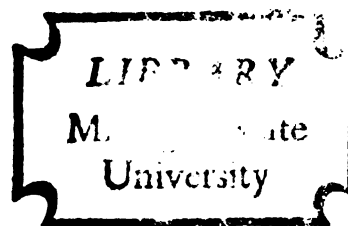


COMPOSITIONAL TECHNIQUES EMPLOYED IN THE
FIRST MOVEMENT OF ELLIOTT CARTER'S
PIANO CONCERTO

Thesis for the Degree of Ph. D.
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This is to certify that the
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**Compositional Techniques Employed in the
First Movement of Elliott Carter's
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ABSTRACT

COMPOSITIONAL TECHNIQUES EMPLOYED IN THE FIRST MOVEMENT OF ELLIOTT CARTER'S PIANO CONCERTO

By

Irene Rosenberg Grau

The first performance, recording, and publication of Elliott Carter's Piano Concerto aroused keen interest. This work, Carter's first composition in this form, was two years in creation. Despite much discussion in the press, however, a published technical analysis has not yet appeared.

The present study investigates the compositional aspects of the first movement of the two-movement concerto. The findings indicate in a generalized way the creative impulse which prevails, however, throughout the entire work. An analysis in depth has been made of form, melody, harmony, density, dynamics, rhythmic activity and rhythmic character, tempo, meter, and metrical modulation, and interpretation and articulation markings. These aspects offer a comprehensive frame of investigation, and although in this work they are treated by the composer in highly original and innovative

ways they proved open to study by conventional analytic techniques, expanded and modified as the situation demanded.

The first, and perhaps most significant point of the present study, is that a systematic and objective theoretical analysis must be combined with an attempt to view the philosophy of the composer as it is expressed in this composition. Carter's apparent purpose in the Piano Concerto is the creation of an abstract form which experiments with time factors and with structural procedures. The development of form in this work is removed from traditional structural considerations of departure and return, repetition, reconciliation of antitheses in thematic material or tonality. The form grows out of the principle of continuous motivic metamorphosis, in this work of motives comprised of twelve different three-note combinations.

Carter makes use of the transformation of time elements through frequent change of meter and tempo, notated as metrical modulation, a technique in which a designated note value retains a constant duration although it changes in its significance within the metrical pattern. Combined with extreme fluidity of tempo and meter is a prevailing use of fragmented, dense, and polyrhythmic patterns.

The motivic three-note combinations which Carter creates for this composition are non-tertian and give rise

to chordal sonorities which are predominantly quartal, secondal, or clusters. When tertian or expanded tertian chords appear it is usually in a polychordal setting. Both tertian and non-tertian sonorities are used, juxtaposed and superimposed.

Figures arising from the kind of harmony employed permeate the melodic structure. The voice lines are often plural and are usually polyphonically complex. The melodic ambitus is extremely wide. The melodic design is immensely varied in contour and in intervallic structure.

Melody, harmony, and rhythm do not coordinate to create phrase structure, cadences, or sectional conclusions. Density and volume favor high levels, although both fluctuate widely and frequently. They, too, are disassociated from structural considerations. The independence of each of these compositional aspects, in combination with the techniques of motivic evolution and metrical modulation, tends to give the work a continual forward thrust which makes of the composition's total 348 measures an extraordinarily large one-part form.

It is theorized that the aural challenge in each of these compositional aspects may be intended to express an aesthetic of extreme concentration and intense emotion. Carter's use of emotive expression markings can be construed as a further indication of his concern for the communication of musical character.

The first movement of the Piano Concerto is traditional in that it is non-electronic, non-aleatory, and conventionally notated in equal temperament. It can perhaps be called futuristic in its innovative compositional technique and above all, in its philosophy.

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PREFACE

Elliott Carter wrote his Piano Concerto in 1964 and 1965. Preceding this composition lay more than a quarter of a century of fruitful creative work. Carter's published compositions prior to the Piano Concerto include:

- 1961 Double Concerto for Harpsichord and Piano with
two Chamber Orchestras
- 1957 String Quartet #2
- 1956 Canonic Suite for four B Flat Clarinets
- 1955 Variations for Orchestra
- 1952 Elegy for String Orchestra
- 1952 Sonata for Flute, Oboe, Cello, and Harpsichord
- 1951 String Quartet #1
- 1950 Eight Etudes and a Fantasy for Woodwind Quartet
- 1950 Recitative and Improvisation for four Kettledrums
- 1948 Sonata for Violoncello and Piano
- 1948 Woodwind Quintet
- 1947 The Minotaur, Ballet and Suite from the Ballet
- 1947 Emblems (for Men's Chorus and Piano)
- 1946 Elegy for String Quartet
- 1946 Piano Sonata
- 1945 Musicians Wrestle Everywhere (SATB a cappella, or
with string acc.)
- 1944 The Harmony of Morning (4 part Women's Chorus and
Small Orch.)
- 1944 Holiday Overture (revised 1961)
- 1943 Dust of Snow (Medium Voice and Piano)
- 1943 Elegy for Viola (or Cello) and Piano
- 1943 The Line Gang (Baritone and Piano)
- 1943 Voyage (Medium Voice and Piano)
- 1943 Warble for Lilac Time (Soprano, or Tenor, and Piano
or small group of instruments)
- 1942 Symphony #1
- 1942 The Rose Family (Medium Voice and Piano)
- 1941 The Defense of Corinth (Speaker, Men's Chorus, and
Piano 4 hands)
- 1940 Pastorale for Viola (Eng. Horn or Clarinet) and Piano

- 1939 Canonic Suite for Quartet of Alto Saxophones
- 1939 Pocahontas, Ballet and Suite from the Ballet
- 1938 Heart No So Heavy As Mine (SATB a cappella)
- 1938 Incidental Music to "The Merchant of Venice"
(guitar and alto voice)
- 1938 Prelude, Fanfare, and Polka for Orchestra
- 1937 Harvest Home (SATB a cappella)
- 1937 Let's be Gay (Women's Chorus and Piano)
- 1937 To Music (SATB a cappella)
- 1936 Incidental Music to "Mostellaria" (Baritone,
Men's Chorus, & Small Orchestra)
- 1936 Tarantella (Men's Chorus and Piano 4 hands)
- 1933 Incidental Music for "Philoctetes" of Sophocles
(Baritone, Men's Chorus, Oboe, and Percussion)

Although there are works for large orchestra, Carter's attention seems to have been drawn particularly to smaller ensembles and to chamber music. He uses piano as a solo instrument only once; and piano in combination with orchestra, prior to the present concerto, only in the Double Concerto for Harpsichord, Piano and Two Chamber Orchestras. The Piano Concerto is a new line of thought for Carter in terms of instrumental sound, but upon review of his total output to date it becomes apparent that each of his works expresses an interest in a fresh kind of instrumental circumstance. A free line of inquiry into many aspects of musical composition is the hallmark of Carter's creation. As he himself notes:

I began to question the familiar methods of presentation and continuation, of so-called "musical logic," based on the statement of themes and their development. . . . Too, I questioned the inner shape of "this" and "that" --of musical ideas--as well as their degrees of

linking or non-linking. . . . I was pre-occupied with the time-memory patterns of music.¹

The philosophic openness and intellectual strength which characterize Carter's career reach new expression in the Piano Concerto.

The Piano Concerto was commissioned by the Ford Foundation. The selection of the composer to be commissioned on this occasion was given to pianist Jacob Lateiner, who turned to Elliott Carter. The first performances of the Concerto were given by Lateiner and the Boston Symphony, directed by Erich Leinsdorf, on January 6th and 7th, 1967, in Symphony Hall, Boston. It was recorded at these performances by RCA Victor (LSC-3001), with the joint subsidy of the Martha Baird Rockefeller Fund for Music, the Steinway Foundation, and the National Foundation for the Arts and Humanities.

Although this event was attended by much publicity and was widely discussed in the press, a published technical examination of the compositional techniques employed in the Concerto has not yet appeared. This lack is curious in view of the composition's singularity. Both the Concerto itself and the apparent difficulty of approaching it represent tantalizing challenges. Hence, the present study.

¹Elliott Carter, Jacket notes to Nonesuch Recording H-7134, of Carter's Sonata for Flute, Oboe, Cello, and Harpsichord, and Carter's Sonata for Cello and Piano.

CHAPTER I

PURPOSE AND METHOD

The philosophy underlying this paper is that a work of art ideally should be understood on its own terms, as part of its culture, and within an historical perspective. The sad gap which exists at present between the contemporary composer and the contemporary listener indicates that in all three regards understanding is weak. The personal, social, or historical raison d'être of contemporary style and content fails to link many musical creators today to the general public. Contemporary "art" music may fairly be reported to be considered widely as enigmatic, isolated, and irrelevant.

It may be suspected that the experimental or avant-garde composer today is misunderstood because his work lies in advance of the understanding of his time. Hopefully, our understanding of the musical trends leading into the future is being aided by the development of a methodology of appreciation, of a systematic technique of analysis, built upon the past but suited to the new material.

Proceeding from this premise, the present study involves two main considerations. One is to examine a

significant new work, the Piano Concerto, by the highly esteemed American composer Elliott Carter. The second is to evaluate the applicability to this composition of the analytic techniques which have been useful up to the present, and to attempt to devise extensions of these techniques which may be particularly suitable to music of our own day.

The Piano Concerto has two movements, the first consisting of 348 measures and the second of 330. Both movements employ full orchestra of

2 Flutes (Piccolos)	4 F Horns
2 Oboes	3 B-flat Trumpets
2 B-flat Clarinets	3 Trombones
2 Bassoons	Tuba
Contrabassoon	Timpani (2 players)
Strings (minimum: 7-6-5-4-3 stands)	

There is also a concertino group of Flute, English Horn, Bass Clarinet, Violin, Viola, Cello, and Bass. The concertino group sometimes plays alone, sometimes with the solo piano, and sometimes merges into the larger ensemble.

In the second movement of the Concerto, the concertino conducts an extensive dialogue with the solo piano; there is a dramatic confrontation of distinct musical personalities. In the first movement there is no comparable theatrical device. However, in all other major aspects the

two movements are very similar, and the compositional procedures in regard to rhythm, harmony, density, thematic process, and formal structure appear to derive from the same creative impulse. Both movements exhibit a unified and highly distinctive aesthetic, as well as a compositional technique which is readily identifiable in all parts of the work.

For this reason, it was felt that the present study could deal specifically and in depth with an examination of the first movement and still could be understood to validly represent in a more generalized sense a way of viewing the compositional procedures used in the second movement.

The modus operandum is to make as comprehensive a list as possible of those aspects of musical composition whose study has proven fruitful in enriching our understanding of the music of earlier periods. This list will serve as a kind of cultural definition. Each of these aspects will then be investigated in connection with the first movement of the Concerto. In view of the complexity of the material, a minute and systematic categorization of data will be undertaken. All the information derived from the various avenues of study will be included in this report. Some information may, significantly, be of a negative character. It may appear, for example, in the early stages of various lines of inquiry, that the

expected results will not be forthcoming; in some cases it may be that no conclusion can be drawn. However, all the relevant data will be assembled and reviewed in the hope of permitting the information to express its own meaning without suffering from the bias of preconception. It will then remain to be seen whether these lines of inquiry have succeeded in providing a viable analytic framework for the music analyzed, and possibly for other contemporary works of similar characteristics and properties.

The musical aspects investigated include:

Formal structure

Sectional organization

Phrases

Delineation of small units

Motives

Motivic uses

Developmental techniques

Tonality

Key relationships

Harmonic function of the bass

Chord progression

Cadences

Functional harmony

Chromatic harmony

Impressionism

Concepts of consonance and dissonance

Chord structure

Non-harmonic tones

Twelve-tone technique

Contrapuntal devices

Utilization of pitch area

Melodic structure

Melodic recurrence

Melodic intervallic relationships

Density

Rhythmic intensity

Types of rhythmic motion

Tempo

Meter

Metrical modulation

Dynamics

Interpretation directions

Articulation

Repeats

Bridges and transitions

Interconnectedness of compositional aspects

Use of folk material

These lines of inquiry, with their concomitant offshoots, will be grouped under the chapter headings of:

Form

Harmony

Melody and Counterpoint

Tempo, Meter and Metrical Modulation

Dynamics

Density

Rhythmic Activity and Rhythmic Character

Expression and Articulation Markings.

CHAPTER II

FORM

The first movement of Elliott Carter's Piano Concerto is a striking example of an extraordinarily large one-part form. Referring to his Variations for Orchestra, Carter said, "As in all my works, I conceived this one as a large, unified musical action or gesture."² This concept appears to be applicable to the Piano Concerto also.

The question of the feasibility of extending the concept of unity through a composition of three hundred and forty-eight measures duration must be solved in terms of the special and inherent logic of the structure. In the Piano Concerto, First Movement, the structural logic does not depend upon the ordering of the structural parts in either classic or innovative ways, or upon comparisons of differences or reconciliation of antitheses. The logic depends rather upon an unfolding continuity of development which seems to make manifest a sub-stratum of emotive continuity. In the large one-part form the original tonal material presented at or near the beginning of the

²Elliott Carter, "Shop Talk by an American Composer," Problems of Modern Music (New York: W. W. Norton, 1960), p. 54.

composition must be capable of providing for a great deal of manipulation. It is also necessary that the emotional tone of the composition as a whole be rich, varied, and withal coherent.

Carter's own comments on his compositional procedure are highly relevant.

The characteristic effort of the serious composer, as I see it, is not so much in the invention of musical ideas in themselves, as in the invention of interesting ideas that will also fill certain compositional requirements and allow for imaginative continuations. Serious music appeals to a longer span of attention and to a more highly developed auditory memory than do the more popular kinds of music. In making this appeal, it uses many contrasts, coherences and contexts that give it a wide scope of expression, great emotional power, and variety, direction, uniqueness, and a fascination of design with many shadings and qualities far beyond the range of popular or folk music. Every moment must count somehow, as must every detail. For a composer it is not always easy to find a passage that fits the particular situation and moment at which it appears in the composition, that carries to a further point some idea previously stated, that has had the appropriate expressive quality motivated by what has been heard and yet is a passage that sounds fresh and alive.

As far as I am concerned, I am always interested in a composer's phrases and their shape and content, the way he joins them, the type of articulation he uses, as well as the general drift or continuity of a large section, and the construction of the whole work. The small details of harmony, rhythm, and texture fall naturally into place when one has interesting conceptions of these larger shapes.³

Carter's usage in the Piano Concerto of compositional factors such as dynamic markings, density, rhythmic

³Ibid.

activity and rhythmic character, and some aspects of tempo, meter, and metrical modulation, all indicate an awareness of the necessity of generating emotional tone as a structural principle in an expanded one-part form. In addition, these factors, although they do not delineate structure in a traditional sense, do combine with tonal elaboration and instrumentation to present a patterning of musical events which gives dimension to the form.

The thrust of these musical events is usually in the direction of change of some kind. Following is a list, rather like a kind of relief map, representing some of the more important configuration changes, or, as Carter states it above, "general drift," with brief descriptions pointing out the salient characteristics of each area.

1. From the beginning to m. 18.

The original thematic material of a perfect 4th, diminished 5th, minor 2nd, and diminished 8th, using the pitches G, F#-C, C#, is presented in a completely dodecaphonic matrix. (In this paper the term "dodecaphonic" will mean totally chromatic.) Piano solo, joined by the concertino, provides a distinctive orchestration, in contrast to the more usual employment of full orchestra. Meter is 3/4, quarter note = 126. (See page 10).

Piano Concerto

Elliott Carter

Reduction by the composer

$\text{♩} = 126 (\text{♩} = 42), \text{fantastico}$

SOLO PIANO

$\text{♩} = 126 (\text{♩} = 42), \text{fantastico}$

ORCHESTRAL REDUCTION

2. M. 18-32.

Here occur changes of meter and texture. The linear writing refocuses into voice leading in pairs. The orchestra enters. This area tends to be lyrical in the orchestral part and figural in the piano part.

(Duration: 14 bars.)

M. 18

♩ → ♩ = 126

The musical score for measures 18-32 is presented in two systems. The tempo is marked as ♩ = 126. The first system shows the piano part with dynamics *mf*, *f*, and *(f)*. The second system shows the orchestral part with dynamics *f*, *mf*, *p*, and *mf-p*. There are also markings for *Stgs* and *Hns*. The piano part is written in a single staff, and the orchestral part is written in a single staff.

3. M. 32-40.

At this point there begins a series of melodic phrases in thematic entrances in the piano part and in clarinet and strings, with thinning of texture and lessening of rhythmic activity. (Duration: 8 bars.)

M. 32

The first system of the musical score consists of two staves. The upper staff is for the vocal part, and the lower staff is for the piano accompaniment. The key signature has one flat (B-flat), and the time signature is 3/4. The vocal line begins with a treble clef and a key signature change from B-flat to A-flat. It features a melodic line with various ornaments and dynamics including *mf*, *espr. ben carol.*, and *mp*. The piano accompaniment starts with a bass clef and a key signature change from B-flat to A-flat, featuring a rhythmic pattern of eighth and sixteenth notes with dynamics *mf* and *espr.*

M. M. 40-68.

Significant here is the appearance of a rhythmic figure of triplet 16th notes which will be pervasive in this area of the work. The use of timpani makes this figure immediately recognizable as a compositional event. (Duration: 28 bars.) (See page 13.)

[illegible]

5. M. 68-111.

Rhythmic activity and texture diminish. The triplet 16th figure disappears for two measures. A new thought emerges: a motive in clusters with glissando. This area builds upon the accumulation of everything preceding, and pushes forward for a longer period than any of the preceding areas. (Duration: 43 bars.)

The musical score for measures 68-111 is presented in two systems. The first system shows measures 68 and 69. The piano part (bottom) begins with a triplet 16th figure in measure 68, marked 'stg' and 'p'. The right hand (top) features a 'delicato' marking and a glissando. The second system shows measures 70 and 71. The piano part continues with a glissando marked '(gliss)' and a dynamic of 'p (= pp)'. The right hand features a glissando marked '(+Ww)' and a dynamic of 'p (= pp)'. The score is marked with various dynamics including p, mf, and pp.

6. M. 111-124.

The meter and tempo change, activity lessens, concertino reappears, piano part dissolves. Sonorities of 3rds and 6ths can be perceived within the 12-tone material. (Duration: 13 bars.) (See page 15.)

7. M. 124-152.

The meter and tempo change. Oboe makes a prominent entrance with a subject consisting of melodic intervals of 3rds and 6ths, followed by imitative counterpoint.

(Duration: 28 bars.)

M. 124

The musical score for measures 124-152 is presented in three systems. Each system begins with a tempo and meter marking: $\text{♩} = \text{♩} = 110.25 \rightarrow$. The first system shows the Oboe (Ob) and Bassoon (Bcl) parts. The Oboe part features a prominent entrance with a subject consisting of melodic intervals of 3rds and 6ths, marked *f espr.* and *mf*. The Bassoon part provides imitative counterpoint. The second system shows the Piano (P) part, marked *mp-pp*, with a *giocoso* marking. The third system shows the Oboe (Ob) part, marked *mf* and *f*, with a *giocoso* marking. The score includes various musical notations such as notes, rests, and dynamic markings.

8. M. 152-167

The distinctive feature here is the absence of piano for fifteen measures. (Duration: 15 bars.)

(See page 17.)

M. 152

Handwritten musical score for 'The Rose Tree'. The score is written on two systems of five-line staves. The first system contains a single treble clef staff with a whole note G4. The second system contains two staves: the top staff is for Oboe (Ob.) and the bottom staff is for Trombone (Tpt.). The Oboe part begins with a dynamic marking of *pp* and a tempo marking of '(pizz.)'. The Trombone part begins with a dynamic marking of *p* and a tempo marking of '(pizz.)'. The music is written in common time (C) and features various musical notations including notes, rests, and slurs.

9. M. 167-188

The piano, absent since m. 150, makes a vigorous re-entry. (Duration: 21 bars.)

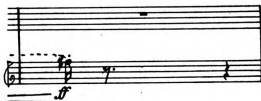
10. M. 188-223

Volume, density, and rhythmic activity drop low. (Clusters, noted at m. 68, are again the main sonority. (Duration: 35 bars.) (See page 19.)

11. Upbeat to m. 223-256

At this point, marked un poco espressivo,
 p decrescendo to pp, the piano, in a solo entrance,
 unfolds a series of 4ths. (Duration: 33 bars.)

M. 222



12. Upbeat to m. 256-270

These orchestral entrances use material related to the first statement of the composition, the augmented 4th, minor 2nd, and diminished 8th. The original pitches C-F# are conspicuous in the cello entrance. (Duration: 14 bars.)

M. 256

The musical score for measures 256-270 is presented in four staves. The top two staves are for Violin I (Vn.) and Violin II (Vn.), and the bottom two are for Viola (Via) and Cello/Bass (Cg). The key signature has one sharp (F#) and the time signature is 4/4. The score includes various musical notations such as notes, rests, and dynamic markings. The Violin I staff has a melodic line with a slur and a fermata. The Violin II staff has a similar melodic line. The Viola staff has a melodic line with a slur and a fermata. The Cello/Bass staff has a melodic line with a slur and a fermata. The score includes dynamic markings such as *mf, sensibile*, *p*, *pp*, *f*, and *mf-pp*. There are also performance instructions like *mf, sensibile* and *mf-pp*. The score is written in a standard musical notation style with a key signature of one sharp and a time signature of 4/4.

13. M. 270-313.

The meter and tempo change. The concertino reappears in a series of imitative entrances, initiating the composition's propulsion to its conclusion.

(Duration: 43 bars.) (See page 23.)

14. M. 313-328

A distinctive event here is the crashing chord which embraces the totality of pitches from sub-contra C to five-line b, an effect used only in this area of the composition. (Duration: 15 bars.) (See page 24.)

15. M. 328 to the conclusion

This event is noteworthy as an extremely rare use of recall within the work. The original thematic material is re-used on the original pitches: G, G-flat (= F#)-C, D-flat (= C#). Further mnemonic reinforcement is offered by the original tempo, re-affirmed, at m. 329, at quarter note = 126. The psychological rounding off and sense of completion, caused by the return of characteristics of the beginning, signal the approaching end. (Duration: 21 bars.) (See page 25.)

AMP-6715

[illegible]

AMP-6715

M. 328

Mod.

Vn

Vn

mf p

37

mod. leggiero

mod.

p

accomp.

Vla

f

pizz

The landmarks included on the foregoing "map" are only the main and most apparent ones. Other parts of the landscape will of course be perceived and subjectively evaluated. The compositional landscape presents a picture of extreme fluidity and organic self-determination, free from arbitrary structuring through the imposition of historical mores or mathematically oriented aesthetics. The spacing of events in terms of the numbers of measures within each area is: 17, 14, 8, 28, 43, 13, 28, 15, 21, 35, 33, 14, 43, 15, 21. The spacing in terms of time-duration must surely be equally varied, since the tempo continually changes and the measure lengths are unequal.

It is worth noting that the graph (see Appendix I) of this study of form-happenings reveals an absence of meaningful correlation with the graphs of other compositional factors. The formal aspect, like all the other aspects of this movement, is completely independent.

The nature of the events within the work is also varied. In some cases only a brief effect is noted. In other instances a change in the on-going situation is perceived and different emphases will be apparent in the entire new area.

The study of the form brings out clearly this significant finding: it does not seem possible to designate any of the areas of this composition by pre-established formal terms such as theme groups, transitions,

developments, recapitulations, or the like. Most of the time it is clear that, while some elements provide change, other, simultaneous, elements offer such strong lines of continuity that the elements of change do not bring about a separation of distinct parts from the structural whole.

The factor which is probably strongest in producing unity is the tonal material itself, which is totally chromatic throughout and which makes use of tightly organized motivic interval patterning. The independent functioning of each compositional aspect, as will be demonstrated further along in this study, also provides unity through overall characterization. Finally, the fact that the evolution of thematic, rhythmic--indeed, all compositional aspects--is pervasive and continual is in itself a unifying principle.

CHAPTER III

HARMONY

Harmony may be understood in this study to refer to three different concepts: (1) harmonic texture or chordal sonority, (2) cadential forms, and (3) harmony in relation to formal organization.

The harmonic texture of the first movement of Elliott Carter's Piano Concerto includes a vast array of chordal sonorities. Some of these sonorities are presented simultaneously; some occur as arpeggios or chordal figuration; some can be comprehended vertically or diagonally as chords accumulated by extension on the time continuum. Careful analysis indicates that some of the classic sonorities used in the common-practice period are included among Carter's chord types. But more prevalent are innovative sonorities resulting from the intervallic aggregations typical of dodecaphonic manipulation.

As the variety of chordal sonorities arising in the Piano Concerto is so great, it may be well to define further the concept of "chord" as it will be used in this paper: the co-existence of three or more tones within a time span sufficiently compact so that their relationship

may be perceived. This definition permits chordal sonorities to be classified into eight types.

1. triads (tertian)
2. seventh chords (tertian)
3. polychords, or juxtaposed tertian sonorities
4. expanded tertian (9ths, 11ths, 13ths, 15ths)
5. tertian with added tones
6. tertian with cross relations or split chord members
7. quartal-quintal
8. secondal-clusters

There is of course some overlapping of chord types and some variation in analysis does occur.

It should be noted that two-note sonorities occur only rarely in this work. A study of the density aspect (see Appendix IV) reveals only seven measures which contain one to two simultaneous pitches, these arising only in the first third of the composition.

Chord type I, the tertian triad, hardly exists as a complete, self-sufficient entity within this work. When tertian triads or seventh chord structures appear they almost always form a part of polychords.

Carter's technique in regard to polychords is highly original and can be directly linked to the very distinctive textures prevailing in this composition.

The usage of polychords in the past has often relied upon wide, juxtaposed spacing. Separation of the constituent chords by pitch area has been an effective means by which independent chordal sonorities have been

held in aural counterpoise. Carter's use of polychords departs almost entirely from this traditional method. Most often his polychords are not distinctly juxtaposed but are crowded together in a dense and rapidly changing texture. The existence of tertian triads and seventh chords can be traced, but their power and distinctiveness as functioning entities are sacrificed in favor of a subordination into a richer, more complex web of interrelationships.

A further distinction is that traditional methods usually deal with clearly recognizable tertian structures, whereas, through the use of added tones and cross relations, as well as secondal and quartal sonorities, Carter's chords often lose the customary means of identification as polychords and merge into other categories.

An interesting and typical example of the complicated use of polychords occurs in the orchestral score at m. 41: the first 16th of the measure is an e minor triad (C-flat = B), the third 16th is e minor plus a major seventh (diminished octave), the seventh 16th is E major plus a major seventh with F major implied on the upper staff. At the beginning of m. 42 there are three levels: C-flat major in the middle, A major arpeggio with a sustained B-flat on the top level, and F contra entering on the lowest level in the piano part at the second 8th.

[illegible]

Diminished triads are rejected. The augmented triad occurs occasionally, as at m. 328, last beat, where it appears in conjunction with the interval of a major third D-flat-F.

M. 328

The musical score for measure 328 consists of two staves. The top staff is for the piano (piano) and the bottom staff is for the violin (Vn). The piano part features a triplet of eighth notes in the right hand and a triplet of eighth notes in the left hand, both marked with 'mf p'. The violin part features a triplet of eighth notes in the right hand and a triplet of eighth notes in the left hand, both marked with 'f'. The measure concludes with a major third interval (D-flat-F) marked with a '3' and a 'V'.

Seventh chords and expanded tertian sonorities can be found frequently, as in m. 36 and 37 (see page 33) and m. 231, 232, and 233 (page 34).

M. 36

(+ Ob)

f

mf

Vns *seal = d*

f marc

Hrs

Sng *f*

Tpr Bn *f*

3

5

AMP-6715

The major-minor seventh chord (dominant seventh structure) occurs only rarely among the other types of seventh chords, as in m. 105, where it appears fleetingly in a polychordal context (see page 35).

Major-minor seventh chords have neither the priority of occurrence which they enjoyed in the music of the past nor the predictability of usage found in earlier styles. Most often the interval of a minor seventh will be left empty, or will be placed upon an interval of a third, forming a ninth chord (both illustrated in m. 184, page 35).

♩ → ♩ = 73.5

mp *molto espr.*

105

♩ → ♩ = 73.5 *mf*

fp (accorp.) *mf*

M. 1848

ff marc.

mf

subito giocoso

[F]

Vn *mf* *p* *mf*

pp *(mf)*

If the interval of the minor seventh is filled, it is most likely to contain two fourths, as in m. 227.



This is one of Carter's favorite sonorities in the Piano Concerto, as illustrated in m. 339-340 (p. 37).

The diminished seventh chord, like the diminished triad, is rejected.

Parallel chord streams and alternations between polarized harmonies, suggestive of impressionistic techniques, are also absent in this composition. Passages in which consonant harmony or consonant intervals are prominent do sometimes contain streams within the texture, for instance in m. 95 through m. 104 where the lower score of the piano part is, with one exception, a series of twenty-four 6ths, while simultaneously the lower score of

Musical score for measures 339-342. The score is written for woodwinds (flute, oboe, clarinet, bassoon), strings (violin, viola, cello, double bass), and percussion (timpani).

Measure 339: Flute (Fl.) and Oboe (Ob.) play a melodic line starting on G4, moving up to A4, B4, and C5. The woodwinds are marked *p* *espr.* (pizzicato). The strings play a rhythmic pattern of eighth notes.

Measure 340: The woodwinds continue their melodic line. The strings play a rhythmic pattern of eighth notes. The percussion (timpani) plays a rhythmic pattern of eighth notes.

Measure 341: The woodwinds continue their melodic line. The strings play a rhythmic pattern of eighth notes. The percussion (timpani) plays a rhythmic pattern of eighth notes.

Measure 342: The woodwinds continue their melodic line. The strings play a rhythmic pattern of eighth notes. The percussion (timpani) plays a rhythmic pattern of eighth notes.

Dynamics and markings include *pp* (pianissimo), *p* (piano), *f* (forte), *sub.* (subito), *orch.* (orchestra), *mf* (mezzo-forte), and *timp* (timpani).

the orchestral part presents a series of fifths (see pp. 39-40).

M. 156 through m. 165 shows two simultaneous independent lines, each of which is composed almost exclusively of the melodic and harmonic intervals of the 3rd and the 6th. The relationship between the two lines is, however, highly dissonant (see p. 41).

There seems to be no concern in the presentation of any of the chords for such matters as root re-inforcement or sonorous doublings. Registration and voicing over the pitch range is immensely varied, as is shown in the study of melody (please see Chapter 3), but the guiding thought does not seem to be the play of sonorities per se.

Tertian sonorities are most frequently blurred by the addition of non-chord tones, by cross relations at the chord root as in m. 111, first six notes, or m. 261, downbeat (see page 42), or by split chord members within the chord structure as in m. 134 (p. 42).

The most prevalent sonorities within the Piano Concerto are those which contain seconds, sevenths, or ninths, often in conjunction with perfect or augmented fourths. The interval of the fourth is motivic and often occurs as quartal harmony, in the form of interlocking

← $\text{♩} \rightarrow \text{♩} = 63$

96

97

98

99

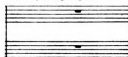
Score for percussion instruments, measures 96-99. The score is written for four staves, each representing a different instrument: Snare Drum (Sn), Tom-Tom (Tm), Cymbal (C), and Triangle (Tr). The tempo is marked as $\text{♩} = 63$. The score includes various musical notations such as notes, rests, and dynamic markings. The instruments are labeled as follows: Sn (Snare Drum), Tm (Tom-Tom), C (Cymbal), and Tr (Triangle). The score is divided into four measures, numbered 96, 97, 98, and 99. Measure 96 starts with a $\text{♩} = 63$ tempo marking. Measure 97 includes a mf dynamic marking. Measure 98 includes a p dynamic marking. Measure 99 includes a mf dynamic marking. The score also includes various musical notations such as notes, rests, and dynamic markings.

This image shows a page of a musical score, likely for a symphony orchestra. The page is filled with multiple staves of music, including woodwinds, brass, and strings. The notation is complex, featuring various musical symbols, notes, and rests. Key elements include:

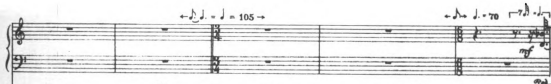
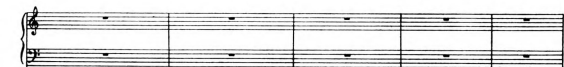
- Rehearsal Marks:** Labeled 'EN', 'BC', and 'NE' in boxes.
- Dynamic Markings:** 'f' (forte) and 'non tempo' (ritardando).
- Section Labels:** 'Brass' and 'Timp' (Timpani).
- Page Number:** '130' at the bottom center.

M. 156

♩ = 183.75



♩ = 183.75



fourths, m. 329, or m. 2 and 3,

$\text{♩} = 126$

$\text{♩} = 126$

329

mf *leggero*

mf

p *espr.* (*accomp.*)

fpp *accomp.*

sfz

pizz

Ob (*pizz*)

Hi

[fig]

[EH]

.-42), fantastico

M. 2

3

superimposed fourths, m. 9, or m. 223,

9

pp

espr.

p

f

223

pp

or juxtaposed fourths, m. 334.

M. 334

Score for measure 334, featuring piano (p) and mezzo-forte (mf) dynamics, triplets, and staccato markings.

Another favored sonority is clusters, as in
m. 50, 68, 181,

M. 50

Score for measure 50, featuring piano (p) and mezzo-forte (mf) dynamics, staccato markings, and a box labeled "FI, EH (Vn)".

M. 181

Score for measure 181, featuring piano (p) and mezzo-forte (mf) dynamics, staccato markings, and a box labeled "f-p sempre (each attack)".

sometimes spread apart into sevenths or ninths, m. 72-74
(see page 45),

72

mp esp. *p leggiero*

pp *mp* *p*

(+ F1 EH)

Tpt *pp* *p* *mp*

sometimes tightly bunched with a fourth as the outer parameter and a third contained, m. 193-194.

The image shows a musical score for two measures, 193 and 194. Measure 193 is marked with a boxed '193' and features a piano (pp) dynamic. It includes a melodic line in the right hand with a slur and a bass line in the left hand with a slur. Measure 194 continues the texture with a piano (pp) dynamic. The score includes various musical notations such as notes, rests, slurs, and dynamic markings (pp, mp, mf).

Clusters are sometimes used in expanded form as fistfuls of sound containing as many as all twelve tones, m. 245-246 (see page 47).

Carter's harmonic texture in this composition is immensely varied. There are brief areas where a particular sonority may prevail, for instance in m. 18 through m. 22, which is predominantly quartal, or m. 188 through m. 194, predominantly clusters, or m. 106 through m. 110, totally chromatic. Usually, however, the harmonic vocabulary is displayed in such richness that classification of the area or even of a group of specific measures by chord type is impossible. This observation becomes increasingly valid as the composition progresses. An example of a measure

← J. J. = J. J. →, J. = 84

84

85

86

87

88

245

with a characteristic wealth of harmonic suggestion is m. 294. This measure is an extreme but typical example of the aesthetic of dodecaphonic saturation, containing elements which are atonal, polychordal, triadic and tertian, secondal and quartal.

Secondal Quartal.

The image shows a musical score for measure 294, which is highlighted with a box containing the number 294. The score is written for piano and orchestra. The piano part is on the left, and the orchestra is on the right. The piano part features a complex texture with multiple layers of notes, some of which are circled and labeled. The labels include 'Secondal Quartal' at the top, 'Tertian' on the left, and 'Triadic' at the bottom. The orchestra part includes staves for Flute (Fl), Oboe (Ob), and String (Strg). The score is marked with various dynamics such as *sf*, *mp*, *pp*, *f*, and *mf*. The tempo is marked 'Tempo' at the bottom.

Elliott Carter wrote in the program notes to the first performance of the Piano Concerto:

Technically the work is based on twelve different three-note groups (triads): six, used exclusively by the piano and concertino and six, by the orchestra. Each triad is associated with one or more tempi and expressive characters. Musical ideas are formed out of constantly changing uses of these fundamental materials.

At the outset, the piano and concertino state ideas derived from the triad shape exemplified by C, F sharp, G and the three speeds and characters associated with it. This is answered briefly by the orchestra using material from one of its triads (shape: G, D flat, F). Later these two triads, which are the primary ones for the orchestra and the piano, each join three others from their respective instrumental groups to form one twelve-note chord for the soloists and another of different character for the orchestra, the alternation of which constitutes the conclusion of the first movement, summarizing in brief all the various expressive characters that have been brought into increasingly sharp focus and contrast.⁴

Nearly any small section of this work will reveal the presence of the two basic three-note groups or their metamorphoses. In fact it is usually impossible to proceed beyond any fourteen to sixteen note sequence without having included therein all twelve tones. M. 1 to 5, or M. 138 to 139, or m. 223 to 224, or the single measures 235 or 302 all illustrate Carter's characteristic technique of accumulating twelve tones (see page 50).

In view of this typical saturation it becomes highly debatable whether it can be perceived that the metamorphosis of these two basic groups into six assigned to piano and concertino and six assigned to orchestra, as outlined by Carter, does result in giving clarification to the texture or dimension to the tonal characterization. The interrelationship of the basic "triads" is so close and the means of presentation so dense that a lucid differentiation of usage does not seem to result. This

⁴Elliott Carter, "The Piano Concerto." Boston Symphony Program Notes (Boston, Mass.: The Boston Symphony, January 6, 1967).

M. 138

M. 302

Handwritten musical score for "L'Espresso" by Debussy. The score is written on five staves. The first staff is a treble clef with a key signature of one flat (B-flat). The second staff is a bass clef. The third staff is a treble clef. The fourth staff is a bass clef. The fifth staff is a treble clef. The score includes various musical notations such as notes, rests, and dynamic markings. The dynamic markings include "meno f - cresc." and "sempre stacc. pesante". The score is handwritten and appears to be a personal manuscript.

conclusion, however, in no way negates the fact that the concept of such differentiation may have been very significant in the creative process.

It may be that the framework within which the composer creates and the framework within which the listener functions, although agreeing in the main, need not be congruent in all their parts.

Cadential patterns do not appear to exist within the work. Functional harmony employing root progressions by fifths or fourths is totally absent, as are mediant progressions. The utilization of harmonic patterns in terms of root movement is completely discarded. On the contrary, roots, where they can be found to exist at all, are ignored in terms of chord weight.

Phrase organization is not generated directly by the harmony. It is true, of course, that harmonic usage is among those compositional factors in this work which create increasing or lessening dynamism, but rather than phrases in the conventional sense there exist undulations within the texture, such as may be described as fluctuations within the formal scheme. These events are structured by tonal manipulations, variations in density, rhythmic activity, changes in rhythmic character, dynamics, expression markings, and orchestration. They flow very coherently into one another. There is no consistent use

of harmony to produce section endings. The conclusion of the entire work is brought about by a process of summation in which the expectation of concluding is partly engendered by the total duration.

The absence of clearly recognizable cadences results in a generally high level of tension throughout the work. The wish to relax and even to rest is consistently frustrated; instead the listener is challenged to expand his concentration span. Tension and extended concentration are part of the aesthetic of the composition. This aesthetic concept follows naturally from Carter's remarks, quoted in Chapter II, Form, p. 8, about the distinguishing character of "serious music."

The structural uses of harmony, organizing a large work and clarifying the framework, can be found in some instances within the work; for example, in those areas mentioned above as having a recognizable type of chordal sonority for a perceivable duration. However, there is no master-network of harmonic relationships upon which the structure of the entire movement is engineered, no utilization of relative positions within an harmonic scheme (either diatonic or chromatic) for sectional organization, no reference to an underlying focal point which recurs either as a tonal degree or as a pitch area.

There is a significant, albeit slight, tonal recall in m. 328, where the middle of the measure uses the pitches G-flat, C, and in m. 330 over the bar line to m. 331, where the original motivic pitches C, F-sharp, C-sharp, are used again in prominent positions. These pitches also occur in a cello entrance at m. 256 downbeat and are sustained in a tremolo until m. 258 downbeat, where they are repeated as the beginning of a figural pattern.

M. 256

29

The image displays a musical score for measures 256 through 258. The top system shows a piano (p) part with a melodic line in the right hand and a bass line in the left hand. The right hand has a long note in measure 256, followed by a series of eighth notes in measures 257 and 258. The left hand has a bass line with a long note in measure 256, followed by a series of eighth notes in measures 257 and 258. The dynamic marking *mf, sensibile* is placed above the piano part in measure 257. The bottom system shows a violin (Vn.) part with a melodic line in the right hand and a bass line in the left hand. The right hand has a series of eighth notes in measure 256, followed by a series of eighth notes in measures 257 and 258. The left hand has a bass line with a long note in measure 256, followed by a series of eighth notes in measures 257 and 258. The dynamic markings *pp*, *mf-pp*, and *pp* are placed below the violin part in measures 256, 257, and 258 respectively. The score is written on a grand staff with a key signature of one flat and a time signature of 4/4.

258

Handwritten musical score for piano, measures 258-261. The score is written on four staves. The first two staves are the right hand, and the last two are the left hand. The key signature is one sharp (F#) and the time signature is 4/4. The music features a variety of dynamics and articulations. Measure 258: Right hand has a half note F#4 and a half note G#4. Left hand has a half note F#3 and a half note G#3. Measure 259: Right hand has a half note F#4 and a half note G#4. Left hand has a half note F#3 and a half note G#3. Measure 260: Right hand has a half note F#4 and a half note G#4. Left hand has a half note F#3 and a half note G#3. Measure 261: Right hand has a half note F#4 and a half note G#4. Left hand has a half note F#3 and a half note G#3. The score includes dynamic markings: *f espr.* (forte, expressive) in measure 258, *mf* (mezzo-forte) in measure 259, *mf* in measure 260, and *p* (piano) in measure 261. There are also slurs and accents over the notes.

03

12

17

23

24

25

26

27

28

29

30

31

32

33

34

35

36

CHAPTER IV

MELODY AND COUNTERPOINT

Fundamental issues emerge at once in the examination of melody. Can a definition of melody be formulated which will be valid for the entire history of music, up to and including the present?

It is in fact the most basic definition of melody as motion and rhythm which is applicable to Carter's music. It may be that the best term to define contemporary usage of the emotive concept of melody would be simply this universal definition: "A linear succession of tones." The new melody or linear succession of tones may be constituted of single notes or of groupings of notes; beyond this nothing may be specified with validity. However it may be constructed, the essential quality, and the one which designates it as a legitimate expression of the melody concept, is that the constituents are not filler-tones or color-tones but sequential carriers of an expressive content. Viewed from this standpoint, even the most unusual of Carter's lines may be considered melody.

In the first movement of the Piano Concerto, Carter's lines tend to consist of a multiple strand, analogous to a bundle of fibers within a muscle sheath, sometimes bunched into a muscle knot, sometimes thin as a lean sinew. His "voices" are treated as orchestral or choral voices, that is, as a section capable of divisi. Polyphony within one voice is common and an abundantly "freistimmig" texture prevails. The single line (monophony) occurs only twice in the entire composition, at m. 17 and at m. 130-133. Several voices are present almost all the time, resulting in a very complex polyphonic web, within which each strand is woven with equality and independence. The homophonic concept in which melody floats upon a chordal support never appears in this work. The technique used is simultaneous voice-leading of lines of varying thickness, range, activity, design, and interval selection, sometimes co-ordinating, sometimes differing.

An important characteristic is the clouding of the melodic line through simultaneous major or minor seconds in the same voice, as in m. 70 (page 57).

As classical melodies were often doubled in thirds or sixths, or medieval chant in fourths and fifths, so Carter's lines tend to be adorned by simultaneous

M. 70



seconds. Other frequent doublings are p. 4ths, aug. 4ths, 7ths, and 9ths, as in m. 56-58 (page 58). Some doublings in 3rds and 6ths do exist in this work, for example at m. 157-165 (page 59), usually however in a generally dissonant context.

In places where clusters adorn the melodic line it is not possible to speak of melodic interval progression but rather of relative placement within the pitch-space and relative density in filling a pitch-space area, as in m. 65-71 (page 60).

In areas of thick texture the lines are often a series of harmonies of fluctuating density, made up predominantly of quartal chords with enclosed third, quartal chords with ambitus of a seventh, quartal and quintal interlocked, or quintal with ambitus of a ninth, as in m. 170-175 (page 61).

Measures 65 and 66 of a musical score. Measure 65 features a complex piano accompaniment with multiple staves, including a grand staff (treble and bass clefs) and a separate staff for a lower instrument. The notation includes various musical symbols such as notes, rests, and dynamic markings like *mf* and *p*. A tempo or performance instruction $\text{♩} = 90$ is present. Measure 66 continues the accompaniment with similar notation and dynamics. A rehearsal mark **65** is located at the beginning of measure 65, and another rehearsal mark **66** is at the beginning of measure 66.

Measures 67 and 68 of a musical score. Measure 67 shows a continuation of the piano accompaniment with various musical notations and dynamics. Measure 68 features a more complex arrangement with multiple staves, including a grand staff and a separate staff for a lower instrument. The notation includes various musical symbols such as notes, rests, and dynamic markings like *mf* and *p*. A rehearsal mark **67** is located at the beginning of measure 67, and another rehearsal mark **68** is at the beginning of measure 68.

[illegible]

The traditional allocation of voices by pitch area, historically derived from vocal ranges, does not seem applicable in the least. On the contrary, a voice, indicated as a line by the continuity of its note stems, may freely range from the highest to lowest pitches and may proceed by wide jumps, using the G or F clefs without regard to placement on upper or lower staves. A typical example of free-ranging writing is m. 238-240. Here both piano staves, written as two voices (and in one instance, upbeat of m. 239, three voices), using both treble and bass clefs, range from contra F-sharp to three-line a and back to contra E. The three-line a is given to the left hand. During the same three bars the orchestra, also written in the reduction as two lines with one extra note (downbeat of m. 240) as a third voice, ranges from contra B-flat to two-line a-flat (see page 63).

Occasional differentiation between voices may be found in the tendency of the bass line to move more slowly at times than the upper parts, for example in m. 12-15, or m. 243-244. However this is rare (see page 64). Generally, differentiation based upon rhythmic activity and rhythmic character is difficult to discern within this work. There is, however, continual differentiation of voices in dynamics, articulation, and expression markings, as well as in instrumentation.

243

← d' → J. - 60

← J. →

p *mf* *mp-pp* *pp* *mf* *BCF*

stg

The ambitus of almost any area fluctuates rapidly and tends to be enormously expansive. Unusual instances of narrow ambitus occur in m. 188-192 and m. 68-71 (see page 66).

When narrow ambitus occurs it is of relatively short duration, whereas the expansive ambitus may continue for considerable time. A typical picture is p. 37, m. 329-334 (see page 67).

The fullness resulting from active polyphonic motion over a wide ambitus is examined in Chapter 7, Density. A brief résumé of the data revealed by that examination is that two-note sonorities predominate in sixty-four bars; four- to five-note sonorities, one hundred and four bars; five- to six-note sonorities, sixty-nine bars; and "extremely opaque" sonorities in thirty-nine bars. Fluctuations in density are continual, but there appears to be a general increase in fullness as the work progresses.

The prevailing rapid motion, as well as the fluid, diversified rhythms, tend to obliterate any temporal distinction between the concepts of melody, melodic figuration, and "passagio." The unification or blurring of these concepts is furthered by Carter's tendency to use similar intervallic motion and "freistimmig" texture throughout. An example is m. 231-237 (page 68).

188

[illegible]

[illegible]

Passagio

Op. 10, No. 60

235

The specific intervallic structure of the melodic lines is usually difficult to calculate, due to the variability of texture within the line. It is apparent, however, that although the interval choices are highly varied, there is a distinct preference in many areas for certain intervals and a rejection of others. An interval count was made of all of page 1, chosen for its leading, and hence probably motivic, position (please see p. 70). The calculations of interval motion in "freistimmig" places, for instance m. 4, beat 2, were made according to the direction of the note stems. In places where the single line doubles on the same stem the motion was calculated into and from both of the notes on the stem. Where a new voice enters, the motion was calculated from all the existent notes on the same staff to the new note. Augmented 2nds were calculated as minor 3rds, diminished 8ths as major 7ths, and augmented 8ths as minor 9ths. Intervals larger than the major 9th were reduced to within the compass of the octave. Rests were ignored; the calculations are from the note preceding the rest to the one following.

The frequency of occurrence of intervals on page 1 is as follows:

per. 4	35	per. 5	2
aug. 4	27	Maj. 2	1
min. 2	10	Maj. 6	1
min. 7	9	Maj. 3	none
min. 3	8	per. 8	none
min. 9	6	Maj. 9	none
min. 7	3		

$\text{♩} = 126 (\text{♩} = 42), \text{fantastico}$

SOLO PIANO

mf *espr.* *cant. espr.* *mf* *p* *mf*

ORCHESTRAL REDUCTION

$\text{♩} = 126 (\text{♩} = 42), \text{fantastico}$

Concertino alone until m. 19

p espr. (accomp.) *poco*

[B C]

leggero

p *mf* *mp* *p* *mf* *pp*

[6]

[F]

$\text{♩} \rightarrow \text{♩} = 84$

f *pp* *mf espr.* *pp* *f* *pp*

[9]

[Sig]

The high preponderance of melodic 4ths is significant and proves to be motivic. The relatively high count of minor seconds relates to the opening motive. The absence of M. 3rds, especially in conjunction with the low count of p. 5ths, indicates the rejection of triad formations.

A similar study was made of melodic interval frequency on p. 37, m. 332, in a line of 16th notes including two clusters. In this case the results are:

per. 4	6	Maj. 7	1
aug. 4	2	min. 2	none
min. 7	2	Maj. 3	none
min. 9	2	per. 5	none
min. 6	2	Maj. 6	none
min. 3	2	per. 8	none
Maj. 2	1		

M. 332

The musical score shows two staves. The top staff is for the right hand and the bottom for the left hand. Measure 332 begins with a piano (p) dynamic. A large slur covers a melodic line in the right hand that includes a cluster of notes marked with an accent (>) and a fermata. The bottom staff has a piano (p) dynamic. Measure 333 continues the melodic line in the right hand, marked with fortissimo (ff) and a crescendo leading to a piano (p) section. There are triplets in both hands in measure 333.

Although the second study deals with a much smaller area than the first study, the results are corroborative. A third study, of m. 231-237, referred to above (please see p. 68), shows a somewhat different pattern of interval preference:

per. 4	12	min. 9	4
per. 5	12	min. 2	3
Maj. 7	12	Maj. 2	3
min. 7	11	min. 6	3
aug. 4	9	Maj. 3	2
min. 3	7	per. 8	none
Maj. 6	6		

Among the significant differences emerging from the third study are the prevalence of 5ths, as well as the higher proportion of minor 3rds and major sixths. The higher use of fifths and sevenths suggests an expanded tertian analysis in m. 231-234.

The principal characteristics which emerge from Carter's interval choice are a preference for intervals of high tension, a disregard for traditional resolutions of these tensions, and a preference for disjunct motion. The melodic line does not reveal any tendency toward the use of chains of similar intervals or symmetrical constructions, except for areas where the preponderance of p. 4ths, augmented 4ths, and minor 7ths is so great that these intervals do appear in sequence. Often the melody reverses direction, returning to the previous pitch. This accounts for some sequential pairs, for instance in m. 99, piano part (page 73). Often this technique leads into

M. 99

poco f. sfacc.

mf cresc.

mf

Timp
Cb

EH

trill forms as at m. 101.

M. 101

J. = 8/4

J. = 8/4

Brass
Timp

f

BCI

FI

Divisi often results, as at m. 30, sometimes caused by the harmonic prolongation of one of the paired pitches.

M. 30



When the re-iteration involves more than two pitches, an unfolding harmony results, as in m. 108 flute part, or m. 54.

M. 108

M. 54

The technique of reversal of direction is motivic, as in the original pitch series the 1st, 3rd, 5th, and 7th notes of the lower voice return to the same pitch: g, re-articulated between c-sharp and one-line c; and the pitch series of the upper voice is 1st, 3rd, and 5th notes the same: f-sharp, re-articulated between one-line c and c-sharp.

The pitch choice of any melodic line within the work seems to express the aesthetic of dodecaphonic saturation. The melodies are not serial, but they are totally chromatic. It is evident that the entire twelve-note palette is continually in use.

The aspect of design in the melodic line cannot be narrowly characterized. In fact, the most significant part of its characterization is that rather than being stereotyped the melodic lines are immensely varied, and this immense and continual variation, being pervasive, is an integrative, unifying factor. The following criteria usually do apply, however: a large ambitus; rapid movement over an outstretched framework; disjunct motion; frequent quick reversals of direction; jagged and discontinuous rhythms. The architecture is not of marble but of quantum particles.

CHAPTER V

TEMPO, METER, AND METRICAL MODULATION

Most of the tempo markings used in traditional music are in fact character indications which have come, over a long period of time, to be associated with rates of speed. The actual speed suggested by such markings as Presto, Andante, Grave, etc., varies according to the interpretation of the content of the music, knowledge of the traditions relating to the historical period, and familiarity with the particular tendencies of the individual composer. Tempo determinants within the content of the music are inclusive of all aspects of the composition, so that sometimes the tempo markings supplied by the composer or the editor are found by the thorough student to be redundant and dispensable. In Baroque music (usually written without tempo markings), the understanding by the performer of the "right tempo" is pre-supposed. Nonetheless, debates on the subject of tempo arise perhaps more frequently than on any other musical subject. The issue is further clouded by the belief held by many musicians that tempo adjustments should be made for changes in instrumentation and in acoustical situations. There is also

the widespread acceptance of the concept of tempo change without specific instructions from the composer within a composition of length, as for instance for a variation in a minor key, for a lyrical second theme in a sonata or rondo form, or for the trio section in a minuet or scherzo. There is no doubt that the selection of the tempo for a short composition, and the handling of tempo changes in larger forms, represent choices which constitute the heart of musical interpretation.

Metronome markings can provide an objective measurement for tempo; but their success depends upon the consenting performer's tempo memory, for unless he has the rare opportunity to consult his metronome before making his initial tempo choice at the beginning of the composition and thereafter for each tempo change, he must rely upon his recollection.

The discarding of traditional tempo markings in favor of metronomic indications brings about a separation of the speed concept and character concept. The cultural associations which enrich our understanding of the tempo indications of the music of the past several hundred years are blocked by the substitution of metronome markings; and, in a sense, music which uses only metronome markings is disjointed from a meaningful heritage. Terms like "Allegro con brio" or "Largo e mesto" resonate

in the mind of the educated musician like poetic references--which in fact they are, being part of the great poems of musical art. They are windows looking into the meaning and style.

In the Piano Concerto, Elliott Carter uses as a tempo heading a metronome marking combined with the evocative word, "fantastico." The use of "objective" tempo indications is carried to its logical extreme. In the Piano Concerto Carter eschews traditional tempo markings. The first tempo is established by metronome; thereafter every new tempo is doubly indicated, by its own metronome marking and also by metrical modulation, which is the technique of relating the new tempo to the previous tempo in terms of some common unit of duration--an obvious analogy between the changing of note value function and the tonal pivot function in traditional harmony. For example, a note value of an eighth in 6/8 meter at dotted quarter = 84 will equal the note value of an eighth in 3/4 meter at quarter = 126, as occurs at m. 49.

$$\overset{6/8}{\text{♩}} = 84, \quad \text{♩} = 252 : \quad \overset{3/4}{\text{♩}} = 126, \quad \text{♩} = 252$$

M. 48

$\text{♩} = 84$

mp cant.

p

p

pp

(harm.)

$\text{♩} = 126$

49

$\text{♩} = 126$

In a more complicated but still typical illustration, the note value of a triplet sixteenth in 5/8 meter at quarter plus dotted quarter = 50.4 will equal an ordinary sixteenth in 9/8 meter at dotted quarter = 126, as in m. 293 (see p. 80).

$$\overset{5/8}{\text{♩}} + \overset{5/8}{\text{♩}} = 50.4, \quad \overset{5/8}{\text{♩}} = 252, \quad \overset{3}{\text{♩}} = 756 : \overset{9/8}{\text{♩}} = 756, \quad \overset{9/8}{\text{♩}} = 378, \quad \overset{9/8}{\text{♩}} = 126$$

The paradox of great fluidity and freedom requiring great precision and discipline is manifest in the area of metrical modulation as it proves to be in other compositional aspects of this work.

[illegible]

It is apparent at first glance that tempo formulations are extremely important in the Piano Concerto. (Please see Appendix II, Graph of Tempo and Meter Change). Carter makes use of a sequence of sixty metronome markings, as well as other indications of meter change and note-duration equivalencies. He establishes quarter = 126 or dotted half = 42, as his initial tempo. The movement concludes at dotted quarter = 126 for the last seven measures. In between, there are continual fluctuations. The longest constant tempo is twenty-three measures in duration. The next longest tempo durations are eighteen measures, once; seventeen measures, once; fifteen measures, once; twelve measures, four times; eleven measures, once; ten measures, five times. The frequency of tempo change is greatest in the middle section of the work and least at the end. The manipulation of the tempo durations suggests an arch form of increasing and lessening activity, with the composition beginning and ending at the same metronomic point. The relative lessening in tempo fluctuation from m. 255 to the end is in contrast to other compositional procedures within this work where in general activity tends to increase toward the end.

Frequent changes of meter provide an additional variable. In this work, meter and tempo often change together, so that the metrical beat, whatever it may be

at that particular point, changes in actual duration while at the same time the distribution of accent changes. It is clear that Carter takes into consideration and generally makes use of the traditional role of metrical accent. If he did not intend to distribute emphasis over rhythmic beats, those places where the eighth note remains constant but the meter changes could be simply notated as a line of even eighth notes, perhaps with added accent marks. A case in point occurs at m. 10, where the quarter = 126 in $\frac{3}{4}$ time becomes the dotted quarter = 84 in $\frac{6}{8}$ time. The eighth remains constant, a fact which Carter meticulously notes by placing an eighth note above the bar line, with arrows pointing both backward and forward.

Similar situations arise frequently within the work. Where there is an equivalency of any note value from the prior to the following tempo or meter, Carter marks it with a notation of that note value, placed above the bar line. At m. 28, where there is a change from $\frac{6}{8}$ meter to a single bar of $\frac{3}{16}$ meter, Carter indicates that the 16th will be constant (see page 83).

The presence of the bar line may be attributed to the need to maintain rhythmic ensemble in the concerto. However, Carter uses the bar line even in solo passages.

The technique of metrical modulation, i.e., expressing each subsequent tempo in terms of the immediately

28

♩ = 84

mf *cresc.* *f* *marcato* *f*

mf, aspir. *f*

sf

preceding one, sometimes leads Carter to such extremes as M.M. 110.25 at m. 129, or M.M. 58.8 at m. 287. However, the fact that these calibrations do not exist on the metronome does not invalidate their usefulness in terms of relationships within the work. For example, the marking at m. 287 of dotted half = 58.8 in 6/8 meter derives mathematically from the previous marking of dotted quarter = 98 in 6/8 meter in that five eighths of the previous tempo equal a dotted half, or six eighths, in the subsequent tempo.

It is obvious that Carter's metrical modulation bears a close resemblance to the proportional system of the fifteenth and sixteenth centuries, when the "time signature," often shifting within the composition, would refer to proportions and equivalencies rather than meter.

Making the metrical modulation successfully requires great precision and in some instances may demand greater skills than the player might reasonably be expected to possess. But the task of remembering a tempo previously established mentally but unplayed also challenges the performer. The risk of inaccuracy is therefore no greater and possibly less. Furthermore, since the player in the metrical modulation system does have the precise metronome marking for each new situation as well as the pivot unit to guide him, he may avail himself of tempo recall as well as relying upon the equivalency.

At times the equivalencies are hard to express, as at m. 156 where the duration of a quintuplet sixteenth note is exchanged for a triplet eighth, changing the tempo from quarter beat = 110.25 to quarter beat = 183.75. Measures 221, 290, and 293 are among numerous similar examples.

M. 290

$\text{♩} = 50.4$

brillante

$\text{♩} = 50.4$

M. 156

$\text{m.m.} = 183.75$

$\text{♩} = 183.75$

M. 293

The musical score for M. 293 is presented in two systems. The top system features a piano part with a tempo marking of $J. = 126$ and dynamics ranging from *ff* to *f*. The bottom system includes a horn part (Hn) with a *cresc.* marking, a bassoon part (Bcl) with a *f* marking, and a solo part (EH, solo) with a *f* marking. The score is written in a complex, rhythmic style with many eighth notes and rests.

The relationship between tempo and meter in this work is a fascinating one. In many places where the duration of the small unit, for instance the eighth note, remains constant but the meter changes, there is a kind of rhythmic phrasing, a play of stress, sometimes duple, sometimes triple, sometimes asymmetrical, which gives to the composition a naturalistic motion, a spontaneous swaying to and fro comparable to the movement of natural objects, rooted but rarely still.

When a graph is made on which the duration of the eighth note is projected for each tempo and each meter throughout the entire work, including those sections where eighths are not used as an actual note value, it is found that for long stretches the eighth remains constant while

the meter plays around it; and it is further discovered that after disturbances within the middle section of the work, the eighth returns to its original duration for most of the final thirty-seven bars. The eighth remains at 252 for the first forty-nine bars, touches 252 again at m. 84, m. 101-102, m. 205-221, m. 246-251, m. 311-319, and m. 329-348 (the end). (Please see Appendix III, Graph of Eighth Note = 252.)

No other constant tempo factor has this frequency or duration. It may therefore be said that in this work Tempo Primo at eighth note = 252 is the basic tempo. The composition recalls this Tempo Primo numerous times and concludes with a recognizable return to Tempo Primo. Most of the variations away from the constant eighth at 252 occur in the middle section, while the beginning and ending sections vary in meter rather than in the eighth note duration. It appears that an arched structural form and architectonic unity centered upon the eighth note underlie the extremely varied metrical modulations.

Although Carter makes use of metrical stress, he is by no means the slave of the meter. Beats are often replaced by rests. While in many cases this means only that the beat is felt rather than heard (as in those measures characterized in Chapter VIII, Rhythmic Activity and Rhythmic Character, as "jagged"), in other instances

it does result in obliterating the beat and obscuring the metrical arrangement (as in other measures characterized in Chapter VIII as "diverse"). Furthermore, off-beat and irregular dynamic accents are used frequently.

Carter's manipulation of stress is anything but simplistic. Tempo and meter change combine with dynamics, density, and rhythmic activity to offer an aural picture of the utmost variety.

Motoric rhythm marked by asymmetrical measures and off-beat accents, such as occurs for instance in Le Sacre du Printemps and other works by Stravinsky, never appears in Carter's Piano Concerto.

The technique of metrical modulation has no room for rubato, accelerando, or ritardando. Carter may make his tempo changes by gradual successive stages of one or two measures. One such series of gradual changes is m. 100, marked quarter = 126, going through m. 101-104 marked dotted quarter = 88, and arriving at m. 105 marked quarter = 73.5. Another example can be found at m. 279 marked quarter = 60, going through m. 285-286 marked quarter = 90, arriving at m. 287 marked eighth = 180. On seven occasions a short intermediate measure is employed. Since the intermediate measure is so brief, there is no feeling of establishing a level tempo. The effect in metrical modulation is analogous to a transient modulation in tonal analysis.

Change within the individual measure, on the minute basis of increasing prolongation from one note to the next, for instance, is never seen in this work. It may be, however, that rubato of a very subtle kind is called for by Carter's frequent use of the term "espressivo." The possible meanings of "espressivo" are discussed in Chapter IX, Expression and Articulation Markings.

CHAPTER VI

DYNAMIC MARKINGS

Carter's Piano Concerto has an extreme profusion of markings relating to the control of dynamics. A random sampling shows that page 9 of the two-piano score has fifty-one markings pertaining to volume level or volume change. Page 19 has forty-seven; page 29, forty-seven, page 39, fifty-eight. Further examination indicates that this wealth of dynamic markings is characteristic of the entire work. Most often, a single measure will have several simultaneous or successive markings, of the same or of contrasting nature.

The dynamic range is extensive and the gradations subtle. The parameters of volume are fff and ppp. The indication ppp occurs four times (m. 194, 198, 225, and 227); fff is used seldom (m. 311 is one instance). Volume gradations are indicated by ff, f, mf, mp, p, pp, più f, più p, poco f, by the words "crescendo" and "diminuendo," and by opening and closing wedges. Although traditionally the words "crescendo" and "diminuendo" are used for changes from one volume level to another and wedges are used for small variations of volume within one

pervasive level, Carter uses these markings interchangeably. The marking sf appears frequently and sff occasionally.

It may be expected, in the use of dynamics in general, that they serve not only to provide variety of volume but also function as indicators of musical character and structure, especially if there are correlations between dynamics and density, tempo, instrumentation, motivic use, and other compositional factors.

In order to comprehend the meaning of the voluminous dynamic usage in this work, three criteria were formulated. One is the volume level during any time period, the second is the stability of volume during any time period, and the third is the kind of change which occurs. Six categories emerge from the application of these criteria to the work:

1. relatively stable, with fluctuations in the range from pp to mf,
2. relatively stable, with fluctuations in the range from mf to ff,
3. very diverse, ranging more widely than (1) or (2),
4. predominantly level at p,
5. predominantly level at f,
6. predominantly crescendo.

A category for relative stability within the middle volume range of p to f, which would complete the classification system, was not used as this kind of dynamic usage did not seem to exist within this work.

There also seemed to be no place for a category for "predominantly diminuendo." Since both of these kinds of dynamic usage are encountered frequently in most music, their absence in this situation should be noted as two significantly empty, or non-applicable, categories. (Please see Appendix IV, Classification of Volume Level and Volume Variation.)

The validity of this kind of categorizing would seem to be directly related to the length of the time period to which the categories are applied. A time period of one measure or less turned out, upon experimentation, to be too brief for general use. On the other hand, three or four bars tended to be insufficiently specific. Two measures were found to be the smallest unit which was usable for this investigation. The two-measure unit is not of uniform size in terms of time elapsed nor of pulses encompassed, due to frequent changes of both tempo and meter, but it does have the advantage of being a constant factor which could be used in measurements of other musical data as well. All the data derived were placed on a graph in which the horizontal axis represented one-measure units. This was done to facilitate comparison with other musical events which were similarly graphed. Category 3, "Very Diverse," was not scanned solely in two-measure units but also represents on the graph various one-measure units between other categories. Category 6, "Predominantly

Crescendo," also represents a single measure in two instances which seem particularly significant (one is the final measure).

Subjective judgment could not be removed entirely, but, in order to objectify as much as possible, various considerations were carefully held in mind in decision making. These include the number of volume changes and the frequency of changes within the framework of each category. Both could be very high without disqualifying the two-measure unit for placement within either of the "relative stability" categories, unless the range of fluctuations exceeded the volume boundaries of the category. In that case the unit was placed in "Very Diverse." Sections of low volume punctuated by loud interjections were placed in Category 1 unless the interjections seemed to prevail by reason of their duration, frequency, or rhythmic position. This would have made the section more suitable for 2 or 3. Rests were considered as tending to reduce the volume level, unless they were very brief.

The number of notes present at any one time (density), and the rhythmic activity were studied and graphed separately. Although, in actual performance, volume, intensity, and density may frequently be found to interrelate, the separate investigation of each of these aspects revealed that a planned relationship among them is rejected by the composer.

In this work, multiple layers, with some strands marked loud and others soft, occur very frequently. These sections were placed in the "Very Diverse" category, unless the dynamic spread did not exceed pp to mf or mf to ff. Accents and sforzandi were considered to function with the surrounding volume level. A sf in piano, for instance, was not considered the equivalent of subito forte, as in this work subito forte, or even forte by itself uses the heavy line over a note to indicate greater emphasis upon that note. This was assumed to be only a slight volume modification. Carter does not use the staccatissimo (') sign to indicate a particularly sharp, short accent. The word, "marcato," which occurs thirty-one times throughout the movement, is dealt with under expression markings rather than volume indications.

When the criteria and categories had been defined and established, the entire work was scanned repeatedly and each definable unit was placed on a graph (please see Appendix IV, p. 158). It then became apparent that the initial impression of very profuse and extreme dynamics is in fact true for one hundred and forty-eight. Category 3, "Very Diverse," was the one which appeared most often on the graph. It is also the one which includes some of the longest stretches of any one

kind. It includes one stretch of twenty-four measures, one of fifteen, one of thirteen, five of twelve, as well as various shorter occurrences. Category 3 definitely prevails in the last third of the work and particularly at the end.

Category 5, "Predominantly f," is the next most prevalent category, with fifty-two measures. However, it is filled by only two appearances, one of twenty-eight measures and one of fourteen. The twenty-eight measure stretch is indicated principally in the solo Piano part.

Category 4, "Predominantly p," is least filled, with only one appearance of thirteen measures at approximately mid-point in the composition, m. 222. It is evident that the sections of comparatively level dynamics are the least frequent, but have relatively long duration. Perhaps the implication here is that sufficient time is a requisite of quietude.

Although Category 4, "Predominantly p," is the meagerest, Category 1, "Relatively stable from pp to mf," is the next in frequency to Category 3. The lower volume range is indeed used a great deal, although with fluctuations. Category 1 includes sixty-four measures in twelve appearances. Significantly, this category begins the composition with eight bars which offer a particularly clear-cut example of the type of sonority of that category.

Its next appearance is for seven measures, then two, three, ten, four, six, two, and eight, with the graph indicating that Category 1 dwindles in importance from the mid-point of the work.

Category 2, "Relatively stable from mf to ff," contains only nineteen measures, in five scattered appearances. Activity in this volume range tends to be of the upward thrusting type, as Category 6, "Predominantly crescendo," contains thirty-six measures, in eight appearances. During the first third of the work there is a five-measure stretch and a six-measure stretch, but starting at m. 202 there is a five-measure appearance, then three measures, and then, clustered toward the end, five measures, ten, one, and one more for the final measure of the composition. Both Category 3 and the Category 6 become increasingly important as the end of the work approaches.

Summary of the data regarding dynamics:

1. Only one place steady at piano (fourteen measures beginning at m. 223)
2. Two places steady at forte (forty-two measures beginning at m. 123 and m. 208)
3. More general stability in the lower range (sixty-four measures) than in the upper range (nineteen measures)
4. No category for diminuendo, whereas there are thirty-six measures of crescendo
5. No category for stability in middle range

6. Most prevalent, one hundred and seventy-four measures of very wide and frequent dynamic fluctuation.

Analysis of dynamics does not reveal that dynamics are used in this work to illuminate the formal structure or to indicate any kind of sectional organization. The progression of the work is marked only very generally by the appearance at the beginning of "softer stable" and the rise in "diverse" and "crescendo" toward the end, while both the piano level and the forte level occur only in the central portion.

Neither does the analysis reveal any identification by dynamics of thematic structure, characteristic motives, or instrumental usage. No significant correlations between dynamic usage and other compositional aspects were discovered by comparison of graphs.

The ready conclusion is that the use of dynamics in this work is merely decorative. Further consideration, however, indicates another, far more sophisticated, function.

Decorative dynamics, whose main purpose is to alleviate tonal boredom, certainly does not require the immense variety demonstrated by this work. Rather than comforting the listener's ear, the range, diversity, and frequency of dynamic change in this work offer an aural challenge of the highest difficulty. Many listeners will not be able to meet this challenge. The willingness to meet the challenge and to function within such an

elaborate framework forces upon the listener an attitude of the highest concentration. It implies a discipline requiring a tense emotional state lasting for three hundred and forty-eight measures. It may be that the dynamic usage is a means of sensitizing the listener to all aspects of the composition.

Possibly this is the principal meaning of Carter's dynamics in this work: the tension level forced upon the participating listener is itself a vital part of the message communicated.

Voluminous dynamic markings of the kind found here are not rare in twentieth-century music, especially in the works of Schönberg, Webern, and Berg. (See, for instance, Six Little Piano Pieces, Op. 19, by Schönberg, the Piano Sonata, Op. 1, or the Chamber Concerto for Piano, Violin, and Thirteen Wind Instruments by Berg, or Webern's Klavierstück, Op. Posthumous.) Carter's link to the Viennese atonalists and expressionists, which is also suggested by other aspects of his compositional technique, may be further bolstered by his usage of dynamics.

An analogy can be made between Carter's dynamics and the use of color in certain contemporary paintings, such as those of Jackson Pollack; non-structural, non-representational, large scale, often pointillist, ranging over the entire palette.

CHAPTER VII

DENSITY

Density, or the "thickness" of sound, is a compositional factor which has grown greatly in significance during the late 19th and 20th centuries. Density is related to harmonic texture and chord structure, contrapuntal delineation and linear integrity, acoustical reinforcement and tonal diversification, spacing and utilization of pitch areas. In orchestral writing, density is related to tone color.

Density may be consistent, stable in the number of voices used and perhaps also in their assigned ranges, or fluctuating in number and pointillist in allocation of pitch area. The organization of density can be useful in establishing formal structure. The deliberate evocation of well-established historical associations in density usage, such as four-part chorale writing or melody with figural accompaniment, for example, may offer clues to thematic characterization and interpretation. In a concerto or concerto grosso, density is concerned with the massing of instrumental forces into tutti, solo, or concertato groups.

In view of the striking complexity of material in Carter's Piano Concerto, a minute and systematic classification of data regarding density may be essential. In this study, density is investigated in regard to both (1) the degree of thickness and (2) the consistency of texture. First it is necessary to define density in such a way as to eliminate confusion from related consideration of volume (acoustical reinforcement), rhythmic activity, and orchestration. Orchestral doublings of the same pitch do not come under consideration because the composer's piano reduction of the orchestral score is used for this study. Carter states in a prefatory note to the published two-piano score that his reduction of the orchestration is fairly literal except for a few octave transpositions and some very densely composed passages. Volume is considered separately in Chapter VI, Dynamic Markings, and rhythmic activity in Chapter VIII, Rhythmic Activity and Rhythmic Character. Those instances within this work where density seems to have increased simultaneously with the building up of volume are studied from both viewpoints. Similarly, closely arpeggiated figures are measured under both Density and Rhythmic Activity.

The strictest and most precise definition of density would be simply the number of pitches present at any one time. A problem immediately arises in the interpretation of "one time." Does this mean occurring simultaneously

(beginning together), or perceived as related and comprehended as a chordal structure which is extended over a relatively brief duration, as an arpeggio or an accumulation of chord tones? Another approach would be from the durational aspect, without, if possible, infringing upon the concept of rhythmic activity. This approach would require choosing a suitable time unit and measuring the thickest and thinnest of sonorities during that time span. Should priority be given to the most prevalent density within the time unit, or to the density of rhythmically significant chords? If the time unit is not precise simultaneity, how minute should it be?

A suitable, although often rather large, time unit is the measure. This choice facilitates graphing in the same way as is used for other compositional aspects and offers ready comparison with other data by making use of the measure as the same constant factor in each case.

A sliding scale of density measurement was devised, with overlapping of boundaries. Subjective judgment was used to determine those sonorities which were likely to be perceived as chordal although not simultaneous. Rhythmic placement of thick sonorities, and the most prevalent density within the measure were taken into consideration as tending to raise the density level. Ambitus was also considered; sonorities which were either very broad and expanded or very narrow and concentrated were rated higher

where it was feasible to do so. To illustrate, let us take a measure where the highest number of pitches which seemed to form one sonority was four, but where only two notes were also present at one time. According to the scale of classifications below, this measure could be placed in one of three categories, depending upon the concomitant considerations. In all decisions, aural perception was taken as the principal guide. In this connection it is noteworthy that Carter's dodecaphonic tonal matrix has nothing to do with the traditions of doublings and spacings for full sonority within a chord.

The classifications which developed as useful categories in this work are:

1. 1 to 2 notes
2. 2 to 4 notes
3. 4 to 5 notes
4. 5 to 6 notes
5. 6 or more notes
6. extremely opaque.

The spread within each category is required by the length of the one-measure time unit and is adjusted in the way which seems suitable for this particular composition.

Category 1 is significant for its meagerness and its placement. The composition begins with one of the rare appearances of the single note, in this instance a note lasting for an entire measure, which is a unique occurrence

within this work. In all, the single note occurs only three times: at the beginning, marked piano espressivo, for a whole measure of the piano part; in m. 223, last quarter, again in the piano part, marked piano un poco espressivo; and in m. 285, downbeat, the lowest C, in this instance actually a doubling between the piano and the double bass, marked fortissimo. The single line is also extremely rare. It occurs in m. 17 in the piano part and in m. 130-133 in the orchestral part.

The other appearances of Category 1 are predominantly two-note sonorities: m. 17, 113, 130, 131, 132, 160, and 166, seven in all. They are conspicuously absent from the second and third sections of the composition.

Category 2, "2 to 4 notes," has sixty-four measures, scattered throughout the work but appearing least in the third section.

Category 3, "4 to 5 notes," has one hundred and four measures, beginning in m. 4 and appearing without apparent pattern throughout.

Category 4, "5 to 6 notes," does not begin until m. 31, and contains sixty-nine measures.

Category 5, "6 or more notes," begins in m. 28 and has sixty-four measures. This category is absent from m. 107 to m. 173. A lowering of density results as it is replaced by sparser categories, Category 3 in particular.

Category 6, "extremely opaque," has only thirty-nine measures, but as it merges into Category 5 we do not get the impression of meagerness in that category as we do in Category 1. On the contrary, the combination of 5 and 6 reveals the very important usage of thick density. The denser categories begin later and occur more frequently as the composition progresses. Category 6 occurs for longer stretches later in the work and is the concluding sonority.

In the entire movement, only seventy-two measures contain sonorities of less than 4-5 notes and these measures occur mostly in the earlier sections, while the denser sonorities, first appearing in m. 25, increase in significance until the end. Some of the sonorities of Category 6 are tone clusters including almost all the notes throughout the pitch range of the piano, as at m. 316 (see page 105).

Summary of findings regarding density:

There does not appear to be a systematic use of different levels of density, different concepts of consistency or variety of texture, or different kinds of density change, such as the addition of voices. Neither is density used for sectional organization or thematic characterization. The soloistic role of the piano is not marked by a particular kind of texture. In studying the

M. 316



graph of density, for which a classification decision has been made for each measure, it proved impossible to discover any meaningful pattern. It would seem that the artistic purpose is the expression of extreme variety and freedom, with much use of very thick sonorities challenging the perceptual capabilities of the listener. The aesthetic is of non-structuring and fantasy. The general growth in density throughout the work tends to reinforce the onward progression in much the same way as was found true for other compositional aspects. This growth is rendered less than obvious by the wide and continual fluctuations.

Please see Appendix V, Graph of Density, p. 159.

CHAPTER VIII

RHYTHMIC ACTIVITY AND RHYTHMIC CHARACTER

Elliott Carter's Piano Concerto is extremely complex in regard to rhythm. The spacing of the sounds in time and in relation to one another displays fantastic variation. In the hope of achieving greater awareness in this area, a classification and graphing system was attempted along the lines of previous chapters. (Please see Appendix VI, Graph of Rhythmic Activity, p. 165).

The concept of rhythmic activity may be described as a horizontal view of density. Instead of measuring the number of simultaneous sounds, the measurement applies to the number of successive sounds within a given duration. Again, in this study as in others, one measure was taken as the unit of duration and each measure was classified and graphed on a scale of

1. 1 to 3 notes per measure
2. 4 to 7 notes
3. 8 to 11 notes
4. 12 to 20 notes
5. more than 20 notes.

Although the disparity in the lengths of measures within the work is in this case a factor which may tend to lessen the validity of this means of considering the data, some conclusions can be drawn.

Rhythmic practices throughout the work appear to adhere to a fairly uniform concept. A careful perusal of the entire movement indicated that the first 120 measures of the composition could, in fact, offer a sampling which would be ample, characteristic, and representative of the method of investigation. This in itself constitutes one of the most important findings: stability of usage. Undoubtedly this stability functions as a significant factor in creating unity in this composition, a very helpful consideration in such an extraordinarily large one-part form.

Immediately apparent is the correlative fact that rhythmic activity, like "dynamics" and "density," is extremely free, fluid, and wide-ranging. There is no observable pattern.

Complications of notation often obscure the true number of successive musical occurrences, for instance when a note tied to the next beat must be written twice. In cross rhythms, some notes share time slots. For example, a five-note group juxtaposed upon a two-note group results in only six sequential sounds.

The third important conclusion, drawn from examining both the music itself and the graph, is that in this

composition rhythmic activity is a completely independent aspect. It is free from either positive or negative correlations with other compositional factors. Increased rhythmic activity may be used at times to aid in building volume, but in general this is not the case. Thicker sonorities may be relatively more widely spaced in time, as in the last few bars, but sparser spacing also occurs in areas of meager density.

Rhythmic activity in this work is used to express scope, variety, frequent change, high levels of rhythmic density, conceptual independence, and dynamic propulsion.

In listening along a time continuum, it is not only the relative frequency and duration of successive notes which is perceived, but also, and more importantly, the kind of rhythmic motion which prevails in any area. The use of gradations of rhythmic density offers one means of expression; the kind of rhythmic motion employed by the composer offers another. The rhythmic character of any area depends upon the total number of notes, their frequency or relative speed, and their relative placement. In this work, rhythmic character types can be sorted into five categories:

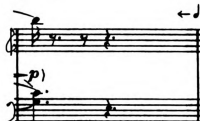
1. smooth
2. uneven
3. jagged

4. diversified
5. extremely diversified.

It is of interest to note that in the study of this compositional aspect, as well as of several others, it is necessary to include a superlative classification. The classifications are also appropriate to the work analyzed in that the homophonic and polyphonic considerations are studied together.

The study of rhythmic character types proved rewarding in clarifying the concept in general and the specific usage within this work. "Smooth" implies that most notes are of equal duration or similar subdivision, or fit easily upon the meter. Examples are m. 17, 23, 232, 258, 282-284 (see page 110). It is not necessary that these measures contain relatively few notes. On the contrary, if the rhythmic activity is very high the impression may be "smooth" because all the time slots are filled. Polyrhythms may therefore lose their effect, as for instance, in m. 109 (page 111), unless the integrity of each rhythmic strand is clearly delineated in other ways, as in m. 207 (page 111), where the orchestration clarifies the rhythmic counterpoint. Carter's technique in dealing with this sensitive concern is one of the more debatable aspects of this composition.

M. 17



282

Via *mf*

[E.H.] *mf* → *p* → *mf* → *sf*

[B.G.] *mf-pp* → *p* → *f*

283

M. 109

mp mf poco f

stg. pizz.

mf f mf pp

ff marcetiss.

207

+Tpt, mf

f molto sost.

"Uneven" describes those places where notes are of similar but not equal duration, where the subdivision changes, but where the metrical placement remains undisturbed, as in m. 6, 22, 45, 76-78.

M. 76

The musical score for measure 76 is presented on seven staves. The instruments and their parts are as follows:

- Vc (Violoncello):** Bottom staff, marked *pp*.
- Vn (Violino):** Second staff from bottom, marked *p*.
- Vln (Violino):** Third staff from bottom, marked *mf*.
- Vpizz (Violoncello pizzicato):** Fourth staff from bottom, marked *f*.
- Tpts (Trumpets):** Fifth staff from bottom, marked *f*.
- Tbn (Tubas):** Sixth staff from bottom, marked *f*.
- Hns (Horns):** Seventh staff (bottom), marked *p*.

The notation includes various rhythmic values and dynamic markings (*pp*, *p*, *mf*, *f*) indicating the intensity of the sounds.

"Jagged" refers to an irregular rhythm that surprises by missing beats. Some kinds of syncopations and anticipations would be included in this category, especially those which place events narrowly off the beat. The dotted eighth followed by the sixteenth sometimes falls into this category, as does the pattern which places very disparate note values in sequence. This type of rhythmic character is of particular interest, because, although it may seem very active due to the alertness required of both listener and performer in perceiving and effectively playing the disproportionate values, it does not necessarily contain many notes. Rather, it is of importance to guard

the significant space between the notes. From this viewpoint, "jagged" may be considered an expansion of the concept of Monteverdi's "stile concitato." Examples are m. 49, 114, 106-107, 145, 150, 189, 251, and 339.

$\text{♩} = 126$

49

$\text{♩} = 126$

145

+BCI

$\text{♩} \rightarrow, \text{♩} = 73.5$ M. 339.251

$\text{♩} \rightarrow, \text{♩} = 73.5$

Stg $\text{♩} \rightarrow$

mf

BCI

The classification "diversified" requires many notes--12 to 20 or even more than 20, comparable to Categories 4 and 5 of Rhythmic Activity. There is usually great variety of note values and of subdivisions within the single line, as well as a high degree of contrapuntal complexity. "Smooth," "uneven," or "jagged" lines may be contained within the texture; however, the overall impression is of rhythmically independent lines made up of different note values. Examples are m. 75, 212, 230, and 327.

M. 212

The musical score for measure 212 is presented in three systems. The first system consists of two staves: the upper staff features a melodic line with a triplet of eighth notes marked 'marc.' and a slur over a group of notes; the lower staff provides a harmonic accompaniment. The second system also has two staves: the upper staff includes a box labeled 'Stg, pizz' and a dynamic marking 'f'; the lower staff includes a box labeled 'Bcl' and a dynamic marking 'mf'. The third system continues the texture with two staves, including another 'Stg, pizz' box. The notation is dense, with many beamed notes and complex rhythmic groupings, illustrating the 'diversified' classification.

"Extremely diversified" will probably contain polyrhythms and irregular groupings. In this study the term is reserved for measures which are so complex that they tend to be interpreted as a sound effect, similar to

the "special effect" interpretation of the measures of highest density. These saturated areas occur with conspicuous frequency, as in m. 81, 99, 215, 248, 249, 313-315, and 343.

M. 215

ff marc. f

ff-mf f-mf

Stg Ww

BCI

343

f meno f f p

f-mf

FI, Stg Stg FI

p

The first ninety measures of the Piano Concerto were systematically classified and graphed in terms of rhythmic character. (Please see Appendix VII, Graph of Rhythmic Character, p. 168.) As in the graphing of rhythmic activity, this sampling offered sufficient data to serve as a visual representation of the kind of use of this compositional factor in the entire work.

Carter's ingenuity in devising and manipulating rhythms seems inexhaustible. Rhythmically identical measure-groupings hardly exist. Although repeated figures, chains of triplets, for example, do sometimes recur, Carter usually manages to eschew the use of repetition or sequential patterning. There is no rhythmic motive. Rhythmic recall is not practised. There is no correlation of rhythmic character with any other compositional aspect. Interpretive mood is evinced by rhythmic character only in an oblique way. Significantly, ostinato is not used. Rhythmic patterning of an organizational nature, such as augmentation, diminution, or "divisions," is also completely absent.

Carter's rhythmic aesthetic is striking in its non-affiliation with other considerations. Perhaps its most important quality, in addition to the astonishing level of its imagination, is that it is a self-contained means of expression.

So many areas within this work can be described as "diversified" or "extremely diversified," with more than twelve or even more than twenty successive sounds per measure, that questions of aural judgement arise. Are the more complex measures intended to be clearly and accurately perceived, or is a sound effect of overwhelming activity the desired objective? In Chapter VI, Dynamics, aural strain in regard to the perception of fluctuating dynamics was presumed to be part of Carter's aesthetic in this composition. Perhaps the rhythmic activity and complexity, amounting at times to a shock wave, may be adjudged similarly.

If confusion, as an expressive phenomenon, is in fact part of the conceptual framework of mid-twentieth-century music, it can be observed in measures such as 239-242. Confusion certainly must be admitted to its place on the extreme Dionysian side of the aesthetic continuum. In this work Carter demonstrates that if confusion is to be communicated purposefully, it cannot be assigned with surety to the possibly obvious happenings of aleatory means, but requires meticulous structuring by the composer.

J. 90 M. 239

This musical score is for a piece labeled "J. 90 M. 239". It consists of two systems of staves. The first system includes a grand staff (treble and bass clefs) and two additional staves. The notation is complex, featuring many triplets, slurs, and dynamic markings such as *p*, *mp*, *f*, and *pp*. There are also markings like "ad lib" and "rit". The second system continues the piece, with a measure number "27" indicated at the top. The notation remains dense with various musical symbols and dynamics. The score is written in a style typical of 19th or 20th-century musical manuscripts.

CHAPTER IX

EXPRESSION AND ARTICULATION MARKINGS

Carter is extremely specific in every aspect of the music analyzed. Dynamic markings are precise, tempo is measured to minute metronomic calibrations. It would not seem as if there were need for many interpretive directions or "expression markings." However, Carter does make use of an extensive vocabulary of "expression markings," and, surprisingly, many are of a subjective, non-specific nature.

A complete list of expression markings found in the first movement of the Piano Concerto and the places where they are used follows (when the marking occurs at an upbeat, the numbering is of the following measure):

1. espressivo, m. 1, 8, 28, 35, 50, 94, 124, 133, 138, 140, 141, 144, 146, 162, 228, 236, 258, 259, 264, 270, 271, 277, 279, 322, 329, 330, 331, 339 (this is the final marking)
2. un poco espressivo, m. 223
3. espressivo sempre, m. 281
4. molto espressivo, m. 54, 105, 125, 126, 276, 299, 318
5. molto espressivo e ben legato, m. 301
6. cantabile espressivo, m. 5, 175, 179, 231

7. espressivo ben cantando, m. 32
8. cantabile, m. 24, 49, 216
9. ben cantando, m. 140, 304
10. ben sentito, m. 319
11. delicato, m. 69
12. leggiero, m. 6, 54, 72, 80, 98, 128, 130, 199,
201, 225, 253, 329
13. sempre leggiero, m. 81
14. marcato, m. 22, 23, 24, 30, 34, 37, 39, 61, 102,
147, 168, 169, 174, 178, 184, 204, 205, 212,
215, 219, 247, 248, 249, 253, 293, 308, 327.
Marcato mano sinistra, m. 27
15. ben marcato, m. 209
16. marcatissimo, m. 207, 310
17. sonoro, m. 216
18. brillante, m. 290
19. sempre staccato e pesante, m. 302
20. giocosso, m. 123, 185
21. accompagnato, m. 105

Very often, different strands within the texture have different markings (m. 252 is one instance among many), presumably to indicate linear balance in terms of tonal pre-eminence or placement within simultaneous independent phrases. Sometimes Carter will repeat an expression marking as if to reaffirm its validity in the face of conflicting markings for simultaneous parts. Often he will meticulously place the same marking in simultaneous parts. In general,

expression markings occur at the beginning of phrases and indicate tonal character or solo position.

Articulation markings are also highly specific and numerous. The word "legato" appears often and there are many legato slurs as well as longer, phrase, slurs. Carter uses staccato dots, but not under slurs. Sometimes he will pair staccato dots with a heavy line over each note, achieving the same kind of "portato" effect which is often the interpretation of dots under a slur. In m. 17 he uses the word "détaché."

It is clear that the expression markings which Carter considers most important in this work are "marcato," "espressivo," and "cantabile." These are all terms of considerable ambiguity. If "marcato" is interpreted in its literal sense, one may wonder why a slightly higher dynamic level was not specified. The implication is either that "marcato" is too subtle a volume gradation to be named as such, or that the meaning is principally of psychological import, referring to the portentous presentation of each note within the phrase. "Cantabile" may be related to "marcato," referring to tonal prominence or to similarity of sound within a phrase. The familiar term "dolce" is conspicuously absent.

Enigmatic, too, is the use of the term "espressivo." Possibly the usage goes beyond the exact definition and means a flexibility in phrase dynamics and phrase rubato.

What does "sensible" (upbeat of m. 257), mean in regard to a single sound, the diminished third A - C-flat?

"Giocoso (subito)" at the upbeat of m. 185 is correlated significantly with a change of articulation from "legato" to "staccato." "Giocoso" at m. 123 is particularly interesting.

M. 123

- ♩ = 110.25 →

The musical score for measures 123-124 is presented in three systems. Each system begins with a tempo marking of ♩ = 110.25. The first system shows a woodwind section with a 'fesor.' marking. The second system shows a woodwind section with a '(BC)' marking and a '(stacc. pizz.)' marking. The third system shows a woodwind section with a 'mf' marking and a 'giocoso' marking.

- ♩ = 110.25 → (BC) (stacc. pizz.)

- ♩ = 110.25 → Ob mf giocoso

It is not a performance direction, but a description of the musical character at that moment, an evocation of the empathy and psychological involvement of the player (oboe). The specific verbal communication of this joyful mood serves to indicate Carter's awareness of the intensity of feeling and emotional participation of the performer. It also makes explicit his wish and expectation in terms of human communication between composer, performer, and listener.

It may be taken as an expression of Carter's philosophy that he makes use, in this work, of terms which indicate to the player not only what he should do, or what he should try to make the listener perceive, but also what he himself might feel if he were internalizing the emotional progression of the composition. The emotive continuity which is the life line of a free form (as this work appears to be) may well call upon the sympathetic partnership of the performer to a degree analogous to that practised by some schools of acting.

The freedom of the lines of internal coherence within this composition are signalled by the use of the term "fantastico" at the beginning. This word appears above the staff, next to the metronome indication in the solo piano part and in the same position above the orchestral reduction, which is tacit at this point. There is no indication in the position usually allocated to the

title of the movement or to the principal tempo.

Although "*fantastico*" is written in lower case italics without an initial capital, it may be that the meaning of the term extends in a general sense to all aspects of the composition. Certainly there is no specific meaning which could apply at this point.

CHAPTER X

SUMMARY AND CONCLUSIONS

Elliott Carter (b. 1908) has had a long career as composer, teacher, and lecturer. His critical success and frequent performances place him in a position of leadership in the world of music. He not only influences the progressive movement in contemporary music, but in his personal and unique way he may be considered one of its true representatives. Each of Carter's new works is therefore extremely interesting in itself, and also may prove helpful in illuminating some of the conceptual trends and compositional techniques of today. The first movement of the Piano Concerto poses serious challenges to the listener and analyst; hopefully, in studying these challenges, perceptual skills may be developed which will be rewarding in understanding not only Carter but other composers of our time.

The principal difficulty in undertaking the present study lay in finding a way to begin (a far from rare problem in analysis and of significance in itself). The first impression is of a work of great complexity and innovation, very active, thick, long, aurally overwhelming,

apparently formless, the creation of which may have been governed to a high degree by an intuitive process. It was helpful at first to define the composition by determining what it is not. It is a work without themes or tunes, with no distinction between statements and transitions, no scenario even in the sense of area-distinction by emotional content, no tonality, no modulation, no identification by pitch-space area, no returns or repeats, no cultural or folkish allusions.

Casting aside false expectations in regard to these considerations brought out the fact that some traditional and even conservative criteria remained. The work is non-aleatory, non-electronic, and makes no use of mixed media or experimental acoustical effects. There are no micro-tones or deviations away from the locked-in pitches of the tempered scale. Traditional instruments are employed and used in traditional, albeit sometimes very virtuosic, ways. (The virtuosic element may also be regarded as traditional in a concerto.) Pitch notation, rhythmic notation, expression markings, and dynamics are employed in the classic tradition. The six basic attributes which define most Western music are all present in some way--rhythm, structure, melody, harmony, timbre, and volume. In addition there are directions to the player. These basic attributes turned out to be quite sufficient as points of

departure for a comprehensive analysis. All the investigable elements of composition listed earlier in Chapter I, Purpose and Method, could be grouped into these attributes.

The study of rhythm required two kinds of inquiry, one into rhythmic activity and rhythmic character, and another into tempo, meter, and metrical modulation. The study of melody included a consideration of the counterpoint. Timbre was deemed a specialized topic somewhat outside the area of this paper; however, the thickness of sound was investigated under Density. Volume comes under Dynamic Markings, and directions to the player under Expression and Articulation Markings. Harmony, in its three aspects of chordal sonority, cadential form, and structural organization, formed a chapter in itself. Form, although it is presented first in this paper, was actually investigated last, as it required bringing together sufficient knowledge of all the other attributes or aspects of the composition.

Procedure, in the sense of evolution over a time-span, is the particular philosophical inquiry in which we, together with Carter, are involved in this work. In studying each attribute it seemed important to consider both the character of the element itself and the kind of procedure in which it was engaged, whether, for instance, the melodic lines were of the same type throughout or, if they varied, in which way they did so. Wherever possible a statistical method was employed, measuring the attribute

in its various presentations and measuring the procedure in which it was involved. Each new aspect studied was scrutinized for possible clues regarding other aspects. A brief recapitulation of findings follows.

In form, the first movement of the Piano Concerto is less like a structure with members, connecting tissue, and organized parts expressing a genetic lineage than it is like protoplasm moving toward its fulfillment. The concept of structure in this work is not one of "being" but "becoming." Apparently one long evolving form, its forward movement is marked by a series of interconnected changes of various kinds, some relating to the harmonic texture, or to the rhythm, density, orchestration, or motivic usage. There are no pauses. The 12-tone matrix is always used and the motivic three-note chords of C, F-sharp, G and G, D-flat, F are always present in their original form or metamorphosed. There is a slight recall of the original pitches toward the end of the work, but in no sense a recapitulation.

The movement is headed by the indication "fantastico," which is perhaps a reference to an intuitive approach to the unfolding of the motivic possibilities. The emotional level is high throughout, due to the absence of sectionalization, obvious phrase endings or cadences, as well as to the particular kind of usage of other compositional aspects. The overall impression is of an

immensely dynamic forward propulsion in one sweep from beginning to end.

The harmonic texture is based upon the use of the two motivic three-note chords. As these three-note chords are not tertian triads but are atonal in implication, it is therefore not surprising that even in their furthest metamorphosis they rarely exhibit tertian formation. The diminished triad never appears; neither does the diminished seventh chord. The augmented triad is seen seldom, but major and minor triads do appear as part of polychords, as do sevenths, ninths, elevenths, thirteenths, and fifteenths. Tertian sonorities with cross relations or added tones are frequent. Most prevalent, again a natural consequence of the motivic material, are quartal and secondal harmony. Although the harmonic vocabulary is profusely varied, the favorite and characteristic sonorities are sevenths or ninths combined with fourths, or clusters which may be expanded to include all twelve tones.

Movement in block chords is not used, nor are sustained harmonies. Chordal figuration, free expansion of the number of voices present, extension of some pitches within a figure to form a harmonic constellation are the techniques prevailing. Chord streams are not used, but occasionally a stream of a particular interval may appear within the texture.

Although Carter writes (see p. 48) of tonal organization by the method of allocating the three-note chords to soloists or to orchestra, the aural impression is of dodecaphonic saturation throughout. The harmonies are not generated serially, but all twelve tones are always present in close juxtaposition.

Cadences in the usual sense of the word cannot be discerned. The tension level of the harmony is consistently high. Although there are some fluctuations to a lower tension level, these periods are brief and do not appear to have significance in defining the structure of the entire composition.

Organization by pitch-space area, or by tonal reference, for example to a special pitch emphasized by frequent repetition or prolongation or rhythmic placement, are techniques unused by Carter in this work.

The figural writing which is employed almost continually tends to bring together the concepts of harmony and melody. The harmony is definitely implied by the melodic movement, and the prevailing contrapuntal treatment of the melodic lines causes the harmonic sonorities in most instances. Melodic voices are treated as choral or instrumental "sections" which divide and reunite continually. The fluctuation of texture is one of the most identifiable characteristics of the work. Voices frequently move in paths of seconds, or in clusters. Occasionally streams of

parallel sixths or thirds appear, or sometimes a stream of fifths. The twinning of the melodic line into seconds may be motivic in that the original three-note chords contain seconds. Since the line is often thickened in this way into two or more concurrent notes, it is usually not possible to speak of the precise intervallic motion which comprises the melodic movement. In the few instances where the linear flow is of single notes, the intervals chosen clearly indicate a preference for leaps of fourths, sevenths, and fifths. This correlates with the harmonic analysis of the most prevalent chordal sonorities.

In design, the lines often reverse direction, repeating the previous pitch. Chains of identical or similar intervals appear rarely. Small interval patterning is used, but expansive movement, noted above as fourths, sevenths, and fifths, is preferred. There seems to be no preference for direction of movement, but swift and frequently reversing motion, ranging over a very wide ambitus, is a conspicuous style-characteristic, as is rhythmic fragmentation. Short rests are often interjected and there seems to be no deliberate manipulation of phrase length in terms of the duration of melodic continuity. Legato slurs and staccato markings are used as articulation, not as phrasing indications. Variety of phrase length and definition of phrase character through articulation are

not utilized as deliberate techniques in this work. Melodic phrasing is not supported by harmonic usage.

Although bunches of sound frequently group upon the line, the prevailing texture is polyphonic. All the voices share the characteristics mentioned above, but they are differentiated by rhythmic patterning, dynamics, articulation, and by the occasional tendency of the lowest voice to move more slowly. The clarity of the voice leading, however, is obscured by the "freistimmigkeit," by the frequent crossing, fragmentation, and the pointillism in the orchestration. There is little, if any, polarization of soprano and basses. "Companioning" of two or three voices within the texture is rare. The counterpoint is freely dissonant at all times and the lines are completely independent. The impression is of varying degrees of concurrent activity, usually rapid and dense.

Elliott Carter's writing is frequently associated with a new technique of tempo change called metrical modulation. A considerable amount of publicity has been given to this innovation. In the composition analyzed, metrical modulation is evidenced by sixty metronome markings and a comparable number of meter changes, indicating that Carter is deeply involved in the procedure of shaping events in time. This concern is extremely enlightening as to Carter's meaning in creative circles today, for it is both sophisticated in its technical application and profound

in its confrontation with basic musical truths. The philosophy of music conceived as aural experiences on a time continuum creates the viewpoint which illuminates all the aspects of the first movement of the Piano Concerto. Carter's continual manipulation of the time element expresses his aesthetic involvement with matters of procedure and "becoming." All the compositional aspects of the work are in flux and the time element itself is extremely fluid.

The time element in music is by nature dual, both objective and subjective, lying within the twin concepts of duration and pulse or tempo and meter. Carter plays with the time element by varying the duration of his beat, the subdivisions of his beat, and the distribution of accent over the group of beats. He uses bar lines and meter indications, but, going further, he controls the time element by means of a specific interchange unit which may be a beat or may be a portion of a beat. The interchange unit functions rather as a coin whose buying power or "real value" changes in altered circumstances, although its assigned numerical value is consistent. A large array of coins may be used by Carter; their meaning changes.

To expedite this fluidity, Carter makes use of extremely specific directions as to both the particular interchange unit, or metrical value which "modulates," and also the objective duration of the beat. The

interchange unit is indicated as a note value over the bar line at the point of tempo change; the duration of the beat is indicated by a metronome indication in each instance.

The technique of metrical modulation results in precise control over the time element. Presumably, therefore, extreme finesse over the shaping of aural events on the time continuum can be achieved. On the other hand, this system disregards two time concepts which are of limitless interest: (1) rubato, accelerando, and ritardando (that is, progressive change within minute units), and (2) complete change without a ready interchange unit (as, for instance, from one system of coinage to another totally unrelated). It would seem, then, that metrical modulation alone does not provide complete control of all the elements that pertain to time.

Carter's further explorations along these important lines will probably be of the highest interest. It may be that a change in his entire aesthetic would result from either greater control over the time element, or renunciation of the presumed present objective of very tight control.

The entire movement is shaped by time considerations. The original tempo is quarter note = 126. This can be subdivided into eighth note = 252. Carter calls attention to the eighth value at m. 10 by shifting from 4/4 meter to 6/8 meter, keeping the eighth constant. If we grasp

this clue and keep in mind the implied value of the eighth note throughout the work, it can be seen that, despite many wide fluctuations, the eighth often re-asserts itself at 252. This metronome marking provides a touching-down place at intervals through the work and becomes a settling-down place at the end. This circumstance may, of course, be unintentional. It does provide a thread, however tenuous, through what appears at first to be a maze of changes of both tempo and meter.

The first movement of Carter's Piano Concerto offers a challenge to the listener's comprehension through the sheer number of sounds employed. Extreme density and extreme activity prevail. A statistical method was employed in the hope of giving definition to the somewhat overwhelming impression of the ear and eye. Each measure was counted, classified, and graphed in terms of the number of simultaneous sounds (density). Large areas of the work were graphed in terms of the number of successive sounds (rhythmic activity). It emerged that prevailing density is so high that only seventy-two measures out of the total of three hundred and forty-eight contain consistently fewer than four to five notes at the same time. Density increases through the middle of the work and is highest at the end. Except for the gradual upward shift, no purposeful patterning appeared. Similar findings emerged from a note-count of successive sounds. Rhythmic

activity, like density, is generally very high, very varied, and tends to increase slightly toward the conclusion of the composition. Here again, a purposeful patterning, related perhaps to other compositional aspects, could not be found.

The rhythms employed were classified in terms of character implications such as smooth, jagged, and the like. Here, too, the findings were, typically, of great variety, ingenuity, and complexity, tending in many instances, due to the activity of each line and to the contrapuntal diversity, toward aural saturation and hyperactivity.

The meaning of the challenging thickness is uncertain. One hypothesis is that the listener of the future may be expected to reach higher comprehension levels than at present. Or it may be that the listener today, by effort and careful attention, can outreach his present self. Or it may be that the listener's effort and careful attention is in itself the goal of Carter's compositional thrust in these areas. The aural saturation and hyperactivity may be designed to sensitize the listener to higher emotional and intellectual states. Or it may be that turbulence is indeed the prevailing message in this composition.

If the last two hypotheses are correct, they supply a raison d'être to the profusion of dynamic markings and

expression markings. A typical page of Carter's score may include forty to sixty such markings, some concurrent, some sequential. No doubt many of these markings are intended to give clarity to the texture, but many others are probably designed to provide variety and richness of expression to the on-going aural experience and to challenge the listener's involvement with the composition. The dynamics do not identify structural areas.

The findings for each measure in terms of density, rhythmic activity, dynamics, and tempo and meter were placed on a graph to facilitate comparison. It is noteworthy that purposeful correlations do not appear.

Perhaps the two most significant findings which emerge from the study of all the compositional aspects of the work analyzed are the intensity of functioning of each aspect and the apparent disassociation between them.

It may be fruitful to look for analogies between the techniques of this composition and some of the techniques of twentieth-century painting. In the use of dynamics, harmony, and rhythm, we have a brilliant, profuse, and diversified palette of color. In density, a generally thick application of paint, with the surface in high relief. In rhythmic activity and rhythmic character, the use of a complex web of design with many planes of super-imposed and conflicting perspective.

Harmony and melody both emerge from compositional choices predetermined by the creator and motivic in the sense that they can be perceived by the listener and also in the sense, more important, that they provided guidance in creation. These choices are innovative and, to a high degree, intuitive.

In his concern for the time element, perhaps the most sensitive matter of all, Carter may be compared to the painter who realizes that his picture may be seen as a whole, as a Gestalt, but may also be viewed in part; and as the eye peruses the picture and makes its own path between the parts, a subjective reproduction of the picture is created by the viewer. So, the pulling together of the parts of Carter's composition by the memory of the listener creates the form. It may therefore be possible in music, as in painting, to create a totally abstract form.

From this viewpoint it can be seen that while many of the techniques and honored traditions of the past are discarded in Carter's Piano Concerto, the basic purpose of the art-work remains the same, and eternally true: the communication of an emotional state through the ordering of sound.

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APPENDICES

APPENDIX I

GRAPH OF THE OCCURRENCE OF EVENTS

APPENDIX II

GRAPH OF TEMPO AND METER CHANGE

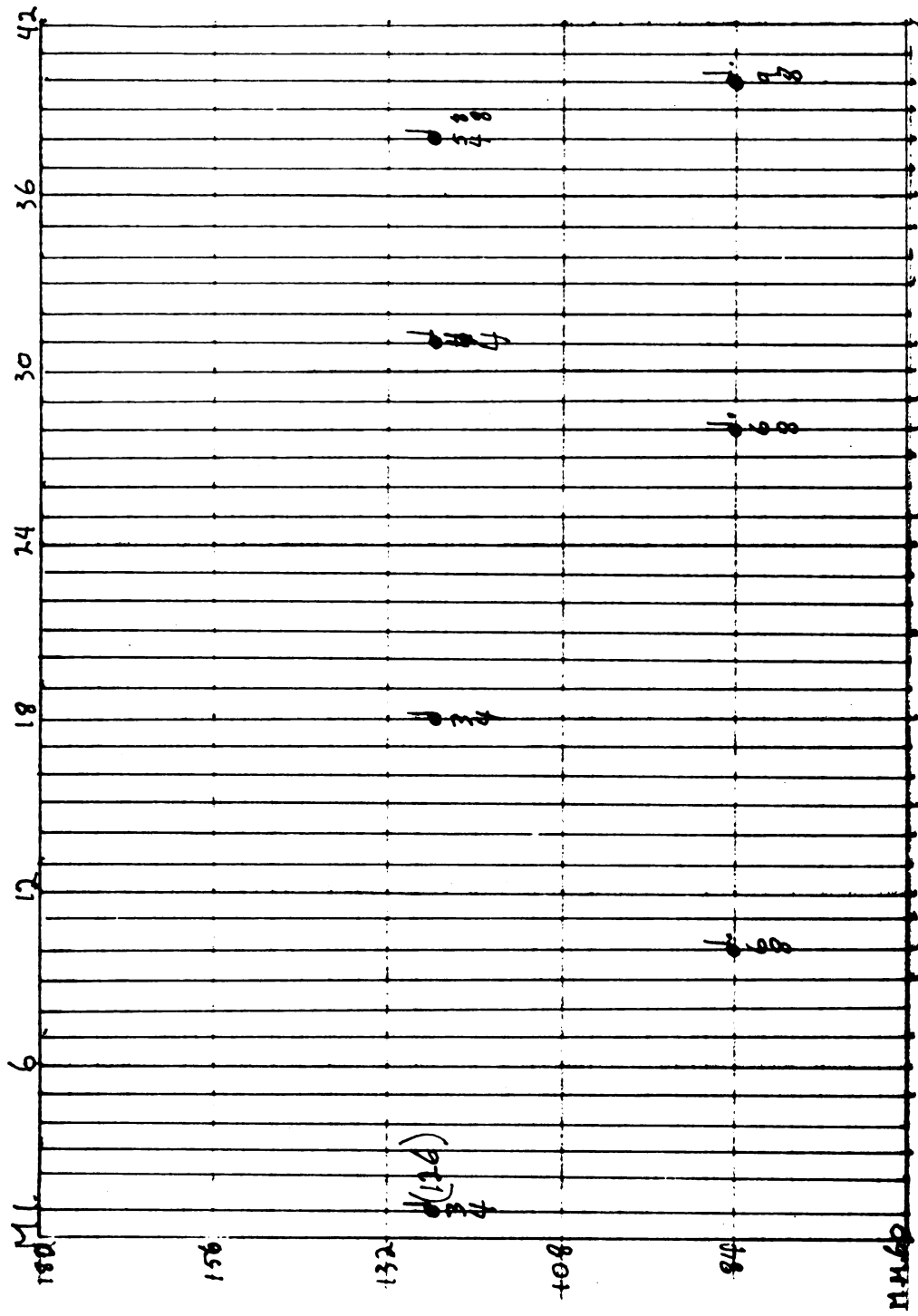
APPENDIX II

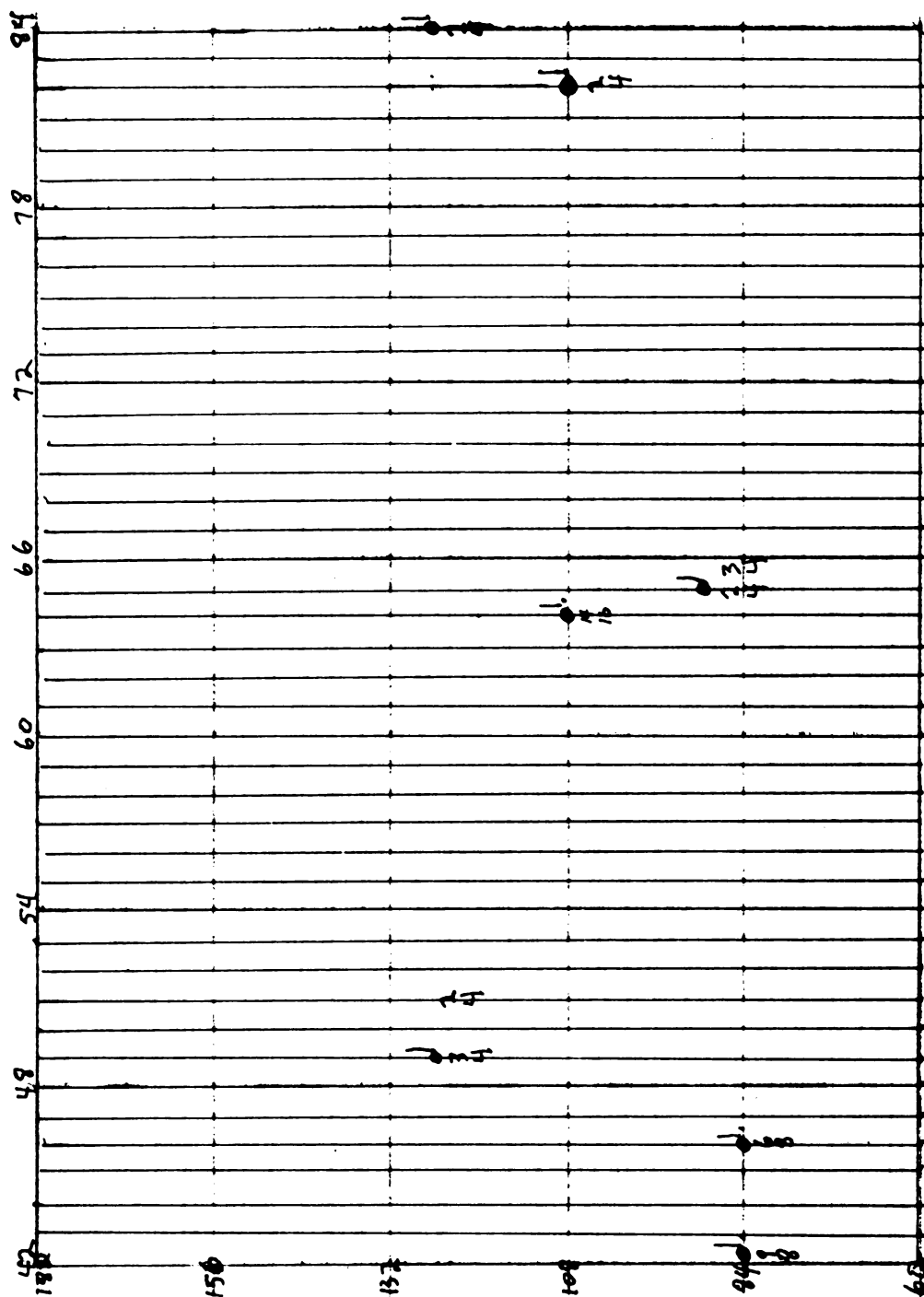
GRAPH OF TEMPO AND METER CHANGE

This graph offers a visual representation of the tempo and the meter used in each measure throughout the work analyzed. The numbers running from left to right across the top of the graph are measure numbers. The numbers running from bottom to top along the left side of the graph are metronome indications. Numbers in parentheses within the graph area are metronome indications which differ from the customary calibrations. The note values drawn on the graph are those which equal the metronome indication. The numbers which appear as fractions on the graph area indicate the meter at that point.

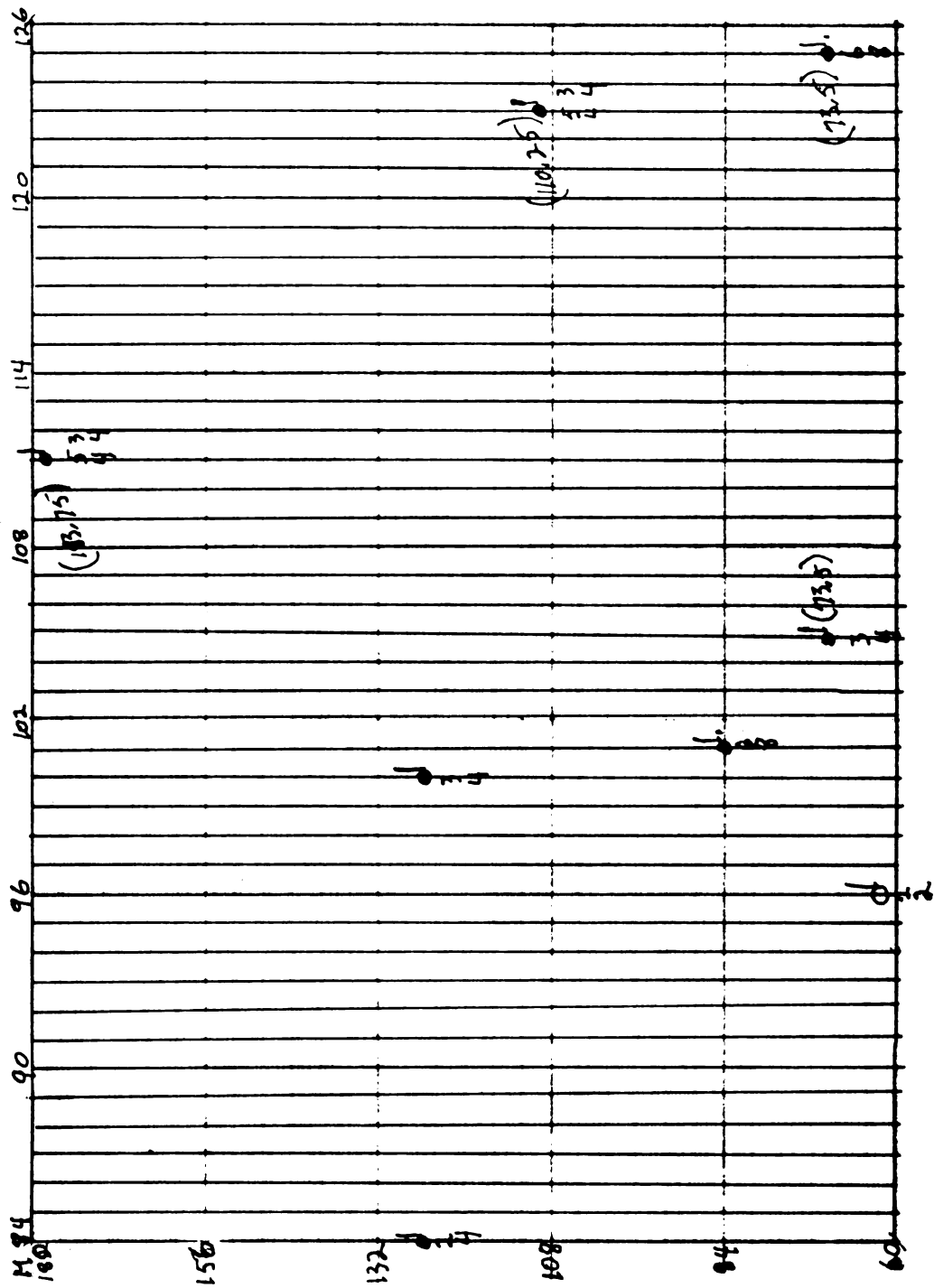
The duration of any tempo can be determined by position on the measure number line. The longest duration is twenty-three measures, which occurs only once. The next longest durations are eighteen measures, once; seventeen measures, once; fifteen measures, once; twelve measures, four times, eleven measures, once; and ten measures, five times. The longest durations occur in the final third of the work; and the largest number of changes of tempo and meter occur in the middle third. The metronome indication of 126 occurs at the beginning and at the end of the work.

GRAPH OF TEMPO AND METER CHANGE, p. 1.

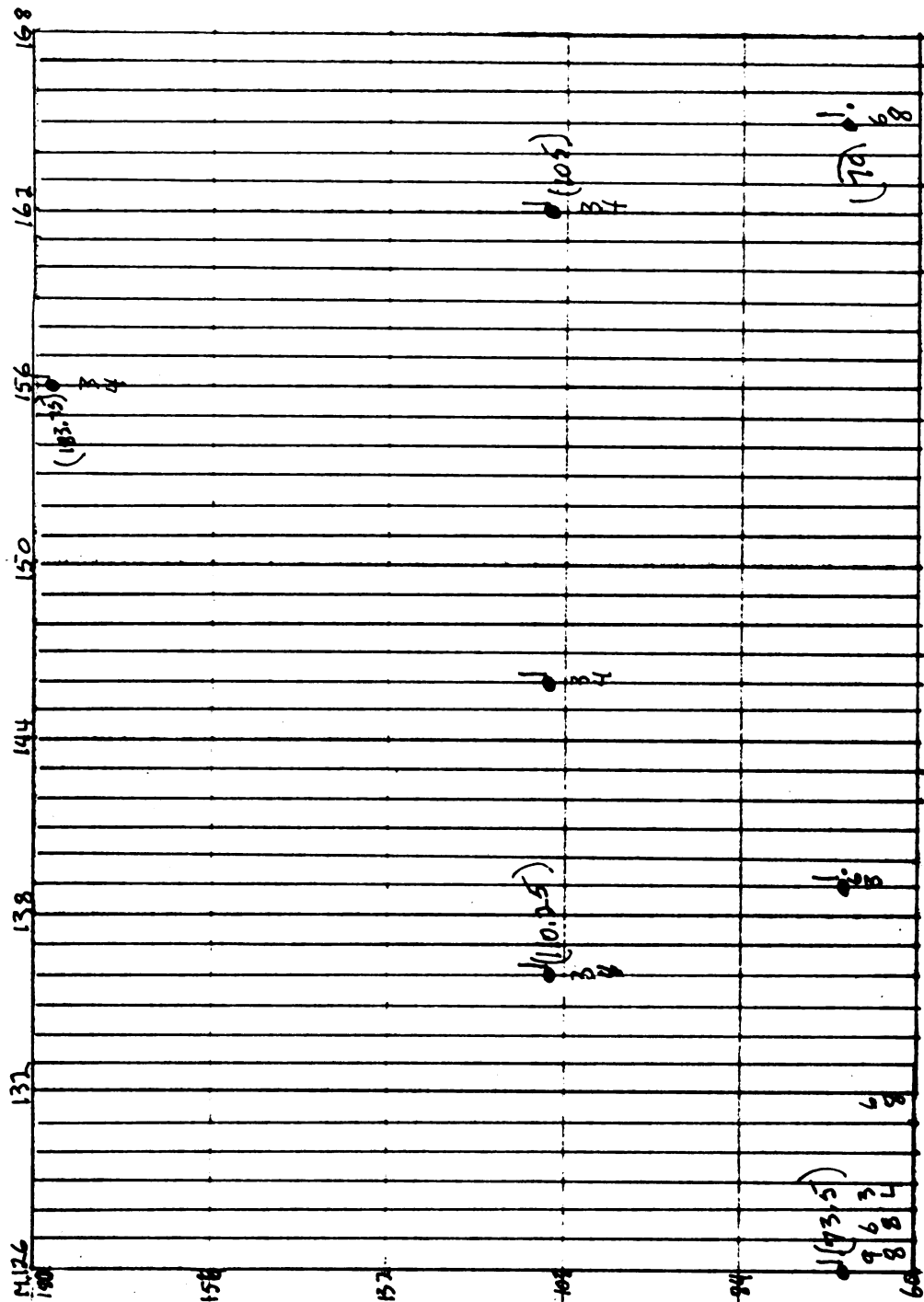




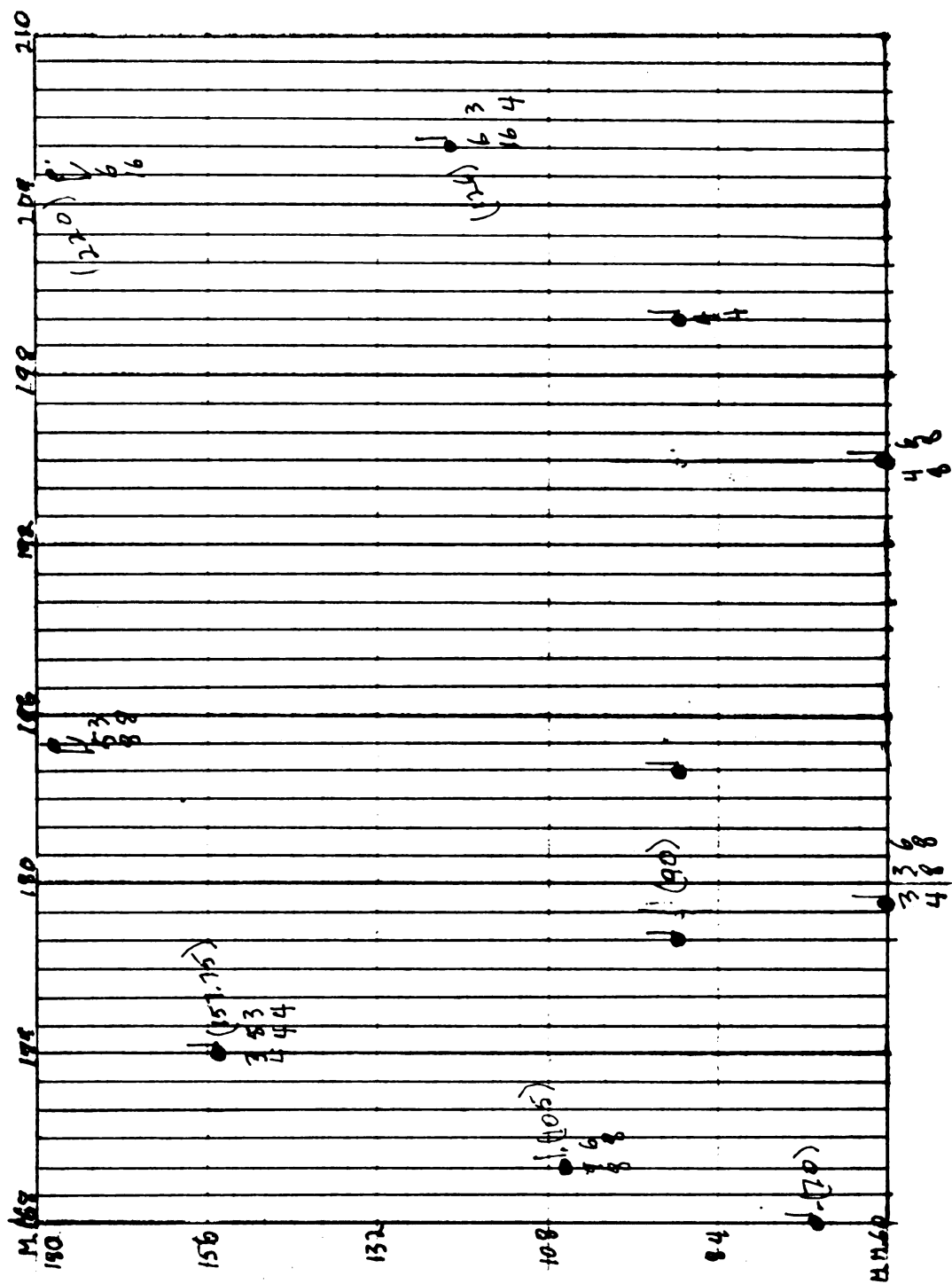
GRAPH OF TEMPO AND METER CHANGE, p. 3.



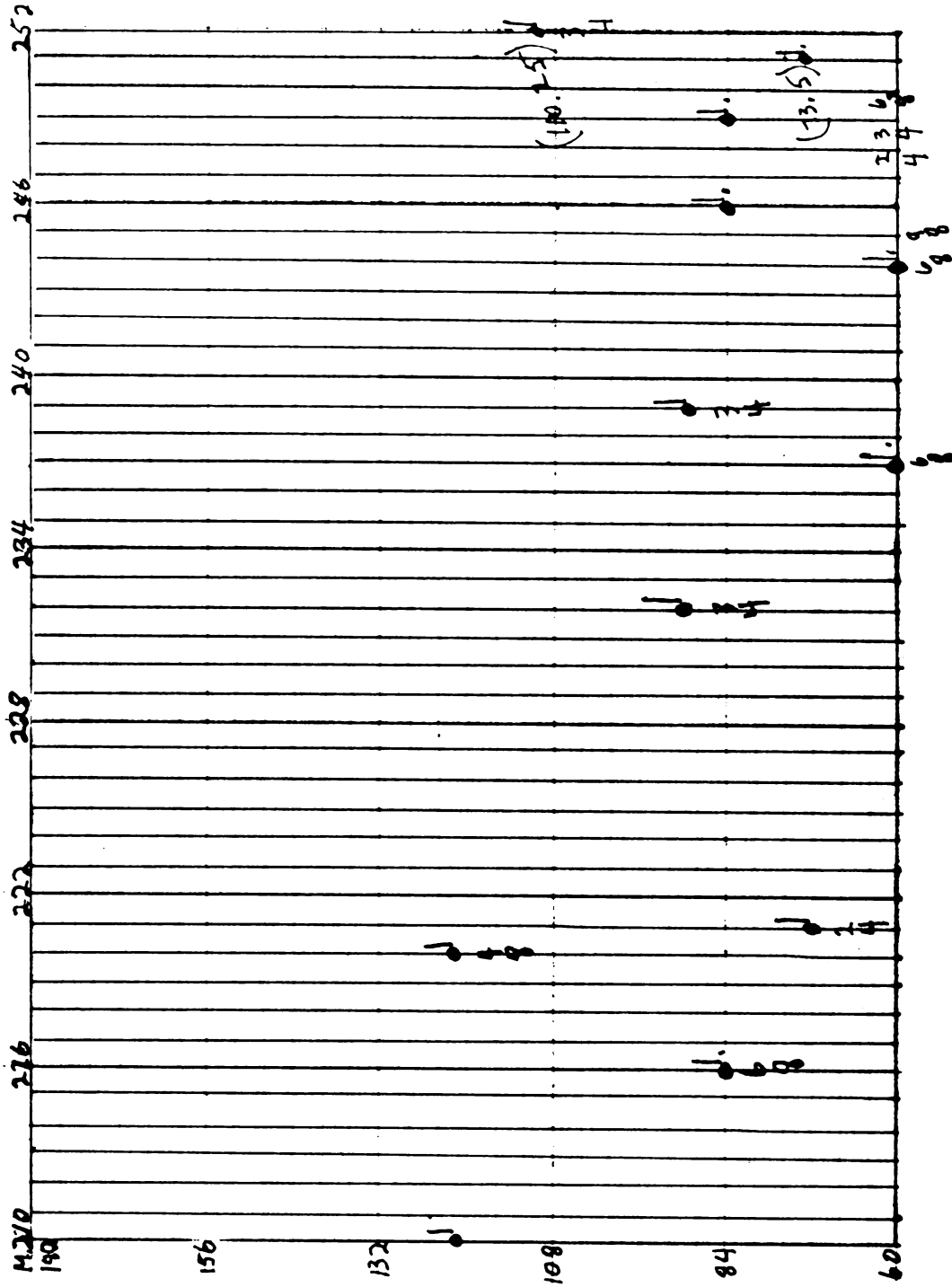
GRAPH OF TEMPO AND METER CHANGE, p. 4.



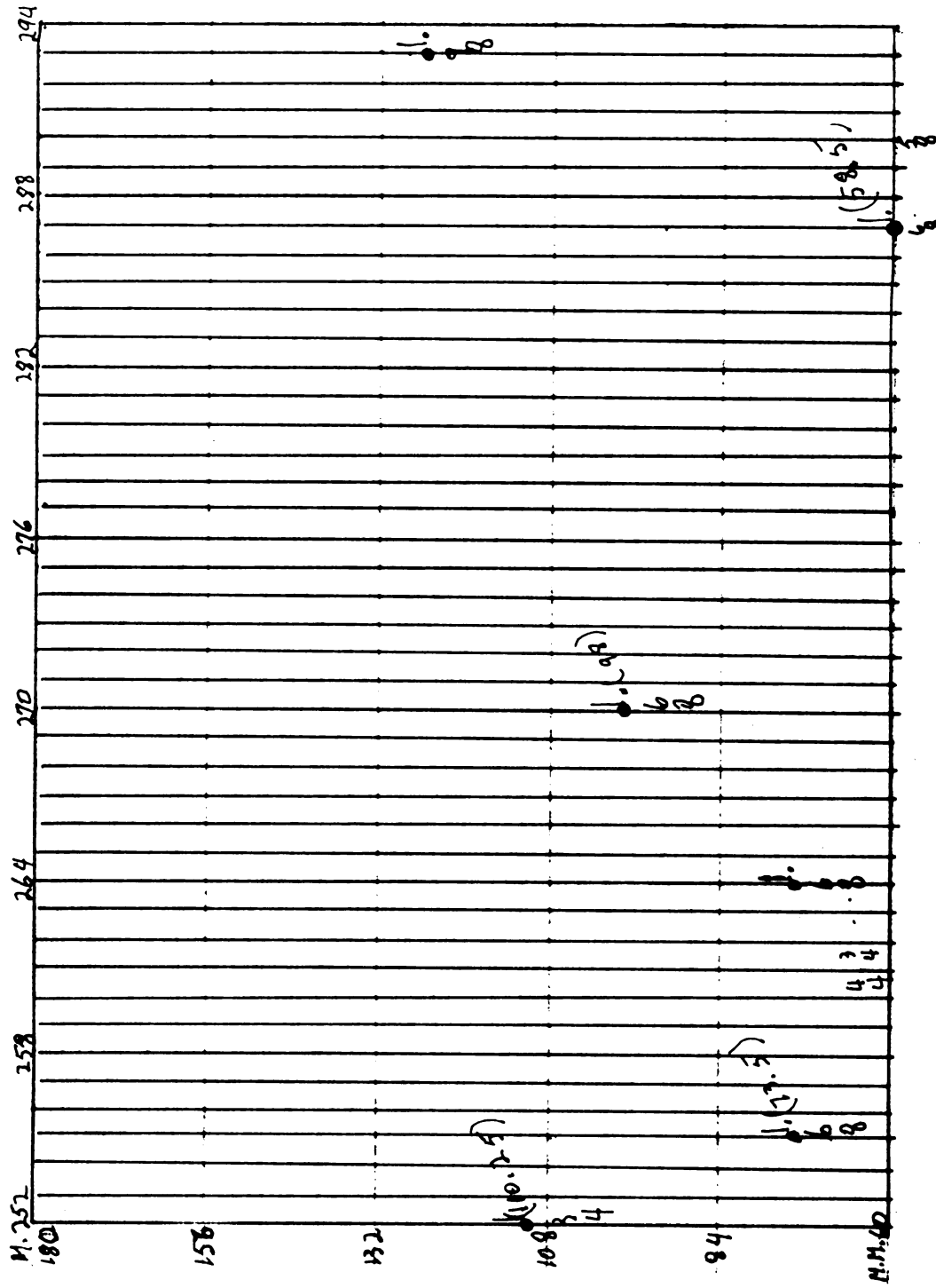
GRAPH OF TEMPO AND METER CHANGE, p. 5.



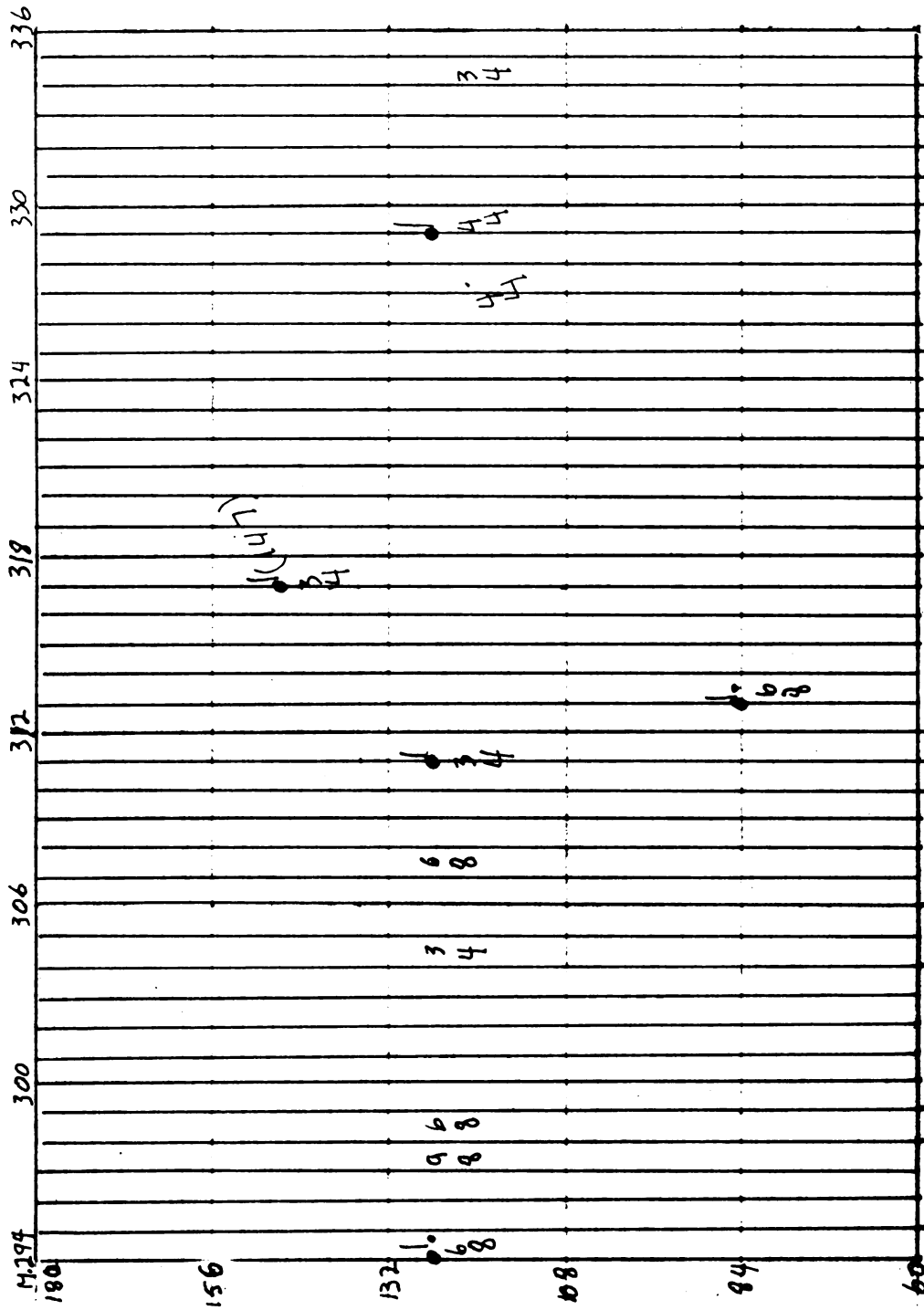
GRAPH OF TEMPO AND METER CHANGE, p. 6.



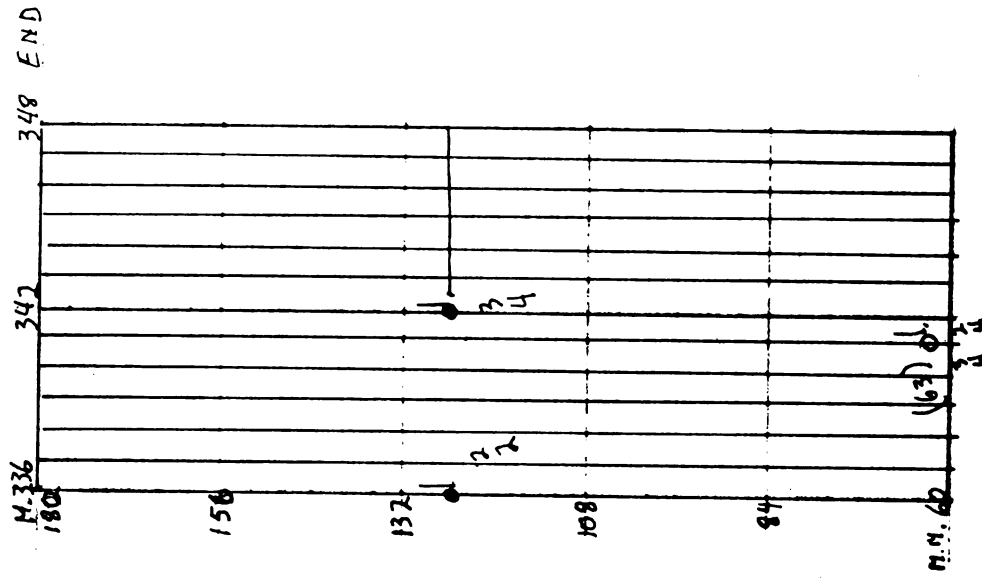
GRAPH OF TEMPO AND METER CHANGE, p. 7.



GRAPH OF TEMPO AND METER CHANGE, p. 3.



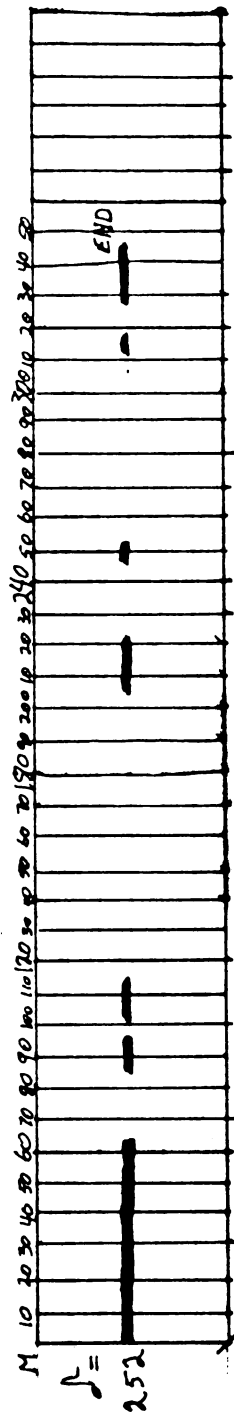
GRAPH OF TEMPO AND METER CHANGE, p. 9.



APPENDIX III

GRAPH OF APPEARANCES OF EIGHTH NOTE = 252

GRAPH OF APPEARANCES OF EIGHTH NOTE = 252



APPENDIX IV

CLASSIFICATION OF VOLUME LEVEL
AND VOLUME VARIATION

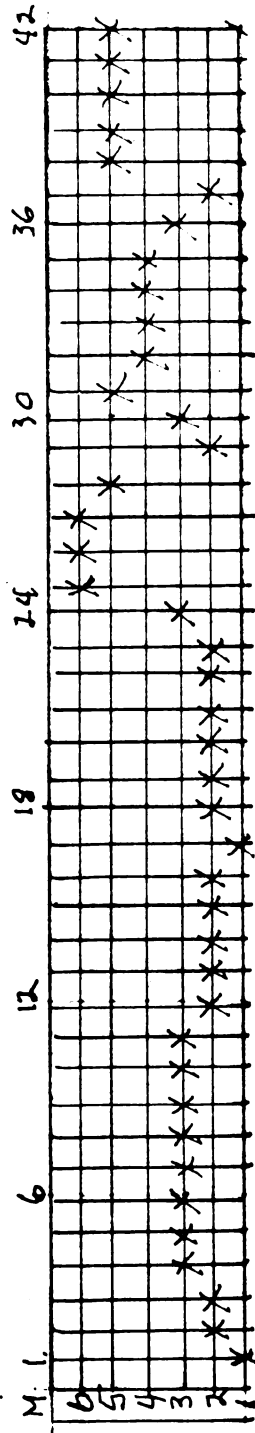
Classification of Volume Level and Volume Variation.

Relative Stability Within Range of mf and Softer	Relative Stability Within Range of mf and Louder	Very Diverse	Predominantly Piano	Predominantly Forte	Predominantly Crescendo
m. 1-8					
11-17	m. 30-31	m. 9-10 17-29 32			
50-51	38-49			m. 33-37	
55-57		52-54			
65-74		58-64			
88-91		75-87			
		92-96			
112-117		103-111	114-151		97-102
153-154		118-123			
		152			
159-166	156-157	155			
	168-169	158			
	170-178	167			
191-195		179-190			203-207
		196-202		208-222	
		223			261-263
270-275		236-260	224-235		
		264-269			
	291-295	276-290			
		296-307			308-312
		313-317			318-327
		328-330			331
333-335		332			336-347

APPENDIX V

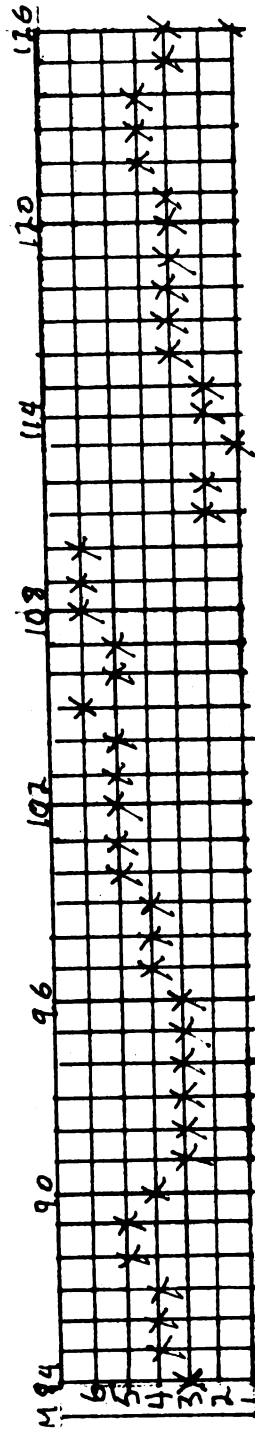
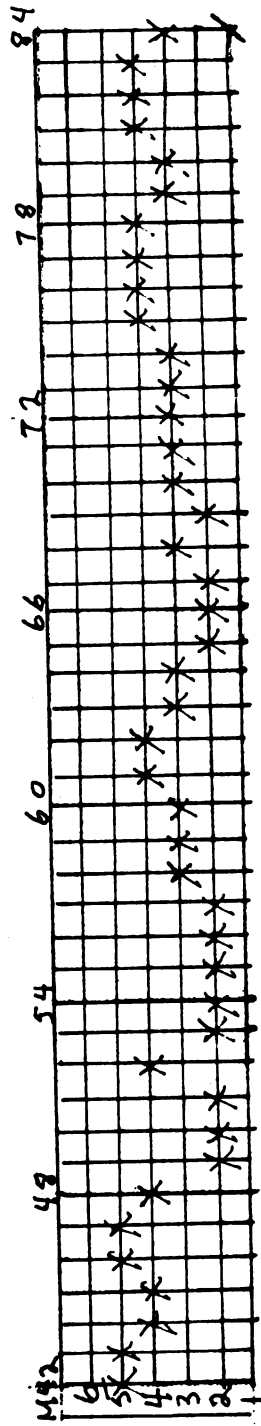
GRAPH OF DENSITY

GRAPH OF DENSITY, p. 1.

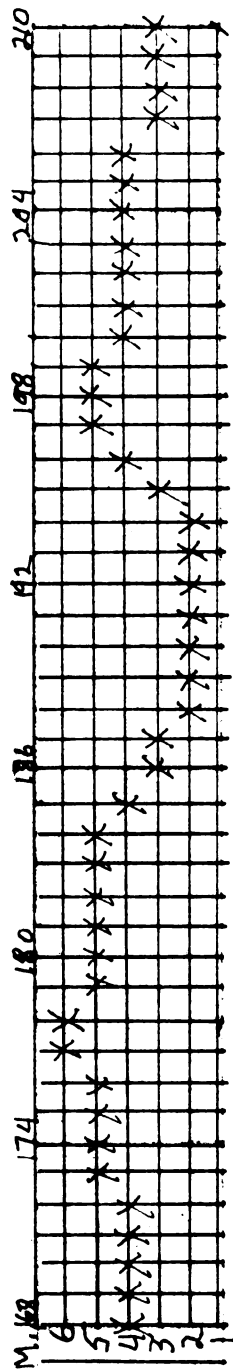
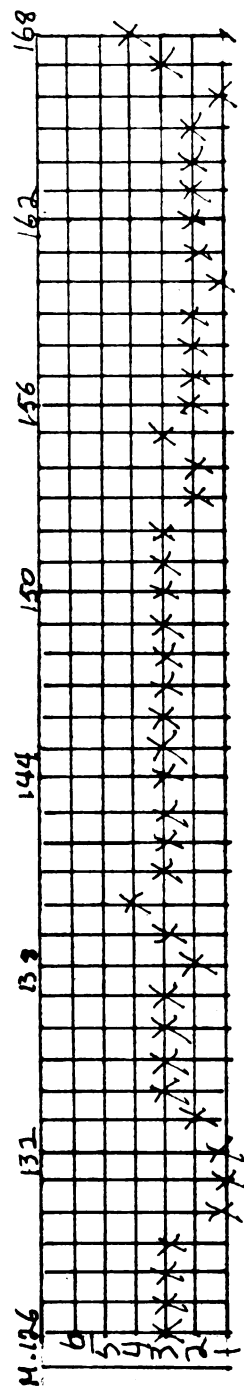


1. 1-2 notes at a time
2. 2-4 notes at a time
3. 4-5 notes at a time
4. 5-6 notes at a time
5. 6 or more notes at a time
6. Extreme opacity.

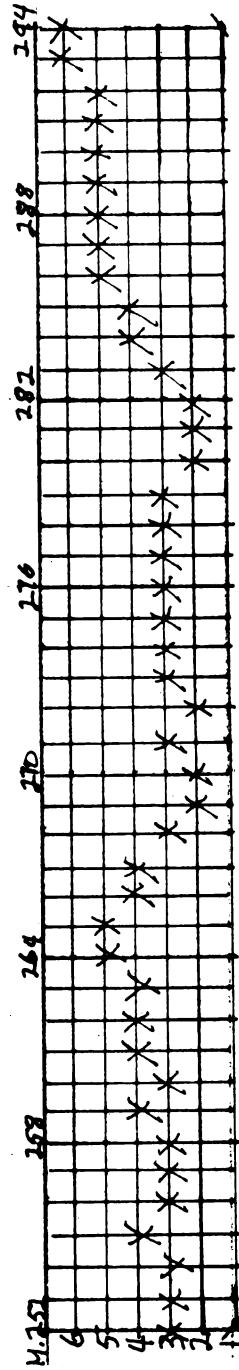
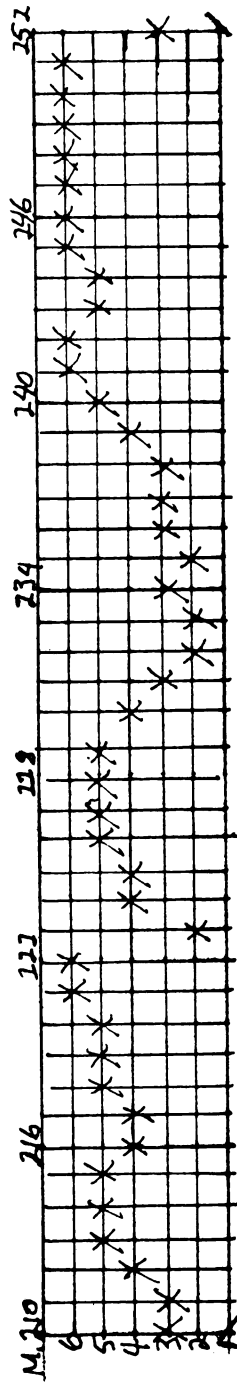
GRAPH OF DENSITY, p. 2.



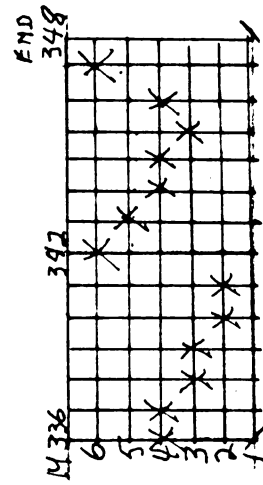
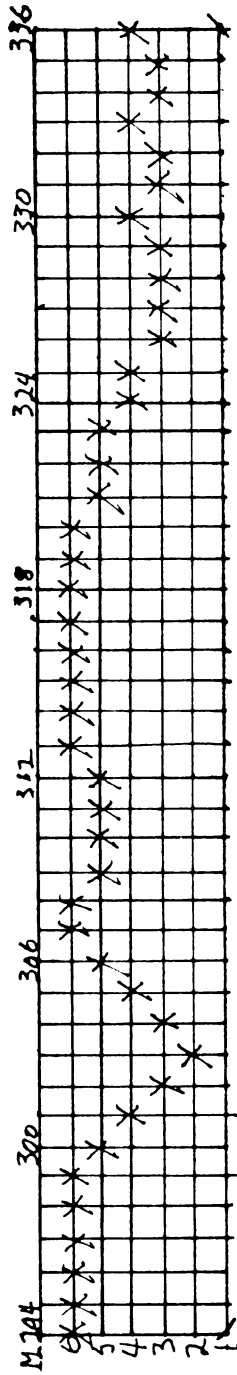
GRAPH OF DENSITY, p. 3.



GRAPH OF DENSITY, p. 4.



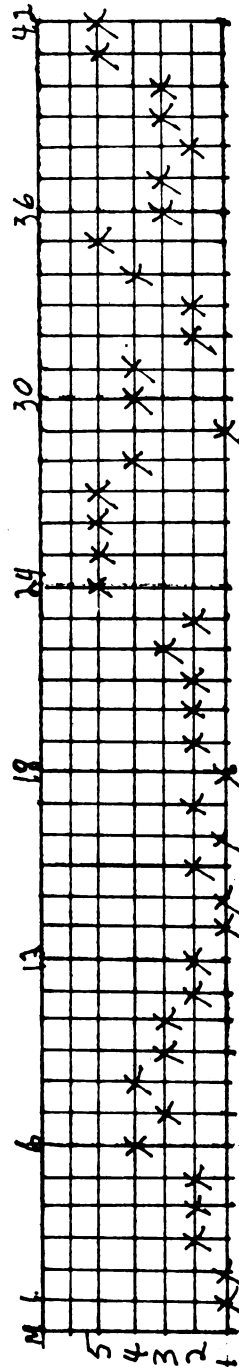
GRAPH OF DENSITY, p. 5.



APPENDIX VI

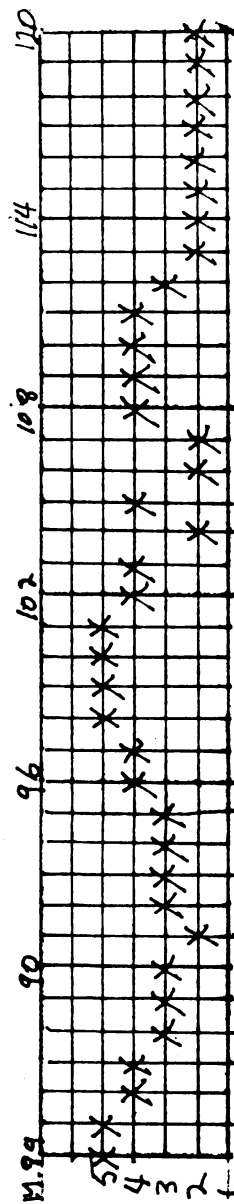
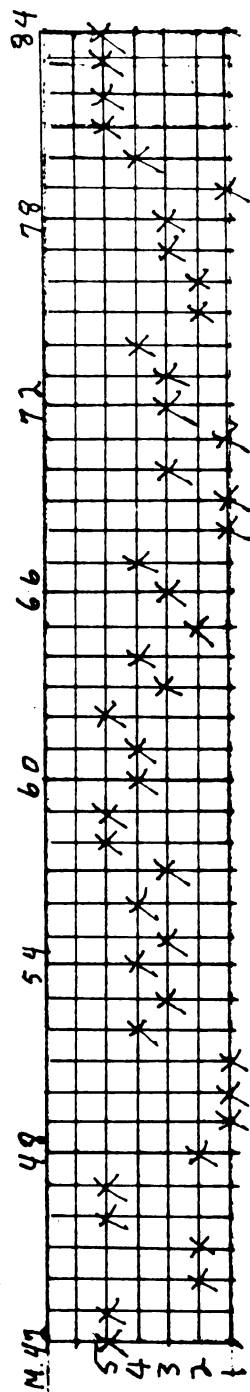
GRAPH OF RHYTHMIC ACTIVITY

GRAPH OF RHYTHMIC ACTIVITY, p. 1.



1. 1-3 occurrences per measure
2. 4-7 occurrences per measure
3. 8-11 occurrences per measure
4. 12-20 occurrences per measure
5. More than 20 occurrences per measure.

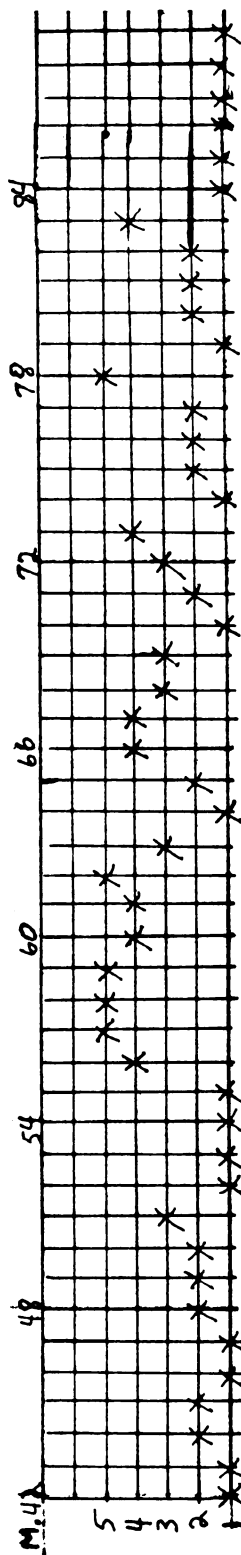
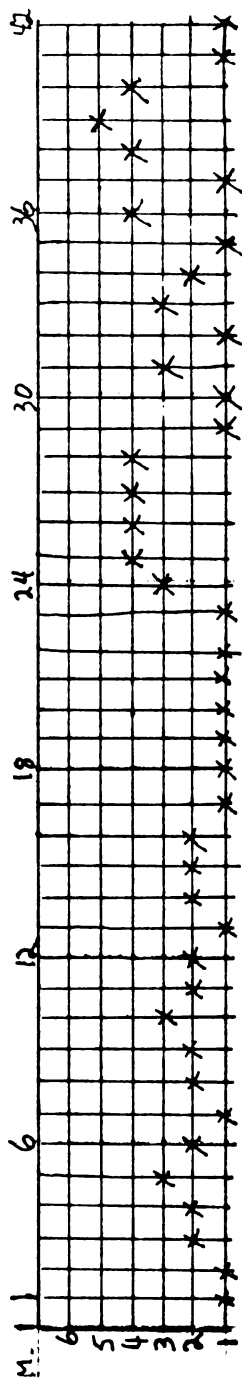
GRAPH OF RHYTHMIC ACTIVITY, p. 2.



APPENDIX VII

GRAPH OF RHYTHMIC CHARACTER

GRAPH OF RHYTHMIC CHARACTER



- 1. Smooth
- 2. Uneven
- 3. Jagged
- 4. Diversified
- 5. Extremely diversified and polyrhythmic.

APPENDIX VIII

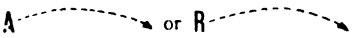
FIRST MOVEMENT OF ELLIOTT CARTER'S
PIANO CONCERTO

Note

The reduction of the orchestra for a second piano is fairly literal except for a few octave transpositions and some very densely composed passages. A compromise between playability and cuing to give the main orchestral material was sought.

In many passages the piano part should be performed not emphasizing the upper line of a series of chords but as a sequence of chords or intervals evenly balanced. This is particularly true of mm. 124-139, 146-151, 179-181, 223-225, 251-269, 321-327, 339-340, 543-607 (wherever simultaneous groups of two or more notes occur), and in 669 to the end. As is indicated in the score, the two passages that emphasize the perfect fifth — mm. 393-410 and 505-521 — depend for their character on this sonority.

Pedalling is suggested in many passages to clarify the chordal intent, but need not be followed literally, and may be used in many other passages at the soloist's discretion.

Passages marked **A**  or **R** (which occur only in the concertino) are to be played as a continuous accelerando or ritardando; the note values indicated are only approximate.

A note to mm. 522-529: Beginning at m. 522 the soloist should accelerate gradually while the orchestra maintains a strict, regular tempo. The dotted arrows indicate approximately what points the piano should have reached in its relation with the orchestra. This relationship can be somewhat free, but at m. 529 the soloist must reach the beginning of his tremolo somewhere between the limits indicated. Once there, he must continue his accelerating and fading tremolo, reaching the maximum speed and lowest dynamic level at the point indicated at the end of the bar. The length of this tremolo is determined entirely by the time it takes the orchestra to arrive at this point playing in strict tempo.

Elliott Carter

Piano Concerto

Elliott Carter

Reduction by the composer

$\text{♩} = 126 (\text{♩} = 42), \text{fantastico}$

SOLO PIANO

p, espr. *mf* *cant. espr.* *mf* *p* *mf*

ORCHESTRAL REDUCTION

$\text{♩} = 126 (\text{♩} = 42), \text{fantastico}$

Concertino alone until m. 19 **BCI** *p espr. (accomp.)* *pp*

leggiere *p* *mf* *mp* *pp* *mf* *p* *espr.*

6 **PI**

$\text{♩} \rightarrow \text{♩} = 84$

pp *espr.* *mf espr.* *pp* *p* *pp* *pp* *pp*

9 **ET** **STg**

NB: Boxed instrument names refer only to the Concertino soli.

12

Fl

Vla

Vc

Cb

16

7. 1. = d. - 1. = 126

detache

mf(p)

p

mf

Stg

Hns

Tpt

mf-p

mf-p sempre

p

mf-p

21

3

3

3

3

Stg

(Tpt)

p

Fla

(pp)

pp

+Cl, Tpt

f

Br

cresc.

marc.

1

31 $\text{♩} = 126$
mf *espr. ben cant.*
mp *mf* *espr.*
ff *mf* *p* *mf* *Cl* *p, espr.*
 Strg. pliz

34 *cresc. poco a poco* *marc.* *f*
 (+ Strg) *mp* *mf, espr.* *cresc.* *f* *Strg* *Bns* *Tbn*

36 (+ Ob) *f* *mf* *f marc* *Vns* *s* *f* *Strg* *Hrs* *Tpr* *Bn*

6

Rhythmic beat of Piano part:

[2+3] (♩ = 126)

stff depress silently

f marc.

menf

39

(♩ = 126)

Stg

[2+3]

ff

Stg

f

p Timp

p (Timp)

etc.

41

Cl

mf

p

stg

pp

(+w)

Stg

Wu

p

Timp

mf

un poco legato

43

Obs

(+ Cls)

(+ Bp)

p

mf

p

Vn

f

(+ [C])

f (dim)

VI

f (dim)

Br

p

(+ Stg)

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9

65 $\text{♩} = 90$ ($\leftarrow \text{♩} \rightarrow$)

66 $\text{♩} = 90$ ($\leftarrow \text{♩} \rightarrow$) *Via*

67 *delicato* *meno f*

68 *Stg piaz* *Stg*

69 *mp rap* *p leggiero*

70 *mp* *p*

71 *mp* *p*

72 *Tpt* *p*

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8

85

86

87

88

89

90

91

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85

86

87

88

89

90

91

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402

marc. $\text{♩} = 73.5$ *f non troppo*

405

$\text{♩} \rightarrow \text{♩} = 73.5$ *mp* *molto cap.* *f*

fp (accorp.)

408

mp *mf* *ppp* *ppp*

mp. pizz. *ppp*

141

Concertino

Orch. Stgts.

183.75

Picc

Stg (arco)

144

120

$\text{♩} = 110.25$

f marc.

mp

mp-pizz

BC

$\text{♩} = 110.25$

BC

(Sigs. sustained)

mp-ppp

mp-ppp

pp

pizz

pp

$\text{♩} = 110.25$

Ob

f

giacoso

p-ppp

$\text{♩} = 73.5$

f

meno f

125

$\text{♩} = 73.5$

f molto esp.

Vh

f molto esp.

Vl

432

137

Handwritten musical score for "Concertino" by J. S. 78.5. The score is written on two systems of staves. The first system includes a piano (p) and a violin (V) part. The second system includes a piano (p), a violin (V), and a cello (C) part. The tempo is marked "Allegretto" and the time signature is 3/4. The score is annotated with various performance instructions such as "f", "mf", "p", "pizz", "batt", "batt. in cant.", and "Concertino". There are also handwritten notes like "(Ww)", "Tpts (+ Vn)", and "V (conce poble)". The score is circled in red ink.

144

145

146

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The musical score consists of three systems of staves. The first system (measures 144-145) features a piano (p) part with complex rhythmic patterns and a violin (Vn) part with sustained notes. Dynamics include *p*, *mf*, *mp*, *pp*, *f*, and *ff*. The second system (measure 146) continues the piano part with a tempo change to $\text{♩} = 110.25$ and includes the instruction *sempre f. espr.*. The third system (measures 147-148) introduces woodwinds: Flute (Fl), Oboe (Ob), Clarinet (Cl), Bassoon (Bn), and Trombone (Tbn). Dynamics range from *pp* to *f*. Specific articulations like *stacc.* and *leg.* are present. The score is marked with various performance instructions such as *sempre f. espr.*, *stacc.*, *leg.*, and *pp*.

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AJP-6715

(-♩ →) ♩ = 180
 mp mf f p pp
 185 ♩ = 180 [Fla] f-p [Fls] pp
 p p
 188 Cls Fls Cls Fls Obs [EH]
 pp sempre p
 (-♩ →) ♩ = 60
 pp p
 193 Fls, Sfg (-♩ →) ♩ = 60
 pp ppp

22

196

mf pp *mf* *mp* *p* *leca*

[n. 197-200: Concerning very soft but still clearly audible above orchestra]

mf pp *p*

Sig Ww

198

pp *mf* *p* *leggiero*

p cresc. *pp* *ppp* *pp* *p* *pp* *mf*

ff *f* *ppp* *pp* *pp* *mf*

Cluster *6th base*

200

pp *ff* *dim.* *f* *mf* *p* *pp*

♩ = 90

AMP-6715

26

Musical score for measures 231-238. The score is written for piano and includes parts for strings, woodwinds (oboe, bassoon, clarinet), and brass (trumpet, horn). It features complex rhythmic patterns, dynamic markings (p, mp, f, mf, pp, ppp), and articulation marks. Measure numbers 231, 235, and 238 are indicated in boxes. Tempo markings include J. 90 and J. 60. Performance instructions like "cant. mp", "pizz.", "f marc.", and "f marc." are present.

241

241

242

243

mp-pp

mp

p

mp

p

mp-pp

244

244

245

p

mf

mp-pp

p

(pp)

pp

mf

246

246

247

p

mf

mf-p

mf-p

28

♩ = 126

247

f *merc.* *cresc.* *p* *merc.* *mp-cresc.* *f* *merc.* *f* *7A = d.*

mp-pp *loco* *mf-pp* *f* *p sub.* [E.H.] [F.] [B.C.]

♩ = 73.5

250

meno f *meno f* *f* *mf* *f* [B.C.]

♩ = 73.5

f *non troppo* *f*

252

♩ = 110.25

mf *mp-pp* *Solo Vln.* *mf marc.* *p* *f*

mp leggiero *mf*

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[illegible]

256

261

267 Musical score for Violin and Piano, measures 267-270. The score includes dynamics like ppp, mf, pizz., and p. It also features performance instructions like "Vla." and "Cantecino".

272

Handwritten musical score for piano and violin, featuring measures 276, 282, and 286. The score includes various musical notations, dynamics, and performance instructions.

Measure 276: The piano part begins with a forte (*f*) dynamic and a *molto espr.* (much expression) marking. The violin part (Vc) enters with a *mf* (mezzo-forte) dynamic. The piano part includes a *mf* *espr.* (expression) marking and a *p* (piano) dynamic. The violin part includes a *mf* dynamic and a *p* dynamic. The piano part includes a *mf* *espr.* marking and a *p* dynamic. The violin part includes a *mf* dynamic and a *p* dynamic.

Measure 282: The piano part includes a *mf* *pp* (pianissimo) dynamic and a *p* dynamic. The violin part includes a *mf* dynamic and a *p* dynamic. The piano part includes a *mf* *pp* dynamic and a *p* dynamic. The violin part includes a *mf* dynamic and a *p* dynamic.

Measure 286: The piano part includes a *mf* *pp* dynamic and a *p* dynamic. The violin part includes a *mf* dynamic and a *p* dynamic. The piano part includes a *mf* *pp* dynamic and a *p* dynamic. The violin part includes a *mf* dynamic and a *p* dynamic.

Additional markings include *meno f* (less forte), *espr. sempre* (expression always), *brillante* (brilliant), and *f* (forte). The score also includes tempo markings such as *molto* and *meno*.

Handwritten annotations include *d. = 58.8* and *d. = 50.4*, likely indicating tempo or duration.

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313

317

319

AMP-6715

313

317

319

AMP-6715

[illegible]

521 (part.)

Musical score for piano, measures 521-528. The score is written for two staves (treble and bass clef). The key signature is one flat (B-flat). The tempo/mood is marked 'And'. The score includes various dynamics: *mf* (mezzo-forte), *mp* (mezzo-piano), *p* (piano), and *pp* (pianissimo). The notation includes chords, single notes, and rests. There are also some markings like '8' and '8-1' above the staff, possibly indicating octaves or specific fingerings. The score ends with a double bar line and a repeat sign.

324

324

Handwritten musical score for the first system of "The Swan" from "The Nutcracker". The score includes parts for Flute (Fl.), Oboe (Ob.), Violin (Vn.), and Violoncello (Vcl.). The key signature is one flat (B-flat major or D minor), and the time signature is 3/4. The score is marked with "ff" (fortissimo) and "f" (forte). The first measure of the Flute part is marked with a box containing the number "327". The score is written on a grand staff with a treble and bass clef. The Flute part has a melodic line with slurs and accents. The Oboe part has a melodic line with slurs and accents. The Violin and Violoncello parts have a rhythmic line with slurs and accents. The score is handwritten and includes various musical notations such as slurs, accents, and dynamic markings.

28

(c. J.)

335

forst

sig

(3 J + 5 J)

337

Picc

Fl *EH* *sig* *pp* *ppp* *f* *pp*

Bcl

p espr. *pp*

339

Fl *sig* *p* *pp* *f sub. Orch.* *f* *Temp*

$\text{♩} = 63$ $\leftarrow \text{♩} \rightarrow \text{♩} = 126$

341 $\leftarrow \text{♩} \rightarrow \text{♩} = 126$

343

345

347

AMP-6715

Brief pauses between movements: 10" - 20"

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