4
Statement B5	5	+	3
Statement B6	5	+	5

In this chart the growth of the statement openings from statements B1 to B4 is clearly outlined. The maximum length of opening is attained in B4, and subsequently a condensed form of opening is stated (in B5) and repeated (in B6). The continuations are consistently binary in construction from B2 to B4. When a shortened form of opening appears in B5 a ternary continuation accompanies it. Statement B5 introduces change in different parameters: condensation rather than expansion in the opening sub-group, and change in grouping in the continuation. In statement B6 the opening motive of B5 is repeated in unaltered form; the expansion and variation occur only in the continuation of the phrase.

Echo B6

The pattern of echo formation seen thus far has featured alternate ternary and binary openings. The durations of the echoes have been constant at seven eighths for the echoes which begin with ternary groups and eight eighths for echoes which begin with binary groups. The procedure for constructing the echo conclusions is unchanging: the last two eighth notes of the statement are repeated twice. As shown in the following chart, echo construction is

completely regular in echoes B1 through B5. Endings of echoes are completely regular and echo openings alternate between binary and ternary construction. Echo B6 introduces a variation in the opening block.

Length and division of echoes

	Opening Block		Ending
Echo B1	3	+	4 (2 + 2)
Echo B2	4 (2 + 2)	+	4 (2 + 2)
Echo B3	3	+	4 (2 + 2)
Echo B4	4 (2 + 2)	+	4 (2 + 2)
Echo B5	3	+	4 (2 + 2)
Echo B6	6 (3 + 3)	+	4 (2 + 2)

All echoes repeat the last three or four beats of their statement in unaltered form. Echo B6 is the only echo to break this pattern. The first three beats of echo B6 repeat the final ternary sub-group of the statement, as in regular echo construction. The variation unique to this echo consists in the second repetition of that sub-group before passing on to the binary repetitions of the echo ending.

Summary

A pattern is established in which the duration of the openings of the B statements are gradually increased in increments of one beat (one eighth note duration) up to a maximum of six beats. Except for the first statement, continuations consist of a binary group of four eighth notes (B2,. B3, and B4). The maximum length opening in B4 is accompanied by a binary continuation of four eighth notes. The process of development after B4 involves rhythmic

compression of the opening motive as seen in B5, accompanied by a change in the structure of the continuation of the statement. The compression creates an opening five beats long which is followed with a ternary continuation. The expansion in B6 does not occur within the opening, which is identical to that of B5, but within the continuation. The ternary group expands to a length of five eighths, mirroring the length of the opening of statement B6. In other words, the expansion of the openings of the statements takes place while the continuations remain relatively constant in their construction and duration. When the durational limit of six eighths is attained, there is a compression of the opening motive to five eighths' duration which remains constant for two statements, B5 and B6. In these two statements the expansion occurs in continuations of the statements rather than in the opening motives of the statements. The concluding groups expand from two eighth's duration (B1-B4) to three eighths in B5 and five eights in B6. See Example 37.

Harmony in the concluding statements of the B section

The harmonic aspect of the B section can be summarized as follows: there is a constant return to the dominant in both the latter parts of statements and the echoes. In statement B5 the raised sixth degree (C#) appears in the continuation. The C# is the upper note in a descending fifth motive. In statement B6 the raised seventh degree (D#) is presented in an upward transposition of that motive. (See Example 37.) The fifth motive is maintained and consequently a raised third degree, G#, is also present. The linear ascent of the motive results in the prominent placement of the seventh degree in statement B6 resulting in a melodically derived emphasis on D#, scale degree 7. The prominence of G# in the same motive weakens dominant harmony.

It is interesting to note that the last statement in the B section has identical rhythmic motives in the opening and the continuation. The expansion of the continuation of statement B6 culminates in a binary statement where the two parts of the phrase

are of equal length and equal rhythmic content. The grouping pattern can be concieved thus: 5 (2 + 3) + 5 (3 + 2). Please refer back to Example 38.

As the length of statement increases the number of scale degrees present in each statement increases. If the number of scale degrees present is a parameter of expansion then statement B6 is the culmination of the process: only in this statement are all the notes of the E major scale present; as well, the motivic construction emphasizes the leading tone and the dominant harmony. See Example 39.

This highly dissonant collection resolves to I in the section marked Ritorno (rehearsal H), where the opening statement is a repetition of statement A1. The B6 opening, E (pedal), B, F#, A, D# resolves to E (pedal), E', B', D#'. In other words the D# is held over as an unresolved suspension creating a major seventh chord on the tonic. See Example 40.

The harmonic resolution is the event which initiates the third section. This section is identified as a recapitulation because of the repetition of statements from the A section. (See Example 40.)

<u>Recapitulation</u>

The third large division begins at rehearsal H (Ritorno) and consists of eight measures of music. There are three phrases consisting of statements and echoes, of which the first, C1, is nearly identical to statement A1. The three phrases are followed by a two measure coda based on the final note pair of echo C3. After the triplet figuration comes to a halt, there is a restatement of the very first gestures of the movement.
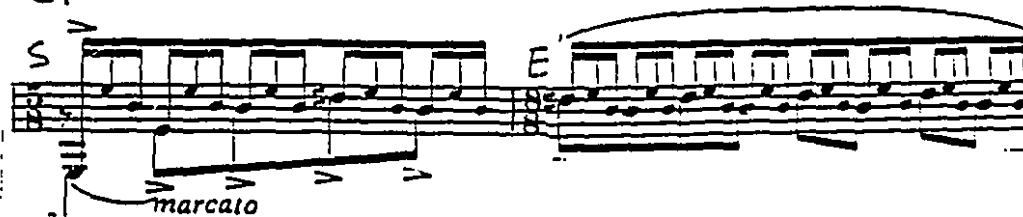
Examples 39 and 40

EXAMPLE 39
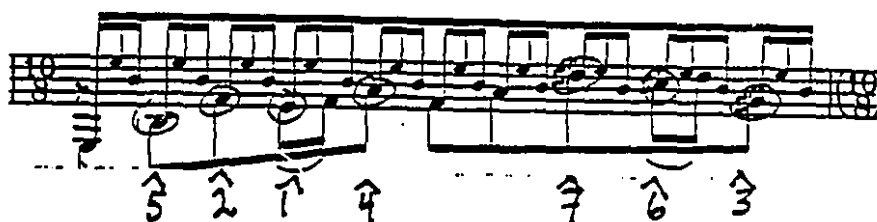
EXAMPLE 40

The highly dissonant content of phrase B6 resolves to material which emphasizes the tonic harmony. The return to tonic harmony and short gestures clearly marks the partition between the B section and the recapitulation. The return to the beginning of a developmental process is signalled by the reappearance of the A core motive in its short form. The C section is considerably shorter than the A section. I will discuss the differences in phrase structure that permit the C section to balance with the A section in spite of the significant difference in length.

Phrase C1

Statements C1 and A1 are identical five beat gestures. The echoes vary in the number of repetitions of the same note pair: echo A1 is six beats long (2 + 2 + 2) while echo C1 is eight beats long (2 + 2 + 2 + 2). Thus the overall length of statement C1 is two beats longer than statement A1. [(5 + 6) vs. (5 + 8)]

The first echo of the A section was only six eighths long while the other A echoes were eight eighths in duration. The difference in lengths of echoes A1 to A5 stems from the practice of repeating the final binary group of each statement as the initial group of its echo. When the statements of the A section have four-note concluding groups the echoes have four-note initiating groups.

Echo C1 breaks the pattern established in A1. Although there is a two note concluding binary group in statement C1 the echo begins with a repetition of the final binary pair of the statement followed by the now routine double repetition of the final note pair. Repetitions of note pairs within the echoes create a sense of stasis or stillness before the new beginning of the next statement. If the echo is longer there is a greater diminution of energy and motion. The dissipation of energy in this first echo of the recapitulation gives the whole phrase a more static quality. Thus a sense of

conclusion is obtained with fewer phrase repetitions than in the previous two sections.

Phrase C2

Phrase C2 is an exact repetition of the second statement and echo of the A section. The statement is seven eighths long, consisting of a three note opening motive and a binary concluding group of four eighths duration. Note that in phrase A2 the process of phrase growth was manifest in the length of both the statements and echoes. In the C section the length of the second statement is greater than that of the first but the length of the echoes remains constant. See Example 41.

Phrase C3 and Coda

The third phrase of the C section contains an exact repetition of the third phrase of the A section: eight beat statement and eight beat echo. (I call the measure following statement C1 the echo even though it does not carry the indication "(eco)" as in phrase A1.) The dynamic marking "p sub." is in place at the beginning of echo C1 followed by "Rall. e dim. _ _ _ _ _ _." There are two more measures which continue the repetition of the the final note pair. These two measures extend the length of the echo.

It is Brouwer's practice to notate each statement and each eco as a complete measure. At the end of the C section the third echo contravenes this practice. The additional measures repeat the same note pair as in the last four beats of the first measure of the echo. Thus echo C3 has an initiating group of four eighths followed by three groups with a total duration of fourteen eighth notes: 4 + 10 (4 + 4 + 2). See Example 42.

Examples 41 and 42

EXAMPLE 41
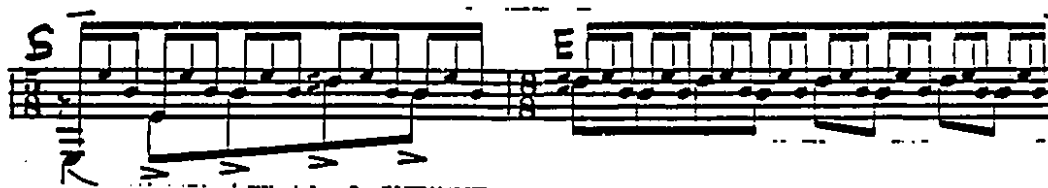
EXAMPLE 42

Statement and Echo lengths of the C section:

	Statement			Echo		
	Opening		Continuation	Opening		Continuation
C1	3	+	2	4 (2+2)	+	4 (2 + 2)
C2	3	+	4	4	+	4 (2 + 2)
C3	3	+	6 (4 + 2)	4		+ 10 (4+4+2)

Statement and Echo lengths of the A section:

	Statement			Echo		
	Opening		Continuation	Opening		Continuation
A1	3	+	2	2	+	4 (2 + 2)
A2	3	+	4	4	+	4 (2 + 2)
A3	3	+	6 (4 + 2)	4	+	4 (2 + 2)
A4	3	+	8 (4 + 4)	4	+	4 (2 + 2)
A5	3	+	12 (6 + 6)	4	+	4 (2 + 2)

Echoes die away into stillness; the longer an echo reverberates the more gradual the rate of decay. When silence or stillness is attained after a long decay new energy is necessary to begin another musical gesture. Consequently it is harder to begin a new gesture after a long echo.

The comparison of phrase structures in the A and C sections demonstrates differences in the length of statements in the A section without differences in the length of the echoes. In the C

section there is a repetition of the expansion in the statement
length accompanied by longer echoes in the first and third phrase;
the third phrase is the one in which the echo is treated
naturalistically--many repetitions fading into silence (or
liquidation of the motive, which has the same effect). This
difference permits the C section to be shorter than the A section
while having a concluding function.

The Epilogo (lentamente) at letter I ends the movement with
gestures taken from the section marked "Presage" at letter B. The
rearrangement of the motives in the Epilogo is significant. There
are three different arpeggiated chords in "Presage": first, a chord
fifths and fourths, E, B F#, B and E; second, a chord that introduces
C#, G and D#; third, a chord that introduces B flat. See Example 43.

These three chords are presented in reverse order in the
Epilogo, as if to reverse the process that takes place at the
beginning of the movement. The gradual removal of notes foreign to
the E chord is a process which is consistent with a consonant ending.
Although the movement ends in a peaceful state the emphasis on the
notes B and F# suggest the dominant function. The movement's final
"cadence" is then slightly inconclusive. The listener has been
directed towards the silence, the blank slate of the opening of the
piece.

The analytic strategy used here can be described as motivic
analysis: I have looked for repetitions and varied repetitions. I have
looked for and found patterns of metric change. Many individual
measures are ambiguous when viewed out of context. The performer
has the opportunity to choose accents and nuances which will
project groups that illustrate Brouwer's patterned variation.

Example 43

Footnotes

[1] I. Bengtsson (1961), pp. 56-59.

[2] Joel Lester (1986), pp. 4-5. Lester presents the contrast between these same authors in summary fashion.

[3] The argument is based on the assumption that time consciousness is dependent on activity. Changes in pitch, timber, dynamics and articulation mark the passage of time. The distinction made by Charles J. Smith (1977) p. 150) is between time and time-articulating events.

[4] Wallace Berry (1987), p. 301.

[5] Carl Schachter(1980), pp. 197-233

[6] Grosvenor Cooper and Leonard Meyer (1960), p. 1.

[7] Joel Lester, p. 5.

[8] Cooper & Meyer, p. 8.

[9] Cooper and Meyer, p. 2.

[10] Cooper and Meyer, p. 2.

[11] Cooper and Meyer, pp. 2-3.

[12] Cooper and Meyer, p. 3.

[13] Cooper and Meyer, p. 3.

[14] Cooper and Meyer, p. 3.

[15] Cooper and Meyer, p. 3.

[16] This description can be rephrased in the following manner: a series of stimuli are organized by the listener into a temporally equidistant series; the listener tends to continue to organize stimuli into the same series until distances between the stimuli vary to a degree sufficient

to break the series; if the series does achieve a second instance of sequential temporal regularity the listener interprets (retrospectively?) the unequal section as tending towards the re-establishment of the series; finally, the listener performs a rounding off activity in order to hear the gradual re-establishment of the series.

[17] Cooper and Meyer, p. 3.

[18] Cooper and Meyer, p. 4.

[19] Cooper and Meyer, p. 6.

[20] Cooper and Meyer, pp. 7-8.

[21] Cooper and Meyer, p. 8.

[22] Cooper and Meyer, p. 9.

[23] Cooper and Meyer, p. 3.

[24] Leonard Meyer (1956), p. 102.

[25] Leonard Meyer, p. 102.

[26] Leonard Meyer, pp. 102-103.

[27] Cooper and Meyer, p. 13, in particular the section dealing with how changes in duration influence accentual patterns.

[28] Cooper and Meyer, p. 9.

[29] Cooper and Meyer, p. 10.

[30] Cooper and Meyer, p. 4.

[31] Cooper and Meyer, p. 10.

[32] Cooper and Meyer, p. 111.

[33] Carl Schachter (1976), pp. 306-307.

34 Wallace Berry (1987).

35 Berry, p. 317. I assume that "musical effect" in this context of a discussion of meter refers to a metrical musical effect.

36 Berry, p. 317.

37 Berry, p. 317.

38 Cooper and Meyer, p. 5.

39 Berry, p. 303.

40 Berry, p. 319.

41 Berry, p. 305-306. The following is a paraphrase of Berry's description of the four divisions of rhythm.

42 Berry, p. 305.

43 Berry, pp. 305-306.

44 Berry, p. 310.

45 Berry, p. 306.

46 Berry, p. 320-323. The six paragraphs numbered from p. 320 state the grouping characteristics listed by Berry.

47 Berry, p. 320.

48 Berry, p. 322.

49 Berry, p. 326.

50 Berry, p. 326.

51 Joei Lester (1986).

52 Lester, pp. 5-6.

53 Lester, p. 53.

54 Lester, p. 53. The dual requirements are necessary for the existence of meter; Lester does not address the question of whether regularity of pulses can exist without grouping occurring; nor does he state whether such an undifferentiated pulse can exist in a musical context. These are points addressed by Cooper and Meyer. The two types of information necessary for meter, pulse and a grouping of the pulse, are described by Yeston.

55 Lester, p. 45.

56 Lester, p. 51.

57 Lester, p. 51. Lester uses the term primary metric level in the same way as Cooper and Meyer.

58 Lester, p. 46.

59 Lester, p. 159.

60 Lester, pp. 160-161.

61 Lester, p. 158

62 Lester, p. 163

63 Lester, p. 163.

64 Lester, p. 13.

65 Lester, p. 14.

66 Lester, p. 14.

67 Lester, pp. 13-16.

68 Lester, p. 16.

69 In all cases music perception arises from an interaction between a musically competent person and the musical signal. The signal does not have to exist as soundwaves. The musical signal may be an idea or mental conception. When I hear something in my head it is as much a musical signal as something I hear performed. In the case of the music perceiver reading or performing a score certain parameters of accent are conveyed by notation but the performance is created by the reader or performer. The "initiative events" required for accents can be acoustic or psychological phenomena.

70 Lester, p. 16.

71 Eric F. Clarke (1985).

72 Berry, p. 319. "In situations of altered interval of accentuation, meter*fluctuates*, and the idea of fluctuant *as opposed to regular meter* is absolutely necessary to the understanding of music other than that of unequivocally regular proportions. It is on this basis that the assertion is made that in highly fluctuant contexts like those of recent styles meter is not extinguished, but assumes a character more (often far more) fluctuant than those of certain traditions."

73 William E. Benjamin (1984), pp. 355-413.

74 Benjamin, pp. 359-360.

75 Benjamin, p. 359.

76 Benjamin, p. 378-9.

77 Lester, pp. 22-36.

78 Benjamin, p. 369.

79 Benjamin, pp. 364-365.

80 Benjamin, p. 360.

81 Benjamin, p. 375.

82 Benjamin, p. 376.

83 Benjamin, p. 382.

84 Benjamin. p. 373.

85 Benjamin, p. 376.

86 Benjamin, pp. 376-77.

87 Benjamin, p. 359.

88 Benjamin, p. 363.

89 Benjamin, p. 379.

90 Benjamin, p. 368.

91 Benjamin, p. 366. The experiments by Eric Clarke and others show that metric perception is based on sub-metric variations in duration as well as dynamic and articulative nuances.

92 Benjamin, p. 375.

93 Benjamin, p. 376.

94 Benjamin, p. 392. This specificity of definition contrasts with the vagueness of the concept of "metric way of thinking."

95 Benjamin, p. 358.

96 Benjamin, p. 362.

97 Benjamin, p. 362.

98 Benjamin, p. 390.

99 Benjamin p. 392.

100 Benjamin, p. 392.

101 Benjamin, p. 305.

102 Benjamin, p. 408.

103 Fred Lerdahl and Ray Jackendoff. (1983).

104 Lerdahl and Jackendoff (1983), p. 37, Grouping Well-Formedness Rule 1: "Any contiguous sequence of pitch-events, drum beats, or the like can constitute a group, and only contiguous sequences can constitute a group."

105 Lerdahl and Jackendoff, p. 37.

106 Lerdahl and Jackendoff, pp. 45-56.

107 Lerdahl and Jackendoff, p. 13. "The most fundamental characteristic of musical groups is that they are heard in a hierarchical fashion."

108 Lerdahl and Jackendoff, p. 18.

109 Lerdahl and Jackendoff, p. 20.

110 Lerdahl and Jackendoff, p. 30.

111 Lerdahl and Jackendoff, p. 21.

112 Benjamin (1984), p. 392.

113 Benjamin (1984), p. 361-362.

114 Alice Singer, "The metrical structure of macedonian dance,"*Ethnomusicology*, September 1974.

115 Lerdahl and Jackendoff, pp. 43-52. The rules prefer (1) to avoid very small groups, (2) groups in which the proximity of events to each

other is greater than the proximity of groups to each other, (3) groups separated by leap or change in dynamic, articulation or speed, (4) large groups which are formed by intensification of the effects of GPR's 2 and 3, (5) groups formed in equal lengths synmmetrically, (6) groups formed because of parallel structure and (7) groups resulting in more stable time-span and/or prolongational reductions.

116 Jonathan D. Kramer (1988).

117 Kramer, chap. 11, pp. 322-374. The discussion which Kramer titles "The Perception of Musical Time" hinges on whether listeners can perceive durations as measured in absolute terms. Estimates of duration or the ratios of durations are referred to as "time perception" when a more precise term would be "duration perception," if it is specified that duration refers to some objective measurement.

118 Kramer, p. 82.

119 Benjamin avoids the contradiction by ascribing accent to time points or initiations.

120 Kramer, p. 82, citing Eric Clarke.

121 Berry, p. 335. "*Accent* is a theoretical term denoting the relative projective, qualitative strength of a given impulse as compared with others which precede and follow it and, with it, form a metric unit at a given level." Also, p. 318, "Meter is that aspect of structure articulated as accent-delineated groupings within the attack (event) sequence, and the proportional interrelations of such groups at all levels."

122 Kramer, p. 83.

123 Kramer, p. 94

124 Kramer, p. 94.

125 Kramer, p. 86.

126 Lerdahl and Jackendoff, p. 17.

127   Lerdahl and Jackendoff, p. 18.

128   Kramer, p. 88.

129   Kramer, p. 86.

130   Kramer, p. 87.

131   Kramer, p. 96 & p. 90.

132   Kramer, p. 97.

133   Kramer, p. 102.

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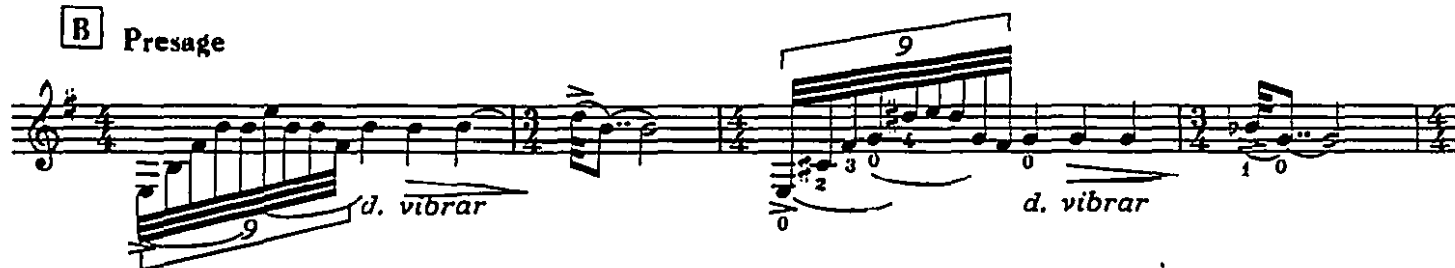# II. La Fuite des Amants par la Vallée des Échos

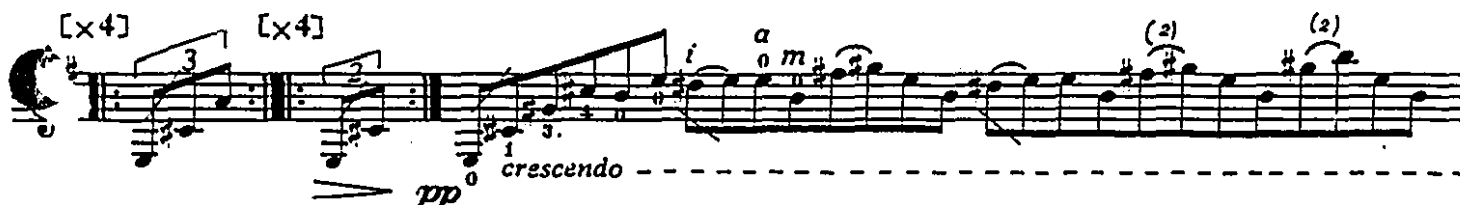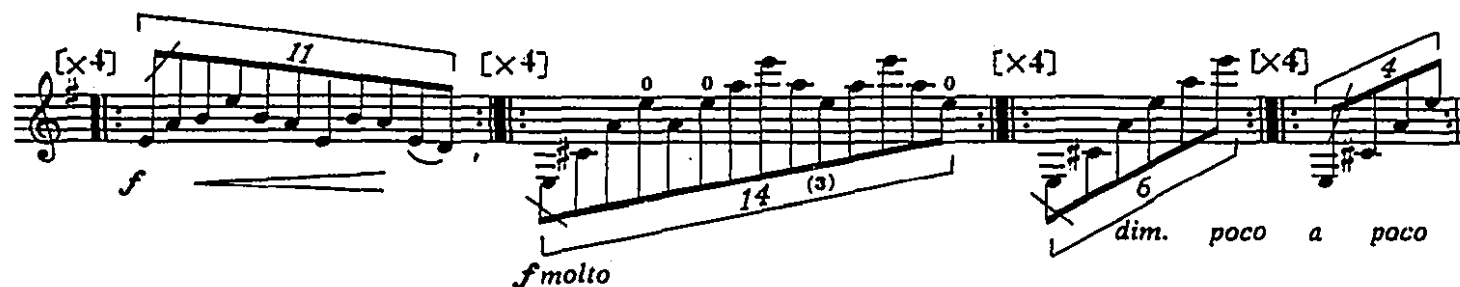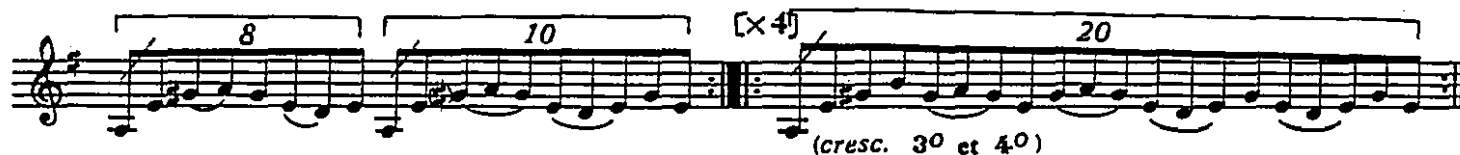## *LA HUIDA DE LOS AMANTES POR EL VALLE DE LOS ECOS*

LEO BROUWER
(1981)

I Epilogo (lentamente)

III. Ballade de la Demoiselle Amoureuse
BALLADA DE LA DONCELLA ENAMORADA

LEO BROUWER
(1981)

Moderato