FORM AND PROCESS

IN MORTON FELDMAN'S SPRING OF CHOSROES (1977)

by

TERRENCE JACK PAYNTER

B.Mus., University of Saskatchewan, 1978

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF

THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF ARTS

in

THE FACULTY OF GRADUATE STUDIES

(Department of Music)

We accept this thesis as conforming

to the required standard

THE UNIVERSITY OF BRITISH COLUMBIA

August 1996

In presenting this thesis in partial fulfilment of the requirements for an advanced degree at the University of British Columbia, I agree that the Library shall make it freely available for reference and study. I further agree that permission for extensive copying of this thesis for scholarly purposes may be granted by the head of my department or by his or her representatives. It is understood that copying or publication of this thesis for financial gain shall not be allowed without my written permission.

Department of MUSIC

The University of British Columbia
Vancouver, Canada

Date JULY 24/96

DE-6 (2/88)

ABSTRACT

The music of Morton Feldman has been noted for the sense of stasis and linear discontinuity it projects. However, recent analytic studies have shown that linear processes direct the horizontal dimension. This thesis investigates process and form in Feldman's Spring of Chosroes (1977) by segmenting the piece into discrete units called modules that are affiliated by coincident structural features and by developmental relationships. The interconnected modules, particularly those that share aspects of pitch, rhythm, and register, articulate form.

The formal plan of the piece is ABA': section A' engages the modular structure of section A, and parallelisms in section B create palindromic relationships. Two sets of modules, each of which are connected by developmental processes, comprise large-scale frameworks that reflect the ternary sectional structure and the palindromic design of section B. Processes of rhythmic deceleration in sections A and A' reinforce the sectional design in that the initial modules in each section generate momentum that is gradually slowed by transformations of their rhythm patterns.

The music is structurally weighted toward its two central modules. Each module bisects a set of palindromically related modules, and together they bisect the piece as a whole.

Organic and inorganic processes unite all levels of form and they connect local and large-scale structures. Effects of disconnectedness, then, are seen to be surface phenomena that arise from the interaction of disparate, ordered structures.

TABLE OF CONTENTS

LIST OF EXAMPLES

LIST OF FIGURES

ACKNOWLEDGEMENT

I wish to thank my advisor, John Roeder, for his kind patience, and for his invaluable comments from which I learned much.

I also wish to thank William Benjamin for his grace, and for guiding the initial development of the concepts that are central to this thesis.

Portions of the score are reprinted with the express permission of European American Music Distributors Corporation.

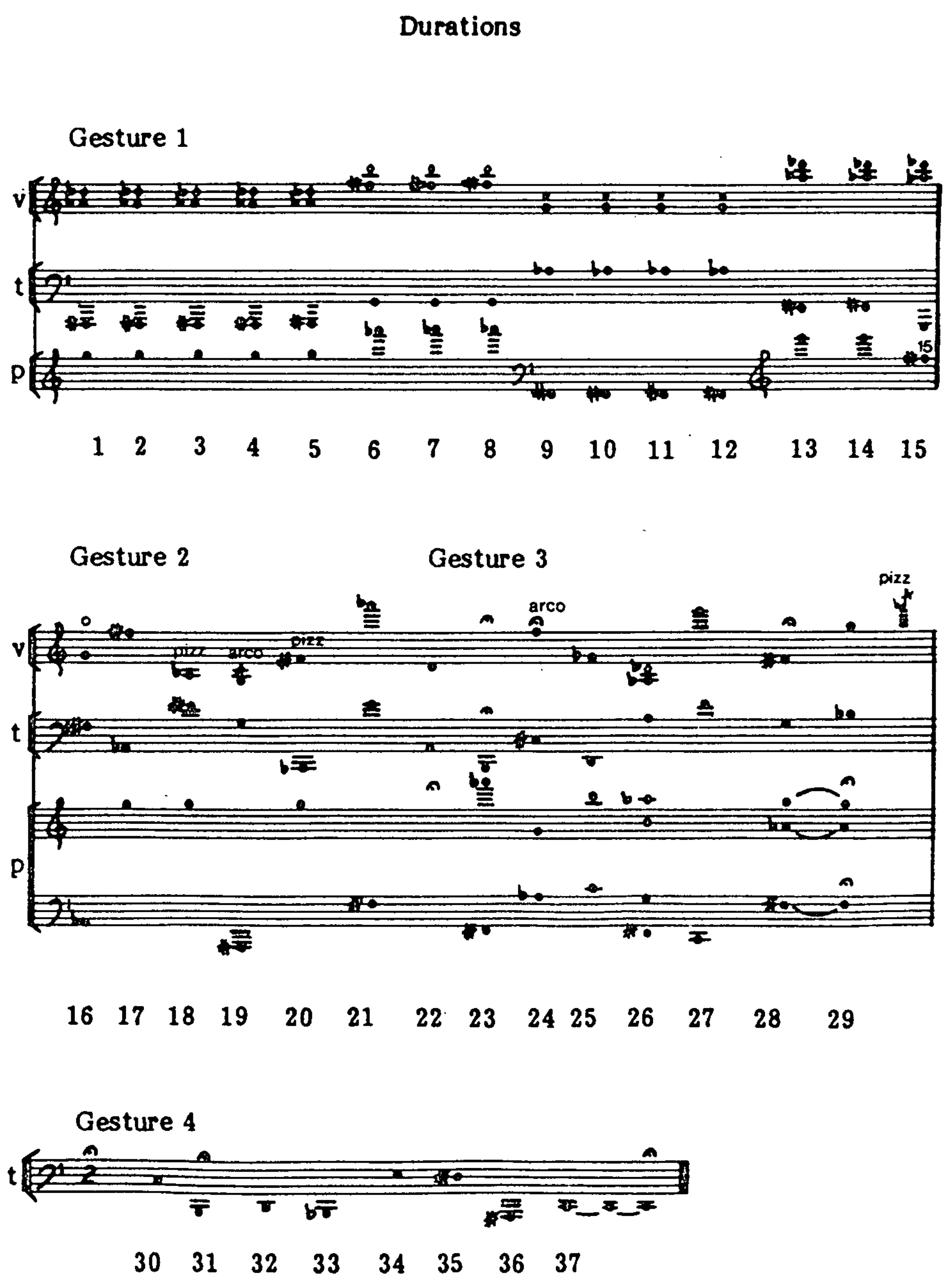
INTRODUCTION

Much has been written about the vertical dimension and seeming linear discontinuity in the music of American composer Morton Feldman (1926-1987). The composer himself emphasized these features in some of his essays and lectures,[1] but there is a growing body of evidence that disposes us to regard these as merely superficial characteristics of the music, and that exposes underlying linear processes that articulate formal structures. This study represents a step in the development of an analytic approach to Feldman that is concerned with process and form. Since it is hoped that the ideas that emerge will provide a point of departure for future studies, it is appropriate to begin by acknowledging two earlier analyses concerned with linearity and form in this music.

In "Toward an art of Imminence, Morton Feldman's Durations 3, III,"[2] Thomas DeLio traces the transformation of a vertical texture into a purely linear one (Figure 1). In gesture 1, three pitch classes, F#, G and A♭, are combined in four distinct vertical spacings, each of which distributes its pitches among upper and lower registers and leaves the middle register empty. A suggestion of rhythmic momentum exists in that all four chords are repeated but the second, third, and especially the fourth are repeated less often than the first. In this way chord formations change more

FIGURE 1

(reproduced from Delio p.468)



frequently as the passage proceeds.

Gesture 2 contains a series of chords made with the same three pitch classes whose spatial formations change with each attack. No pitch class appears consecutively in the same register and previously vacant registral spaces are utilized. Gesture 2 retains pitch and register associations with gesture 1 but has a degree of textural fluidity that makes it seem less "static."

In gesture 3 new pitch classes are added to the original three. More importantly, "the instruments begin to take on new, more independent roles as a result of which the texture starts to fragment" (474). In gestures 1 and 2, simultaneities were formed by all three instruments but in gesture 3 the piano assumes a larger vertical role, variously playing 2, 3 and 4 pitches together. At the same time, the tuba's pitches (virtually all new ones) emerge as a foregrounded linear construct against the vertical background provided by the violin and piano. DeLio divides the tuba line into two tetrachords and shows that their intervallic structures are generated from the initial trichord of the piece. "Thus, from the original three note cluster unfolds an independent, highly structured linear formation" (476) that projects into the foreground as the vertical texture recedes into the background.

In gesture 4, the tuba melody is unaccompanied. Intervallic connections exist between its tetrachords and the foreground/

background structures in gesture 3, the original trichord, and the low register notes in gesture 1. In this way, gesture 4 not only extends the music before it, it expands in a new direction and provides closure by virtue of its association with gesture 1.

DeLio has shown us a four-stage process in which an essentially static, vertical texture loses cohesion, and is relegated to the background by an emerging melodic line that ultimately supersedes it. This would suggest that the piece is linearly conceived, and that verticality exists as a textural phenomenon whose shape--indeed whose very existence--is determined by underlying linear forces in much the same way that the surface features of a river are altered by underlying currents. Disconnectedness appears as a surface effect caused by local perturbations in register, instrumentation, etc.

In an unpublished paper entitled, "Organic Construction in Music of Morton Feldman,"[3] Stephen Johnson takes exception to the "overemphasis on the stationary" in the literature. Instead, he seeks to uncover linear and organic connections in the domains of texture, timbre, harmony, and pitch space in some sections of <u>For Frank O'Hara</u> (1972). Johnson's choice of segments is based on exhibited differences in texture, timbre, and position in the pitch field.

He begins by examining harmony in section 1 and points out that chord repetitions generate unity while organicism is demonstrated in a series of six chords, the first five of which are subsets of the sixth. Variation procedures are applied to some aspects of chords--for example, the clustered pitches of a chord are arranged in a given spatial formation. In its variant form, the intervallic relationships in the clusters and their relative vertical positions are preserved but the sizes of the spaces between them are changed. In Johnson's example 3 we see an inversionally symmetrical formation and example 4 shows the return of an earlier spacing "just beyond the halfway point" of the piece.

Feldman was keenly interested in abstract expressionist painting and appears to have incorporated at least one of its principles into his music--"the principle of positive and negative space." Simply put, the objects in a picture represent positive space and the areas that separate them, negative space. In his analysis, Johnson treats pitches as positive space and the vertical and horizontal spans between them as negative space. He goes on to say that negative spaces do not remain so for long; they soon become filled-in positive spaces and vice versa in local and extended passages. It seems that Feldman, "like a true abstract expressionist, obeyed the basic laws of balance."

In his discussion of section two, Johnson describes "crystallization," a process by which the enmeshed elements of earlier material become distinct, taking on a "sharper focus." In his example 6, he shows that three distinct timbres are associated with three specific harmonic formations: "What has happened, in effect, is that timbres which have mainly blended together at the beginning suddenly coagulate into distinct, non-blended groups."

The process of "crystallization" demonstrates Feldman's approach to organicism. "The stages progress from an initial state of flux, in which the material has not fully taken shape; through a central, prolonged moment of clarity, in which the material crystallizes into distinct relationships; to a final stage of disintegration." Although the "crystallized" relationships in stage two begin to break down in the final stage, they retain aspects of earlier spatial, timbral and harmonic structures.

Johnson demonstrates that the emergence of timbral structures in section 2 is prepared by chords early in section 1. The first three chords of the piece blend timbres that exhibit differing rates of decay, but a few measures later, the timbres are disentangled to form chords that decay uniformly.

Regarding the third and fourth sections, Johnson observes that "incremental alterations" in the repeated material of a passage do not disrupt its continuity. As well, he identifies in a "vertical" passage some "linear-function" pitches that are directly linked to an evolving melody line. In the final section, the foregrounded melody forms a harmonic, textural and timbral "point of culmination" that unfolds a prevalent set type in the piece (set class 4-1) and fills in a previously vacant spatial area. In summary, Johnson's analysis presents a variety of processes and relations that belie the view that Feldman's music is made from vertical, random events.

Two procedures in Durations 3, III and For Frank O'Hara are especially important to form. The crystallization process generates a sectional three-part structure in O'Hara that is supported by distinct changes in texture. Durations may be understood to begin in the second, "crystalline" stage and therefore exhibits two types of vertical texture. Secondly, each piece contains a line that emerges from the third stage, in which vertical structures "disintegrate," and becomes a point of focus for the entire piece. In the final passage of Durations, the line is unaccompanied and the disintegration of vertical texture complete. In these two pieces linear structures are more strongly defined and vertical structures are gradually eroded as the music proceeds.

Feldman has characterized his approach to composing his later works as "continually rearranging the furniture in the same room."[4] If the "furniture" is analogous to a repertoire of compositional techniques, his statement implies that he uses the same procedures in his pieces to various structural ends. Thus, in O'Hara and Durations we see two distinct formal structures generated by crystallization, and two culminating melodic lines with different structural associations to the textures from which they emerge.

Feldman was generally enigmatic when discussing his music but implied in some statements that he conceived it in a linear way.[5] By "linear information" he seems to mean material with inherent directional tendencies such as dissonant intervals, seventh chords etc. exhibit in tonal music. Although his information may not be pre-compositionally linear, the two structures we have seen here that were built with that "information" have profound linear dimensions.

DeLio and Johnson recognize the importance of the vertical aspect of Feldman's music but they show us pervasive evidence of linear process as well. That Feldman implied the existence of both supports this view.

CHAPTER ONE

PATTERNS AND MODULES

In his writings Feldman relates process and form to the concepts of "pattern" and "module." We shall see that patterns are the basic structural units in Feldman's music. A passage generated by repetitions of a pattern is a "module." The purpose of this chapter is to define patterns and modules and examine the ways that Feldman treated them, using, as an example, Spring of Chosroes (1977) for violin and piano.

Feldman was deeply influenced by the visual arts and often drew analogies in his writings and lectures between aspects of painting and rug designs and his music. His conception of the pattern was inspired by the highly colorful, asymmetric designs of Turkish rugs.

> The color-scale of most nonurban rugs appears more extensive than it actually is, due to the great variation of shades of the same color (abrash)--a result of the yarn having been dyed in small quantities. As a composer, I respond to this most singular aspect of a rug's coloration and its creation of a microchromatic overall hue. My music has been influenced mainly by the methods in which color is used on essentially simple devices. It has made me question the nature of musical material. What could best be used to accommodate, by equally simple means, musical color? Patterns.[1]

He goes on in this passage to discuss patterns in three compositions--Why Patterns, String Quartet, and Spring of Chosroes. In his comments regarding the first he indicates that slight variations in a pattern do not alter its identity; instead, they generate surface asymmetries analogous to the irregularities of shape and color in rug patterns.

> Why Patterns is a composition for flute, glockenspiel, and piano consisting of a large variety of patterns. The work is notated separately for each instrument and does not coordinate until the last few minutes of the composition. This very close, but never precisely synchronized, notation allows for a more flexible pacing of three distinct colors. Material given to each instrument is idiomatically not interchangeable with that of the other instruments. Some of the patterns repeat exactly--others, with slight variation either in their shape or rhythmic placement. At times, a series of different patterns are linked together on a chain and then juxtaposed by simple means.[2]

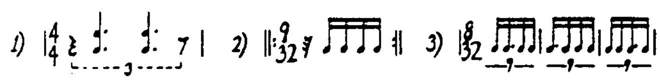
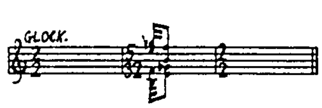
Feldman implies that patterns are independent entities which, when strung together, have equal structural importance.

> The most interesting aspect for me, composing exclusively with patterns, is that there is not one organizational procedure more advantageous than another, perhaps because no one pattern ever takes precedence over the others. The compositional concentration is solely on which pattern should be reiterated and for how long, and on the character of its inevitable change into something else.[3]

One may therefore expect to find a "flat" structure, void of hierarchical relationships, in a composition made "exclusively with patterns." It will be shown that this is, in fact, not the case. The design of a given pattern is not in and of itself predisposed to any structural purpose; however, some patterns share pitch classes, rhythmic elements, register, contours (etc.) and are therefore "connected."

Larger passages formed by repeated patterns are called modules. Local and large-scale connections between modules define formal structures. We will see that large-scale connections, especially those that are made with two or more connective elements, have deeper structural meanings than local connections.

Feldman goes on to describe two types of patterns.

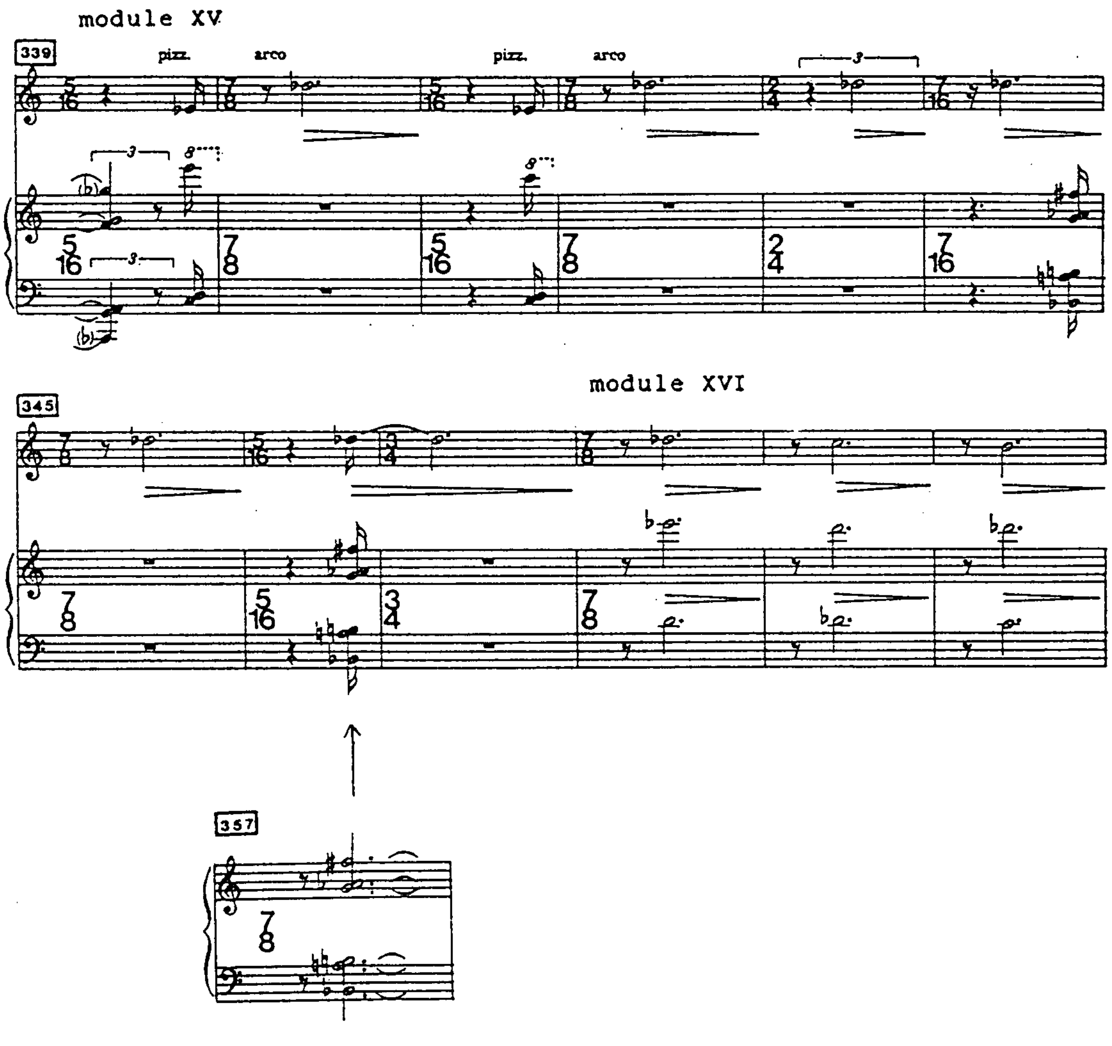
> I enjoy working with patterns that we feel are symmetrical (patterns of 2, 4, 8, etc.) but present them in a particular context:
>
> 
>
>
> Example 1 is characteristic of a vertical pattern framed by silent beats; in this instance the rests on either end are slightly unequal. Linear patterns are naturally more ongoing, and could have the "short breath" regularity of example 2 or anticipate a slight staggered rhythmic alteration such as in example 3. Another device I use is to have a longish silent timeframe that is asymmetrical; in this instance, with a quixotic four-note figure in the middle:
>
> 
>
>
> or a symmetrical silent frame around a short asymmetric measure:[4]
>
> 
>
>
> Repetitive chordal patterns might not progress from one another, but might occur at irregular time intervals in order to diminish the close-knit aspect of patterning; while the more evident rhythmic patterns might be mottled

> at certain junctures to obscure their periodicity. For me patterns are really self-contained sound-groupings that enable me to break off without preparation into something else.[5]

The pitches in vertical patterns are combined in vertical formations (dyads, trichords, etc.) that are usually repeated, and in linear patterns the pitches are disposed horizontally. In Spring of Chosroes, for example, vertical patterns are found in the piano (measures 1-27) and violin (measures 58-63), and measures 219-228 contain a linear pattern. Most patterns in this piece fall into one or the other of these two categories but some patterns embody aspects of both; for example, in measures 1-12 (violin), vertical sonorities are incorporated into an otherwise predominantly linear design.

Feldman's characterization of patterns as "self-contained sound-groupings that can break off into something else" appropriately describes abrupt changes between some patterns in Spring of Chosroes (for example, measures 145-146 and 155-156) but other patterns contain "borrowed" elements that prepare for the arrival of subsequent patterns. Example 1 shows how the material of two adjacent modules is overlapped. Measures 340 and 342-347 contain D♭5 in the violin which anticipates the initial violin pitch of module XVI. In the measures surrounding measure 340 we see module XV which has as its pattern a discrete, brief tetrachord {C2, D2, E♭4, E7}. Initially rests separate this tetrachord from the D flats in the violin, but in measures 344 and 346

EXAMPLE 1



appear two chords that have the rhythm of module XV and the pitches and registral distribution of the hexachord that occupies measure 357 in module XVI. These chords cohabit the temporal space occupied by two D flats in the violin; thus, their rhythm and spatial organization extends module XV but their pitches prepare module XVI. In this way, the initial pattern (module XV) does "break off into something else" but it does not do so "without preparation."

Regarding <u>String Quartet</u>, Feldman discusses a passage that contains four juxtaposed patterns.

> In <u>String Quartet</u> there is an almost obsessive reiteration of the same chord--dispersed in an overlay of four different speeds:
>
> 
>
>
> The rhythmic structure of the block consists of four uneven bar lengths with four permutations that incorporate the instrumentation of the quartet. I must caution the reader not to take the barlines here at face value. This

> passage becomes rhythmically obscured by the complicated nonpatterned syncopation that results. Only after rehearsals, and by following the score, could I catch an individual [rhythmic] pattern as it crisscrossed from one instrument to another.[6]

A striking feature of this design is the transfer of rhythmic patterns between the four instruments, an underlying order that Feldman sought to discern in repeated hearings of the passage. In this instance he was not concerned with disconnected events but with ordered events which, when juxtaposed, generate the effect of randomness.

Regarding <u>Spring of Chosroes</u> Feldman states the following:

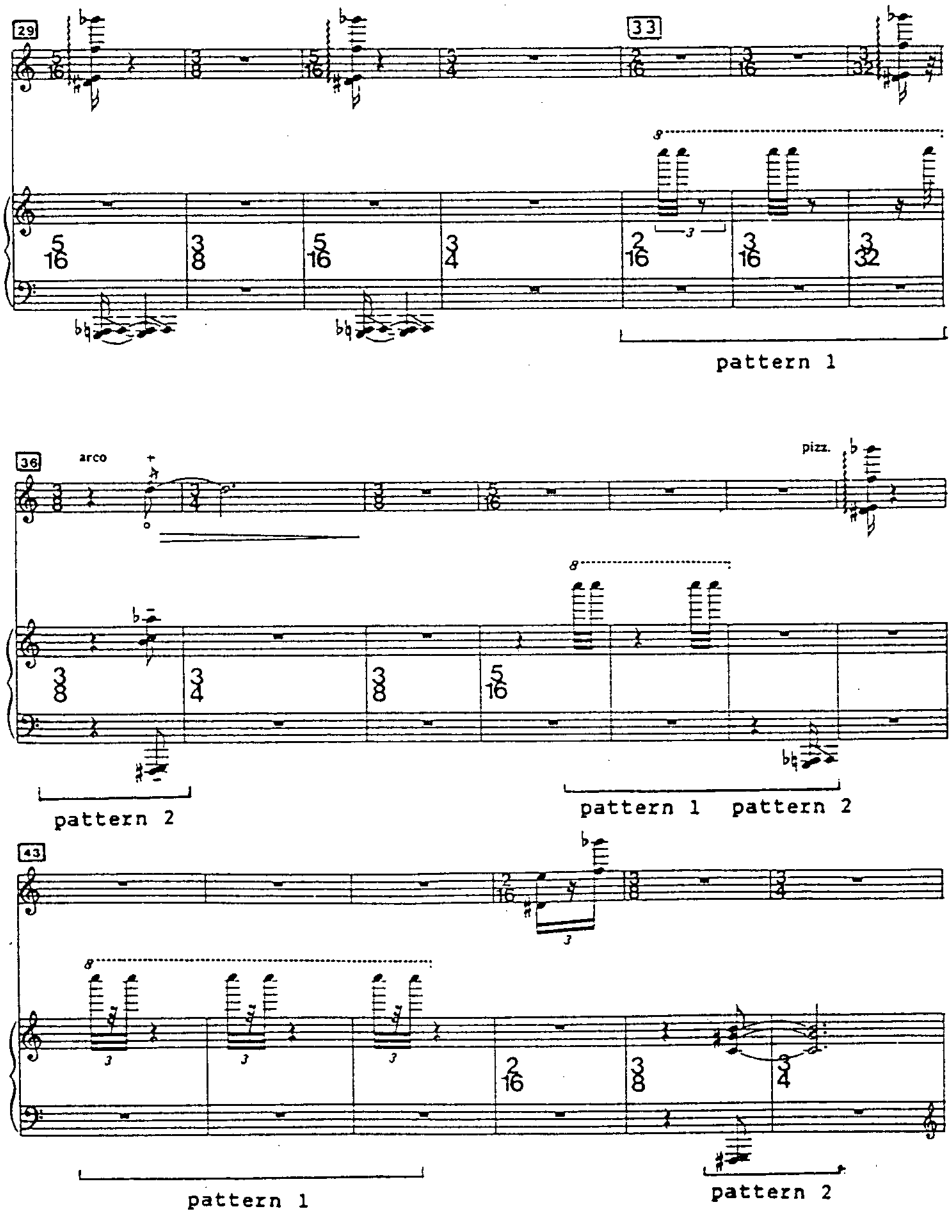
> In <u>Spring of Chosroes</u> for violin and piano, the "pattern" of one section consists of heightening the effect of the plucked violin figure (encompassing three pitches) by not establishing any clear-cut rhythmic shape except for its constant displacement within the quintuplet. This allows for five permutations, which are then juxtaposed in a helter-skelter fashion as the series continues. The use of three pitches against five uneven beats created, in my ears, a crippled constellation of "eight" as I was writing it. Against the violin's pattern, the piano has an independent rhythmic series of the same three pitches, played in a symmetric unit of four equal beats to a measure. This functions as still another deterrent to the natural propulsion of the quintuplet.

> A modular construction such as the above could be a basic device for organic development. However, I use it to see that patterns are "complete" in themselves, and in no need of development--only of extension. My concern is: what is its scale when prolonged, and what is the best method to arrive at it?[7]

Feldman's view that the passage encompasses three pitches (G#,A,B^{b}) assumes octave equivalence given that they appear in three distinct registers. This seems to contradict a statement made in his Darmstadt lecture, "Instead of the twelve-tone as a concept, I'm involved with all the 88 notes."[8] In Spring of Chosroes he is evidently involved with 12 pitch classes, not 88 pitches.

Slight variations in a pattern do not alter its identity because they do not alter its relation to other patterns. In measures 33-48 (Example 2), two patterns that characterize a passage in the piano exhibit changes in duration. Despite these changes the durations of pattern 1 are consistently "fast" relative to pattern 2; thus, specific changes do not alter the broad, "generic" relationship that exists between the two patterns. Small fluctuations in register, pitch and texture similarly do not change the larger, underlying

EXAMPLE 2

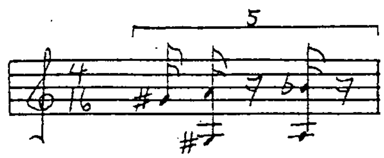

29
33
pattern 1
36
arco
pizz.
pattern 2
pattern 1
pattern 2
43
pattern 1
pattern 2

structure of the passage.

The order of events in a pattern may be varied somewhat without threat to its unity. In measures 291-300, five permutations of a single pattern are used to generate a module in the violin (Example 3). Within each pattern, five rhythmic events (three quintuplet sixteenth durations and two quintuplet sixteenth rests) are arranged four ways, three of which contain two dyads and one discrete pitch while the fourth contains a discrete pitch, a dyad and a trichord. The pitches of all four permutations are distributed among two registers. The fifth permutation has the rhythm of the first but the pitches of its three dyads are distributed in three registers. Thus, the more consistent aspects of the passage (durational values, ratio of attacks versus rests etc.) provide a coherence that offsets the destabilizing effect of the changing order.

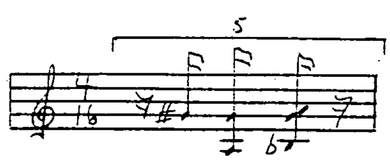
Pitch class and rhythm are the most important aspects of a pattern's identity because they are the ones that are varied least; therefore, in this analysis a pattern is understood to be a set of pitch classes associated with a set of one or more rhythmic elements. These pitch classes will be called "constituent pitch classes." A pattern may also contain pitch classes that are "borrowed" from other patterns; these may increase the number of pitch classes of a passage containing a pattern but do not increase the number of the pattern's constituent pitch classes. Other aspects of a pattern such as

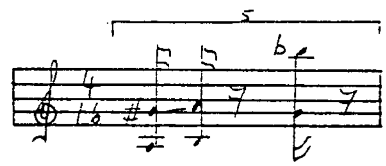
EXAMPLE 3

1


2


3

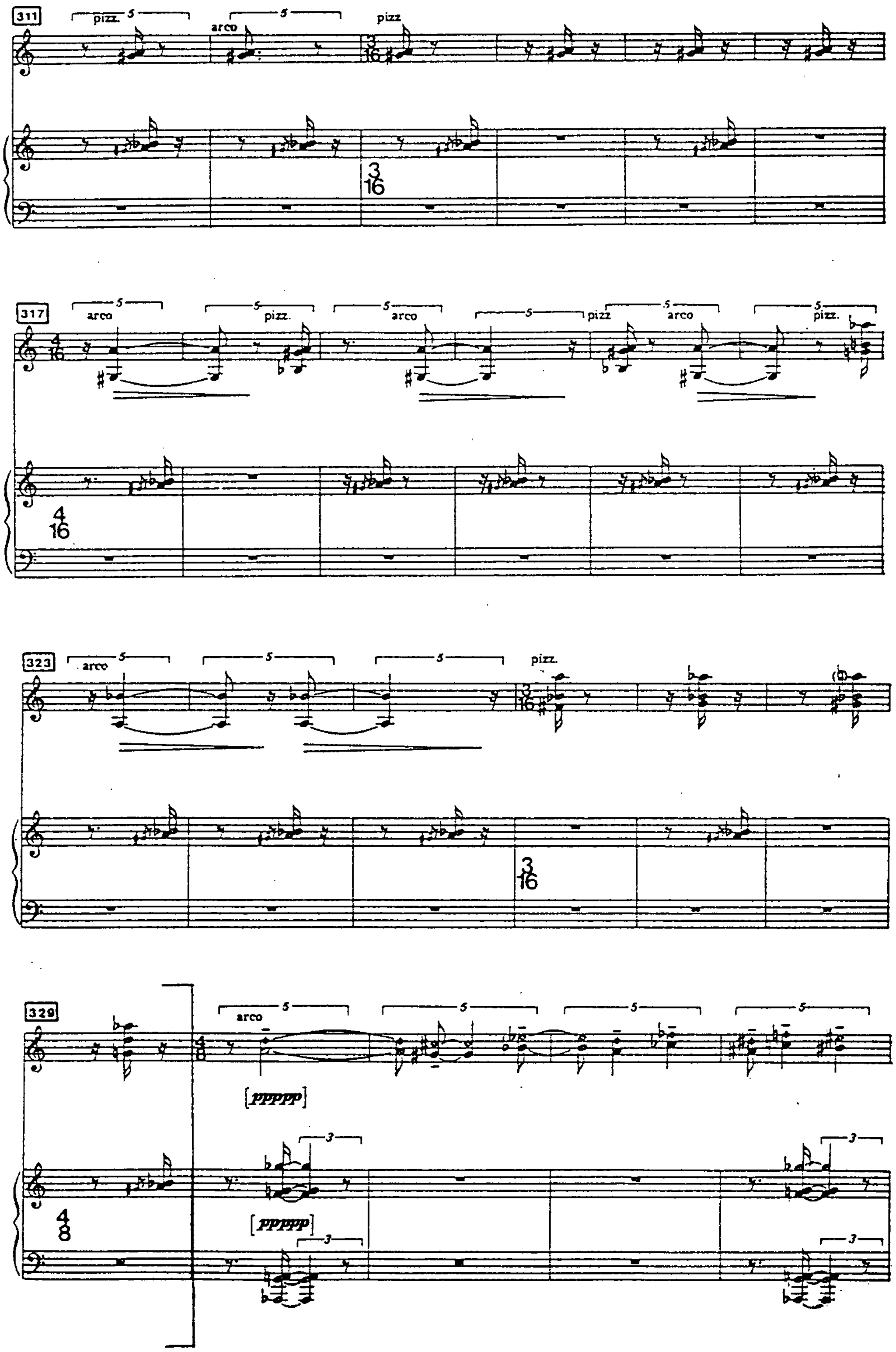

4


5


duration, register, the order and number of events, etc., may be varied, but not to an extent that threatens the pattern's identity.

Let us now turn to the concept of a "module." Feldman refers to measures 291-300 as a "modular construction." It is apparent from Example 4 that these measures are part of a

EXAMPLE 4

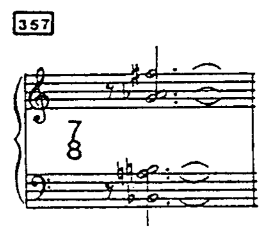

311
pizz.
arco
pizz
317
arco
pizz.
arco
pizz
arco
pizz.
323
arco
pizz.
329
arco
[ppppp]
[ppppp]

larger construct that extends to measure 329--permutations of the violin pattern are extended to measure 305 but its pitch classes are extended to measure 329, and the rhythm of the piano (discrete sixteenth-note durations variously placed on one of four beats in each measure) also extends to the latter measure. The measures cited by Feldman are the minimum necessary to demonstrate the five permutations of the violin pattern. Accordingly we will refer to any passage in which a pattern is repeated as a "modular construction."

The two essential elements of a pattern, and therefore of a module, are its pitch class content and rhythm. In general, a module begins when both elements have replaced those of the previous module and ends when each is replaced by a following module or when each is extended to its furthest point. Thus, when the pitch classes but not the rhythm of a pattern A are replaced by those of a subsequent pattern B, it is the furthest extension of the rhythm of pattern A that defines the end point of the module to which pattern A belongs. Similarly, if the rhythm but not the pitch classes of a pattern A is replaced by that of a subsequent pattern B, it is the furthest extension of the pitch classes of pattern A that defines the end point of the module to which pattern A belongs.

This principle is demonstrated by Example 5. Measures 339-347 contain a module consisting of a pattern A in which four pitch classes C,D,E♭,E are combined with a rhythm consisting

EXAMPLE 5

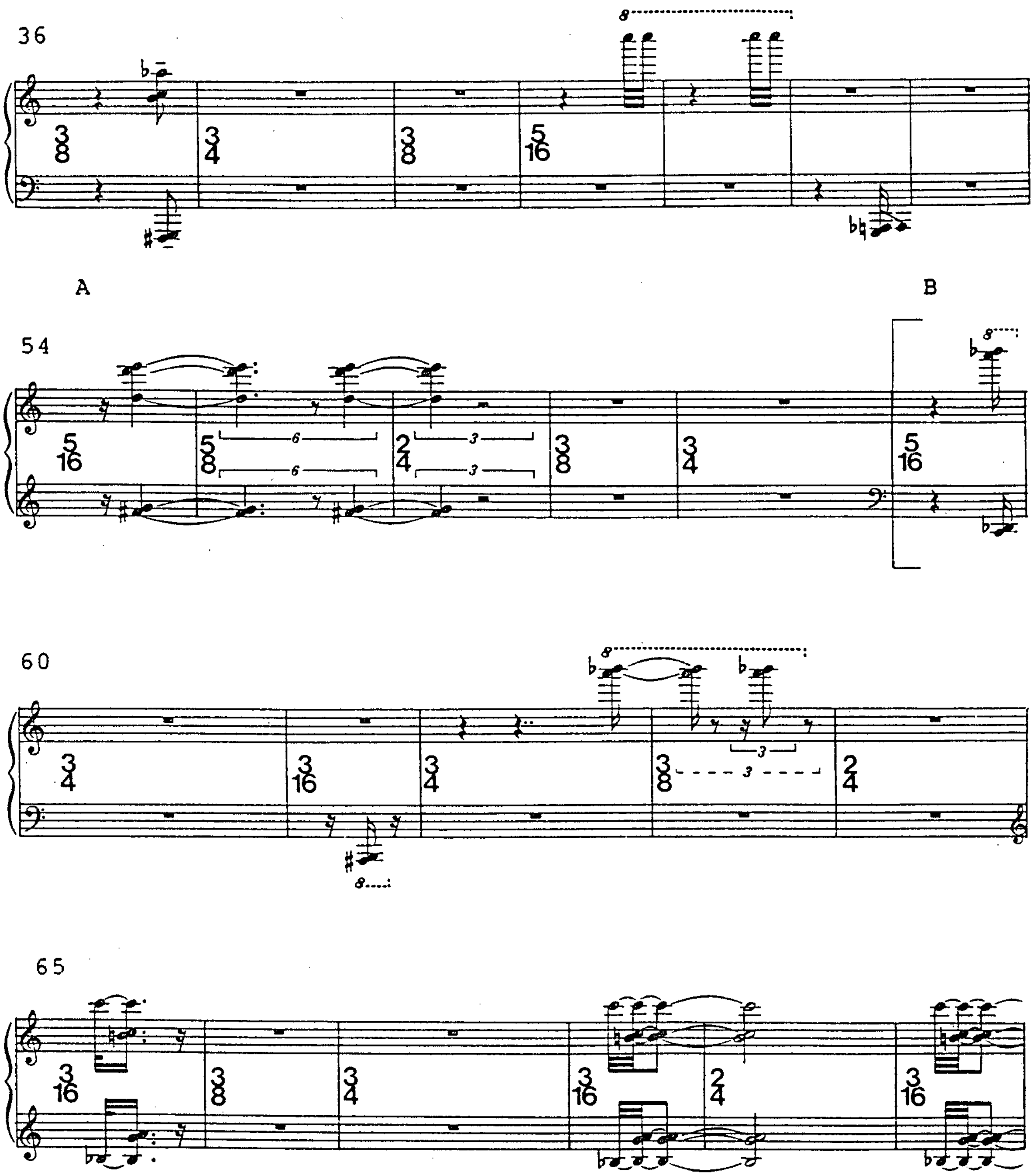


of discrete sixteenth durations positioned at the ends of measures in 5/16 and 7/16 time. Each statement of pattern A is followed by at least one measure of rest in the piano.[9] In measures 344 and 346, the pitch classes F#,G,A♭,A,B♭,B from measure 357 in pattern B replace those of pattern A, but the rhythm of pattern A is extended to measure 347. In measure 348, the rhythm of pattern B begins; thus, the end point of the module to which pattern A belongs is measure 347.

Returning briefly to Example 4 we see that the rhythm of the violin is replaced in measure 307 by detached quintuplet sixteenth-note durations that are borrowed from the concurrent pattern of the piano. These alternate with longer durations that anticipate those of the following construct (measures 330-338). The pitch classes G#, A, and B♭ are extended in both instruments to measure 329; thus, it is the furthest extension of its pitch classes that defines the end point of the module.

In Example 6, the rhythm in the piano that identifies a module B begins in measure 65 but the pitch classes of the module are introduced in measures 59-64 with durations like those of an earlier, non-adjacent pattern--specifically, measures 36 and 41. The rhythm created by these durations replaces the rhythm of the previous pattern A; thus, the endpoint of the module containing A is measure 58. Although the rhythm of module B does not begin until measure 65, the

EXAMPLE 6



module containing pattern B is understood to begin in measure 59. Thus, a module begins when the pitch classes but not the rhythm of its pattern replace those of the previous module if the commencement of its rhythm is delayed by rhythmic elements that are like those of a non-adjacent module.

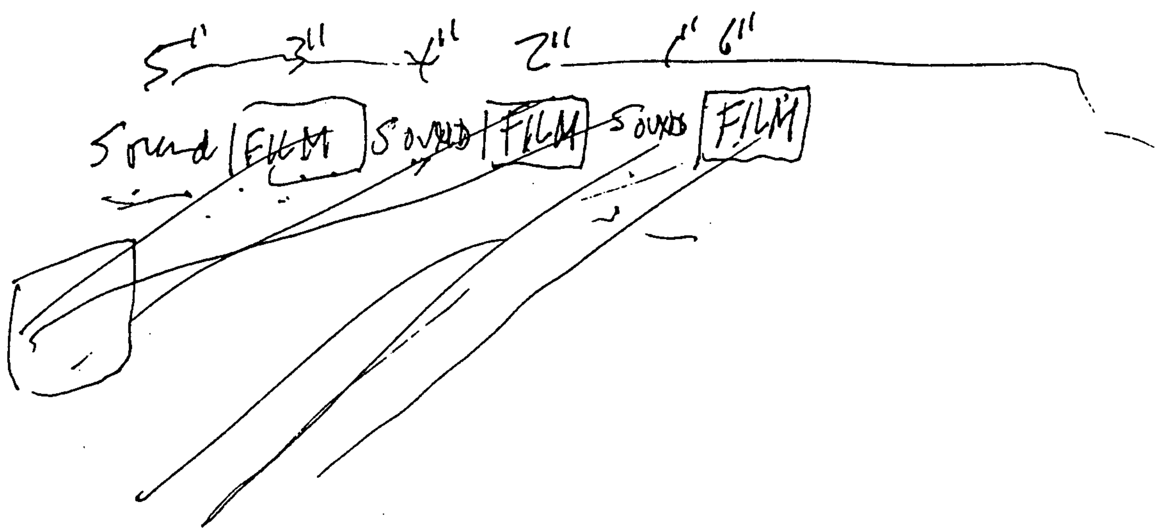
The terms "pattern" and "module" are used interchangeably by Feldman. In this analysis, however, "module" refers to a complete modular construct and a "partial module" is any segment of a module. A "pattern" is that unique combination of features that determines the identity of a module, or a partial module, in relation to other modules.

Modules are favored by Feldman as a compositional raw material precisely because they do not presuppose a compositional process. A module must contain a recognizable pattern of pitch and rhythm but it is otherwise free of the strictures of pre-compositional logic. In this way the composer is able to devise the structure of a piece according to any criteria including that of a specific compositional process. Further, any musical dimension may be isolated and used in a structural way; thus, any imaginable formal design is possible. Pieces composed with modules may therefore be widely disparate in their underlying and surface structures.

Feldman discusses his "modular" approach to composing in Anecdote XXII.

> I work very modularly, I don't work in a continuity; I work modularly. And many times I like to work modularly

> because then I turn it around! If I just think in terms of a module, I could take this in another place like Frankenstein, and I could put it over here...(draws)



> I got this idea when I was a young man not from John Cage, not from modern art, not from Miro. I got this from from Tolstoi. In a marvellous book that his daughter wrote (about) him writing "War and Peace." What they did was this: on an old-fashioned typewriter, and I suppose the letters were small in Russian, they wrote these long lines--in the house they were called noodles. What he then would do...is cut up every sentence, you put the sentence on the table and like a film editor would rearrange--and it's a marvellous book about the writing of War and Peace. I work the same way now. And Burrough's "Naked Lunch", he worked the same way you see, its very much like a film.[10]

In his lecture at Darmstadt, Feldman applies the term "assemblage" to a composition made in this manner[11] and in Anecdote XXII explains the advantage of this approach.

> I don't work in a continuity, the continuity comes later. In other words, I'm not involved in linear information.

> And so, very quickly, I see possibilities in new things. I could assemble...I have it all, all together, marvelously visual."[12]

Earlier in the passage Feldman explains that he uses retrograde "to bring back a kind of fake association." He further states, "I have pieces where I don't repeat the tones retrograde, but I repeat the whole module retrograde". It will be seen that retrograde and inversion relations between modular constructs are highly significant to continuity and form in the second section of Spring of Chosroes.

Thus, a typical Feldman piece is an assemblage of modular constructions, each of which is an assemblage of repetitions of a pattern. The ordered arrangement of patterns within a modular construct generates local underlying linearity which may or may not be discerned in the resultant surface effect. Connections between constructs define formal structures and their ordered arrangement generates large-scale continuity.

In "Crippled Symmetry" Feldman stated:

> "A modular construction could be a basis for organic development. However, I use it to see that patterns are "complete" in themselves, and in no need of development--only of extension."[7]

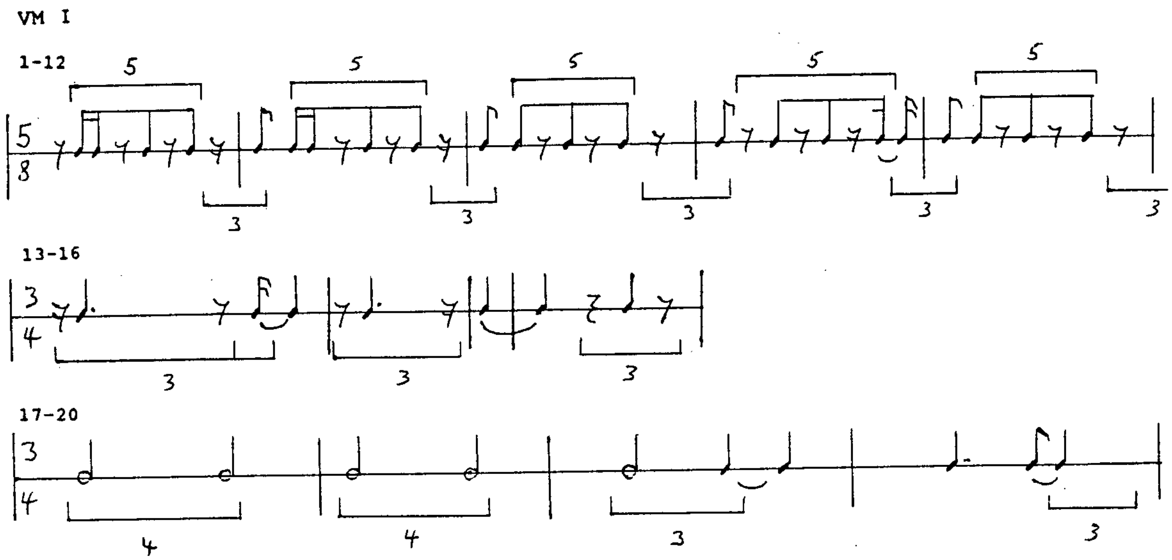
It may be inferred that repetition and extension are equivalent procedures. In fact, extension is a somewhat generalized notion of repetition that describes both literal and varied repetition; however, any variation must be small so that it does not alter the identity of the module. Although the "extension" of an object is normally attached to the object, in this analysis the structural components that connect two non-contiguous modules are said to be "extended" to the later module from the earlier one.

Implicit in the definition of extension is the definition of "sameness." A module's identity is determined by its structural components, particularly those components that are least varied. When all of the identifying elements of a module are extended to a later module, the later segment is said to be a return of the first and therefore the "same" as the first.[13] The concept of sameness may be applied to complete modules or to each of the various domains within modules; thus two modules may share the "same" pitch classes or rhythmic pattern while retaining their independent identities.

Some patterns are altered structurally when they are repeated and may therefore be seen to be "developed." For example, in the initial rhythmic pattern of the violin (measures 1-12 of example 7) quintuplets containing alternating eighth notes and eighth rests are separated by sixteenth triplets. Some durations are divided into smaller values. In measures 13-16, detached longer durations form a pattern that is a slower, simpler version of the first pattern (Example 8), and in measures 17-20 the pattern is further simplified to connected durations. Although the latter two patterns are variants of the first the changes they undergo are hardly "slight" and may therefore be considered "development," not "variation."

EXAMPLE 7

EXAMPLE 8



If a theory is a means by which the properties, and therefore the directional possibilities, of a given musical system are defined, there will never be a "theory of modular composition." Modules are a pre-compositional, structureless raw material that may be conceived in order to create a new system, or to adapt to any existing system, or to be unsystematic. The substance of a conventional composition is found, for example, in the development of its themes and in resultant continuities. Feldman chose not to utilize developmental procedures as a means of generating continuity but instead "extended" his patterns to form modules; thus, it is in patterns and the connectivities between them that we find the substance of Feldman's music.

> As the foundation of his new art, Feldman proposed a language of pure process. Rather than represent form as ontologically prior to process Feldman...treated process as ontologically prior to form. In his art, the work and the act of creation became indistinguishable. For him, the act of creating a piece becomes the very substance of that piece--its form in a rich new sense of the word. To experience art such as this is quite literally to experience the act of creation "in medias res" and the work in the act of being born. What the perceiver witnesses is the very emergence of order; the artwork organizing itself into existence.[14]

MODULE ANALYSIS

The first step in analyzing a work of Feldman's is to segment it into modules. A list of the constituent modules of Spring of Chosroes is shown in Figure 2. Modules designated PM and VM belong to the piano and violin respectively, and the central column lists modules in which the violin and piano are combined. Violin modules are numbered independently from those in the piano and the central column. Each module contains at least two pitch classes.[15] (The designations VI/1, VI/2 etc. will be explained in chapter 2).

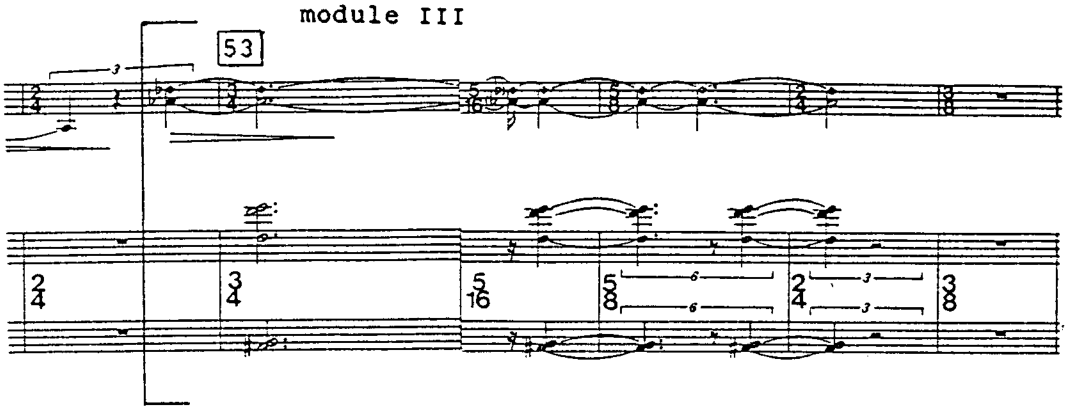
In the modules that incorporate both instruments in sections 1 and 3 (excepting modules XII and XIII) a single violin pitch class is added to a piano dyad to construct a chromatic trichord, a set type that is used consistently throughout the piece. For example, we see in module III (measures 52-56, Example 9) that a sustained A♭ in the violin is combined with the lower piano dyad to form the trichord F#,G,A♭.

FIGURE 2

MODULES

Section	Measures	Piano		Violin	Measures
1	1	PM I		VM I	1
	33	PM II			
				VM II	49
	53		III		53
				VM III	58
	59	PM IV			
	90		V		90
				VM II'	141
2	146		VI/1		146
	156		VII/1		156
	158		VIII/1		158
	163		VII/1		163
	165		IX/1		165
	174		X/1		174
	192		IX/1		192
	201		X/1		201
	210		XI		210
				VM II''	219
	228		X/2		228
	237		IX/2		237
	247		VIII/2		247
	265		VI/2		265
3	282		XII		282
	291		XIII		291
	330	PM XIV		VM II'''	330
	339		XV		339
	348		XVI		348
				VM II''''	369
	380		XVI (coda)		

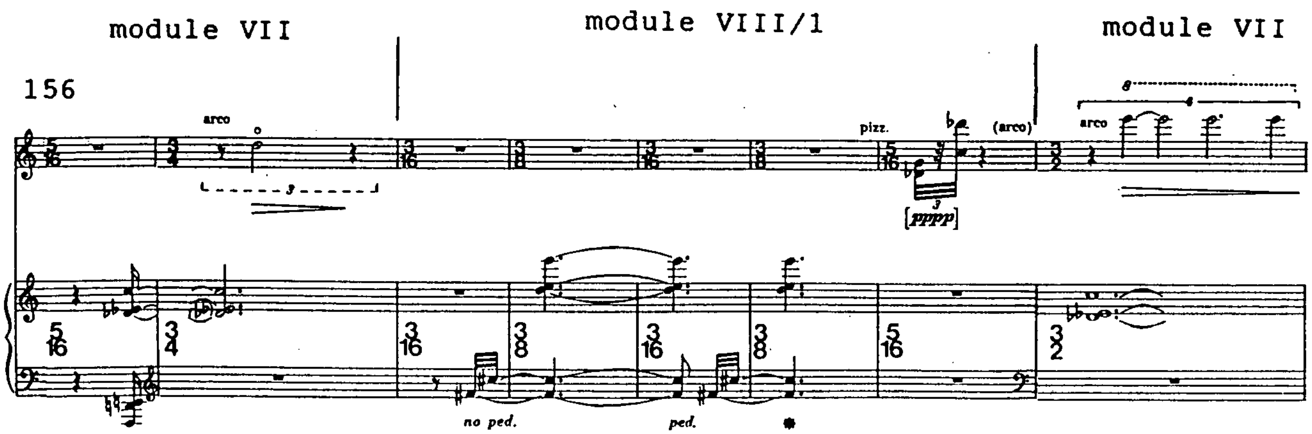
EXAMPLE 9



Some measures in VM-I and VM-III contain pitch classes that also belong to the piano modules adjacent to them--measures 23-28 (F#), measure 64 (B), and measures 65 and 72 (D^b). F# doubles G^b in the piano and each of the latter two pitch classes forms a chromatic trichord with the upper dyad in the piano that immediately precedes it.

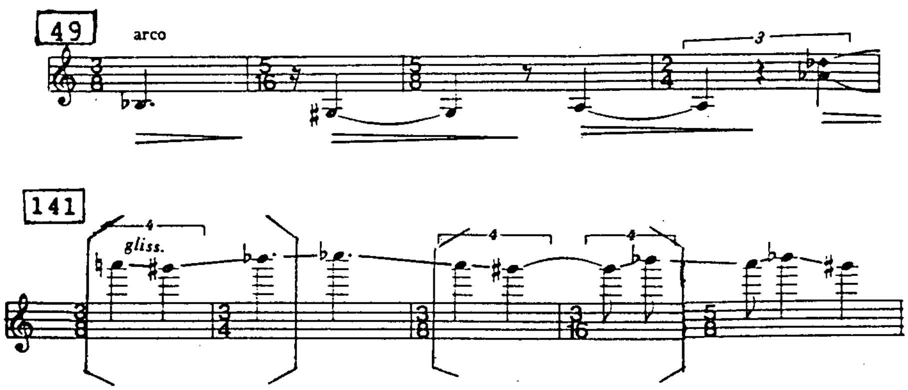
A pattern must be repeated to generate a module; however, it need not be repeated immediately. Measures 156-157 (Example 10) contain the initial statement of module VII but its repetition (in a varied form) in measure 163 is interrupted by module VIII/1 in measures 158-162. In each module the pattern is repeated only once; therefore, each is the shortest possible module.[16]

EXAMPLE 10


module VII
module VIII/1
module VII
156
arco
pizz.
(arco)
arco
[pppp]
no ped.
ped.

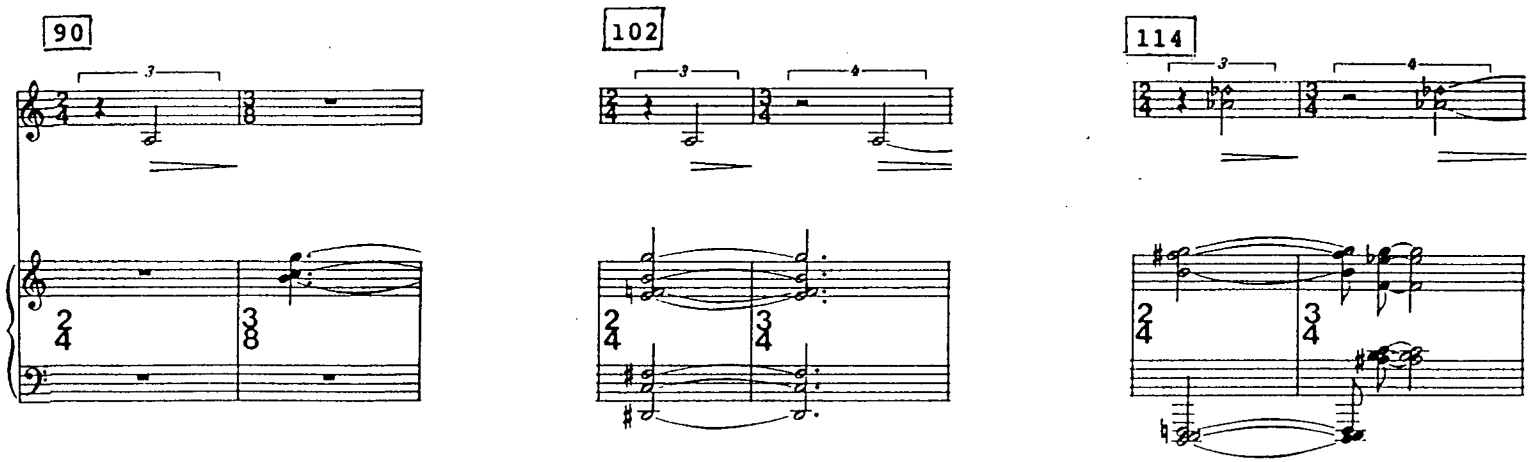
A more extreme interruption is seen in the violin (Example 11). VM-II is first stated in measures 49-52 but is not repeated until measure 141 when it appears in retrograde in a higher register (shown here in brackets) and with an added pitch class (C^b).

EXAMPLE 11



The pitch classes of a module may be introduced gradually. In module V (Example 12) four pitch classes are extended through measures 90-101, in measure 102 four more are added, and in measure 114 a ninth pitch class A^b is found in the violin. A less dramatic additive process is seen in VM-I (refer to Example 7) in which three pitch classes D#, E, and F are seen in the initial measures, then D is added in measure 5 and G^b in measure 8.

EXAMPLE 12

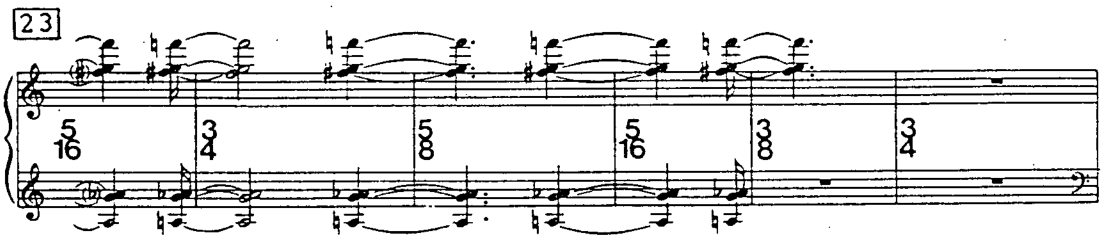


Feldman employs techniques that blur points of change between modules. It has been shown, for example, that pitch classes may be "borrowed" from a subsequent module (Example 5) or may be introduced with a rhythm that is extended from a non-adjacent module (Example 6). In measures 29-41 (Example 13) elements of PM I and PM II are overlapped. Measure 36 contains one of the two characteristic elements of PM II, a chord containing a low register dyad and a mid-register trichord. The pitch classes that form the lower trichord of PM I in measure 26 (G, A^{b}, and A) are clustered in a low register in measures 29 and 31. This grouping and register are "borrowed" from PM II and prepare the lower register dyad in measure 36. In PM II, rapidly articulated pairs of upper register C's in measures 33-35 are followed by a registrally contrasting vertical. When the high C's are repeated in measures 39-40 they are followed in measure 41 by the lower register cluster found in measures 29 and 31 rather than the vertical, but with a duration more closely associated with PM II.

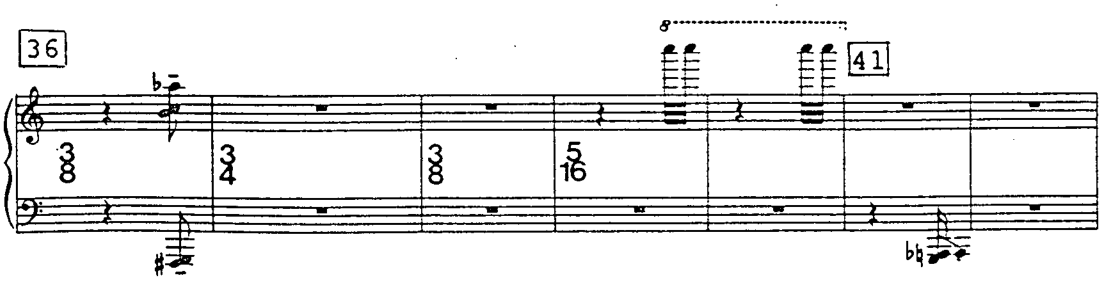
Similarly, Example 14 shows the overlapping of pitch classes from modules IV and V, VM III, and by extension, VM I in measures 81-88 immediately prior to the beginning of module V.[17] Pitch classes from VM III (measure 82) and the extension of VM-I (measure 81) are combined to form the upper piano trichord in measure 84. The pitch classes of the upper trichord of module IV are extended to the lower piano

EXAMPLE 13

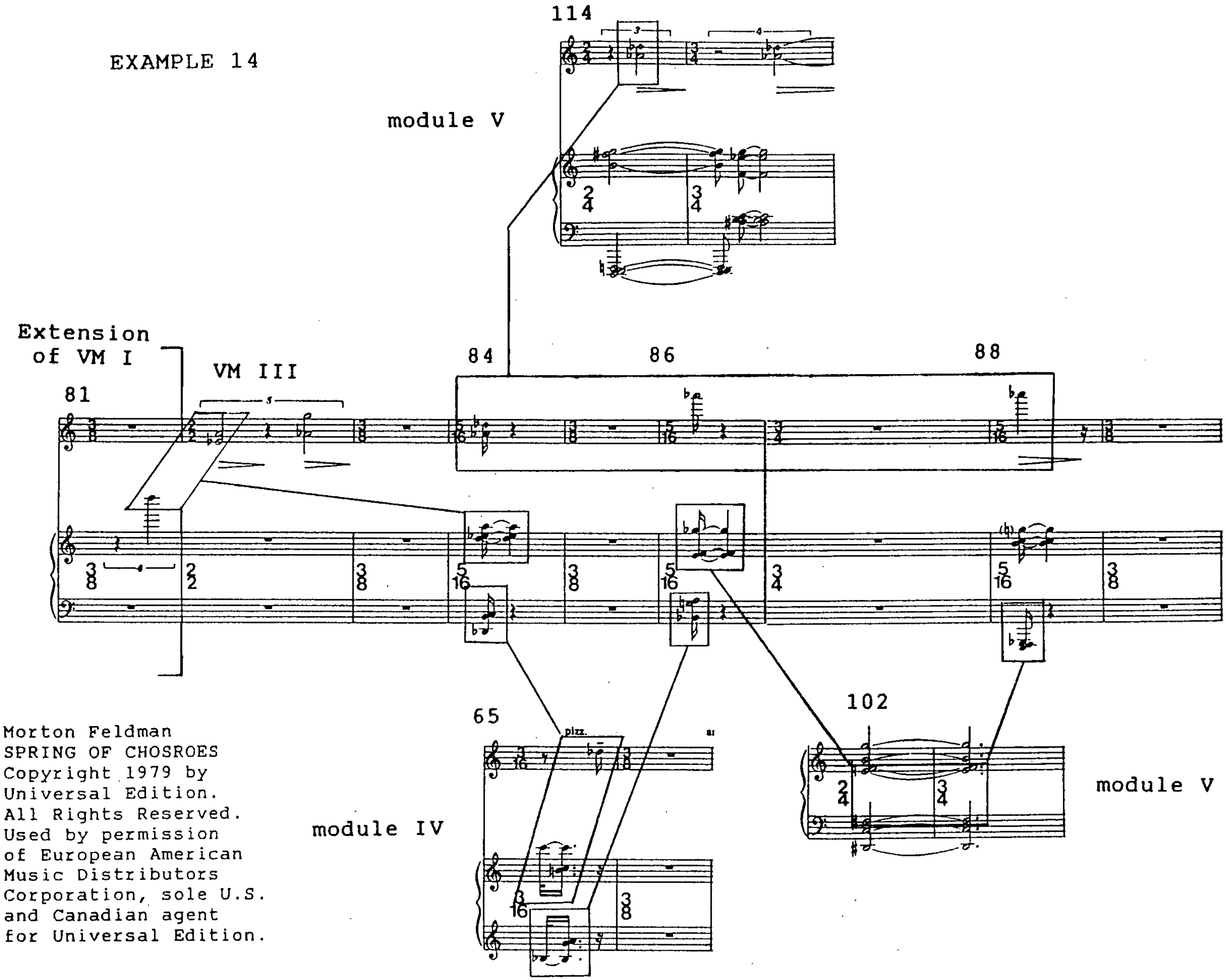
PM I



PM II



EXAMPLE 14


114
module V
Extension
of VM I
VM III
81
84
86
88
65
module IV
102
module V
pizz.

trichord in measure 84, and the lower trichord of module IV forms the lower trichord of measure 86. The pitch classes E, F, and G^{b} that form the upper piano trichord of measure 86, and the lower trichord of measure 88, are borrowed from measure 102 of module V. The upper register A^{b} in the violin seen throughout measures 84-88 is found in module V in measures 114-139.

In measures 114-138 (Example 15) pitch classes unique to modules III and IV (B^{b},D^{b},and D) are extended to module V and mixed with its constituent pitch classes. At least four of the six pitch classes in each hexachord are common to module V, and variations in other parameters (rhythm, texture, etc.) are slight; thus, the number of pitch classes in the passage has increased, but the number of constituent pitch classes in module V has not. The extended pitch classes do not replace the pitch classes of module V; rather, they commingle with them. In this way, the added pitch material masks but does not change the identity of the module.

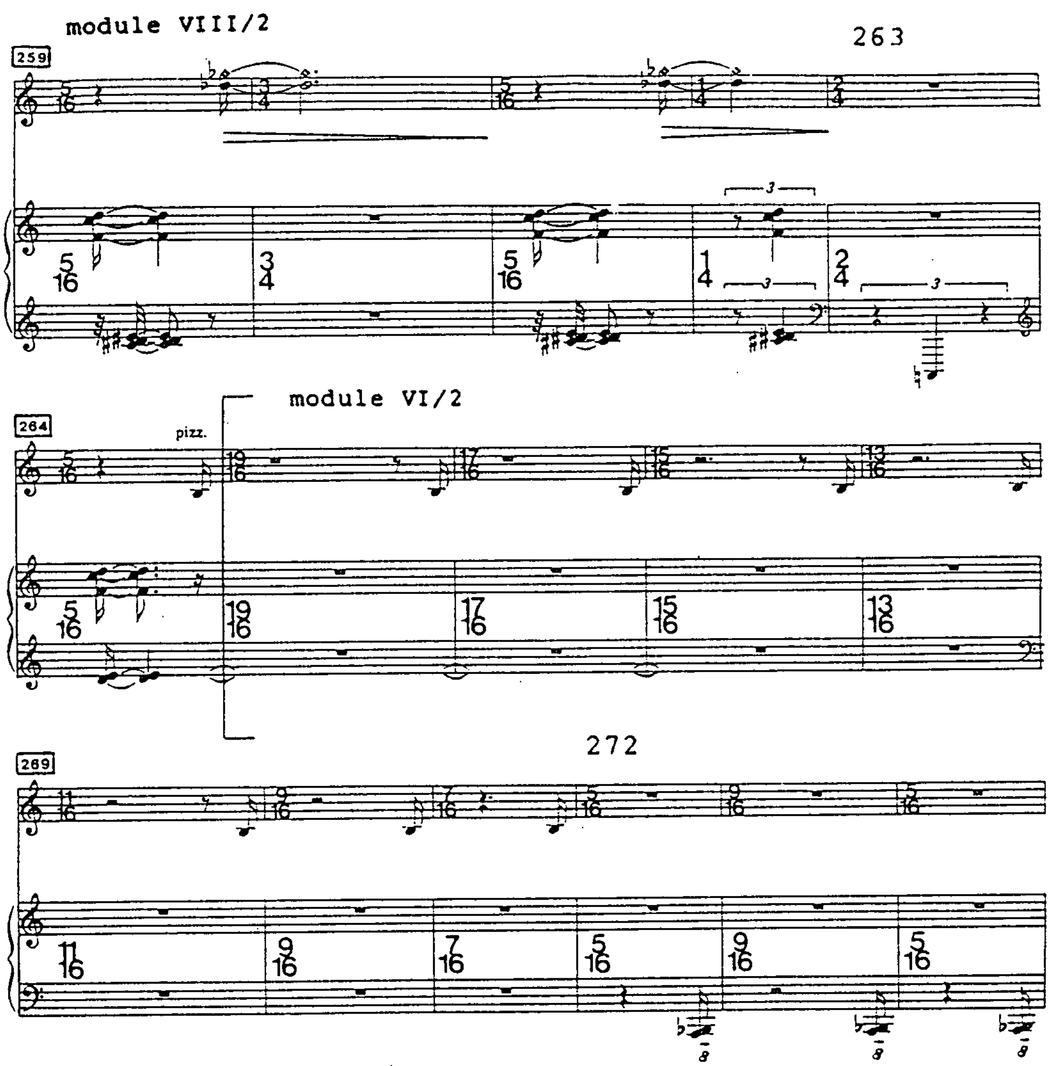
A last example of blurred modular boundaries appears in measure 263 of module VIII/2 (Example 16). C natural is texturally and registrally exposed in a way that anticipates the lower register of the dyad A,B^{b} in module VI/2 (measures 272-281).

EXAMPLE 15

module V

○ = extended pitch classes (B^{b}, D^{b}, D)

EXAMPLE 16



Module manipulations such as these tend to soften the transitions between successive modules and generate variety within modules. Feldman varies and occasionally develops aspects of modules but his alterations are never taken to such an extreme that the identities of modules cease to be recognizable.

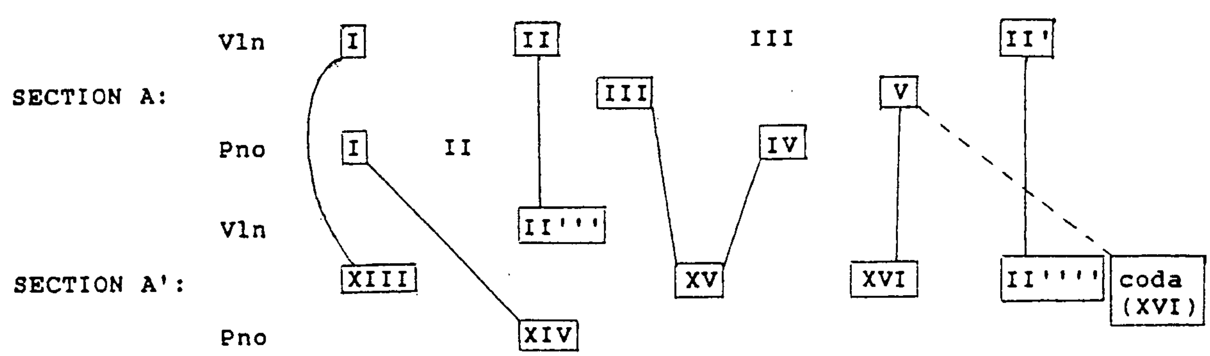
Thus far we have observed connections that exist largely near the musical surface. In chapter 2 we will examine deeper connections that generate form.

CHAPTER TWO

FORM

Spring of Chosroes may be divided into three large sections; A (measures 1-145), a contrasting section B (measures 146-290), and A', a reprise that engages the modular structure of section A. In Example 17, lines that connect modules indicate that aspects of the constituent modules of section A are extended to modules in section A' in an order which largely parallels that of the first section; therefore, some processes that unify section A are reproduced in section A'.

EXAMPLE 17



The unity of each section arises from the connection of its modules. Some modules unfold in a developmental way but formal coherence is largely created by the extension of modules, as was defined in Chapter 1, rather than by developmental procedures. Modules may resemble one another and share one or more characteristic elements but they do not, as a rule, grow out of one another in the way that, say, a theme grows from one or two motivic fragments (the various configurations of module II discussed later in this chapter are an arguable example of the latter). But this inorganic connectivity is most commonly found at the surface. Organicism is revealed in some broader, developmental connections that articulate large-scale form.

We will examine two aspects of form. The first involves modules that are repeated in ways that give rise to structural parallelisms. Specifically, these define a palindromic structure in section B, and they also show that section A' is a variant of section A. The second aspect involves continuities and developments that unfold locally within modules or between adjacent modules, or over larger time spans in repeated modules. Parallelisms define the substantive portion of form and are most obvious in section B; therefore, we will begin by discussing those measures.

SECTION B:

One of the principal structural features of this section is its palindromic design (Example 18). In this example, the

EXAMPLE 18

MODULE	MEASURES
VI/1	146-155
VII	156-157
VIII/1	158-161
VII	163
IX/1	165-173
X/1	174-191
IX/1	192-200
X/1	201-209
XI	210-218
II''	219-227
X/2	228-236
IX/2	237-246
VIII/2	247-264
VI/2	265-281

labels VI/1, VI/2 etc. denote corresponding modules in the first and second half of the palindrome. Brackets to the left of the "module" column link modules with their retrogrades and those to the right identify modules that are merely extended. Modules XI and II'' are connected with a dotted bracket to indicate that they share several characteristic features but are in fact distinct modules.

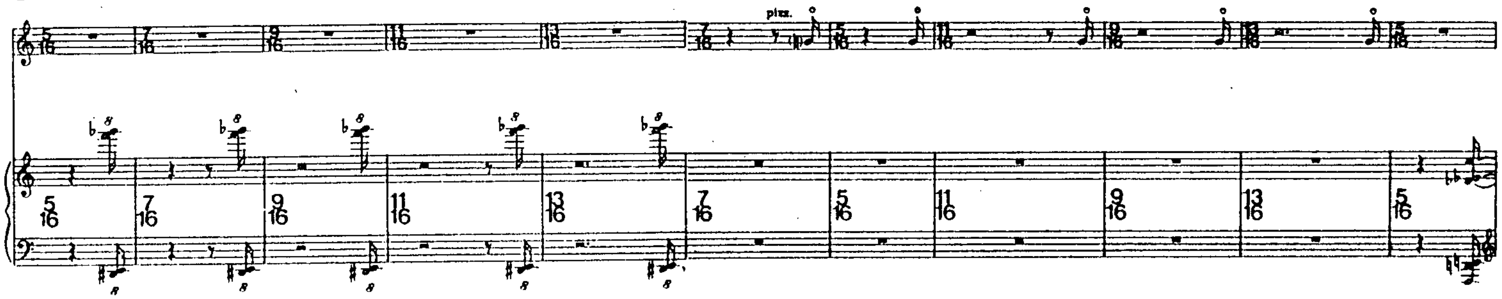
The palindrome is asymmetric; that is, modules IX and X are repeated in the first half but not the second, modules are varied when repeated, and there is no "mirror" of module VII at all. Feldman explains,

> "I'm very interested also in retrograde. And I have pieces where I don't repeat the tones retrograde, but I repeat the whole module retrograde". He then suggests ways in which retrograde modules may be varied, and continues, "The reason is that I want to bring back a kind of fake association."[1]

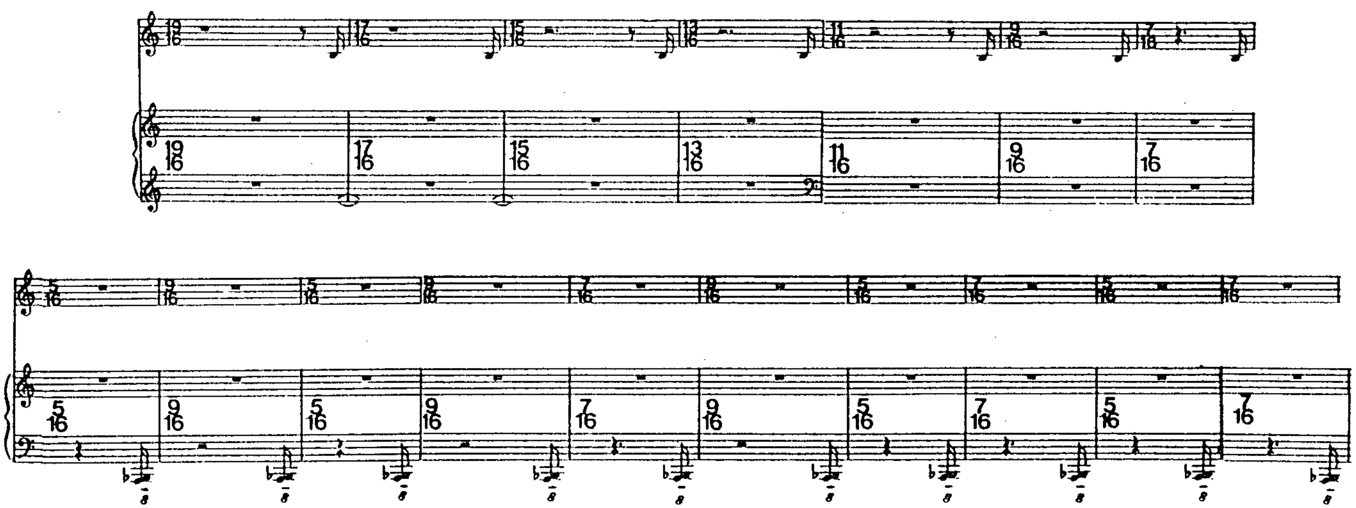
Feldman's approach to retrograde is typified by his treatment of module VI (Example 19). In module VI/I, a verticality composed of two registrally distant dyads is stated five times in the piano prior to an equal number of pizzicato G naturals in the central register of the violin. In module VI/2, a single pitch is articulated seven times in the central register of the violin prior to seven statements of a low register dyad in the piano. All durations in both statements of the module are sixteenths situated at the ends of measures. The incremental expansion of bar lengths in the piano in module VI/1 is reversed to an incremental contraction in the violin in module VI/2, but module VI/2 has no pitch classes in common with module VI/1.[2] Thus, retrograde is applied to some aspects of module VI--instrumentation and register, and bar lengths--but pitch, texture and length are varied and the metric position of durations is unchanged. This selective application of retrograde, variation, and repetition is used to bring about

EXAMPLE 19

146 module VI/1



265 module VI/2



palindromic associations. Feldman has described the process in the following way:

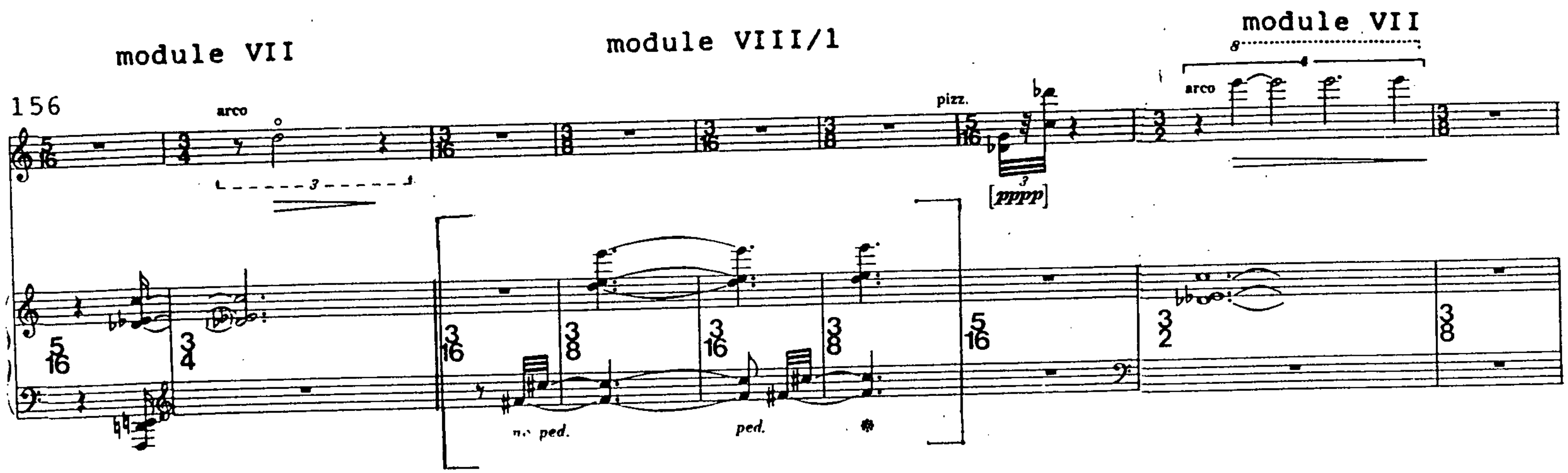
> "You can do two things with music, you could be involved with variation, which in simple terms means only vary it, or you could be in repetition. Reiterative. What my work is, is a synthesis between variation and repetition. However, I might repeat things that, [are] varying [themselves] on one aspect. Or I could vary repetition."[3]

Retrograde (repetition in reverse) is one aspect of this "synthesis," and is therefore a means by which small or large-scale connectivity and structural coherence may be generated.

As example 18 shows, modules in section B are arranged palindromically, so retrograde is important to large scale form. The modules that are associated in this palindrome, however, are not always retrograde-related in content. Rather, the palindromic structure of section B is largely defined by inversion relations of modules. Inversion is rarely literal, however, and instead involves general oppositions of register, duration, texture, and instrumentation. Inversion relations are also generated by extreme differences of magnitude (shortest to longest, widest to narrowest, etc.) relative to other modules.

For example, although module VII (measures 156-157) does not reappear in the second half of the palindrome, it is extended to measure 163. In the extension, the relative registral positions of its pitch classes are the inverse of the original (Example 20) in the following sense: in measure 156, the pitch classes of module VII are disposed in two

EXAMPLE 20

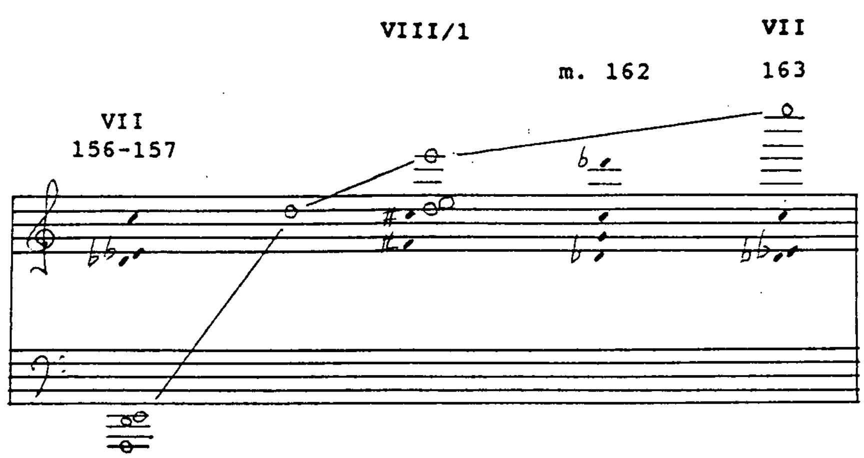


Morton Feldman SPRING OF CHOSROES. Copyright 1979 by Universal Edition.

registral areas; $D^{\flat}4$, $E^{\flat}4$, and C5 form a trichord in a central register and a second trichord F1, D2, E2 occupies a low register. When module VII is extended to measure 163, it retains its central register trichord but is joined to a high E7 rather than a set of pitches in a low register.

This registral inversion is prepared by two pitch classes D and E that rise from the lower trichord in measure 156 toward the register occupied by E7 in measure 163 (Example 21). the D5 in measure 157 is extended to module VIII where it is joined to E5 and E6. The uppermost pitch in measure 162, $D^{\flat}6$, extends the register of E6 immediately prior to the arrival of E7. Also in this module, F#4 and C#5 extend the spatial area occupied by the trichord $D^{\flat}4$, $E^{\flat}4$, C5 around which the inversion takes place.

EXAMPLE 21



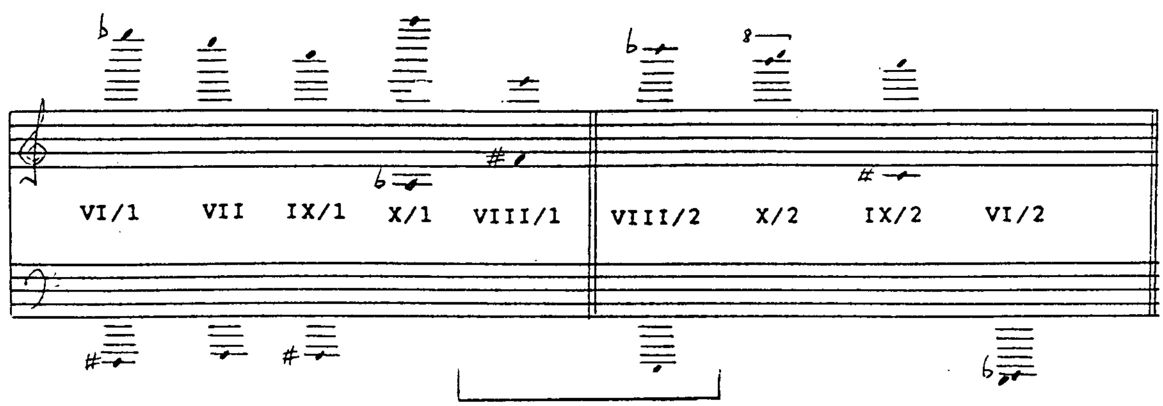
The palindromic reprise of all modules in section B other than modules VII and XI similarly involves other general relations of inversion. In the reprise of module VIII, the magnitude of some domains is expanded in a way that creates palindromic associations with the original statement. Module VIII/1 is the shortest module in the first half of the palindrome and in the second half, module VIII/2 is the longest; thus, the difference in its length relative to that of other modules constitutes an "inversion" relation.

Similarly, module VIII/1 has the narrowest registral span in the first half of the palindrome and module VIII/2 has the widest in the second half (Example 22). It is true that the incomplete repetition of module X/1 (measures 173-191) in measures 201-209 extends a single pitch and therefore has a narrower span, but these measures are not a discrete module; rather, they are the extension of an "interrupted" module the combined span of which is wider than that of module VIII/1. Thus, the difference in the registral spans of modules VIII/1 and VIII/2 relative to other modules (narrowest to widest) forms an inversion relation.

The magnitudes of domains are variously expanded in module VIII. Extreme changes generate inversion relations while slightly smaller changes form "incomplete" inversion relations. Connections that contribute to large scale form are generated by extreme expansions while smaller ones give rise to localized form. For example, an "incomplete"

EXAMPLE 22

REGISTRAL SPANS OF MODULES



inversion relation is formed by changes of instrumentation in module VIII in that module VIII/1 is the only module with one instrument in the first half of the palindrome but is one of two modules with two instruments in the second half (module VI/2 is the other).

Module VIII is the only module in the palindrome in which the number of pitch classes increases, from 4 in module VIII/1 to 7 in module VIII/2 (Example 23). The change in this case is not from "least" to "most" and is therefore not inversional; rather, it is a feature that is unique to this module.

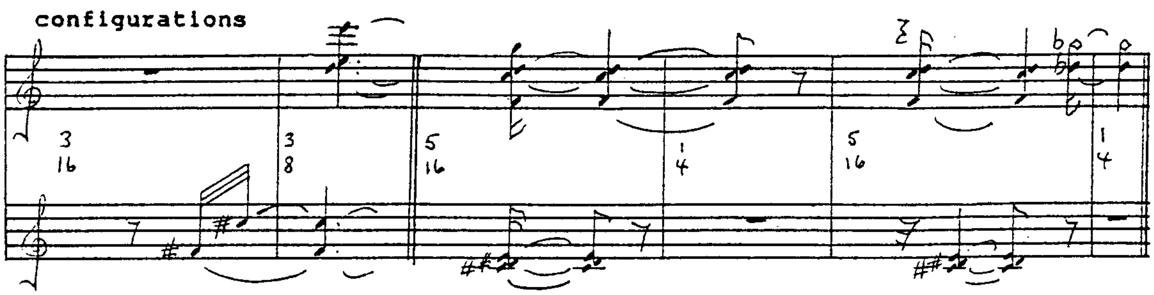
Marginal expansions of magnitude in module VIII decorate

EXAMPLE 23

PITCH CLASS CONTENT OF MODULES VIII/1 AND VIII/2

module VIII/1 {C# D E F#}

module VIII/2 {B C C# D D# E F}



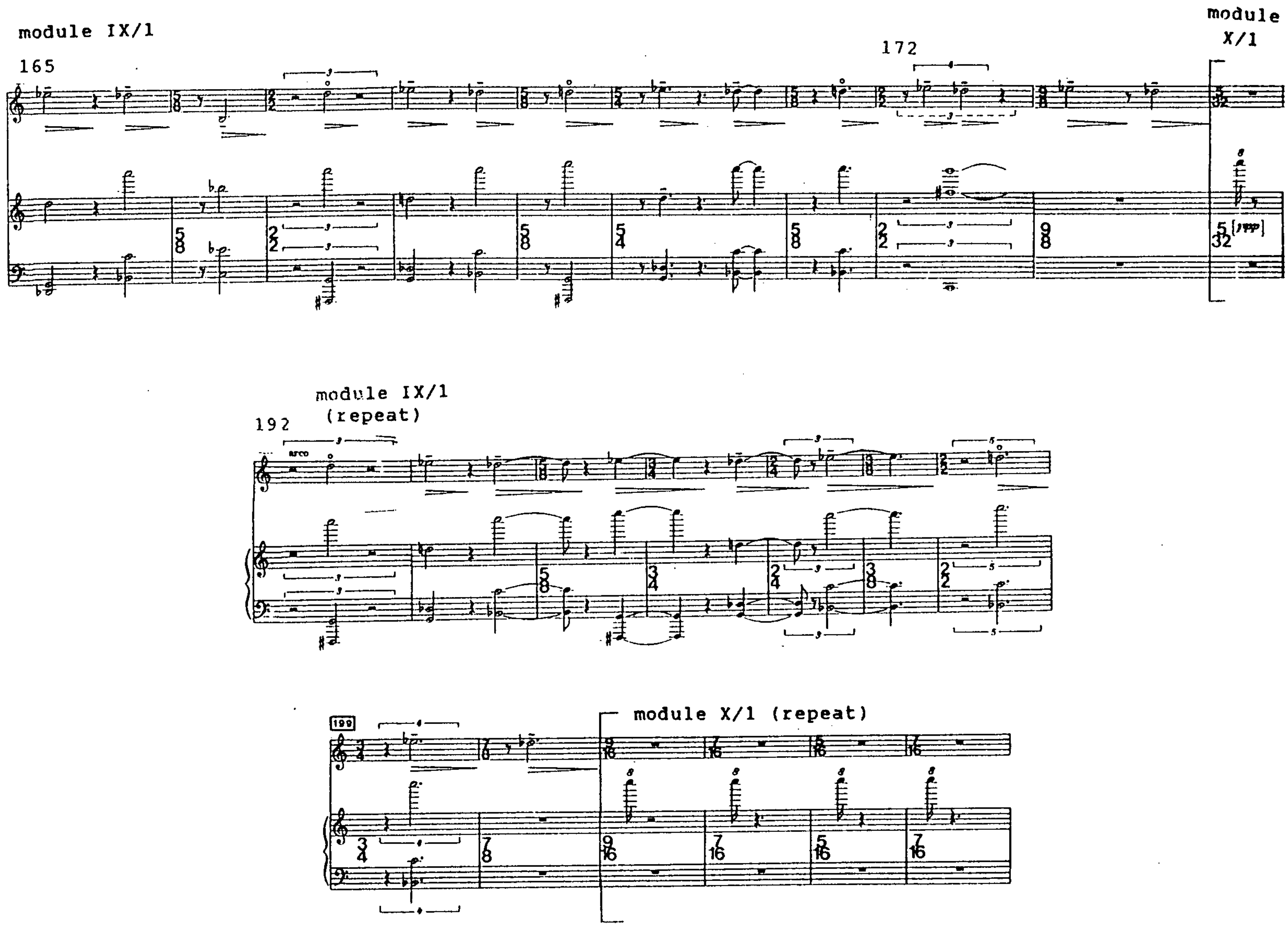
the surface of the music. Module VIII/2 has two rhythmic and registral configurations (measures 247-254 and 255-264) and module VIII/1 has one. As well, module VIII/2 has three discrete meters; module VIII/1 has two.

Like expansion, contractions of magnitude produce complete or incomplete "inversion" relations. In module IX contractions exist but not to the extent that inversion relations are formed. In the first half of the palindrome, module IX/1 is stated twice (measures 165-173 and 192-200) and contains a series of vertical tetrachords that are distributed between both instruments (Ex.24). Module IX/2, on the other hand, is stated once in measures 237-246 and contains a series of vertical dyads in the violin. Thus, the chord size, number of instruments, and total length (measured by the number of attacks and measures) of the latter module are half (or nearly half) that of module IX/1.[4]

Inversion relations are formed in another way at the points of transition from modules IX/1 to X/1, and IX/2 to VIII/2. In the first case, measures 171-174 in Example 24, $E^{\flat}$5 falls to $D^{\flat}$5 twice, then there is an abrupt rise to a high C7. The neighbouring $E^{\flat}$ and $D^{\flat}$ generate a sense of registral directedness in each of measures 172 and 173. When these two pitches appear in other measures of module IX/1 their linear implications are obscured by their textural context--each pitch is combined with three other pitch classes to form a vertical tetrachord. In measure 172 however, they obtain a degree of rhythmic independence from the three vertical pitches in the measure and are thereby perceived as horizontally related, and in measure 173 this sense of pairing is reiterated when they appear without other pitches. The sudden rise to C in measure 174 is therefore all the more pronounced.

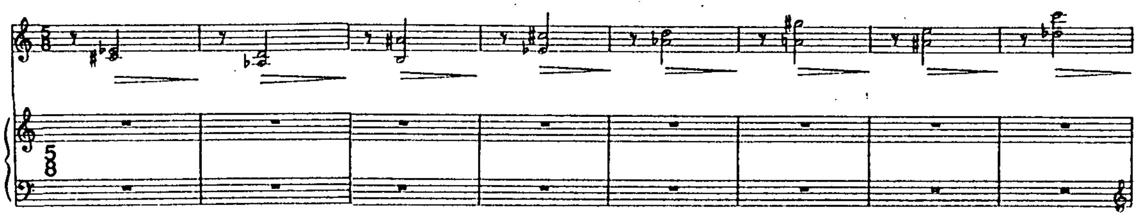
By contrast, the essentially rising contour of module IX/2 (measures 237-245) maintains a directed character, ascending most steeply in its final three measures, then falls instead of rising to the initial septachord of module VIII/2. In these same passages the relatively full texture of module IX/1 is replaced by the thinnest of the palindrome in module X/1 while the relatively thin texture of module IX/2 is

EXAMPLE 24

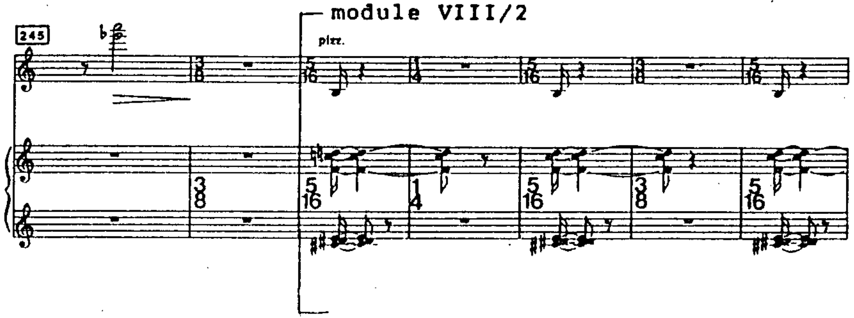

module IX/1
165
172
module
X/1
module IX/1
(repeat)
192
arco
199
module X/1 (repeat)

module IX/2

237



module VIII/2



	Measures	Attacks
Module IX/1	9 + 9 = 18	22
Module IX/2	= 9	10

replaced by the thickest of the palindrome in module VIII/2. Although these two textural transitions are not related by inversion in the strict sense, the latter is the nevertheless the reciprocal of the former in that a thick texture proceeds to a thin one in the first half of the palindrome and in the second half, a thin texture moves to a thick one. Thus, the magnitude of some aspects of module IX is contracted but not to a degree that generates inversion relations. The direction of registral change at the points of transition between modules IX/1 and X/1, and IX/2 and VIII/2, is inverted, and textural changes demonstrate a somewhat generalized principle of inversion but do not create a palindromic relationship.

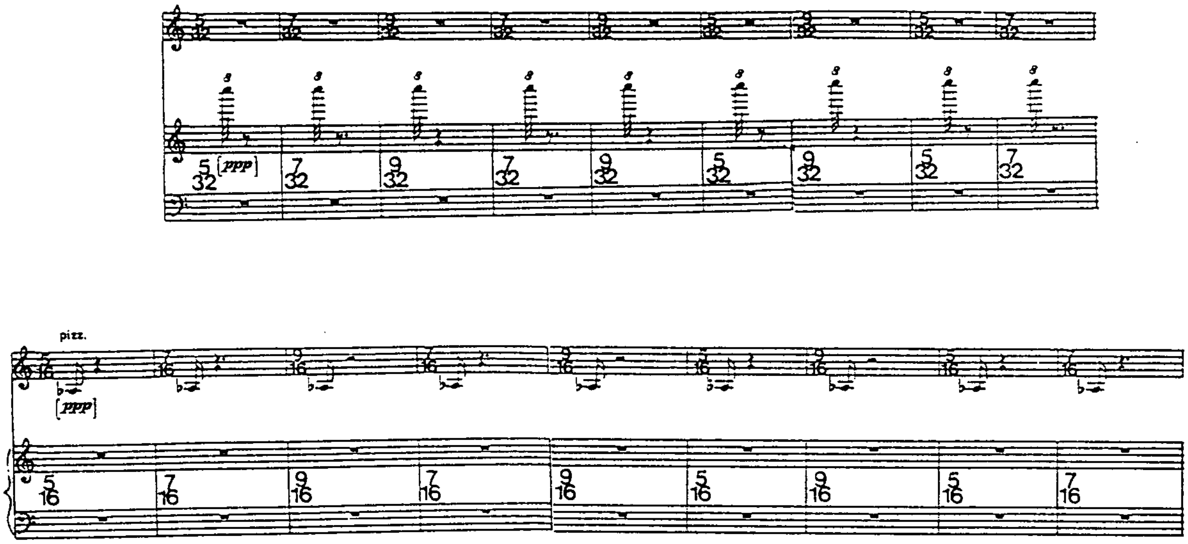
We see another kind of inversion in connection with module X (Example 25). Its first statement (measures 174-191) features a sudden shift of meter and durations: thirty-second notes in 5/32, 7/32 and 9/32 measures (174-182) are changed to sixteenth notes in 5/16, 7/16, and 9/16 measures (183-191) (the latter values are extended to measures 201-209 in which module X/1 is repeated). In contrast, module X/2 (measures 228-236) exhibits a metric contraction in that each measure contains one less beat than the one previous to it. Durations are uniform but the length of the rests separating attacks regularly decrements. Thus, greater measure lengths in module X/1 are combined with greater pitch durations, while shorter rests in module X/2 result from metric contraction.

There are other contractions as well in module X. The

EXAMPLE 25

module X/1

174

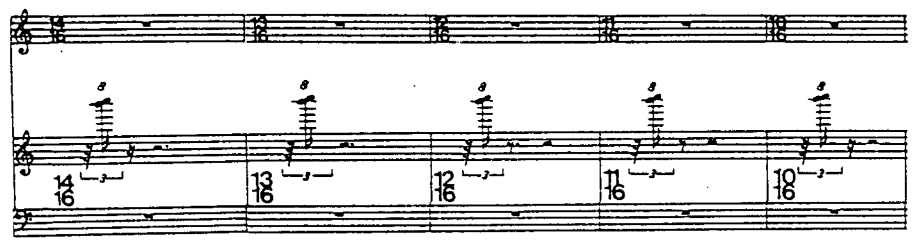


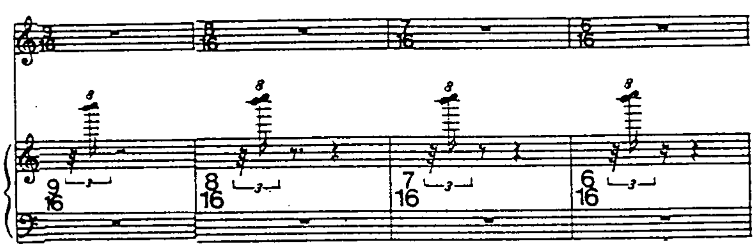
module X/1 (repeat)

201

module X/2

228



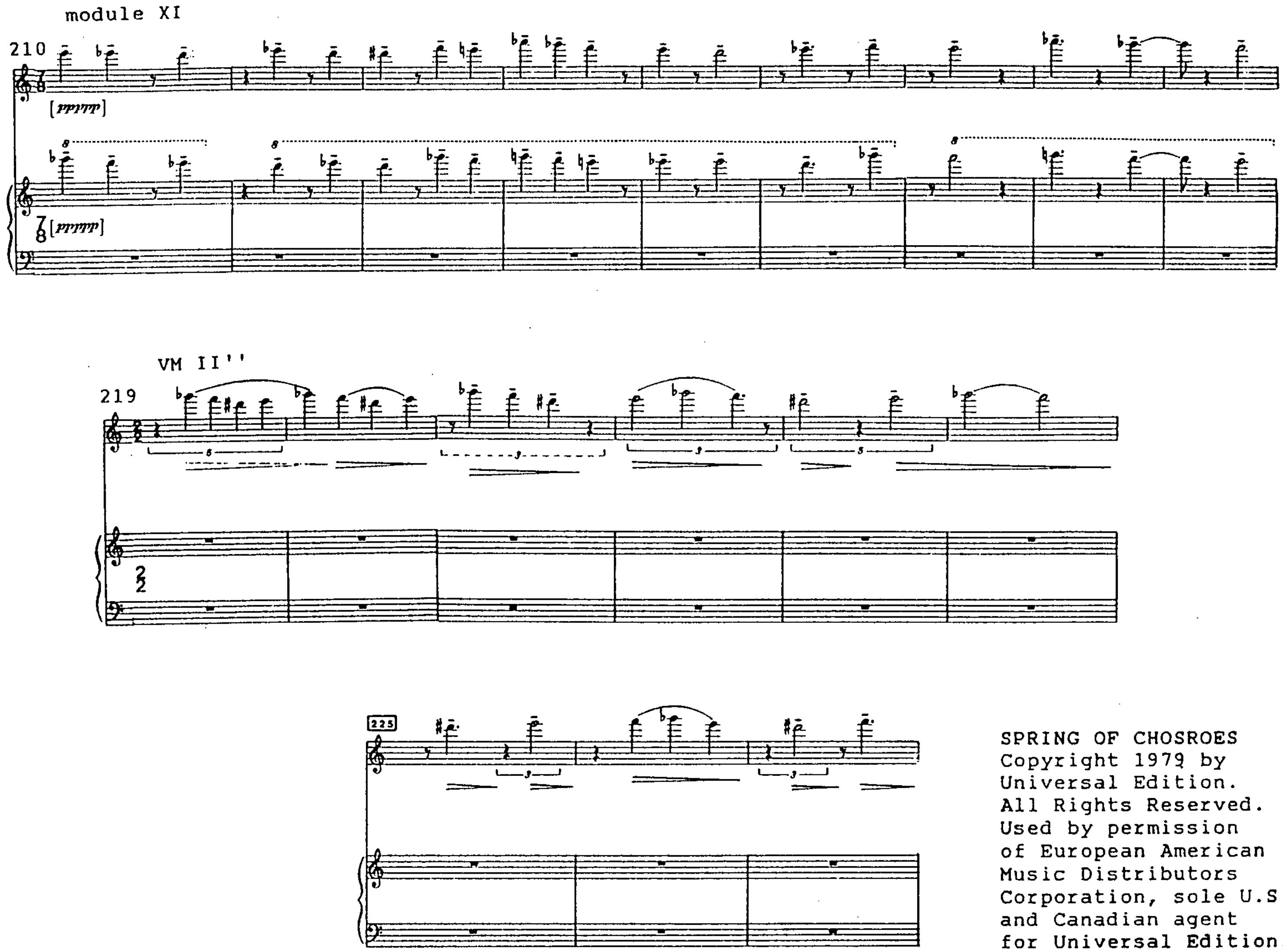


length of module X/2 is half that of the first statement of module X/1 (measures 174-191). Module X/1 contains two pitch classes, C and A♭, that are stated in isolation but the pitch classes of module X/2, C and B, form a vertical dyad; thus, the "merging" of pitch elements in module X/2 reduces its length. Also, the number of instruments is reduced from two in module X/1 to one in module X/2; thus, an inverse relationship exists with regard to measure lengths, but the contractions of overall length and instrumentation do not produce inversion relations relative to other modules.

The parallelisms in the modules cited above help define the palindromic structure of section B. Let us turn our attention to the two singular modules at the centre of the palindrome, XI and VM II'' (Example 26). We shall see similarities in the way that the internal structures of modules XI and VM II'' unfold, similarities that support hearing the two modules as related and therefore as the centre of the palindrome.

Module XI is distinguished on the surface by the first change in the dynamic level of the piece (PPP to PPPPP). But it projects some continuity as well because it contains some pitch class material from each module in section B (Example 27) and occupies an upper register close to that of its neighbouring module VI/1 and near-neighbour X/2. (In this example, pitch classes that are added to the modules in the second half of the palindrome are indicated by lower case letters).[5]

EXAMPLE 26



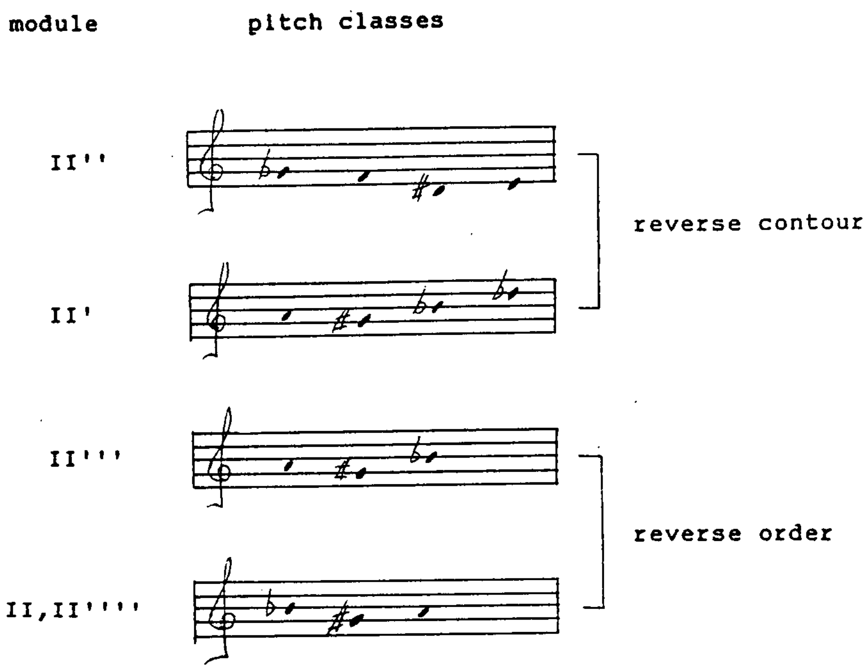
EXAMPLE 27

VM II''				{D#	E	F	$G^{\flat}$}					
module XI			{D	D#	E	F	$G^{\flat}$	G	$A^{\flat}$}			
module VI			{D	D#	E			G		a	$b^{\flat}$	b}
module VII	{C	$D^{\flat}$	D	$E^{\flat}$	E	F}						
module VIII	{C	C#	D	d#	E	f	F#}					
module IX	{C	c#	D	$E^{\flat}$	e		F#	G	g#	A	$B^{\flat}$	B}
module X	{C								$A^{\flat}$			b}

Distinctive characteristics of module XI are extended in VM II'' (measures 219-227). The strongest connections exist in the domains of pitch, rhythm and register; for example, four of the seven pitch classes of module XI, D#, E, F, and $G^{\flat}$, are extended to VM II'' to form its set of constituent pitch classes. The pitch classes of module XI are distributed in two discrete registers--VM II'' extends the lowermost region. Each module utilizes a common pool of durational values that are frequently separated from one another by rests.

However, aspects of register, instrumentation, contour and structural function in VM II'' reveal a connectedness to VM II and its variants (Example 28) that is deeper than that of module XI, reinforcing the distinctiveness of module XI and VM II''. The repeated four-note "motive" $G^{\flat}6$, F6, D#6, E6 in VM II'' (transposed to octave 4 in this example) has the

EXAMPLE 28



reverse contour of the first four pitches in VM II' (measures 141-145) and the second, third, and fourth pitches of the repeated "motive" (F6, D#6, E6) in VM II'' have the same contour as VM II (measures 49-52) and VM II'''' (measures 369-379) as well as the reverse contour of the first three pitches of VM II''' in measures 330-338.

All five versions of VM II are "bridge" modules that span structural divisions (Example 29). This example shows that modules nearer the center of the piece join larger sections. We will see that these modules are more important to large-scale form and to the structure of the piece as a whole than modules nearer the beginning and end.

EXAMPLE 29

MODULE	MEASURES	STRUCTURAL ROLE
II	49-52	Bridges two modules
II'	141-145	Bridges two sections
II''	219-227	Bridges two halves of palindrome and the piece
II'''	330-338	Bridges two modules
II''''	369-379	Bridges the final module and the "coda"

To summarize our investigation of section B, we see that Feldman has combined inversion and retrograde with literal and varied repetition to create palindromic relationships. Extreme changes in the magnitude of some domains generate inversion relations relative to lesser changes in other modules. Modules that contain extreme changes also contain lesser changes that produce "near" inversional relationships and other distinguishing characteristics.

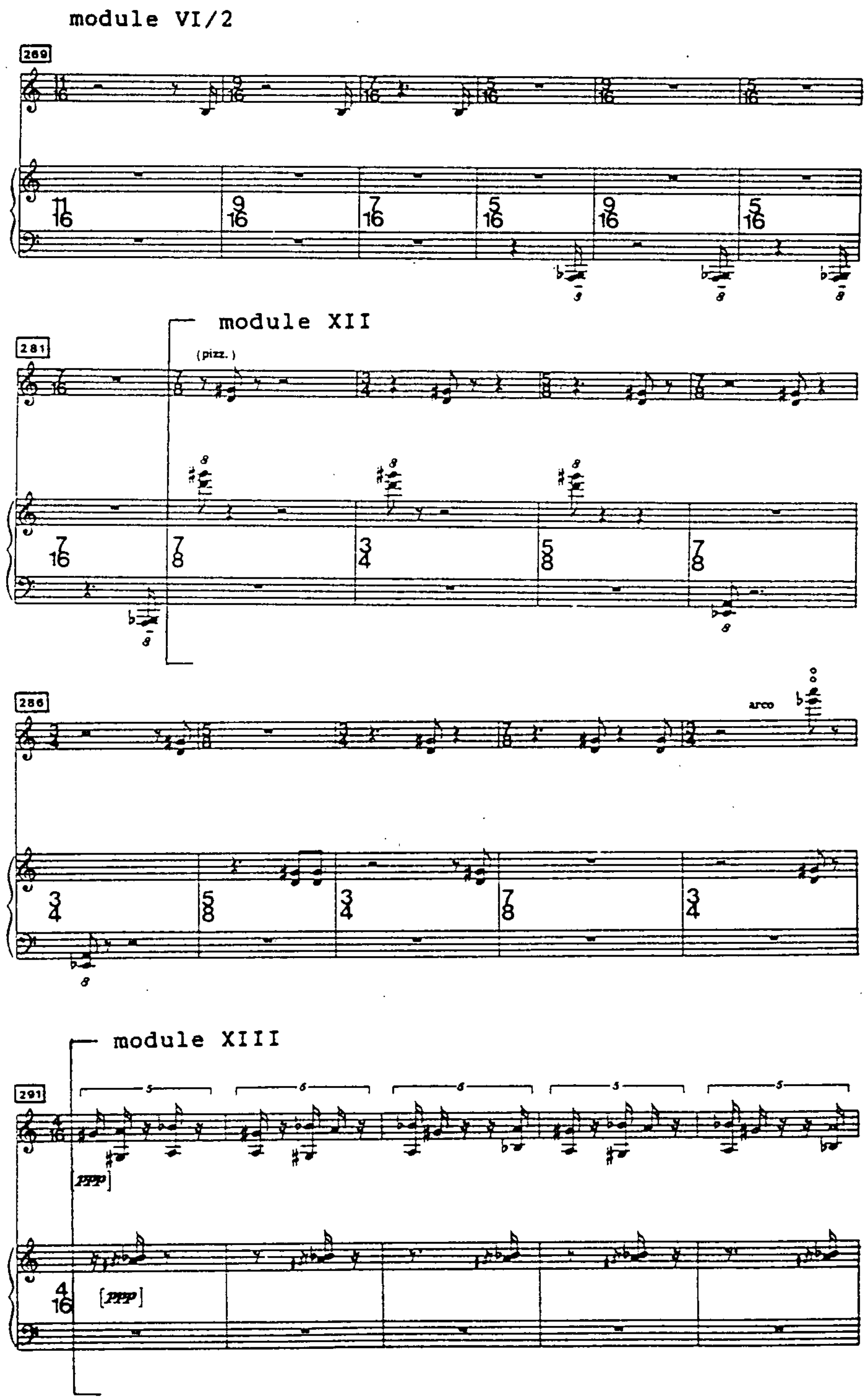
Palindromic structure is commonly understood to be "arch-shaped". Here, modules XI and II'' at the centre of the palindrome represent the "peak" of the arch. Variants of module II that are situated more closely to the central modules XI and II'' are more important to large-scale form than those further from the centre. Developmental connections between module II and its variants, and the continuities that bind module II'' to module XI and therefore to the palindrome, serve to extend palindromic structure beyond the formal boundaries of section B into the temporal regions of sections A and A'.

SECTIONS A AND A':

Non-palindromic parallelisms between sections A and A' reveal the latter section to be a variant of the former. Before discussing these however, let us first examine module XII (measures 282-290, Example 30) which facilitates the transition between the disparate constructs of the final module of the section B palindrome (VI/2) and the first module of section A' (XIII) by incorporating aspects of both modules. Module VI/2, like the previous related modules VI/1, X/1 and X/2 (Example 31), is extended by the widely spaced dyads of module XII and by the alignment of specific registers with one instrument or the other in measures 282-286. Extreme high and low register notes, the latter necessarily, are played by the piano, and mid-register pitches are given to the violin. All five modules contain short, discrete durations and all violin articulations are pizzicato.

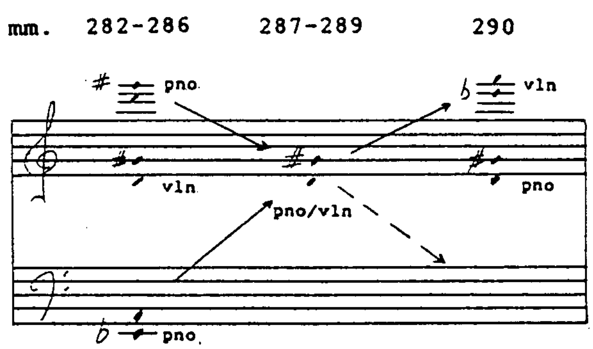
Instrumental and registral inversion in module XII, demonstrated in Example 32, also contributes to the transition to section A'. In measures 287-289 the extreme upper and lower piano registers merge in piano events that occupy the central register of the violin and thereby prepare

EXAMPLE 30



EXAMPLE 31

EXAMPLE 32



the compressed spatial focus of the early measures of module XIII. In measure 290, the violin departs from its central register to occupy the upper one left vacant by the piano as the central space left vacant by the violin is filled by the piano. The pitch classes in the low register of the piano rise to the upper register of the violin in measure 290 and the upper dyad of the piano moves to the central register but does not proceed to the low register of measure 290. At this point in module XII, then, each instrument has exchanged its pitch space for that of the other; we can suppose that the low register in measure 290 "belongs" to the violin but remains unfilled because that instrument cannot play so low. Thus, module XII at the end of section B is not treated palindromically with respect to a module prior to section B, but there is an echo of inversion in its pattern. This local inversion recalls the larger relationships of section B that it concludes.

Another transitional feature of module XII is that aspects of its rhythm and pitch extend module VI/2 and prepare module XIII. The rhythm of each instrument is characterized by infrequent, relatively short durations that extend the rhythmic effect of module VI/2. Heard together, however, these rhythms generate a sense of irregularity that prepares the rhythm of module XIII. Piano durations in module VI/2 do not overlap those of the violin, but in modules XII and XIII piano and violin durations are dispersed within the same time span. Considering pitch: G# is exposed throughout module XII as the upper pitch of a repeated dyad, and is the first pitch of each instrument in module XIII. Thus, the aspects of module XII that extend module VI/2 and/or prepare module XIII generate linearity and organic connectivity in a relatively short but structurally strategic passage.

We recognize module XIII as the beginning of a varied reprise of section A because of its similarities to VM I. For example, aspects of rhythm and articulation divide both VM I and module XIII into three segments as shown in Example 33. The first segment in both modules contains rapid, short durations. The second contains longer, less frequent ones. In each third segment essentially linear designs transmute to essentially vertical ones. Both segments contain exactly four vertical chords--the fifth chord of VM I, in measure 46, is divided into two consecutive dyads.[6]

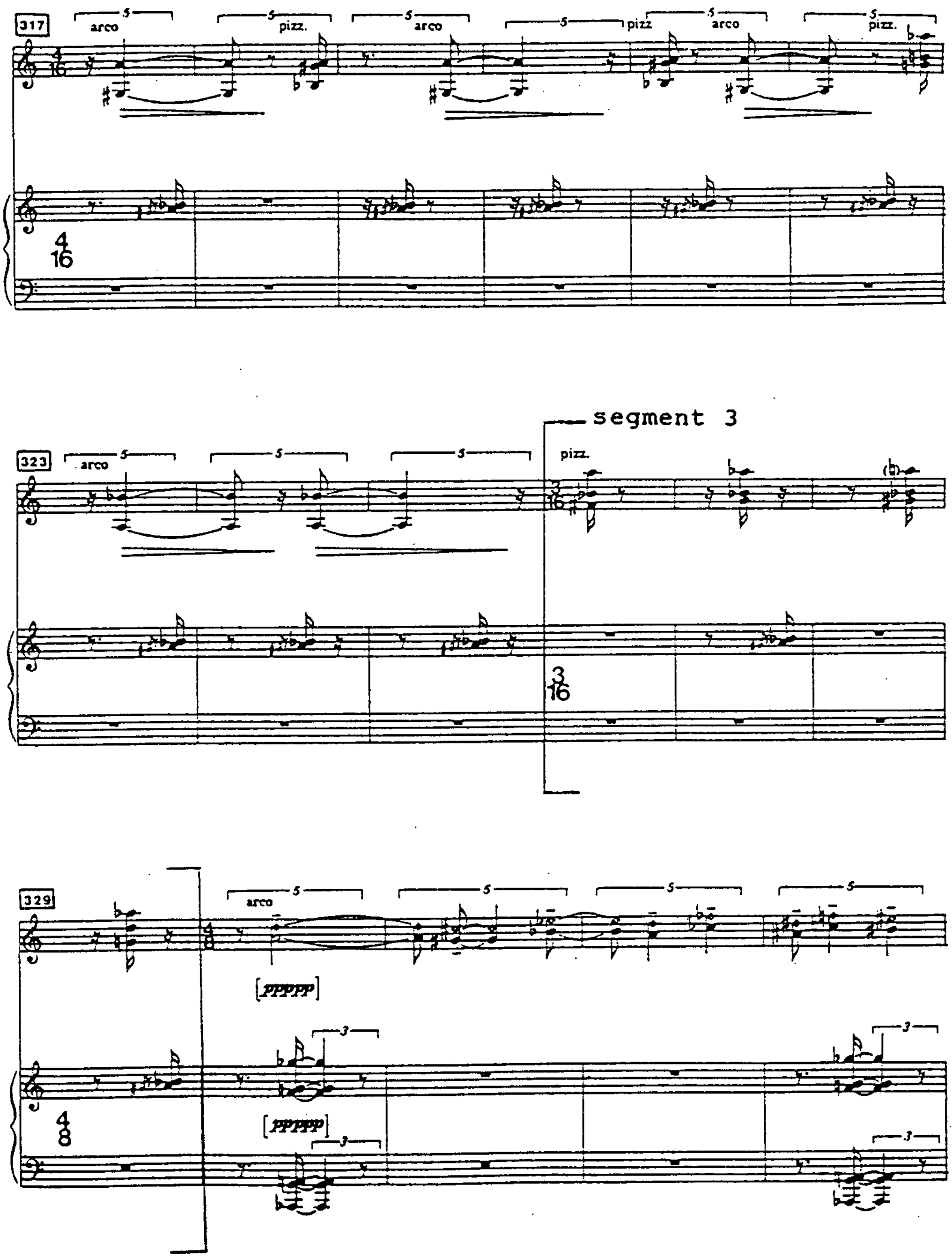
In VM I, segment 1 contains pizzicato and arco articulations, while in segment two, all durations are bowed. In module XIII, the inverse is true--we see only bowed durations in segment one and pizzicato and arco markings in segment two. In each third segment, all chords are played pizzicato.

The relative lengths of segments are shown in Example 34. Each first segment is roughly the same length but the relative lengths of segments two and three are reversed; that is, in VM I, segment two is relatively short and segment

EXAMPLE 33


segment 1
VM I
ppp
arco
pizz.
segment 2
arco
segment 3
arco
pizz.

module XIII
segment 1


317
arco
pizz.
arco
pizz
arco
pizz.
323
arco
segment 3
pizz.
329
arco
[ppppp]
[ppppp]

EXAMPLE 34

SECTION	MODULE	MEASURES	LENGTH IN MEASURES	
1	VM I	1-12	12	
2	VM I	13-20	8	
3	VM I	29-46	20	TOTAL--40
1	XIII	291-305	15	
2	XIII	306-325	20	
3	XIII	326-329	4	TOTAL--39

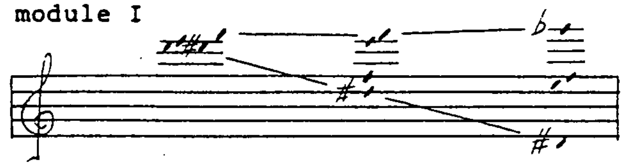
three relatively long but in module XIII segment two is the longer. The combined length of all three segments in each module is nearly identical. (Measures 21-28 contain F sharps that were seen in chapter 1 to be constituent members of piano module I. These measures are therefore excluded from this summation).

In each module, segment one exhibits a process of registral expansion (Example 35) in that the constituent pitch classes of VM I are redistributed in measures 7 and 8 to form a bi-leveled structure that spans 14 semitones, then a tri-leveled one spanning 26 semitones. Module XIII contains bi- and tri-leveled constructs and a nearly identical spatial expansion from 14 to 25 semitones.

Parallelisms in the domain of rhythm deepen the bond

EXAMPLE 35

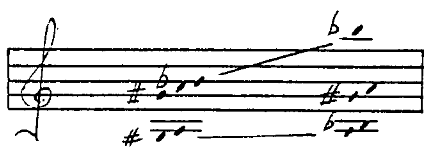
module I



measures 1-6 7 8

span in semitones 3 14 26

module XIII



measures 291-298 299-304

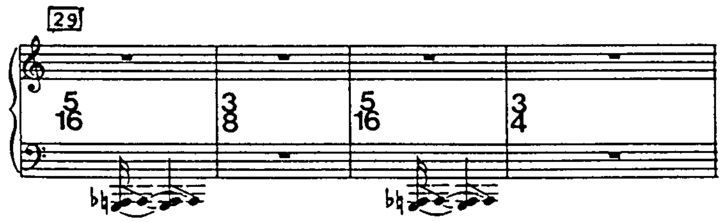
span in semitones 14 25

between sections A and A' in general, and modules I and XIII (as well as other pairings) in particular. Although chapter 3 explores these in some depth, some connections are relevant to the discussion of form in this chapter.

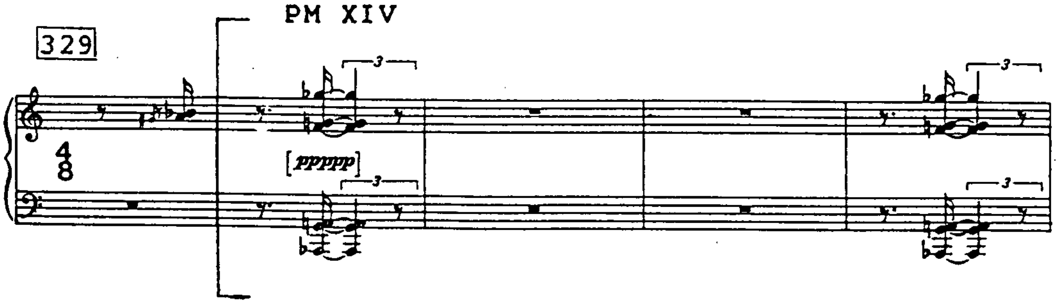
For instance, Example 36 demonstrates that PM XIV (four measures of which are shown in this example) contains the same pitch classes as PM I and the first of its two trichord formations, and that its rhythm is closely related to that of the last few measures of PM I (29-32). In chapter 1 we saw that the two most consistent aspects of a module--pitch and

EXAMPLE 36

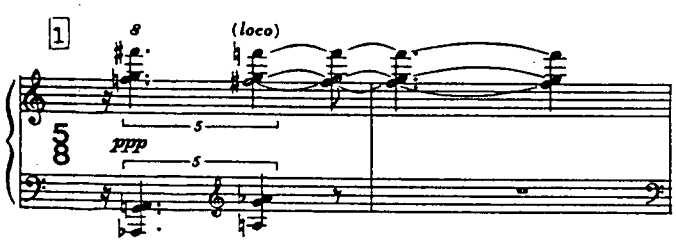
PM I



PM XIV



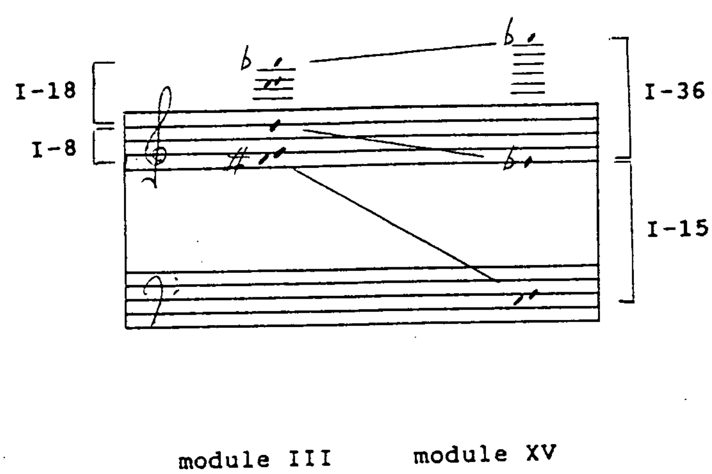
PM I



rhythm--define its pattern; thus, it seems that PM XIV is a variant of PM I rather than a distinct module; but the rhythm pattern of PM I is contained in measures 1-27, <u>not</u> measures 29-32. The latter measures may therefore be seen to contain a rhythmic "seed" that emerges at the corresponding point in the reprise, PM XIV. (The notion that the rhythms of later modules have their generative origins in earlier ones is more fully explored in chapter 3).

Elements of the next two modules in section A (III and IV) are contained in the next module in section A', module XV. Pitch classes in module XV are distributed in a vertical arrangement that is essentially the same as the arrangement of pitch classes in module III but occupies a larger spatial area (Example 37). That is, a low dyad, a single mid-level

EXAMPLE 37



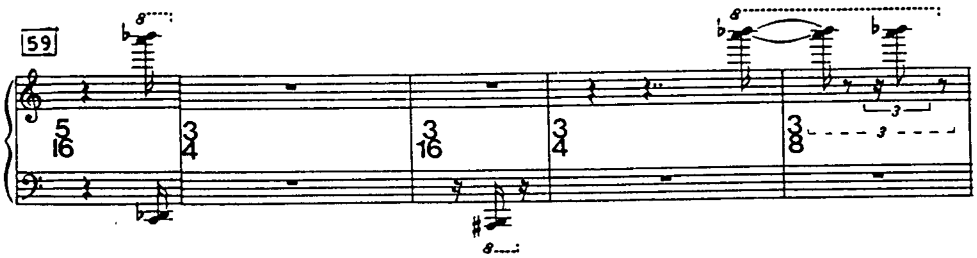
pitch and a single upper-level pitch are arranged such that the lower segment of each chord is slightly less than half the span of the upper segment. Moreover, short, widely spaced durations in the initial measures of module IV (59-63: Example 38) are extended to form the rhythm of module XV.

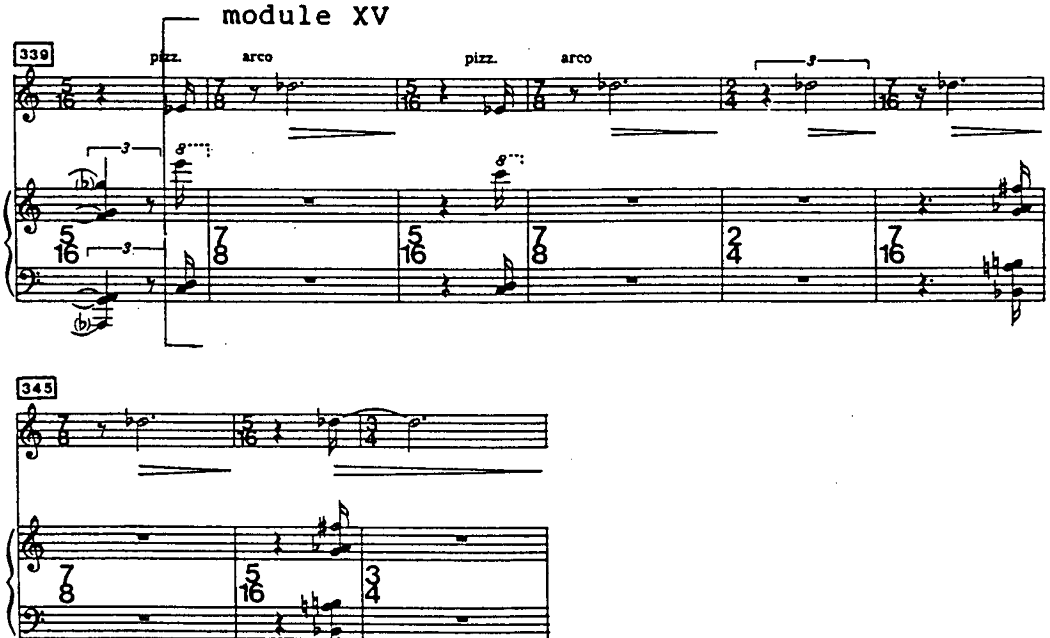
In modules V and XVI (Example 39), which occupy corresponding positions in sections A and A', an expansion of pitch and register takes place such that trichords in the piano in module V become septachords at measure 102, and trichords in module XVI are expanded to hexachords (and septachords) in measures 355-356. (A second spatial expansion occurs in module V at measure 114).[7]

Example 12 has shown that module V may be divided into three segments that differ in pitch class content, texture, and spatial distribution; the third segment contains nine pitch classes to which are added three others that are extended from earlier modules, and that complete the chromatic gamut (refer to example 15). The corresponding module XVI in section A' (measures 348-368) likewise contains all twelve pitch classes but none of them are borrowed. Rather, chords are transposed to form chromatic descending lines that ultimately incorporate all twelve pitch classes. Module XVI may therefore be understood to contain twelve constituent pitch classes that are gradually introduced by means of transposed chords.

EXAMPLE 38

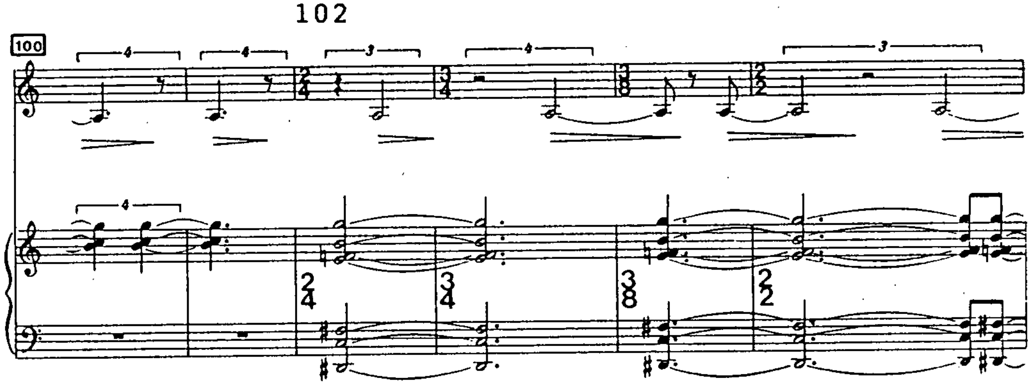
PM IV





EXAMPLE 39

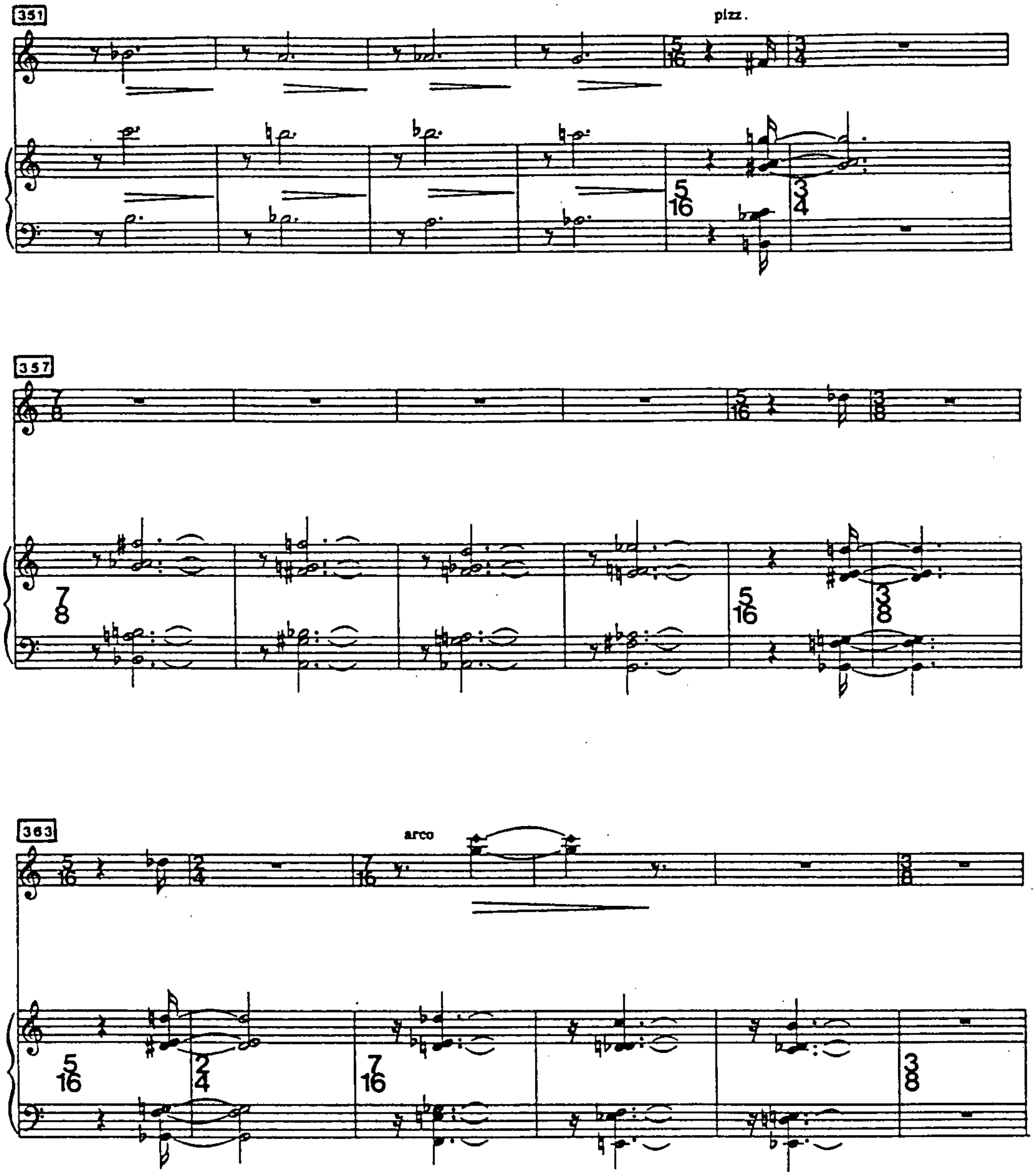
module V



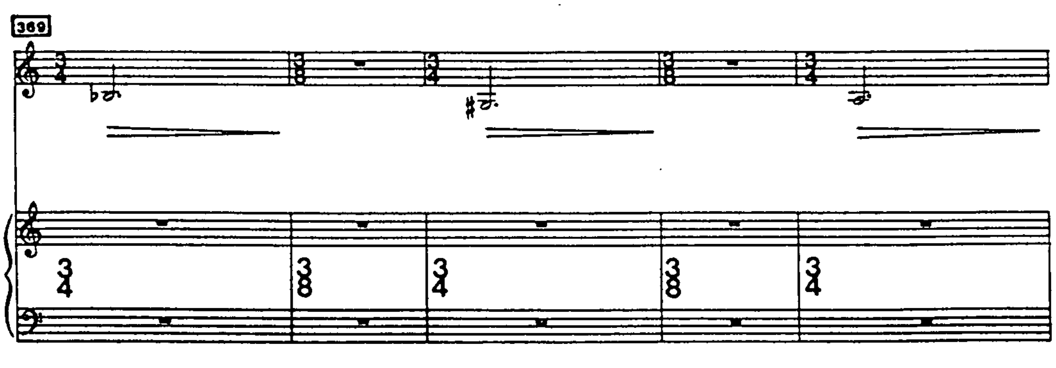
module XVI

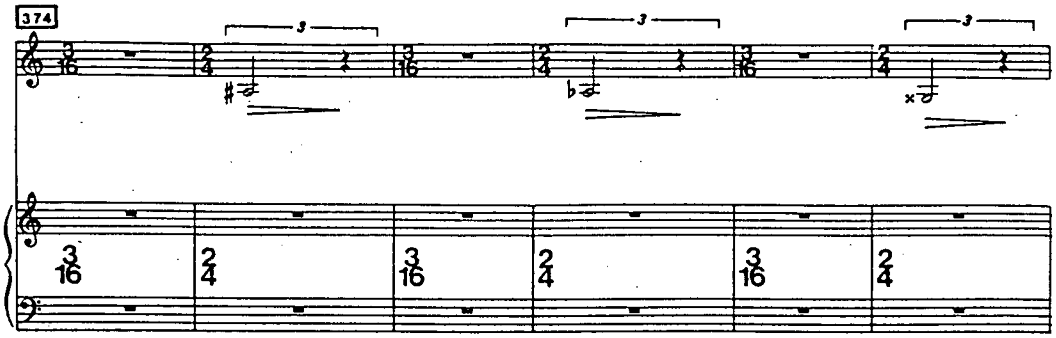
EXAMPLE 40

module XVI

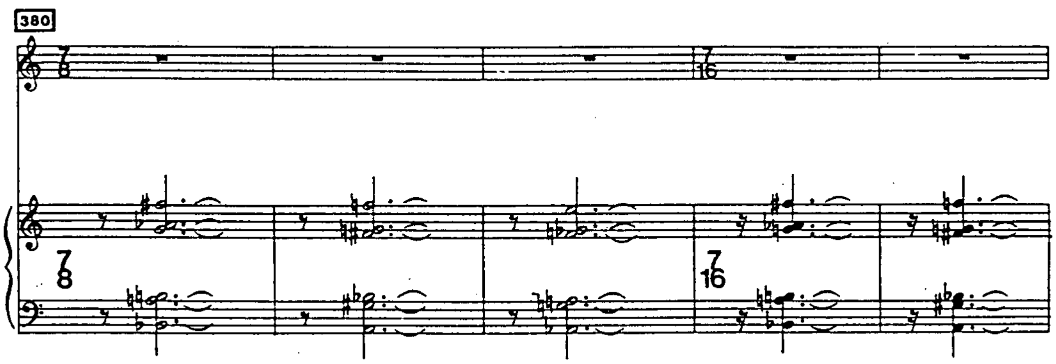


VM II''''





Coda



The third segment of module XVI (measures 380-388) extends the second one but is separated from it by a bridge module, II'''', in measures 369-379 (Example 40). In Example 27 we saw that the surface features of VM II'' connect it to module XI but its structural role more deeply connects it to VM II and its variants. If we consider measures 380-388 to be a "coda" that retains surface features of module XI but has a distinct formal role, module XVI ends at measure 386 and thereby reveals another parallelism between modules V and XVI--each is followed by a variant of VM II.

In this discussion of form we have shown that parallelisms between modules generate formal connections between sections A and A' and define palindromic structure in section B. The sectional structure is augmented, however, by recurrences of module II that have special formal functions. Connections between module II and its variants extend palindromic relationships beyond the formal boundaries of section B into sections A and A' with implications to form that will be addressed in the following discussion.

LARGE SCALE STRUCTURE

The connections that articulate large-scale form are found in the domains of pitch, rhythm, and register. Each of two sets of modules--{VM I, module XI and module XVI, and VM II and its variants}--form a discrete framework: together these comprise the underlying structure of the piece. We will see that the frameworks coincide in some ways--that is, modules in one framework are connected to modules in the other one--but first let us examine each set in turn.

Example 41 illustrates the pitch classes that connect VM I, module XI and module XVI as well as the coda. The five constituent pitch classes of VM I are extended to module XI which also contains two additional pitch classes, G and A♭. Module XVI contains all twelve pitch classes and is therefore connected to all modules in this domain, but its connection

EXAMPLE 41

VM I		{D D# E F G♭}
module XI	vln	{D D# E F G♭ A♭}
	pno	{D D# E F G♭ G}
module XVI (mm. 357-362)		{D E♭ E F F#}

to VM I is especially strong because the five pitch classes of that module are exposed in the upper voice of a series of descending hexachords in measures 357-362 (refer to Examples 39 and 40).[8]

Several factors cause us to perceive the series of hexachords as coherent. They are uniquely orchestrated in that each is contained in the piano, but one pitch in each of the preceding trichords is played by the violin, and, after measures 357-360, a high sustained G in that instrument overlaps the hexachords in measures 365-367. The hexachords in measures 357-360 are uniquely articulated as well. Although the rhythm of these chords and that of the preceding trichords is identical, they are sustained through the eighth rests that separate them while identical rests isolate each trichord. Likewise, each of the subsequent septachords in measures 361-364 are isolated by rests.

More important to the exposure of measures 357-360 are the rhythmic, registral, and textural punctuations that are created by the two septachords that frame them in measure 355 and measure 361. Prior to measure 355, trichords are stated in which the pitches are evenly spaced in three registers. Although the pitches of the following septachord in measures 355-356 are likewise disposed at three levels, five of them are packed into the central octave space. Moreover, the trichords span a range from E♭6 in measure 348 to A♭3 in measure 354 but the following septachord inhabits a lower space between B2 and G5, thus adding to its weight. After measures 357-360, the spatial formation of the septachord in measures 361-364 extends that of the preceding hexachords but the repetition of this chord forms a registral plateau that interrupts the steady descent of the module.

Regarding rhythm, the initial septachord in measures 355-356 contains three pitches that extend the durational values of the preceding trichords and prepare those of the following hexachords, but its four other pitches have very short durations. One of these short notes is given a pizzicato articulation that increases our sense of its durational contrast. The subsequent septachord in measures 361-364 similarly contains six sustained durations in the piano and one short, pizzicato note in the violin.

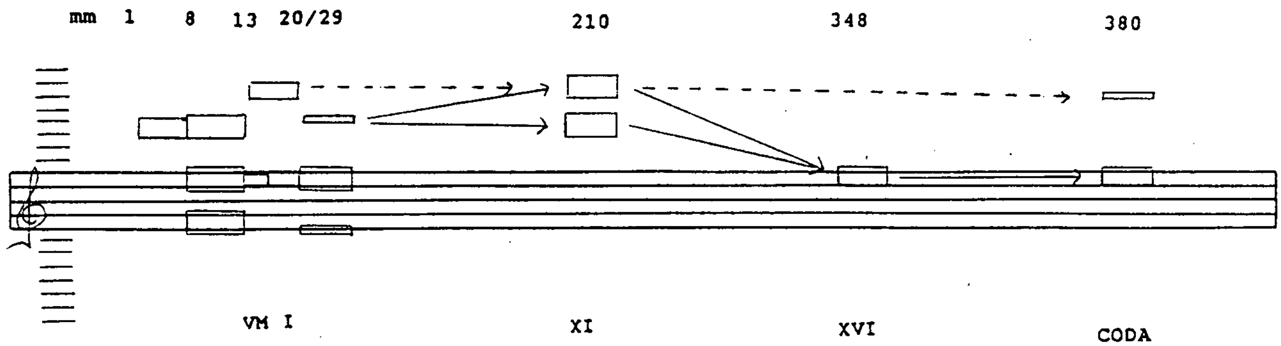
The durational value of the final three hexachords in measures 365-367 is half that of the set of hexachords in measures 357-360. These shorter values are prepared by the first statement of the septachord in measures 361-362, but when this chord is repeated in measures 363-364, it has a slightly longer duration that is precisely three sixteenths shorter than the hexachords in measures 357-360 and three sixteenths longer than the hexachords in measures 365-367. Each septachord is preceded by a rest that is twice the length of that which precedes each trichord in measures 348-354 and each hexachord in measures 357-360.

Each septachord completes at least one of the descending lines in the stream of chords that precedes it. In measures 348-354 the line in the violin that falls from D♭5 to G4 culminates at the pizzicato F#4 in measure 355. The spatially exposed upper line of the piano descends chromatically from E♭6 to A5 then leaps two semitones rather than one to G5--the expected G# is transferred to an inner voice. G5 then acts as an upper neighbour to the first of the five exposed pitch classes that connect this module to VM I, and the second septachord in measures 361-364 contains the upper voice D5 that completes the set. The repetition of D5 causes us to perceive it as a terminus and, as we have seen, creates a moment of registral stasis that temporarily halts the descending path of the line.

Thus each septachord is a punctuation that completes some aspects of the events before it and prepares other events that follow. Each septachord is highlighted by short durations and by the lengthy rest that precedes it. The module is therefore divided into three descending series of chords, and it is the second series that features the pitch classes of VM I. In the coda, shown in example 40 (measures 380-388) the first three chords of this second series are stated three times; thus, three pitch classes from VM I--F#, F, and E--are repeatedly exposed in the upper voice. In the last two measures of the piece, the violin plays the remaining two pitch classes in the descending line, D and E♭; E♭ is therefore the first and the last violin pitch class in the piece.

Let us turn our attention to the registral dispositions of the pitch classes of VM I that are projected to modules XI and XVI. These comprise an arched structure that is illustrated in Example 42. In measures 1-6, four of the five constituent pitch classes of VM I occupy a narrow high register, which is made slightly wider by the addition of G♭ in measure 8. This register comprises one of three strata in

EXAMPLE 42



measures 8-12 but in measures 13-20, three pitch classes, E^{b}, then D and E, are relocated to a higher register that prepares the upper level of module XI. Measures 29-48 contain a tri-leveled structure that is derived from the one in measures 8-12; thus, the upper register of VM I moves from octave 6 to octave 7 and back to octave 6 forming a local arch that reflects the shape of the large-scale arch formed by the upper registral levels of VM I, module XI, and module XVI.

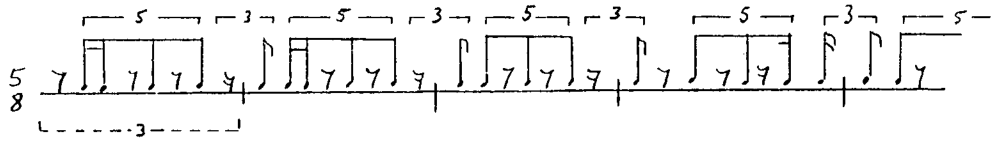
Although there are four distinct strata in VM I, octave 6 defines the starting point of the large-scale arch because it is the only level in that module that contains all five pitch classes. In module XI, these five pitch classes appear simultaneously in two registers, octave 6 and octave 7, the latter of which is the highest point of the large-scale arch, and in module XVI, they are placed at the lowest register of the arch--octave 5. In the coda, four pitch classes, D, E, F, and F#, extend octave 5, but $E^{b}7$ in the violin echoes the upper level of module XI and of VM I. Thus, a process of registral change that generates a local arch in VM I is projected across the entire length of the piece, although the final level of the large-scale arch is lower than that of the local one.

In the domain of rhythm, the second and third stages of the three-stage process of rhythmic simplification in VM I (refer to Example 7a) are projected to modules XI and XVI respectively. Example 43 shows the rapid, irregular durations that typify measures 1-12 (VM I) and the two rhythms below and to the left illustrate the second and third stages of the process. The rhythm of module XI is a variant of measures 1-12 that is analogous to the rhythm of stage two in measures 13-16. In module XVI, sustained, regular durations are the analog of the rhythm of stage three. Thus, a process of rhythmic change in VM I is projected to modules XI and XVI in such a way that the second and third stages, each of which filled only a few measures in the local process, are expanded to comprise an entire module.

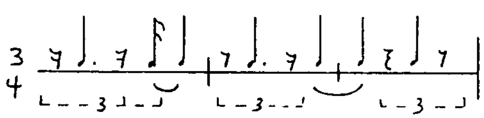
Now let us examine the large-scale structure formed by VM II and its variants. This framework extends palindromic relationships beyond section B and coincides in some ways with the structure generated by VM I and modules XI and XVI.

EXAMPLE 43

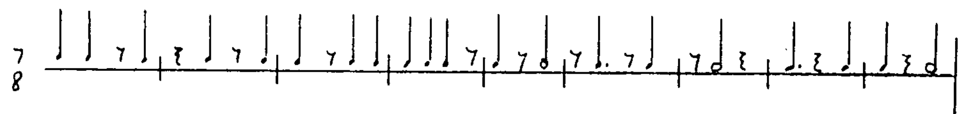
VM I
mm 1-4
(stage one)



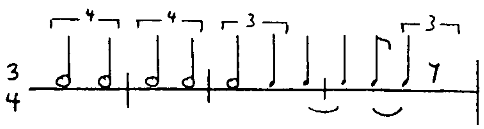
VM I
mm 13-16 (stage two)



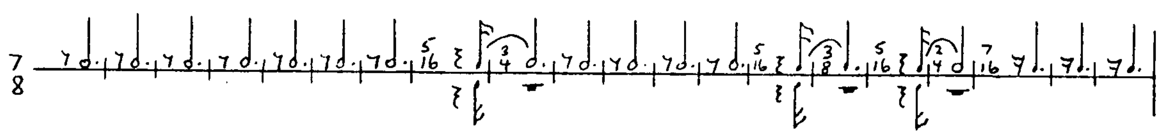
module XI



VM I
mm 17-20 (stage three)



module XVI



EXAMPLE 44

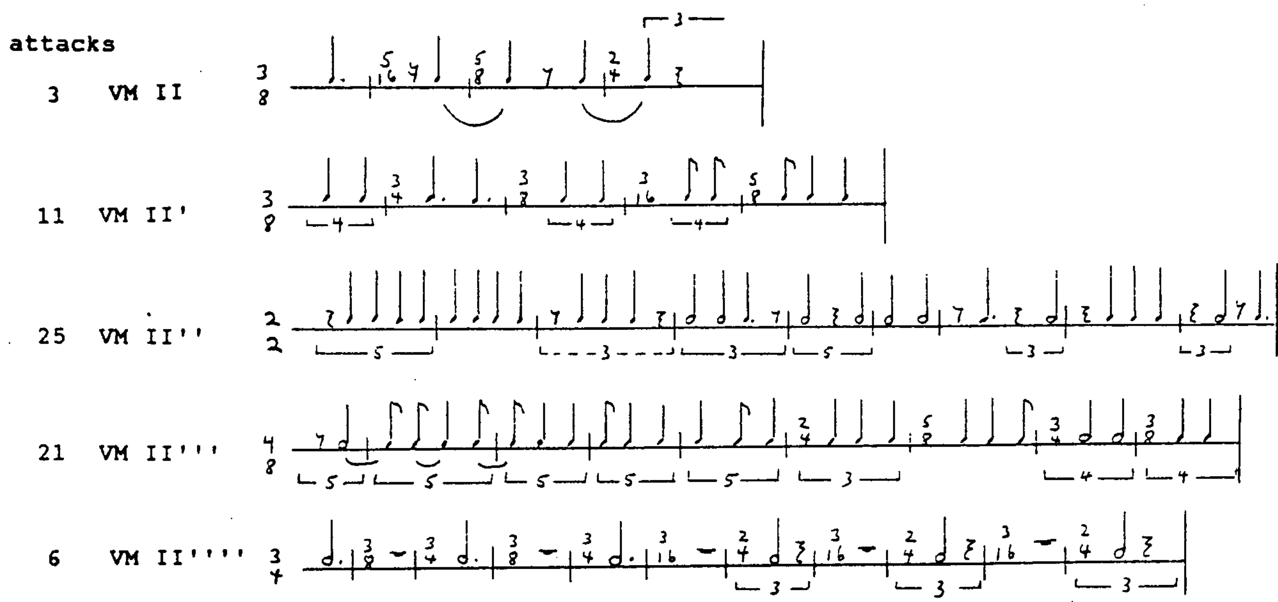
VM II	{G# A B♭}
VM II'	{G# A B♭ B}
VM II''	{ D# E F G♭}
VM II'''	{G# A B♭ B C D♭ D E♭}
VM II''''	{G# A B♭}

Example 44 shows pitch-class associations between VM II and its variants. Palindromic relationships, symbolized by square brackets in the example, are produced by the pitch classes G#, A, and B♭ that are common to VM II and VM II'''', and by the pitch classes G#, A, B♭, and B that are common to VM II' and VM II'''. VM II'' contains a discrete set of pitch classes, D#, E, F and G♭.

Some pitch connections are not palindromic; for example, VM II''' begins with G#, A, B♭, and B in measures 330-332, then C, D♭, D and E♭ are added. The last of these, E♭, is common to VM II''. When they are viewed as a single set, the pitch classes of VM II' and VM II'' do not form a chromatic set; however, the pitch space between B and D# that separates them is filled by the C, D♭, and D in VM II'''. Each set of pitch classes in each of the five modules is a chromatic set, and the union of these forms a single, large all-adjacent set.

The parallelisms in the domain of rhythm shown in Example

EXAMPLE 45



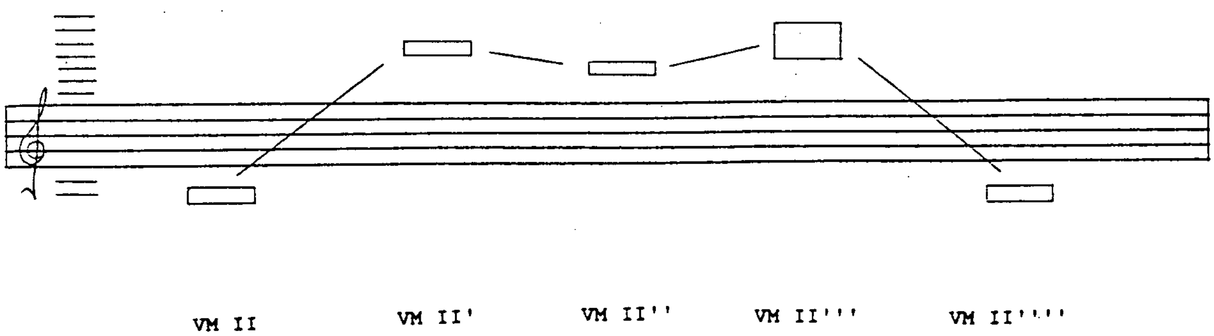
45 exhibit aspects of palindrome. VM II and VM II'''' contain sustained durations that are separated by rests, and the contiguous durations of VM II' are extended to VM II''' with only slight changes. VM II'' may be seen to embody aspects of both pairs of modules in that it contains some rests and some adjoining notes, and has durational values in common with all four modules.

The number of attacks in each module are tabulated in the column to the left of this example. These figures demonstrate palindromic associations in that VM II and VM II'''' have fewer attacks than VM II' and VM II''', which in turn have fewer attacks than VM II''. Furthermore, the magnitudes of VM II and VM II' are expanded when they are restated as modules

VM II'''' and VM II''' respectively,[9] a process that generated inversion relations and articulated palindromic structure in section B. Among VM II and its variants, however, expansions do not create inversion relations and therefore have only local meaning.

Example 46 illustrates the registral arch created by these five modules. Palindromic associations are formed by the common low register of VM II and VM II'''' and by the shared upper region of VM II' and VM II'''. VM II'' is situated in a range that is slightly lower than that of its neighbouring modules.

EXAMPLE 46

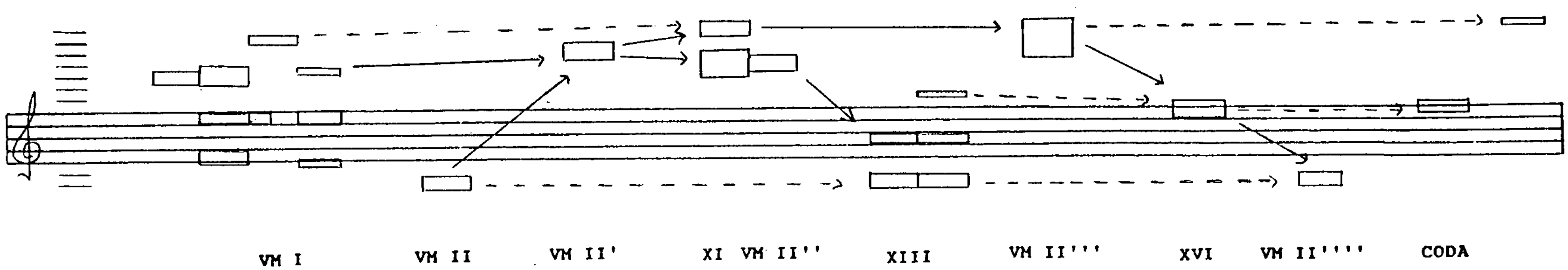


Although the pitch classes G#, A, B♭, and C♭ occupy the same high spatial level in VM II' and VM II''', the latter module contains other, higher pitches that form the uppermost point of the arch. We have seen, however, in Example 29 that VM II'' has a pivotal structural role among the five modules; thus, the registral high point does not coincide with the underlying structural one.

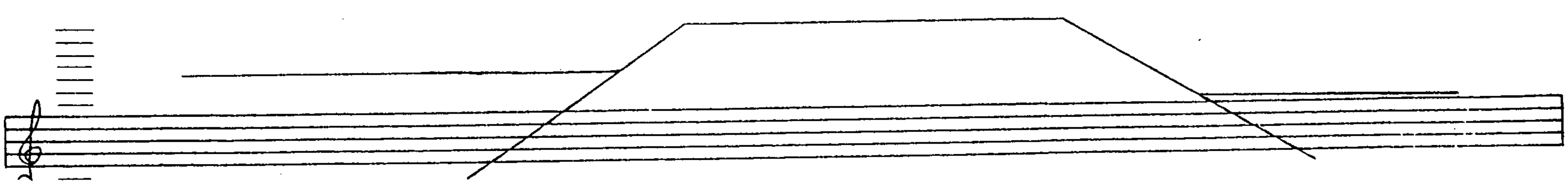
Thus far, our discussion of larger structure has shown us that the piece contains two frameworks, each formed by a discrete set of modules. Although we have investigated these structures as distinct units, they share some common attributes of pitch, rhythm, and register, and are therefore said to coincide. At the same time however, each structure retains its individual identity. The frameworks are therefore fastened to one another at points of coincidence such that they are perceived to be two segments of a single, more complex structure.

Let us consider points of coincidence in the domain of register, represented in Example 47. We have seen that the register of measures 1-7 in VM I is extended to module XI and forms the lower of its two discrete registers. The subsequent module VM II'' inhabits this space; thus, its register is extended to it by VM I. A more detailed representation of this relationship is given in Example 49. This example shows that each of two processes of expansion cause the span of a module in one framework to overlap the span of a module in the other one. The span of VM I expands from 4 semitones (I-4) to 6 semitones (I-6) when it is extended to the lower strata of module XI, and VM II' expands from I-3 to I-7 in VM II'''. Thus, we see that A♭6 in module XI coincides with G#6 in VM II' and VM II''', and that D7 and E♭7 in VM II''' coincide with the upper strata of module XI.

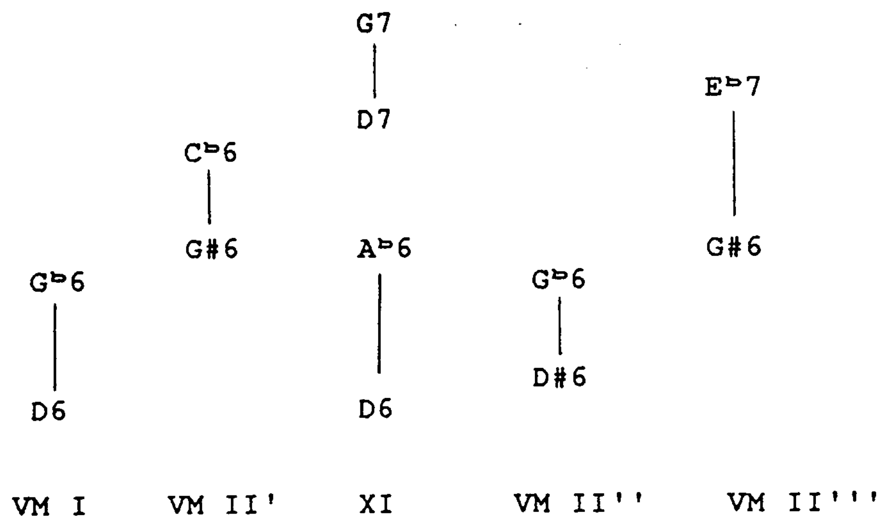
EXAMPLE 47



EXAMPLE 48



EXAMPLE 49



Example 49 exhibits a broader process of expansion such that the span of VM I widens to the extent that it incorporates both strata of module XI. Each of VM I, VM II' and the upper strata of module XI occupy discrete, progressively rising spaces that may be seen to widen the span of VM I from I-4 to I-10 in VM II', and I-17 in module XI. Thus, while the span of VM II' does not coincide with that of VM I, it constitutes a step in the expansion process of VM I.

Thus, the registers of the two frameworks coincide in module XI and VM II'' such that the space of VM II'' is contained within that of module XI. By contrast, registers coincide more selectively by way of discrete processes of expansion in two pairs of modules--VM I and XI, and VM II' and VM II'''. Although the registers of VM I and VM II' do not coincide, the span of the latter module is encompassed by the relatively dramatic expansion process of the former.

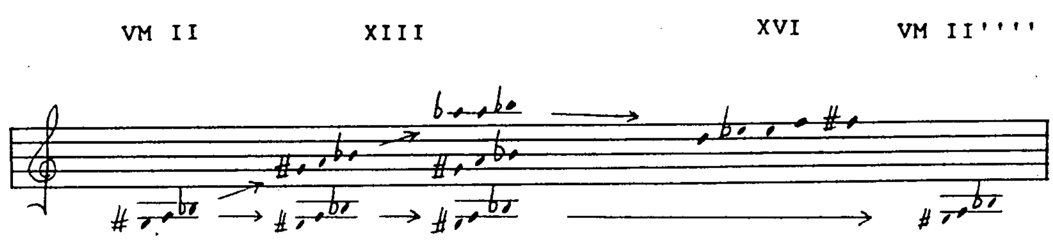
In the same way that the register of VM II'' may be seen to emerge from within that of module XI, the span of VM II'''' derives from module XVI. VM II''' is situated in a high register and VM II'''' in a low one but the descending lines of module XVI facilitate the spatial transition between the levels. In module XVI (refer to Example 39 and 40), we see three gradually descending lines, the highest of which moves from E♭6 to G5 (measures 348-356) then states the constituent pitch classes of VM I in measures 357-364 (the register of these pitches is isolated in Example 47). Three subsequent pitches (D♭5, C5, and B4) complete the descent.[10] In measures 352-354, the lower voice articulates the pitches of VM II'''' but in the measures that follow, the widened span of module XVI envelopes their narrow register. The descending hexachords in measures 357-367 inhabit a space between E♭2 and F#5; thus, the pitches of VM II'''' (G#3, A3, and B♭3) may be seen to emerge from about its midpoint.

The descending lines of module XVI therefore ensure that the transition from the very high register of VM II''' to the low register of VM II'''' is perceived as a gradual one. Although the spatial locus of the latter module coincides with that of module XVI and seems to be extended from it, VM II'''' remains more strongly connected to VM II in that it exactly repeats that module's register and pitch classes.

Let us turn for a moment to the domain of pitch. In Example 26 we saw that VM II'' contains four of the constituent pitch classes of module XI rather than the expected pitch classes G#, A, and B♭ that connect VM II with its other three variants. These are instead displaced to module XIII.

Example 50 illustrates pitch and register connections between VM II, modules XIII and XVI, and VM II''''. G#, A, and B♭ occupy a single register in VM II that is expanded to two, then three levels in module XIII. (An analogous process takes place in VM I--see Example 35). The constituent pitch classes of VM I are exposed at the highest of these levels in module XVI (measures 357-362) and in the coda. VM II'''' inhabits the lower level. In this way, the upper and lower strata of module XIII foreshadow the final register of each large-scale registral arch.

EXAMPLE 50



Example 48 depicts the arch formed by the uppermost points of registral coincidence between the two large-scale structural frameworks. Each structure begins at a discrete register--these converge at octave 6 in VM II' and rise to octave 7 in module XI. After VM II'''' the arch falls to octave 5 in module XVI and the two structures divide--octave 5 is extended to the coda and the register of VM II is recovered in VM II''''.

Most points of coincidence in the piece are registral; however, there are two points of rhythmic coincidence that we will now consider. The first occurs in module XI and VM II'' and the second takes place between module XVI and VM II''''. Regarding the first, Example 43 demonstrated that each of the second and third stages of a three-stage process of rhythmic simplification in VM I were projected to modules XI and XVI respectively. Example 45 reveals that palindromic relationships among VM II and its variants were created by a different type of rhythmic process. These discrete procedures produced rhythms in the two central modules XI and VM II'' that coincide; that is, they are essentially the same in that the rhythm of VM II'' sounds like a continuation of the rhythm of module XI.

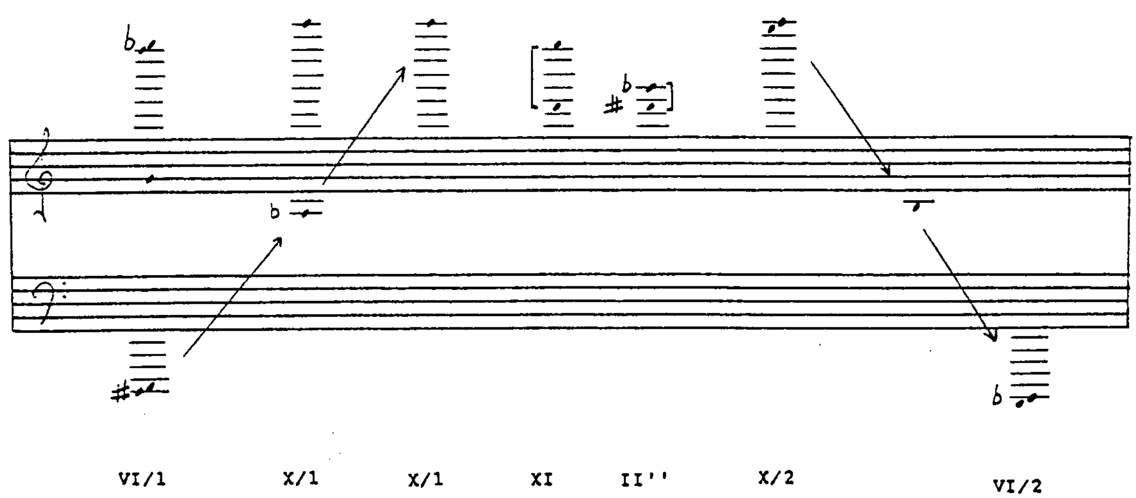
At the second point of coincidence, module XVI and VM II'''' share common rhythmic attributes. Sustained, contiguous durations comprise the third stage of rhythmic simplification in VM I (measures 17-20, Example 43) but the durations of VM II and VM II'''' are separated by rests (Example 45). The rhythm of module XVI, the large-scale analog of the third stage of VM I, incorporates this aspect of VM II; that is, its durations are separated by rests. But the durations of VM II'''' are more widely spaced than those of module XVI and therefore proceed more slowly; thus, while the rhythm of module XVI exhibits elements of VM I and VM II, the rhythm of VM II'''' extends the process of rhythmic simplification that is projected from VM I to module XVI.

We will consider one last example of coincidence that takes place outside the domains of pitch, rhythm, and register; specifically, module XI and VM II'' share the same structural function. Palindromic relationships unify each of two sets of modules--VM II and its variants, and the modules that comprise section B. The central module in each set (VM II'' and module XI respectively) is not repeated, nor is its own pattern palindromic; instead, it functions as a bridge module that connects the two halves of its palindrome. But the connective purpose of module XI has a deeper meaning.

VM I, module XI, module XVI and the coda, form a large-scale framework that extends from the first measure of the piece to the last. Its central module therefore bisects not only the palindrome in section B but the piece as a whole. The framework made with VM II and its variants begins in measure 49 and ends in measure 379; thus, while its central module VM II'' bisects a large-scale structure that is itself palindromic, it does not, strictly speaking, divide the entire piece. But module XI and VM II'' are contiguous and share several attributes such that we perceive the latter module to be a continuation of the first; thus, VM II'' may be seen to embody the deeper connective meaning of module XI as well.

Module XI and VM II'' coincide in three domains--pitch, rhythm, and register, and they share a common structural purpose; thus the piece is weighted so that its structural focus is located at its centre. As Example 51 shows, a secondary registral arch created by the spans of modules VI/1, X/1, X/2, and VI/2 frames the central modules. (In this

EXAMPLE 51



example, the upper and lower pitches of module XI and VM II'' are bracketed to show that other pitches are contained in the space between them). Although there are few pitch-class connections among them, these four modules share distinctive, nearly identical rhythms and together they inhabit three widely spaced registers. Module VI/1 contains all three spatial levels, while module X/1 retains only the upper two, and the highest level is extended to the repeat of module X/1. The registral floor therefore rises to its highest point immediately prior to module XI. The downward slope of the arch is steeper--after VM II, each registral level is presented in turn from highest to lowest. The pitches of module X/2 are clustered in the high register, then, in module VI/2, a central pitch is followed by a low register dyad.

The bisected peak of the resultant arch rises above module XI and VM II''; therefore, Example 51 projects a registral profile that resembles that of the large-scale arch generated by VM II and its variants (Example 46). The central modules of each formation are lower than the modules that surround it but their structural meanings are deeper. One of the modules of the secondary arch, VI/1, is connected to module XI and VM I in that all of its five pitch classes are contained within the former module and four of them are shared with the latter one. In this way, the secondary arch coincides with the framework whose central modules it surrounds.

In the first part of this chapter, we saw that structural parallelisms between modules gave rise to an ABA' formal plan and that the second of these segments contains a palindrome that is itself a two-sided structure. VM II and its variants project palindromic relationships, and therefore two-part structure, across a large distance. Furthermore, the piece as a whole is bisected by its structural pivot, module XI, but the large-scale framework to which it belongs projects three-stage processes in the domains of rhythm and register that are analogs of local ones within VM I. Thus a variety of formal processes generate juxtaposed formal shapes that articulate local and large-scale structure. In the following chapter, we will examine another process that articulates the ABA' plan of the piece--large-scale rhythmic pulse.

CHAPTER 3

LARGE-SCALE RHYTHMIC PULSE

Let us begin by examining two important concepts--"pulse" and "rhythm stream." In some recent literature, the term "pulse" refers to a regular series of equal durations.[1] David Epstein presents the contrasting view that the specific durations of pulses are controlled by the performer and therefore may or may not exhibit regularity.[2] He contends that beats and pulses reside in discrete temporal dimensions. One of these, the dimension of "chronometric time," is comprised of beats, measures and hypermeasures that together form an underlying, periodic metric grid. Its counterpart, "integral time," contains pulses, motives and phrases that may or may not exactly coincide with the metric structure (in rubato passages for example). Pulses are therefore considered to be aurally discernible, temporally flexible attack points that correspond to beats but may not specifically align with them.

In the present analysis, a quite different concept of pulse is linked to the notion of "auditory stream" as it is defined in the psychoacoustic literature.[3] In this conception, a pulse is defined as a span of time within which momentum is generated then dissipated in a more or less gradual way. Its length is demarcated by the attack point that begins it and by the culmination of the duration that ends it. Momentum is generated and maintained by a stream of related rhythmic events that nevertheless decelerate the pulse over time.

Spring of Chosroes contains two such pulses: the length of the first equals the length of section A and the second is the length of section A'. The rhythm of section B projects stasis, that is, it generates no momentum, but surface processes of deceleration may be found in the first half as well as in the central modules XI and VM II'', and there are processes of acceleration in the second half. In this way, the gradual decay of rhythmic momentum in section A reverberates on the surface of section B, and the accelerations that follow prepare us for the arrival of the second pulse in measure 291.

Several factors contribute to the deceleration of momentum in each pulse; among them, lengthened durations, registral expansion, disparate registers, wide temporal spacing, fewer attacks, etc. Conversely, each pulse is prolonged by rhythms that derive from VM I or PM I. We will begin our discussion by examining these and other features in section A.

SECTION A

The first pulse is comprised of two discrete, simultaneous rhythm streams. The more powerful and longer lasting of these begins in the piano while its counterpart in the violin dissipates partway through the section. Our initial focus will be toward the shorter stream.

In VM I, measures 1-6 (see Example 33), momentum is generated by a linear pattern comprised of rapid, variously articulated, irregularly spaced durations that are contained within a narrow register. The module begins to decelerate in measures 7 and 8 when its spatial field expands from I-2 to I-27. Because the expansion unfolds a lower space, the module becomes more weighted, and since there is no compensatory increase in the attack frequency in these measures to support the added weight, the momentum begins to slow down. In measures 8-10, the narrow span of the opening measures is recovered but the attacks are less frequent and they are more regular; therefore, the momentum does not return to its initial intensity.

Durations are longer in measures 13-16 than in measures 1-12, and attacks are more widely spaced. Three pitch classes are distributed in two registers--octave 5 and octave 7. The span that separates these two levels (I-25) is larger than the widest unfilled space in measures 8-12 (I-13); thus, the module is at once higher and less dense. In measures 16-20, sustained, legato durations are positioned in the uppermost of these two registers.

As the rhythm of VM I decelerates in measures 13-20, it increasingly resembles the pattern of PM I; that is, its durations are longer and more uniformly spaced, and after measure 20, short pizzicato chords that are isolated by lengthy rests project stasis.

Although the energy of the first 12 measures of VM I dissipates in measures 13-20 as it assumes a profile closer to that of the piano, the interlocked patterns of PM II and VM I in measures 33-49 (Example 2) ensure the continuance of its rhythm stream. For example, the pattern in measures 33-35 displays three pairs of short durations that are spaced by eighth rests (in the third pair, a chord in the violin that articulates three discrete registers precedes a high C7 in the piano). This is like the first two measures of VM I and measures 10-11, where pairs of sixteenths are followed by eighth rests; in fact, most attacks in measures 1-12 are isolated by eighth rests. In measures 8 and 10-12, the violin distributes four vertical pitches in the three general spatial areas that are demarcated by the chord in measure 35, but each violin tetrachord in measures 10-12 is stated by means of two consecutive dyads such that the lower dyad precedes the higher one. The spatial relationship of these two dyads is echoed in measure 35 by the tetrachord and subsequent high C7 in measure 35, and by the rapid arpeggiation of the pitches of that chord from lowest to highest.

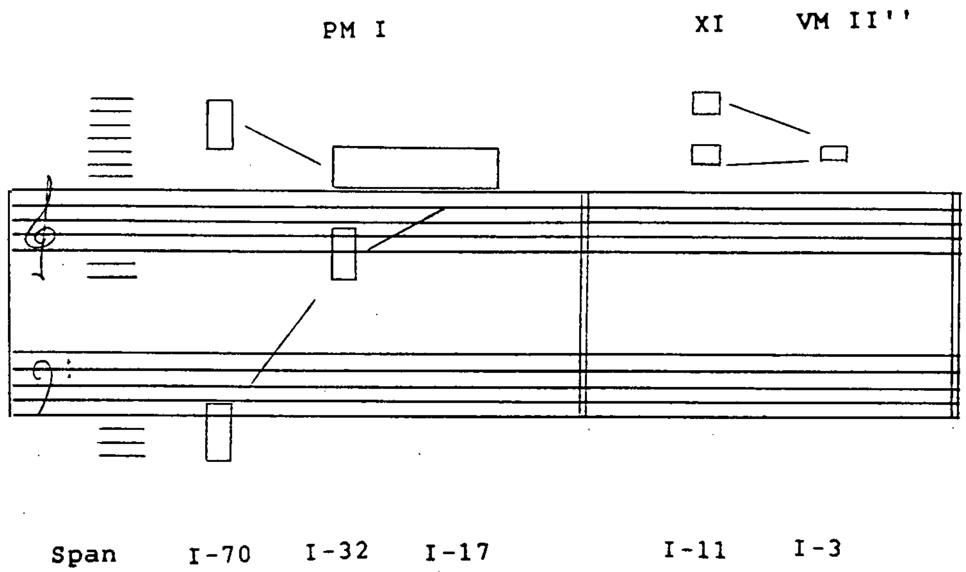
Each of the two successive statements of the measure 33-35 pattern in measures 39-46 is modified in a way that slows the impetus of VM I. In measures 39-42, each pair of attacks is set off by quarter rests rather than by eighths. In measures 41-42, a low clustered trichord precedes the mid-register violin chord--their combined span (I-59) is wider and lower than that of the corresponding pair of attacks in measure 35 (I-45). Measures 43-48 contain three paired C7's as in measure 33, but here the notes are divided by a brief rest. In measure 46, the pitches of the violin chord are arranged as consecutive dyads: the durations of the dyads and the rest that divides them is twice that of the preceding C7's.

Thus, the pattern of VM I dissipates in measures 13-20 but the momentum it generated in measures 1-12 is extended by the pattern of PM II. In VM II and module III, the last few durations in the rhythm stream are passed from the piano back to the violin (refer to Examples 11 and 9).

In VM II and module III the momentum of VM I ceases. Three mid-level sustained durations in VM II give way to a single, very long A♭6. It is supported by a repeated sustained chord in the piano that occupies a relatively high spatial area and therefore has little weight. PM IV contains a few short notes and pairs of notes that remind us of the rhythm of VM I, but these are isolated events that do not revive its momentum.

Let us turn to the stronger, more enduring rhythm stream that begins with a repeated two bar pattern in the piano in measures 1-18. (The first occurrence of this pattern is isolated in example 36). Each pair of measures contains two chords, the pitches of which are disposed as trichords that together reside in seven octaves as shown in Example 52. The first chord in each pair inhabits the upper and lower strata

EXAMPLE 52



and the subsequent chord occupies four of the central layers.

Because the duration of the upper trichord in the second chord of each pair is sustained, the span of the pattern constricts from I-70 to I-32, then to I-11. At the same time, the durational relationship between the two chords (short-long) creates closure. In this way, a wide span compresses to a narrow one to create propulsion that dissipates somewhat during the length of the long trichord in each pair, but the pattern is repeated several times and therefore generates enduring momentum.

Measures 19-27 contain sustained reiterations of the second chord of the pattern--the intensity therefore eases somewhat.

(Measures 23-27 are shown in Example 13). After a measure of rest, PM I culminates with two chords widely separated in time, in measures 29 and 31 (Example 2). As we have seen, the rhythm of PM II subsequently interacts with that of VM I and prolongs the latter module's rhythm stream thereby interrupting the rhythm of PM I; however, two chords in PM II exhibit characteristic features of the second chord of each two-bar pattern in PM I. In measures 36-37, a relatively short, registrally dispersed chord in the piano is combined with a sustained violin pitch (D5) that is contained within the span of its upper trichord. In measures 47-48, a similarly disposed piano chord repeats the durational pattern of the first but more closely reflects the formation of PM I in that its upper trichord is sustained. These two chords connect PM I to PM II and therefore extend not only its rhythm but the deeper momentum that it generated.

After VM II and module III, the pattern of VM III (measures 58-87) extends some aspects of PM I. Pairs of violin dyads in measures 58-62 are separated by complete measures of rest, and after measure 63 they are more widely separated in time. In contrast to PM I however, the span of each pair widens from I-6 to I-11 and thereby gradually reduces the energy of the underlying momentum.

In measures 58-64 (Example 6) isolated sixteenth notes in the piano recall the rhythm of VM I (measures 29-48) but the dispersion of these pitches in chromatic dyads at extreme high and low registers not only extends the registral formation of the initial chord of PM I, but it anticipates the first, static module of section B (module VI/1--see Example 19).

The pattern of PM IV in measures 56-73 (Example 6) exhibits elements of both rhythm streams. The spatial configuration and durational relationship of each pair of chords in PM I are echoed in the pairs of attacks in measures 65, 68, 70, and 72 in that the span of each pair contracts, and each second attack is longer than the first. The close spacing of each pair of attacks derives from the paired sixteenths in measures 1, 2, and 10-11 in VM I, but these do not revive the momentum of that module; rather they decorate the surface of an otherwise largely static passage that extends the rhythm of PM I.

In measures 84-89 elements from three modules are intermingled (Example 14). Each of the chords in the piano reflects the formation of the second chord of each pair in PM I in that each forms two trichords, the higher of which lasts longer than the lower. But each chord is united with a violin pitch; therefore, its instrumentation and exact durational values specifically reiterate the final chords of VM I and PM I in measures 26-27 and measures 29-31. However, in these the lower trichord is sustained.

Module V exhibits a pattern of long, repeated chords that is derived from measures 19-26 in PM I (refer to Example 12).

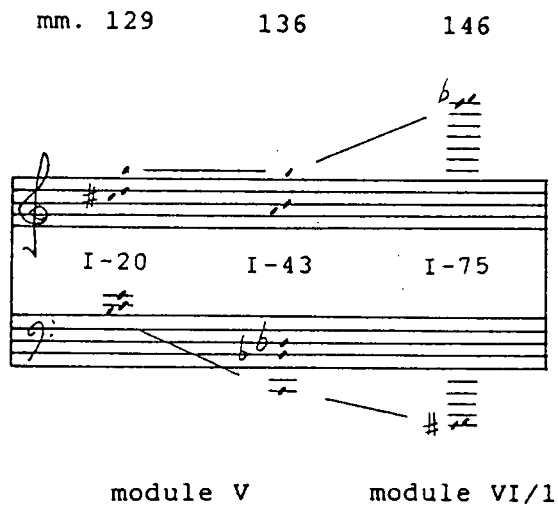
In module V, spatial expansions in measures 102 and 114, and increased density in measure 102, add weight to the module that decreases the momentum.

Several factors reinforce our perception that the chords after measure 114 unfold within that wide span (I-66)(Example 16). Although they are more densely packed than any previous chords in the module, they sound less weighted because their lowest pitches are higher than that of the repeated chord in measures 102-113, and because they project some instability since no two adjacent chords are the same. G5 and $A^{\flat}6$ comprise a two-tiered registral ceiling such that each chord after measure 114 is suspended from the lower tier. The low trichord in measure 114 is registrally and texturally exposed, and it is distinctive for its density and weight. Furthermore, it occupies a discrete octave space below the chords that surround it; thus, it resonates in our hearing and so comprises the registral floor of the passage.

Nevertheless, there is another spatial expansion in the final measures of the module (Example 53). A repeated piano hexachord in measures 129-133 spans I-20 from B3 and G5, and the pitches of the two subsequent chords in measures 136 and 138 are wider, more bottom-heavy verticals spanning I-43 between C2 and G5.

Although the first rhythmic pulse dissipates entirely after measure 139, the spatial expansion created by the arrival of the first chord of module VI/1 provides final closure.

EXAMPLE 53



Locally this chord completes the expansion from I-20 to I-43 in measures 129-138, but more broadly, the span widens from I-22 to I-40 in measure 102 and I-66 in measure 114 then I-75 in module VI/1. The closure that it generates is strengthened by the fact that its duration is very short and that its pitches are disposed at the upper and lower extremes of its span. Thus, the initial chord of module VI/1 signals the end of the first large scale pulse and the beginning of section B precisely because it projects stasis.

In section A then, the momentum that is created by VM I in measures 1-12 and by PM I in measures 1-27 is extended by patterns that are derived from one module or the other. Modules that display features of both are more heavily disposed toward one source or the other. Essentially, the rhythm of PM II in measures 33-48 extends that of VM I, and the rhythms of VM III, PM IV, and module V extend PM I. Because PM II more strongly reflects the rhythm of VM I, the two modules that follow--VM II and module III--sound like a continuance of that rhythm stream and therefore represent its endpoint. Thus, although the rhythm stream of VM I is transferred to the piano in PM II, in its final measures it is returned to the violin.

The pattern of PM II interrupts the pattern of PM I; nevertheless, two intermittent chords are sufficient to prolong its deeper impulse. Conversely, VM III and PM IV derive their rhythm from PM I but exhibit elements of VM I; however, these do not revive the momentum of its rhythm stream.

SECTION B

In section A, large-scale rhythmic pulse was generated in the opening measures of VM I and PM I--likewise, a context of stasis is created by module VI/1 in the first measures of section B (see Example 19). Prior to module X/2, surface processes of deceleration augment the underlying calm. For example, in the opening five measures of module VI/1, each subsequent measure is longer than the one that precedes it. Although these five measure lengths are then reordered, the module nevertheless decelerates in that measures 153 and 154 are longer than measures 151 and 152, and measure 155 is longer than each of the previous four.

In section A we saw that rapid isolated attacks in PM IV momentarily agitated the surface rhythm but did not affect the underlying momentum. Similarly, rapid pairs of attacks in module VIII/1 (Example 20, measures 158-161) are isolated in a way that preserves the underlying calm. Three closely spaced attacks articulate the pitches of two chords. Measure 162 contains a discrete set of attacks in the violin; however, each set is distanced from its neighbour by sustained durations, and the passage is framed by the long chords in module VII (measures 156-157 and 163).

Measure lengths in module X/1 (Example 25, measures 174-191) are initially demarcated by meter signatures of 5/32, 7/32, and 9/32 but these are subsequently doubled to 5/16, 7/16, and 9/16. The contrasted registers of each passage contribute to the module's deceleration in that very high C8's give way in measure 183 to more weighted mid-register A♭3's.

Module XI (Example 26, measures 210-218) echoes the process of durational expansion demonstrated by VM I such that durations in its last 4 measures are longer and more widely spaced than those in the first four. Furthermore, the module projects little weight because its pitches are linearly disposed in octaves 7 and 8. The process is extended to the first seven measures of VM II''.

In contrast to the processes of deceleration displayed in the first half of section B, surface acceleration in the second half prepares us for the arrival of the second large-scale rhythmic pulse. We have seen that the durations of module XI and VM II'' expand; however, the relative spans of these modules reflect the process of registral compression in PM I that was crucial to the formation of the rhythmic pulse in section A (Example 52). Recall that in PM I, a span that extended from octave 1 to octave 7 was compressed into a narrow space within octave 6; thus, the distance that the low trichord rose was greater than the distance the upper trichord fell. The much narrower span of module XI (I-17) likewise compresses to a space within octave 6 (I-3) but the resultant profile is the inverse of the shape of PM I in that the upper register falls farther than the lower one rises.

Module X/2 (Example 25, measures 228-236) demonstrates a decrementing of measure length in that each successive measure is shorter than the one that precedes it. In the following module IX/2 (Example 24, measures 237-246) a slight momentum is created by the regular spacing of its durations, the relatively narrow spans of its dyads, and by its rising contour. These features do not produce deeper momentum because the durations are slow moving and detached, and the module resides in relatively high octave spaces--octaves 4, 5, and 6. In fact, this rhythm anticipates that of module XVI and the coda at the culmination of the second large-scale pulse.

By contrast, the next module, VIII/2, begins with repeated, densely packed septachords that are alternately spaced by eighth and quarter rests (Example 24). In measures 255-260 however (refer to Example 16), the pattern is changed so that the lower trichord in the piano and the single pitch in the violin are metrically displaced, and B♭3 in the violin rises to D♭7 thereby widening the span from I-15 to I-36. At first glance, these alterations seem to diffuse the impact of the weighted pulsation created by the chords in measures 246-254; however, they instead create a pattern that derives from VM I (See example 54). Furthermore, the disparate registers of the piano hexachord and the high D♭7 in the violin (measures 255-262) echo the spatial relationship between the low trichord that begins each pair of chords in PM I and the subsequent sustained upper trichord in the second chord of that pattern.

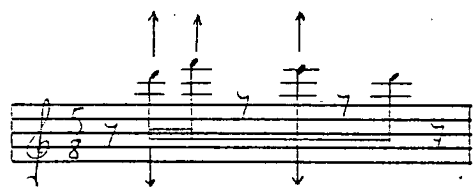
Example 54 isolates register changes and attack patterns in VM I, PM I, and module VIII/2. The rhythm of the first three pitches in VM I is reiterated by the displaced attacks in module VIII/2. In VM I, the first and third attack are emphasized by virtue of their close alignment to the first two chords in PM I. Thus, module VIII/2 incorporates a variant of the distinctive rhythm of the first three pitches of VM I and of the registral and durational relationship of the two chords that form the initial pattern of PM I.

Thus, alterations to the pattern of module VIII/2 do not

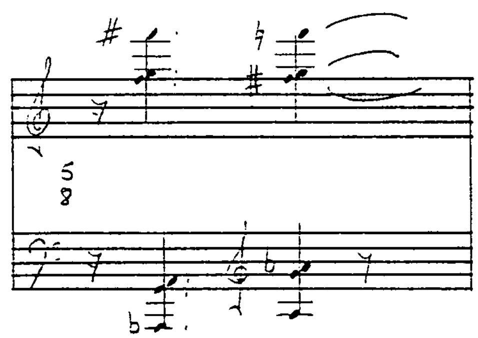
EXAMPLE 54

VIII/2

VM I



PM I



diffuse the impetus of measures 247-254; rather, they augment it by incorporating distinctive aspects of PM I and VM I that contributed to the formation of the first large scale rhythmic pulse. In this way, the energy of the pattern of module VIII/2 increases as it progresses and thereby threatens the underlying stasis; however, these features are not extended to last 3 measures of the module.[4] In fact, the low, exposed C1 in measure 263 adds weight to it and widens its span, and therefore helps to disperse the momentum that it created.

In module VI/2 (Example 19, measures 265-281) we return to a static pattern; still, measure lengths repeatedly decrease by two beats in measures 265-272, from 19 to 17 to 15 etc. In this way, the rhythmic pattern accelerates at twice the rate of the analogous pattern in module X/2. Thus, modules that are positioned nearer to section A' and therefore to the second rhythmic pulse, accelerate more intensely than those nearer to the first half of section B.

Several aspects of module XII (Example 30, measures 282-290) that prepare us for the arrival of module XIII have been discussed in chapter 2.[5] In measures 282-286, its pitch classes are disposed among three widely spaced registers, but in the three measures that follow, these converge at mid-level and therefore recall the spatial compression in the initial measures of PM I. At the same time, the vertically displaced dyads in measures 282-286 inhabit discrete linear planes that exhibit differences of instrumentation, pitch class content and timbre. Although each of measures 282-286 contain two discrete attacks, they are distributed among the strata so that each level contains one attack in each measure. When the spatial levels converge in the following three measures, the attack frequency therefore seems to increase. In this way, module XII utilizes aspects of VM I and PM I to generate an intensity that prepares us for the registrally focused, agitated rhythm of module XIII.

Section B as a whole projects a context of rhythmic stasis but its surface rhythm periodically decelerates prior to module X/2. Beginning in modules XI and VM II'', processes of acceleration are more intense in modules that are closer to the beginning of the second large scale rhythmic pulse, especially modules VIII/2 and XII. Processes of deceleration and acceleration overlap in module XI and VM II'' such that each module demonstrates durational expansion while a broader process of registral compression incorporates both of their spans.

SECTION A'

We have seen that the rhythmic pulse in section A was comprised of two simultaneous, contrasting rhythm streams that are divided between the piano and violin. Likewise, at the beginning of A', module XIII displays two discrete rhythms but they share the same pitch classes, registral space and some durations thereby forming a single stream that is analogous to that generated by VM I.

Each of module XIII and VM I has an ordered structure within which subtle variance generates irregularity (see Example 33). VM I is comprised of alternating sets of quintuplet eighths and sixteenth triplets, but changes in the attack pattern of the triplets, subdivided durations etc., obscure their regularity. The initial pattern of module XIII is comprised of four discrete orderings of quintuplet sixteenth durations (refer to Example 3) each of which fills one measure. In the piano, each measure contains a single attack that falls on one of four beats but does not coincide with the quintuplet attacks in the violin. The resultant irregularity arises from the fact that no two consecutive orderings in the violin are the same and that only two consecutive piano attacks are located on the same beat. Thus, each module displays underlying order but projects irregularity.

Recall that the momentum of VM I began to decrease when the register span expanded from I-3 to I-15 in measures 7 and 8. Likewise, the momentum of module XIII begins to decelerate in measure 299 when its span widens from I-14 to I-26. In measures 299-305, a glissando that unites each pair of chromatically related dyads creates the effect of a single, "blurry" dyad. In this way, the percussive clarity of the pattern that was brought about by the pizzicato articulations in measures 291-298 and therefore highlighted the irregularity of its attacks, is diminished. In measures 306-325, each sustained dyad reiterates, or is derived from, one or the other of the united dyads.

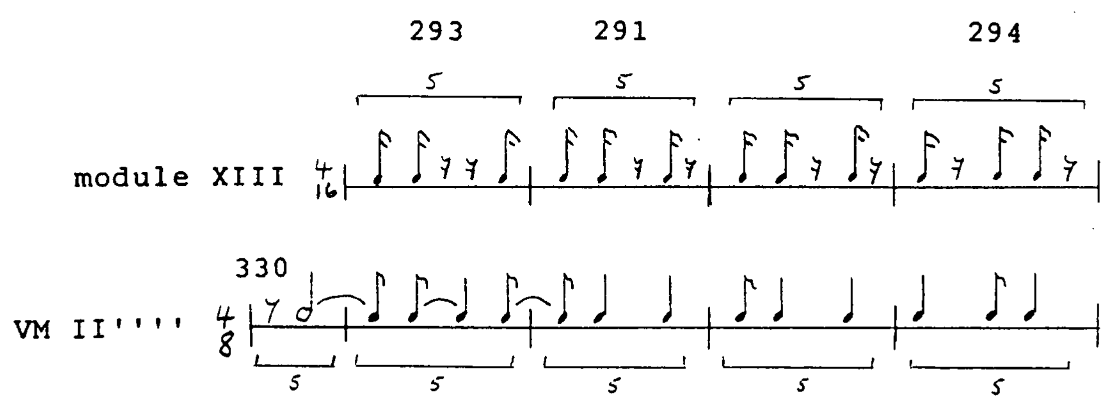
The pattern of measure 299 in the violin is repeated in each of measures 301-304 and a variant of this is extended to measure 305. The regularity of the passage relaxes the intensity of the propulsion in a manner that is analogous to measures 19-27 in which a single repeated chord "stabilized" the pattern of PM I. This process is echoed in measures 313-316 and in measures 326-329 in which three of four violin attacks are equally spaced, and both piano attacks are aligned with the last beat of a measure.[6]

The pace of the rhythm decelerates after each stable passage. In measures 306-316, the pattern of the violin is derived from the concurrent pattern of the piano in that each measure contains a single attack, although some durations in the violin are sustained. In measures 317-325, most violin durations are sustained; then, after measures 326-329, VM II''' articulates a sustained, legato line, and in the same measures, the pattern of PM XIV projects stasis.

Although VM II''' resides in a very high register, its disposition within a narrow span demonstrates a rising contour that directs its forward motion. The attacks of the line are irregularly spaced--in fact, the rhythms of some measures are derived from rhythms in the violin in module

XIII (Example 55)--but its slow pace ensures that it does not project the agitation of the earlier module.

EXAMPLE 55

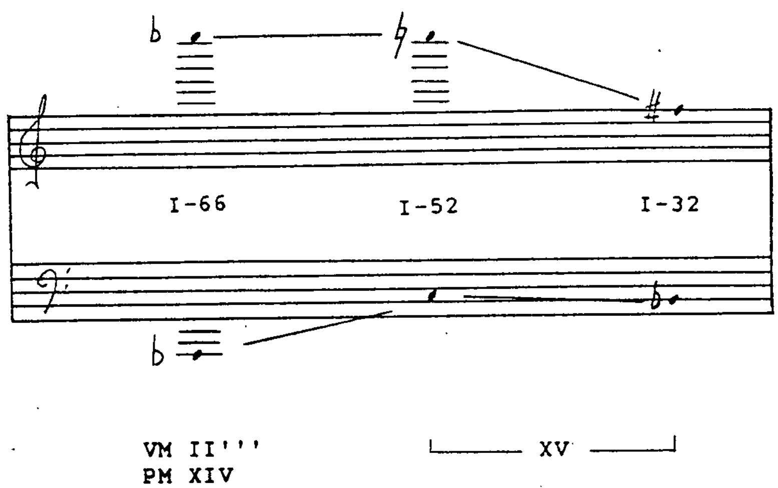


The linearity of VM II''' is contrasted with the vertical, static pattern of PM XIV (Example 33). Together however, these modules encompass a very wide span that gradually widens as VM II''' rises. Although the pattern of VM II''' prolongs the momentum of module XIII, the spatial expansion it creates and the relatively low, weighted chords in PM XIV contribute to its deceleration.

In measures 339-347 (see Example 1), module XV extends the rhythm, and therefore the stasis, of PM XIV although its constituent chords (measures 339 and 341) are very short, and they occupy a wider, higher spatial area. The heavier chords in measures 344-346 anticipate module XVI as they extend the rhythm of module XV. Similarly, irregularly spaced $D^{\flat}5$'s in the violin extend the rhythm of VM II''' but their durations more closely predict those of module XVI. Furthermore, they anticipate the first violin pitch of that module; therefore, we perceive them to be linearly directed events.

Example 56 compares the spans of VM II''' and PM XIV, and module XV. We have seen that registral contractions normally generate momentum but the factors in the passage that diminish the strength of the pulse offset this effect.

EXAMPLE 56



In module XVI (measures 348-368--refer to Example 40)) the weight of the chromatically descending streams of chords increases as the module proceeds; therefore, the underlying momentum gradually decelerates. In measures 354-355, registrally dispersed trichords are transformed to denser, heavier hexachords that extend the lower limit of its span.

Although the durations of module XVI are relatively long, they exhibit a regular spacing that perpetuates the underlying momentum--in the subsequent module (VM II'''') these durations are more widely spaced and therefore reduce the strength of the impulse.

In section A, VM II and module III were the end point of the rhythm stream that began in VM I. VM II'''' and the Coda function analogously at the end of the second pulse; however, the static effect of VM II'''' is more pronounced than that of VM II because its durations are more widely spaced, and its pattern is longer.

The pattern of the coda (measures 380-388) exhibits processes of durational and registral expansion. The first of three sets of descending hexachords in the piano extends the duration of VM II'''' but the following set of chords is half as long as the first set. In the third set, durations are more than double those of the first set; thus, the slightly faster rhythm of the second set contrasts with and therefore accentuates the very slow speed of the third set.

Because they are repeated, these sets of chords display a static registral profile against which three pitches in the violin--C4, D5, and E♭7--articulate a steeply rising contour. C4 and D5 are contained within the span of the concurrent piano chords; thus, the hexachords and the violin line may be understood to occupy discrete spatial planes such that one overlaps the other. Nevertheless, the descending chords interact with the concurrent line such that the span is widened in the last measure of the piece. Closure is therefore produced by processes of durational and registral expansion, and by the fact that each set of chords descends.

We have seen that the two large-scale pulses articulate 3-part form because they align with sections A and A'. The palindromic structure of section B is reflected by the fact that surface decelerations in the first half transmute to accelerations in the second half--the pivotal central modules XI and VM II'' exhibit both processes.

Chapter 2 revealed that palindromic structure was radiated from section B to sections A and A' by VM II and its variants. In the domain of rhythm, processes of deceleration are extended to section B from section A, and processes of acceleration, though not extended to section B from section A', nevertheless help to prepare us for its arrival.

Surface continuity is exhibited in several ways; for example, the pitch classes of most chords describe a chromatic cluster that is normally disposed in trichords that span about an octave. Furthermore, VM I and PM I together demonstrate virtually all subsequent octave spaces in the piece. The highest point (C8) appears in PM II (measures 33-48); thus, nearly all registral levels are prepared by these three source modules.

Rhythmic continuity is generated by the aspects of PM I and VM I that are extended to all subsequent modules. Figure 3 shows that all modules derive their rhythm pattern either from VM I or PM I, or from both. In fact, these connections largely obtain for other factors in each pattern except pitch. Thus, on the surface, the entire piece may be seen to be a projection of VM I and PM I.

FIGURE 3

MODULE	RHYTHM SOURCE	
	VM I	PM I
PM II	X	X
VM II	X	
III		X
VM III		X
PM IV	X	X
V		X
VM II'	X	
VI/1	X	
VII		X
VIII/1	X	X
IX/1	X	
X/1	X	
XI	X	
VM II''	X	
X/2	X	
IX/2	X	
VIII/2	X	X
VI/2	X	
XII	X	
XIII	X	
PM XIV		X
VM II'''	X	
XV	X	
XVI/Coda	X	X
VM II''''	X	

SUMMARY AND CONCLUSIONS

In Spring of Chosroes, form arises from the processes that create and unify patterns and generate connections between modules. Two processes--extension and development--produce local and large-scale structures. When pitch classes and rhythms are extended, they generate coherent patterns that determine the identities of modules. Connections between adjacent modules create local continuities, and larger formal relationships arise when structural features of modules are extended to other, non-contiguous modules. Three-part form arises when aspects of modules in section A are extended to their counterparts in section A'. In section B, on the other hand, parallelisms articulate palindromic relationships. Developmental processes create organic unity and linearity within some modules and connect the two sets of modules that form large-scale frameworks--modules VM I and modules XI and XVI; and VM II and its variants.

Some modules are connected by other processes that make their boundaries less transparent and that smooth the transitions between modules. The materials of some modules overlap (Examples 13 and 14), and in one case, aspects of a module precede its arrival (Example 1). On a larger scale, module XII contains elements of the modules that precede and follow it; therefore it not only facilitates the transition between its disparate neighbouring modules VI/2 and XIII, but it links section B to section A' as well.

The section B palindrome, a two-part structure, resides within the larger, three-part ABA' plan. The nested relationship of these structures is echoed by the large-scale frameworks formed by VM I and modules XI and XVI, and by VM II and its variants. The first of these sets of modules comprises a three-part structure that extends from the beginning of the piece to the end. VM II and its variants, a palindromically related set, lie within these temporal extremes. The central module of each set (XI and VM II'') bisects a palindrome, and together these modules form the structural focus of the piece.

Organicism is demonstrated by local and large-scale developmental processes. Some local processes are projected to modules that articulate large-scale relationships. In VM I for example, a process of rhythmic development proceeds through three stages (Example 8). The second and third stages are projected to modules XI and XVI in which rhythms are expanded and developed (Example 43). In the pitch domain, the pitch content of VM I is expanded in module XI by the addition of G and A♭, and in module XVI, the number of pitch classes increases to twelve. Thus, the process that binds VM I to modules XI and XVI derives from a process within VM I.

Organicism is also produced by the transformations of the rhythmic features of VM I and PM I that decelerate each large-scale rhythmic pulse. Although section B projects stasis, organic processes at the musical surface create subtle effects of deceleration and acceleration: these local processes are derived from the preceding large-scale ones.

Since all the rhythms of the piece are to some extent like those of VM I and PM I, they contribute to its flat surface. Other important features in this regard include slow tempi, soft dynamics and muted attacks. Furthermore, most chords are made with chromatic pitch class sets that are usually dispersed in trichords that combine a dyad and a single note in adjacent octaves.

Thus, at most levels, form in Spring of Chosroes is generated by organic and inorganic processes. Despite this rich array of horizontal connections, the patterns of many modules project a sense of randomness and stasis. In what sense, then, can the music be considered to be "vertical" and "disconnected?"

Recall that a passage in String Quartet exhibited four ordered rhythms that, when juxtaposed, created the effect of randomness (see pages 14-15). Module XIII demonstrates this principle in that four ordered rhythms in the violin are combined with the contrasting rhythm of the piano. In VM I, juxtaposed patterns incorporate pitch formations. The durations in measures 1-12 are subsumed under alternating sets of quintuplet eighths and triplet sixteenths. In measures 1-7, the pitches partition into three segments that demonstrate palindromic associations and inversional symmetry.[1] In the first and second segments, durational patterns align with these structures but they do not align with the regular triplet and quintuplet groupings; thus, when the two disparate patterns coincide, they create a sense of disorder.

Most modules demonstrate durational asymmetry and variety. Each of the two modules that have regular rhythms--IX/2 and XVI--contain a relatively large set of pitch classes that are presented gradually in various combinations. Module IX/2 contains nine pitch classes that are distributed among nine dyads as shown below.

E♭	D	A#	C#	D	G#	E	C	A
C#	A♭	B	E♭	A♭	A	A#	D♭	E♭
*	*	*			*	*	*	

Dyads that are marked with an asterisk contain newly stated pitch material. Thus, since we hear new pitches in most dyads, and most pairings are unique, the pitch content of the module, normally the least fluctuant element, sounds "unfixed."

In module XVI, descending streams of chords gradually introduce all twelve pitch classes: the first ten verticals contain previously unstated pitch material, and each chord in the module contains a unique combination of pitch classes. Thus, the various pitches and combinations of pitches in these modules create a sense of disorder that offsets the regularity of the rhythm pattern.

Asymmetries obtain at all levels of structure. For example, section A' contains fewer modules than section A, and there is no retrograde of module VII in the second half of the section B palindrome. Parallelisms that define three-part form are rarely literal, and the connections they generate utilize some but not all aspects of modules. The large-scale registral arches are likewise asymmetrical (Examples 42 and 46) as are the specific lengths of the palindromically related modules among VM II and its variants (Example 45). Thus, in the same way that modules retain their identities when their components are varied, these larger asymmetries do not destroy the form of the piece.

When the elements of a module are extended, their surface features may be varied, but their structural ones are not. By contrast, developmental processes generate linear relationships because each developmental step is derived from the one that precedes it and engenders the one that follows; thus, developed patterns progress. The static effect in Feldman's music therefore arises when the components of a module are extended but not developed: in Feldman's words, "It's frozen, at the same time its vibrating." (see Chapter 1, Note 1). Module V demonstrates both processes (Example 12). Each of its three segments projects stasis--in segments one and two, chords are repeated without variation, and in segment three they "vibrate." However, each new segment expands the register of the module and adds to its set of pitch classes; therefore, since these elements are developed, the module progresses. The irregular surface rhythm of most modules contributes to the static effect; thus, modules are most static when their elements are most fixed and their surface rhythms are irregular.

In summary, disconnectedness is a surface effect generated by juxtaposed, disparate structures and by the varied surface features of modules. Stasis arises when the structural features of a module are extended but not developed. Modules that exhibit developmental processes are therefore less static than those modules that are merely extended. These surface effects mask the underlying order that unites the piece as a whole.

The analytic approach presented in this study is most suited to Feldman's later works (after 1969) because they are his most patterned ones. In these fully notated scores, no domains are indeterminate; thus, all aspects of modules can be examined. Not all late pieces are, strictly speaking, "modular." "Madame Press Died Last Week at Ninety" (1970) contains ninety configurations of a single chord, and therefore comprises a single module.

In many earlier pieces, particularly those from the 1960's, durations are unspecified; and since the identities of modules are determined by their pitch classes and rhythm, the works are not modular in the strict sense. Many of these pieces are, however, sectional. In Figure 1 for example, we saw that Durations 3, III comprises four "gestures" that are demarcated by differences of texture, and to a lesser degree by differences of pitch. However, if we generalize the definition of a module such that the determiners of its identity are its pitch classes and a domain other than rhythm (in this case, texture) the piece partitions somewhat differently. Consider that the initial three pitch classes, F#, G, and A$^{\flat}$, are extended from gesture 1 through gesture 3 in a registrally rigid vertical pattern that gradually loses its cohesion; and that in gesture 4, a contrasting linear texture contains seven new pitch classes, five of which are previewed in gestures 2 and 3. These pitch and texture distinctions delineate two generalized modules, the first of which embodies gestures 1-3 while the second consists of gesture 4. Several of the constituent pitch classes of module II intermingle with those of module I thereby anticipating its arrival. In gesture 3, F is added to the set of pitch classes but it is not extended to module II; thus, it may be seen to expand the number of pitch classes in module I from three to four and to combine with F#, G, and A$^{\flat}$ to form a chromatic tetrachord.

The definition of a module may be further generalized. In Chosroes and Durations, the domain of pitch is the primary determiner of each module's identity. If this function is transferred to other domains, a module may be recognized, say, by its constituent registers, or by the various textures it contains.

In Spring of Chosroes, Feldman uses secondary elements, register in particular, to articulate form. In early works that do not exhibit generalized modules we may expect to find formal processes within these domains.

ENDNOTES

INTRODUCTION

1. The following quotations are taken from Morton Feldman Essays, Ed. by Walter Zimmerman, Kerpen: Beginner Press, 1985.

> "I'm involved in stasis. It's frozen, at the same time it's vibrating." (168)
>
> "I work very modularly, I don't work in a continuity." (166)
>
> "Many years ago I got a letter from Frederick Rzewski; he said, "Was a piece of mine available?" He says, "You know, that canon for two pianos." Canon? Me, write a canon! Oh yeah, that free durational piece...it's a CANON! Tell you the truth, if I thought it was a canon...I would have committed suicide." (108)
>
> "It [early 20th century atonality] was still another organizational process, and one that adapted itself perfectly to the old forms. Only by "unfixing" the elements traditionally used to construct a piece of music could the sounds exist in themselves--not as symbols, or memories which were memories of other music to begin with." (48-49)

2. Thomas DeLio, "Toward an Art of Imminence, Morton Feldman's Durations 3, III," Interface 12 (1983):465-480.

3. This paper was delivered at the Annual Meeting of the Society for Music Theory in Montreal, Canada, (November 1993). I offer my gratitude to Dr. Johnson for the copy he graciously gave to me. His more recent article entitled "Rothko Chapel and Rothko's Chapel" (Perspectives of New Music 32/2 (Summer 1994):6-53) explores organicism in a piece that is in many ways atypical of Feldman. Written to commemorate Rothko, characteristics of the painter's style are incorporated into the music. Johnson examines some of these and uncovers

features that are peculiar to the piece as well as techniques that have wider applications in Feldman's music.

4. Essays, "The Anxiety of Art," 94.

5. "I, instead of figuring out series', I do my series underneath on the music paper, instead of making series, because I don't work in a continuity, the continuity comes later. In other words, I'm not involved in linear information." (Essays, 167)

"If the article [in an issue of Tempo magazine] accused me of killing melody, I would hang my head. But pitch relationships? I can't get that excited about pitch relationships." (Essays, "Conversations Without Stravinsky," 64)

CHAPTER ONE: PATTERNS AND MODULES

1. Morton Feldman, "Crippled Symmetry," in Morton Feldman Essays, ed. Walter Zimmerman (Cologne: Beginner Press, 1985), 128.

2. Ibid. 129.

3. Ibid.

4. The term "timeframe" appears to refer to the empty measures on either side of the measures in each example that contains notes. In the second instance, the timeframe is symmetrical because the empty measures are of equal length. The first instance, like the second, has a symmetrical timeframe that Feldman claims is asymmetrical. If our understanding of the meaning of the term "timeframe" is accurate we must assume that the meter signature of one the

outer measures in the first example has been misprinted.

5. Ibid. 129-130.

6. Ibid. 130.

7. Ibid. 131.

8. Morton Feldman, "Darmstadt Lecture," in <u>Essays</u>, 195.

9. The upper pitch C in measure 341 is absent from the recording used in this study (<u>Spring of Chosroes</u>, 1979: Paul Zukofsky, violin, and Ursula Oppens, piano).

10. Morton Feldman, "Lecture XXII," in <u>Essays</u>, 166.

11. "Darmstadt Lecture," 184.

12. "Lecture XXII," 167.

13. Consider, for example, module IX/1 in measures 165-172 and 192-200. Although the return is not identical to the first statement, it reiterates the features of the first.

14. DeLio, 466-467.

15. It is conceivable that a module could be made with one pitch class. Feldman used a minimum of two and normally two to seven.

16. Aspects of pitch and register connect modules VII and VIII/1 so that they seem to be a single construct (Examples

20, 21, and 27); however, distinctive features in their rhythms isolate their identities. On the surface, the rapid attacks in module VIII/1 contrast with the relatively leisurely ones in module VII. More significantly however, the rhythms of these modules are derived from different source modules, PM I (module VII) and VM I (module VIII/1--see Figure 3, page 127), and therefore exhibit different functions in the process of large-scale rhythmic deceleration that is discussed in chapter 3. Figure 3 reveals that the rhythm of module VIII/2 arises from VM I and PM I, but rhythms that emanate from both sources tend to reflect one source more strongly than the other. In the case of module VIII/1, the rapid attacks more closely associate it with VM I.

17. The isolated trichords {G, A, B♭} and {D, D♭, A} reside exclusively in the modules from which they are drawn. The trichords {B, C, D♭} and {E, F, F#} are restated in the final module, XVI, in measures 350 and 359 respectively. (In measure 359, D is misprinted--see Chapter 2, Note 8). The trichord {E, F, F#} also appears in the context of a larger tetrachord {D#, E, F, G♭} in VM I (measures 29-46). In this example, the source modules for trichords are therefore those nearest to module V. A♭7 is extended from module III (refer to example 9) to measures 84-88 immediately preceding module V. Since A♭7 therefore anticipates module V, it is shown to be "borrowed" from it.

CHAPTER TWO: FORM

1. "Lecture XXII," 167.

2. The labels VI/1, VI/2 etc. imply that the two modules that make up each corresponding pair in section B are understood to be two versions of the "same" module. As we have seen in chapter 1, two modules are the "same" if they share all of the same identifying characteristics. We will see that palindromic pairs of modules are not, strictly speaking, the same; however, they do strongly resemble one another in that some of the identifying characteristics of the one are extended to the other. For example, although modules VI/1 and VI/2 share no common pitch classes, they do share a virtually identical rhythm pattern and registral spacing. These two distinctive aspects of their structure create a powerful connection between the two modules. Thus, the notion of sameness that is implied by the module labels is somewhat generalized.

We will also see that VM II and its variants II', II'', II''', and II'''' do not explicitly conform to the notion of "sameness" as it is defined in chapter 1, although a case may be made in favor of sameness between VM's II and II'''', and II' and II'''. Characteristic features of VM II are passed on to VM II' etc. but not without structural changes. I argue that these modules are developmentally related such that VM's II' to II'''' are not merely extensions of one another but neither do they have discrete structures. They are, in a sense, the "same" but not in the literal way the concept has been defined; thus, the notion of "sameness" that is implied in the labelling of VM II and its variants has been enlarged to incorporate developmental connections between modules.

3. "Lecture XXIV," 169. The exact meaning of Feldman's penultimate sentence is unclear--the brackets indicate my paraphrase of it. The original reads: "However, I might repeat things that, as it's going around, is varying itself on one aspect." No reason is given for the distinction made between the terms "variation" and "varied repetition" although we may speculate that the former, by means of its historical usage, retains an implication of developmental process that the latter does not.

4. In chapter 1 we saw that a module begins when its pitch classes and rhythm replace those of the previous module. Measure 246 is a measure of rest with a metric affiliation to module VIII/2; thus, the possibility exists that module VIII/2 is introduced by its metre, not its pitch and rhythm. But if we allow domains other than pitch and rhythm to articulate modular boundaries, we open a pandora's box of criteria that tend to obscure points of division rather than clarify them. Measure 246 may therefore be seen to extend module IX/2 with a metre that anticipates module VIII/2.

5. Some pitch classes in the second half of the palindrome are the enharmonic equivalents of ones in the first half. In the "Darmstadt Lecture," Feldman characterizes microtonal [enharmonic] spelling as "the hardening of the distance, say between a minor second." He goes on to say:

> "When you've been working with a minor second as long as I've been, it's very wide. So that perception of hearing is a very interesting thing. Because, conceptually you are not hearing it, but perceptually, you might be able to hear it. I hear that pitch...coming to me very slowly, and there's a lot of stuff in there. But I don't use it conceptually. That's why I use the double flats. But I use it because I think it's a very practical way of still having the focus of the pitch. And after all, what's sharp? It's directional, right? And a double sharp is more directional. But I didn't get the idea conceptually from music at all. I got the idea from "Teppishe," rugs. One of the most interesting things about a beautiful old rug in natural vegetable dyes is that it has "abrash." "Abrash" is that you dye in small quantities. You cannot dye in big bulks of wool. So it's the same, but yet it's not the same. It has a kind of microtonal hue. So when you look at it, it has that kind of marvellous shimmer which is that slight gradation."
> (Morton Feldman Essays, pp.192-193)

Feldman's use of microtonal spelling is intended to emulate the "microtonal hue" of "abrash" by creating "shades" of a pitch rather than discrete pitches; that is, to explore the space around a pitch but not draw our focus from it.

6. The distinction between linear and vertical designs is less obvious in module XIII than in VM I. Chords in measures 318, 321, and especially 322 anticipate the texture, rhythm, and articulation of segment three, and dyads predominate the texture in module XIII but seldom occur in VM I. Nevertheless, the third segment of each module is the more vertical one.

7. In measure 102, the span in the piano embodies seven pitches and it engulfs the violin A3 in its middle register. Conversely, the pitches of VM II'''' emerge from its analog--module XVI--in the same middle register near the centrepoint of the space inhabited by the descending piano hexachords in measures 357-368.

8. The score that was used for this analysis contains D5 in measure 359 rather than the expected E5; however, the entire module is constructed with parallel descending chromatic lines and D5 is the only pitch that departs from this pattern. Furthermore, on the recording used for this study (Endnote 14, Chapter 1) E5 rather than D5 is heard in measure 359. It is therefore assumed that D5 is a misprint.

9. The term "restated" implies that VM II and VM II'''' are the "same," a concept that is addressed in Note 2 above.

10. Although it is not, strictly speaking, a point of coincidence, a continuity nonetheless links module XVI and VM II''''. The upper line in measures 348-356 begins with the first violin pitch of the piece ($E^{\flat}6$) and completes its chromatic descent at B natural in measure 367. VM II'''' begins with the next expected pitch, $B^{\flat}$, but in the same register that it appears at the beginning of VM II. In this way, the upper voice descent leads us from the first pitch of one large-scale framework to the first pitch of the other one.

CHAPTER 3: LARGE SCALE RHYTHMIC PULSE

1. See, for example, Wallace Berry's definition of "pulse" in Structural Functions in Music (New York: Dover Publications Inc., 1987):305. Joel Lester uses the terms "beat" and "pulse" interchangeably in The Rhythms of Tonal Music (Carbondale and Edwardsville: Southern Illinois University Press, 1986):45-46; however, in The Rhythmic Structure of Music (Chicago: The University of Chicago Press, 1960):3-4, Grosvenor Cooper and Leonard Meyer differentiate the meanings of the terms and conceive pulses to be uninterpreted beats. John Roeder discusses the intersection of simultaneous durational strata, each of which is comprised of a series of regular pulses, in "Interacting Pulse Streams in Schoenberg's Atonal Polyphony." Music Theory Spectrum 16/2, (1994):231-249. In Phrase Rhythm in Tonal Music (New York: Schirmer Books, 1989) William Rothstein generalizes the term "pulse" to include regular durations that are longer than beats.

2. David Epstein. Shaping Time (New York: Schirmer Books, 1995):22-40.

3. The term "auditory stream" is defined in Albert Bregman. Auditory Scene Analysis (Cambridge Massachusetts: The MIT Press, 1990):9-10.

> An auditory stream is our perceptual grouping of the parts of the neural spectrogram that go together.

The stream serves the purpose of clustering related qualities.

4. We recognize however that this observation applies only to the attacks in these measures and that D7 is sustained through measure 262, having begun in the previous measure.

5. Chapter 2, pp. 66-70.

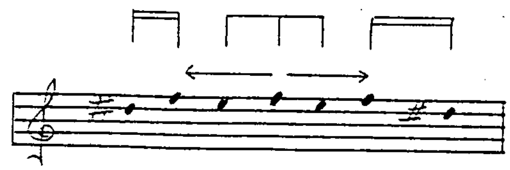
6. Although measure 329 contains only 3 sixteenths, its meter signature is 4/8. This bar line should therefore be aligned with the 4/8 meter signature in the violin at measure 330.

SUMMARY AND CONCLUSIONS

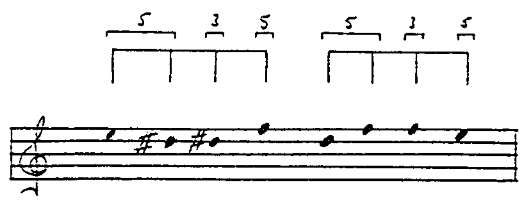
1. In measures 1-7 (refer to Example 7) pitches partition neatly into three segments that display discrete patterns. These are reproduced below as segments A, B, and C. Pitch and rhythm in segment A are palindromic. In segment C, the inner 7 pitches form a palindrome. Although each pair of bracketed notes is the transposed retrograde of the other, the palindromic contours of the passage are preserved. Segment B reveals a contrasting structure in that the last four notes are the retrograde-inversion of the first four. The rhythm pattern of the first set of pitches (two quintuplet eighths followed by a single triplet eighth and a single quintuplet eighth) is identical to that of the second set. Although the pitch structures within measures 1-7 of VM I are not

organically connected to sections ABA', they nevertheless foreshadow this formal plan. Furthermore, the outer palindromic segments anticipate the structure of section B.

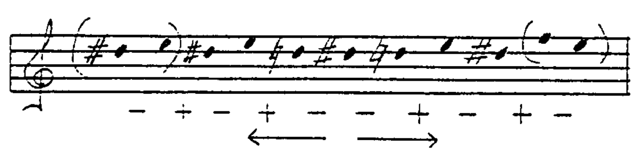
A



B



C



BIBLIOGRAPHY

Ashley, Robert. "Morton Feldman. An Interview with Robert Ashley, August 1964." In Contemporary Composers on Contemporary Music, 362-366. Edited by Elliott Schwartz and Barney Childs. New York: Holt, Rinehart and Winston (1967).

Behrman, David. "What Indeterminate Notation Determines." Perspectives of New Music 3/2 (1965): 58-73.

Berry, Wallace. Structural Functions in Music. New York: Dover Publications Inc., 1987.

Bottinger, Peter. "Das exakt Ungefahre." In Morton Feldman, 105-114. Edited by Heinz-Klaus Metzer and Rainer Riehm. Muzik-Konzepte Series 48/49. Munich: Text und Kritik, 1986.

Bregman, Albert S. Auditory Scene Analysis. Cambridge, Massachusetts: The MIT Press, 1990.

Cardew, Cornelius. "Notation-Interpretation, Etc." Tempo 58 (1961): 21-33.

Cooper, Grosvenor W., and Leonard B. Meyer. The Rhythmic Structure of Music. Chicago: The University of Chicago Press, 1960.

DeLio, Thomas. "Toward an Art of Imminence, Morton Feldman's Durations 3, III." Interface 12 (1983): 465-480.

Dickinson, Peter. "Feldman Explains Himself." Music and Musicians 14/11 (1966): 22-23.

Dominick, Lisa R. "Darmstadt 1984." Perspectives of New Music 23/2 (1985): 274-279.

Epstein, David. Shaping Time: Music, The Brain, and Performance. New York: Schirmer Books, 1995.

Feldman, Morton. "Einfuhrung zu For Philip Guston." In Morton Feldman, 64-66. Edited by Heinz-Klaus Metzer and Rainer Riehm. Muzik-Konzepte Series 48/49. Munich: Text und Kritik, 1986.

________. "Triadic Memories." Transcribed by Linda Catlin Smith. Lecture delivered at Mercer Union Gallery, Toronto, Canada, April 17, 1982.

Hitchcock, H. Wiley. "Current Chronicle, United States." Musical Quarterly 50 (1964): 91-98.

Johnson, Steven. "Organic Construction in Music of Morton Feldman." Paper presented at the annual meeting of the Society for Music Theory, Montreal, Canada, November 1993.

________. "Rothko Chapel and Rothko's Chapel." Perspectives of New Music 32/2 (1994): 6-53.

Kramer, Jonathan D. The Time of Music. New York: Schirmer Books, 1988.

Lerdahl, Fred, and Ray Jackendoff. A Generative Theory of Tonal Music. Cambridge, Massachusetts: The MIT Press, 1983.

Lester, Joel. The Rhythms of Tonal Music. Carbondale and Edwardsville: Southern Illinois University Press, 1986.

Roeder, John. "Interacting Pulse Streams in Schoenberg's Atonal Polyphony." Music Theory Spectrum 16/2 (1994): 231-249.

Rothstein, William. Phrase Rhythm in Tonal Music. New York: Schirmer Books, 1989.

Wolpe, Stefan. "On New (and Not So New) Music in America." Translated by Austin Clarkson. Journal of Music Theory 28/1 (1984): 1-45.

Zimmerman, Walter, ed. Morton Feldman Essays. Kerpin: Beginner Press, 1985.

APPENDIX

VIOLIN MODULES	MEASURES/BEATS*	
	Violin	Piano
VM I	1/1 - 23/4	
	29/1 - 48/3	
	77/1 - 81/3	76/3 - 83/3
VM II	49/1 - 52/2	
VM III	58/1 - 63/3	
	67/1 - 72/2	
	74/1 - 76/3	
	82/1 - 90/1	
VM II'	141/1 - 146/4	
VM II''	219/1 - 228/1	
VM II'''	330/1 - 339/4	
VM II''''	369/1 - 380/1	
PIANO MODULES		
PM I	23/5 - 28/3	1/1 - 32/3
PM II		33/1 - 52/2
PM IV	64/1 - 66/3	59/5 - 76/2
	72/3 - 73/3	84/1 - 90/1
PM XIV		330/2 - 339/4
OTHER MODULES		
III	52/2 - 57/3	52/2 - 59/4
V	90/1 - 140/2	90/1 - 146/4
VI/1	146/5 - 156/4	146/5 - 156/4
VII	156/5 - 158/2	156/5 - 158/2
	163/1 - 164/3	163/1 - 164/3
VIII/1	158/3 - 162/5	158/3 - 162/5
IX/1	165/1 - 173/9	165/1 - 173/9
	192/1 - 200/7	192/1 - 200/7
X/1	174/1 - 192/1	174/1 - 192/1
	201/1 - 209/7	201/1 - 209/7
XI	210/1 - 219/1	210/1 - 228/1
X/2	228/1 - 237/1	228/1 - 237/1
IX/2	237/2 - 246/3	237/2 - 246/3
VIII/2	247/1 - 264/4	247/1 - 264/4
VI/2	264/5 - 281/7	264/5 - 281/7
XII	282/1 - 290/3	282/1 - 290/3
XIII	291/1 - 330/1	291/1 - 330/1
XV	339/5 - 348/1	339/5 - 348/1
XVI	348/2 - 368/3	348/2 - 380/1
CODA	380/2 - 388/7	380/2 - 388/7

*The beats shown here are those within which the modules begin and end.