De azufre y sal

Natalia Gaviola
Faculty of Music
McGill University, Montreal
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Abstract

De azufre y sal -- which can be translated as "From sulphur and salt" -- is a composition for orchestra with an approximate duration of 12' 30". This piece is mainly concerned with nuances of instrumental colour, registral space and tuning. The idea of exploring and working with these parameters was inspired by the work of Theophrastus Paracelsus (1493-1541) and by other texts about alchemy from different periods. The idea of conducting slow empirical work in laboratories in attempts to find the formula to create gold and the Philosopherís Stone suggested to me certain ideas about this piece, for example, the notion that the piece should always turns back on itself in order to proceed in a certain direction, while simultaneously accumulating the desirable features of each stage. The title is purely symbolic and should in no way be read as programmatic.

Résumé

De azufre y sal, "Du soufre et sel" est une composition pour orchestre ayant une durée approximative de 12' 30". Cette pièce explore principalement les nuances de couleur instrumentale, de champ de registe et d'accord. L'utilisation de ces paramètres est inspiré des textes de Theophrastus Paracelsus (1493-1541) ainsi que d'autres textes de différentes époques qui traitent d'alchemie. Certaines idées dans la pièce proviennent de l'idée de la tâche longue et ardue qu'était le travail dans un laboratoire pour essayer de trouver la formule qui menerait à l'or, et de trouver la Pierre Philosophale. Comme cet achamement, la pièce se retourne sur elle-même tout en avançant; à chaque étape les traits désirables sont retenus et accumulés. Il est important de noter que le titre est purement symbolique est ne sert aucune façon de programmatique.

Acknowledgment

I would like to express my deep gratitude to Professor Brian Cherney for his advice, time and encouragement in helping me complete this degree.

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I. An Introduction to the Main Concepts behind the Music: Alchemy as an Element of Unity and Transmutation

In pre-history, human beings had to acquire knowledge of the many materials that came into their hands slowly and laboriously, by trial and error. The application of things to everyday uses, particularly in the provision of food, fuel, clothing and shelter, brought familiarity with the properties of the materials and paved the way for later speculations concerning their fundamental nature. When, where and how alchemy arose is impossible to say, but the name points to Egyptian and Arabic sources, since *Khem* was an ancient name for Egypt and *al* was a definite article in Arabic. For this reason, Egypt, or *Khem*, the country of dark soil and the biblical Land of Ham, has often been considered the birthplace of alchemy, the "art of the dark country."

The corpus of alchemy was always of a dual nature. On the one hand, it was essentially practical and allied closely with the arts, crafts, and medicine; on the other it was an indistinct aggregation of vague mysticism and cryptic expression. These two main aspects of alchemy persisted throughout the Middle Ages.

In general, it may be said that alchemical reasoning was mainly deductive and based upon two *a priori* assumptions first, the unity of matter; and second, the existence of a potent transmuting agent known as the Philosopher's Stone. These two concepts can be connected with the Apollonian and Dionysian, -- terms that the German philosopher Friedrich Nietzsche used to represent the two central impulses of Greek culture. Apollo symbolized everything in Greek life and art that was orderly, moderate, proportionate, rational, comprehensible and clear in formal structure; Dionysus, the god of

wine and patron of orgies and theatre, symbolized everything that was manic, disorganized, irrational, instinctive and emotional, i.e., that tended to submerge the individual personality within a greater whole.

De azufre y sal utilizes these two essential ideas to create awareness of the contrast between order (or organization) and disorder (or disorganization). Sometimes apparent disorganization is only on the surface; it is not always easy to recognize what is planned and what is not . Disorganization may be absolutely calculated in the mind of the composer although the listeners assume it is not, or vice versa.

The antagonism between opposites always raises a very fundamental question: in order to create Dionysian elements, must one not first perceive a system or continuum, representing order? In other words, do both elements not need each other in order to exist? And does the absence of one of them not immediately cancel the existence of the other? In *De azufre y sal* the listener is able to perceive a continuum which is suddenly disrupted by gestures that do not have much in common with what proceeded them. These Dionysian elements never occur in the same place or order.

This piece was inspired by the idea of opposites, which are in their essence differentiated from each other. In other words, the differences between opposites construct their identity. Because of this, that identity is in some way based on what things are not, i.e., on boundaries. In the end, no amount of opposition can eliminate the concept of indissoluble unity, in which alchemists also believed. Indeed, to take a wider view, until René Descartes proclaimed "I think therefore I am" in the seventeenth century, no rigid distinction was drawn between matter and the mind. Alchemists imagined an essential unity of all things, whether tangible or intangible, material or spiritual. This conception found expression, for example, in an ancient Greek inscription associated with

the Ouroboros, or tail-eating serpent "one is all, and by it all and to it all, and if one does not contain all, all is nought:"[1]

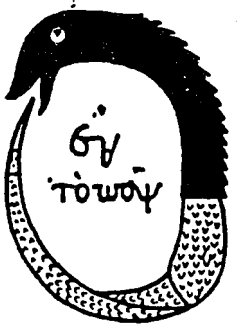

Figure 1: The Ouroboros Serpent, "Tail-Eater".

Unity is also represented in the *tria prima* or three "hypostatical principles" of Paracelsus. They have a double significance they can be interpreted in either a material or spiritual sense. In the words of Paracelsus himself "know, then, that all the seven metals are born from a threefold matter.... Mercury is the spirit, Sulphur is the soul, and Salt is the body.... the soul, which indeed is Sulphur....unites those two contraries, the body and the spirit, and changes them into one essence."[2] The *tria prima* found many other forms of graphic expression, notably as the alchemical triangle composed of three lines or three serpents:

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1 Ferdinand Weinhandl, Die Philosophie des Paracelsus (Stuttgart: Sepp Domandl, 1944), p. 15; translation my own.

2 Ibid., p. 29.

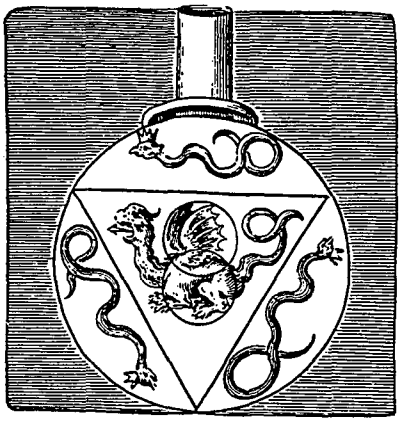


Figure 2: The Alchemical Triangle.

The main relationships in the *tria prima* are as follows:

Mercury	**Sulphur**	**Salt**
metallicity, liquidity	inflammability	non-flammability
volatile, but unchanged	volatile and changed	found in the ashes
in fire	in the fire	---
spirit	soul	body
water	air and fire	earth

Figure 3: Relationships of the *Tria prima.*

Considered as masculine and feminine principles, sulphur and mercury were regarded as fixed and volatile respectively, -- an interpretation that seems at variance with the illustration above. This is another inconsistency, but alchemy was anything but consistent. In another source, Paracelsus called his three principles "phlegma" (by which he seems to have meant fire), "fat" and "ash": "The phlegma is Mercurius, the fat is Sulphur, and the ash is Salt. For that which smokes and evaporates over the fire (as in the burning of wood) is Mercury; what flames and is burnt is Sulphur; and all ashes Salt."[3]

Numbers hold a position of great importance in alchemy. From very early times certain numbers were endowed with mystical and magical properties, and even in the present day there are those who view the number thirteen with superstition. Numbers came into prominence in alchemy partly because of the influence of Greek schools of thought and partly also because of the influence of the doctrines of cabbalism. In the cabbalistic system of expressing words in numerical terms, for example, the word "gold" had the value (1x2x3x4)8, or 192. Cabbalism also maintained the ancient importance of the number four, in such mystical quaternions as the corners of the earth, the elements, the winds, the spirits, the guardian angels, and the rivers of Paradise. In *De azufre y sal*, four is given similar importance as the basis of the pitch organization, because the whole system is based on four main entities. Another favourite number in cabbalism was seven, which was associated with the known metals, the major heavenly bodies, the days of the week, and so forth. Seven is represented in *De azufre y sal* by the number of sections in the piece.

This introduction does not pretend to be an exhaustive study of alchemy; it is just a brief description of some points relevant in the genesis of *De azufre y sal* and how these are manifested in the musical parameters of the piece.

[3] Ibid., p. 25.

II. Formal structure

One of the purposes of *De azufre y sal* was to work with *a priori* restrictions on different levels, such as using a high register only in a few spots. These imposed restrictions help to produce a very concentrated piece with an austere atmosphere, despite the richness of some of the materials that the orchestra provides.

De azufre y sal is divided into seven sections of various durations, which are not completely contrasting. There are some materials that, even though they may look varied and different at first glance, act as unifying elements throughout the piece, depending on how many times they appear and where. From section to section, the 'experiences' of preceding gestures are taken up in order to be developed further, continuously or discontinuously. Another important characteristic, as was mentioned before, is the concept of a continuum with sudden disruptions which never occur in the same place or order, bringing into the piece a certain element of unexpectedness or surprise. The purpose of these disruptions is to create an unpredictable and erratic perception of the continuum. In other words, these are the Dionysian elements. Nevertheless, the original entities are recognised throughout the whole, though with changes in their roles and inter-relationships. All these small and subtle changes have as a goal the creation of a motionless state. They do not intend to initiate a process in which direction is an essential factor, even though the piece has moments with a much clearer sense of direction.

The temporal perception in the piece is not an imitation of the European one, but rather more extended and less concentrated. Violence is present together with subtlety, without these constituting a contradiction. The notion of

background and foreground does not exist in a pure and strict manner. Avoiding this obvious distinction through the superimposition of different layers, the rising microtonal texture acquires the important role of enabling the evasion of clear limits, therefore producing a nebulous effect. What is foreground (the quasi melodic lines?) and what is background (the sound mass?) is not explicit.

The concept of conceiving of a rigorous system or group of systems as a way of creating order was completely avoided from the beginning. Most systems contain hierarchies in which one or some of the elements have more importance and power than others. I prefer to think in terms of a cooperation, in which each component has its own particular behaviour and life and yet simultaneously contributes to the functioning of the whole. A good example of such collaboration among elements is the internal structure of the atom, where each tiny particle has a function and a reason to be. The mechanism of the atom would be broken if some of the members did not do what they were supposed to do; the entire structure would fall apart.

The overall design of *De azufre y sal* is represented in the graph that follows. As one can see, it is possible to divide the seven sections into two principal groups. I will call sections I, II, III, IV and V, group A, and sections VI and VII, group B. This division is also supported by the pitch system, as well as by the tempi and length of the sections. As can easily be observed, the sections in group A are arranged symmetrically according to tempi and duration. Such symmetry is essential because it represents the Apollonian component in the piece:

Group A

Section I	(mm. 1 - 18)	tempo = 50	duration 1'
Section II	(mm. 19 - 45)	tempo = 73	duration 1' 30"
Section III	(mm. 46 - 83)	tempo = 48	duration 3'
Section IV	(mm. 84 - 111)	tempo = 73	duration 1' 30"
Section V	(mm. 112 - 129)	tempo = 50	duration 1'

Group B

Section VI	(mm. 130 - 164)	tempo = 120	duration 2'
		tempo = 60	
Section VII	(mm. 165 - 194)	tempo = 90	duration 2' 30"
		tempo = 50	
		tempo = 90	
		tempo = 50	
		tempo = 60	
		tempo = 90	

Figure 4: Formal Structure of *De azufre y sal.*

It seems more practical to discuss separately and in more detail some of the passages in each section which demonstrate in a much more concrete way the ideas expressed in my introduction.

In Section I there is a significant emphasis on the low register. The starting point is a subtle attack in the piano, marimba and medium tam-tam -- all playing the same chord *pp*; this attack masks the entrance of bassoon 1 and the

bass clarinet. At the same time, the cellos play a minor second for three beats with changing dynamics, adding a different colour to the bass clarinet and bassoon figures. Trombone 1 (with Harmon mute), double bass 1 and bass clarinet are closely related in a contrapuntal web, in which the interaction among the instruments, with their distinct timbres, was the main compositional concern.

On the last beat of m. 5 (p. 2) the only unison of the piece begins, played by bass clarinet, trombone 1 with Harmon mute (open and closed) and cellos 1 and 2. This unison is coloured by a pedal like figure in double bass 2 and tuba. The piano masks the entry of each of the notes which bassoon 1 plays, and horn 2 introduces a held D# which is prolonged and enriched with a trill played by the marimba. At the same time, the tam-tams add a very soft resonance which blends with the rest of the instruments. The same kind of procedure is utilized until the end of Section I, but with a considerable increase in the polyphonic density (quantity of instruments that play at the same time) and chronometric density (quantity of attacks per beat).

Section II begins at m. 19 (p. 4) with the first abrupt interruption, one of the gestures mentioned in the introduction as a representation of the Dionysian. The chord here functions as an articulation because it marks the beginning of Section II but at the same time, it also provides variety because it is the first homorhythmic texture since the beginning of the piece. It acts as a compact block with internal nuances of colours due to its dynamics. It is important to keep in mind that it is also the first time in the piece where there is a *sforzatissimo*. In Section II there is a significant expansion in register, which brings to the piece a much wider sense of space In m. 26 (p. 6) a contrapuntal tutti emerges, in contrasts with what occurred before in m. 19. Each voice is independent, and yet what is more important is the totality, the creation of a

sound mass with internal motion.

The texture displayed in mm. 30-35 (p. 7) is based on dynamics and timbre. In other words, having the same sounds held for a time presents a good opportunity to experiment with subtle changes in the dynamic level changes which underline the timbral differences. The result is a rich *chiaroscuro* of shadows and brightness among the instruments that play at that moment.

The handling of register adds drama and articulation to the piece. An example may be found in m. 44 (p. 10), which represents the culmination of the tutti started in m. 26. There is a sudden decrease in polyphonic density to just the two double basses in the low register. This return to the low register is crucial as a structural articulation at the end of Section II and the beginning of Section III.

Section III has the same time signature and tempo as Section !. This can be seen in the graph in which the symmetries in the formal structure are clearly expressed. The idea of creating music which evokes the sensation of breathing, or that moves in waves which come and go in irregular cycles, is achieved through the use of changes in the polyphonic density, tempo, time signature and expression slurs (which are always utilized in a non-uniform manner). The beginning of Section III is characterized by a very sparse texture in which each small event acquires great presence. Within Section III the activity increases slowly to culminate in m.61 (p. 14) with a new tutti, which also presents an expansion of register, lasting until m.70 (p. 16). This tutti is framed by seemingly random attacks in the suspended cymbals and the piano. Immediately afterwards there is a return to the slow, quiet texture using the double basses; however the events are never in the same place. Therefore, this brings to the piece both consistency and variation.

Towards the end of Section III, similar material to that which first occurred

in m. 26 (p. 6) returns, but this time used in a different way. Now, this gesture no longer acts to articulate a new section, but rather to remind the listener of previous material. Through the use of dynamics, this chord seems to pass through a prism which separates the sound, like light, into the colours of the rainbow.

Close to the end of Section III (m.81, p. 19) new material appears. The introduction of the piccolo, piano and glockenspiel implies a break in register -- the highest utilized to this point in the piece -- and at the same time provides a refreshing timbral combination, which has never been used before. A small cluster (A-Bb-B) starts in m. 82 (p. 19), shared among the oboe 1, clarinet Bb and trumpet with straight mute; this functions as a prolongation of what occurred before, even though it is an octave lower. This cluster gets dissolved into the *fermata* and marks the end of Section III.

Another significant concept in *De azufre y sal is* the notion of "micro-composition" -- a process by which every event is planned as a link in a chain. This device is used to create sparse textures. The manner in which these links are joined is important because of the various ways in which they can be orchestrated. Unusual colours or new ones can be used to add tension and continuity to the music. A good example of this can be found at the beginning of Section IV in m.84 (p. 20) where we can observe how the large tam-tam, scraped across the front with a triangle beater masks, gives a richer sound to the entry of the clarinet and horn 1, which attacks stopped and *sforzato*. The major sixth sustained in the clarinet and horn 1 is lent dimension by the violins II, which use microtones to create a harsh, 'dirty', contrasting sound. Later the fingernail pizzicato in the piano masks the entry of the violas, and the short chord in m.90 (p. 20) is marked by a new pizzicato in the piano, as well as by the vibraphone with bow and motor on; this gives a finishing touch to the chord

due to the resonance which is produced. This is a clear example of how these textures were composed using the concept of micro-composition.

Section IV is formed using material which was presented in preceding sections. For example, in m.92 (p. 22) the material presented is a variation of what occurred in m. 22 (p. 5). As in the previous passage, this excerpt displays a homorhythmic texture created by the woodwinds, violins and violas (1-3), with a brief appearance of the trombones, horn 2 and trumpet 1, and harmonics as pedals in the low strings, all of which contribute to the full sound. It is important to point out that the dynamics also have an essential role because, even though the woodwinds and strings have the same rhythmic pattern, the constant change of dynamics brings about an effect which lacks definition. On the other hand, in m.92, the pitch structure is even more diffused than in the earlier passage due to the use of microtones and different rhythmic patterns.

In mm. 88- 91 (p. 21) there is a permutation of the instruments from m. 26 (p. 6). For example, what was played by violins I (1-4) is now played by flute 1. The melodic material of the piccolo was originally for violins II (4-6); oboe 1 plays the material of violins I (5-8), and oboe 2 plays what was played by violins II (1-3). Likewise, trombone 1 plays the line of cellos 1 and 2, and the tuba plays what was played by double bass 2. Basically, all that was played by the strings in mm. 26-29 is now played by the woodwinds or brass. Not all the permutations that take place are mentioned here, but these examples illustrate very well the compositional approach.

In m.111 (p. 26) Section IV finishes. The final gesture is introduced by a very short pause which announces a change. The simultaneous attack before the last chord gives a sense of expectation and diversity, because this gesture has never previously occurred.

Section V is a continuation and exploration of what was done in Section

I. In other words, the same kind of ideas are present but with small and subtle changes. Even though Section V is strongly linked to Section I, nothing is repeated exactly. It is also connected to Section III: similar material to that at m.129 (p. 30) was already presented in m. 92 (p. 22). As in the other sections, orchestration plays a decisive role here. For instance, the trills in both clarinets are accompanied by another trill in the marimba, building a composite timbre that amalgamates very well with the lower strings and brass. In m.123 (p. 29) a new phrase (a new breath) starts, introduced by the muted piano which, with the large tam-tam, masks the entrance of the tuba, trombone 2 and contrabassoon. A second phrase starts with the appearance of a new timbre in the piano, made by striking the strings in the low register with the palm of the hand. This sound, in combination with the bass drum, large tam-tam and pizzicati in the double basses, creates a rich timbre from whose resonance emerges the flute 1 and oboe 1.

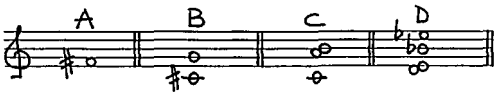
The starting point of Section VI is clearly marked by a significant change in the tempo, which now is ♩ =120. The new texture introduced in m.130 is quite different from, and contrasts with, that of the earlier sections. This texture emphasises the notion of motion with convulsive attacks, in a much wider range of dynamics (from *f* to *ppp*). After three measures, the tempo changes again and we see the return of familiar materials. The next interruption occurs in m. 161 (p. 38) this one is clearly related to the one that took place in m.19 (p. 4). At this moment in the piece the interruption acts as an articulation to frame the end of Section VI. Its appearance here justifies its original appearance in m.19.

In Section VII there is an obvious expansion in register, as well as a reinterpretation of the original materials upon which the piece is based. In mm. 173-176, for example, the trills in the woodwinds and violins create another elaboration of what occurred in mm. 31-32. A gesture from mm. 81-82 (p. 19)

recurs in m. 178 (p. 42); the orchestration is only slightly different, with the subtle attacks in the violin II and violas in harmonics accompanying the punctuation of the glockenspiel and crotales, giving the latter more body and richness. In m. 180 material returns in the bass clarinet and horn 1. This major sixth was first seen in m. 84 (p. 20), at the beginning of Section IV. Now it is broken off in m. 182 (p. 43) by the muted piano together with the large tam-tam and, in the second attack, by the bass drum. However, new material is also presented in Section VII. A new timbre occurs in m.182 in the piano, with a slow glissando played directly on the strings in the low register with a rubber ball mallet. This creates a blurred effect, which blends with the pedal notes in the contrabassoon, trombone 2, tuba, cellos and double basses. A new timbre, a 'bending' effect created by slightly lowering the end of the note in flute 1, oboe 1 and the solo violin in m.183 (p. 43), is quite different from anything heard before, and acts in opposition to what is happening in the low register. The last 'bent' sound, now only in flute 1, is accompanied by a slow glissando on the piano strings, and a tremolo in the bass drum. This phrase culminates in m. 185 (p. 43) with the pianist striking the piano percussively with the palm of his/her hand, accompanied by a tremolo in the bass drum and an attack in the large tam-tam. After one of the few pauses in the piece, a new attack using the same sounds occurs in m. 187 (p. 44). Soon afterwards the piece returns to materials already used. But first we hear a short block in a *subito* staccato texture, strongly related in character to the one in m. 130 (p. 30). In m.190 (p. 44) the material from m. 130 is used again in a different tempo, but with the original material in retrograde.

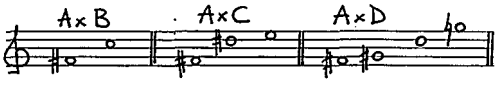
III. Pitch organization

One of the crucial parameters that help to create continuity and coherence in musical composition is pitch organization. In *De azufre y sal*, the manner in which pitches are generated creates homogeneity. In other words, one of the most important features of this piece is how correspondences are established on the level of pitch organization. The process of creating these pitch collections originates in four main entities:



Example 1: Four Main Entities which generate the Pitch Collections.

The second step in the process is the multiplication of these entities. For example, if one takes entity A and multiplies it with entity B, the result is a diminished fifth (F#-C). The multiplication of entity A with entity C is a minor sixth with a major second on top -- therefore the resulting interval is a major seventh; and the result of AxD is a major second with a diminished fifth and a perfect fourth:



Example 2: Multiplication Process of AxB, AxC and AxD.

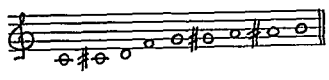
It is clear that the process consists of reproducing the intervallic structure of the second entity on each of the components that form the first entity. Thus when the multiplication process involves two entities with more than one component each, the result is larger. The example below shows the case of BxD:

Example 3: BxD.

If we look in more detail at the case of BxD or CxD, as the example above shows, some of the pitch classes are repeated. Therefore it is important to keep in mind that none of the duplications generated by the multiplication are used. For example, the multiplication of CxD produces three pitch classes which are repeated (C-Db-B); each is present in the final collection, but only once:

Example 4: CxD with its Duplications.

So the final pitch collection for CxD is:



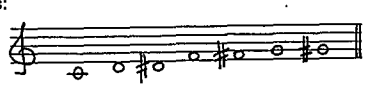
Example 5: CxD.

The results of all these operations are different sets of pitch classes. In some cases these pitches are used linearly, creating a melodic motion, and in others they are used to construct the overall harmony; sometimes there is a combination of these two possibilities. The decision about which pitch collection would be used in each of the sections of the piece was made arbitrarily. BxD is used in Section I:

Example 6: Pitch Collection BxD, Section One.

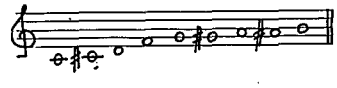
At this point it is important to make some remarks about BxD. The example above shows a D in a square; this is because this pitch class from the original collection is missing and E, which was not present in the multiplication process, was added. The reason for this is that the lack of the D represents the Dionysian element in the collection, an unpredictable element in the Apollonian order. To compensate for this, E is added. Because this pitch class was not part of the original collection, its inclusion has extra importance. It is used to symbolize Mercury, which was the representation of the spirit in the *tria prima* principles of Paracelsus, and which is the only element of the *tria prima* missing in the title. Thus the pitch fills two important gaps.

In Section II the pitch collection is obtained from the sum of AxB, AxC and AxD, which is:



Example 7: Pitch Collection Ax (B+C+D), Section II.

In Section III CxD is the pitch collection used, as was mentioned before:



Example 8: Pitch Collection CxD, Section III.

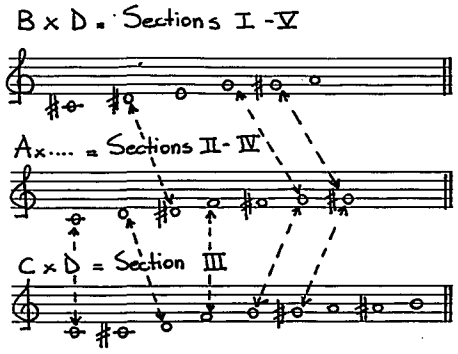
As was mentioned before, there is a strong symmetry in the lengths of Section I and Section V, and between Section II and Section IV. These symmetries are also emphasized by the utilization of the same pitch collection for example, BxD is employed in both Section I and Section V. However, in Section V, in addition to BxD we have microtones, which have already been used in Section III, which is the axis of the symmetry between Section I and Section V.

The use of microtones was necessary to superimpose a blurred, 'dirty' effect upon the true pitch collection being used at any moment --only Sections I and II lack them. The microtones are not used within a particular tuning system, but rather as an element of colour within the pitch collections.

In group B, Sections VI and VII, the total chromatic scale is incorporated. As one may see, there is an increase in the number of pitch classes used throughout the piece, in contrast to the decrease in the number of tutti and dense textures. However, there is not a moment in *De azufre y sal* where the entire chromatic scale is used simultaneously.

The pitch collections are not always introduced in an abrupt manner; for example, in m.18 (p. 4) the new pitch collection for Section II -- which is the sum of AxB, AxC and AxD -- is presented by the piano before Section I is finished. As well, there are always at least three pitch classes in common BxD has D#-G-G# in common with the sum of AxB, AxC and AxD, just as this sum has C-D-F-G-G# in common with CxD. This brings unity and consistency, so that changes

are smooth and fluid:



Example 9: Connections between the three Pitch Collections used.

From this example it is also clear that only two pitch classes are common to the three pitch collections used from Section I to Section V: these are G and G#. In Section II m. 24 (p. 5), G3 and G#4 are introduced in the horn 2 and trumpet 1 respectively. This minor ninth is held, with dynamic changes and irregular rests, until m.29 (p. 6). Later it comes back in mm.38-44 (pp. 9-10), where it is dissolved before the beginning of Section III.

The pitch classes G, G# and E (the representation of Mercury) remain important towards the end, more specifically in the last measure (m.194, p. 45), where they are used in double bass 2, cellos 3-4 and bass clarinet to finish the piece with a spasmodic texture that was already heard in m. 130 (p. 30).

Noise is incorporated as an extra element in the pitch organisation in the piece. Most musical instruments have a noisy background to their harmonic spectrum because of methods of sound production; this is one of the most

important portions of the overall sound. With stringed instruments, for instance, some bow noise can always be heard, and with woodwind instruments one can never quite avoid the noise of blowing. No doubt players will always try to reduce this interference to a minimum, but this minimum is absolutely necessary to preserve the natural character of the sound. In this piece, these 'undesirable noises' that all instruments have in their nature (though in different degrees) are emphasised by the glissandi, microtones, bent pitches, and extreme bow pressure, etc. The noise components broaden the harmonic spectrum, but also represents a deviation from a mathematically exact vibration. These departures are, however, extremely important in an aesthetic sense, because they enliven the overall sound. An analogy to these slightly blurred sound outlines is obvious in painting, where one can follow a whole scale of grades of sharpness from the photographic 'preciseness' of Canaletto to the pointillistic manner of Impressionism.

IV. Rhythm

The idea of an almost total lack of pulse was a strong concern in this piece. In most of the piece the concept of a continuous pulse is eliminated; this implies avoiding strong beats as well as using irregular rhythms, slow tempi and a few pauses of diverse lengths.

Another important feature is the use of retrograde technique, which gives consistency and coherency even though it is not very easy to recognize when it is heard. For example the materials from mm. 26-29 (p. 6) are presented in retrograde form mm. 38-40 (p.9). Starting at the end of m. 40 the original material is repeated until almost the end of Section II. Some of the retrograde versions are exactly the same, but some of them have slight modifications for example the double bass 2 does not use glissando in the original version (mm. 27 -28), but a glissando is presented in the retrograde version (mm. 38 - 40). Another example is the bass clarinet in the retrograde version at m. 40, where there is an added quarter tied to a eighth note on Eb, and then an eighth note F which is not in the original version. These small variations can be explained again as the interference of the Dionysian element. A further example of the use of retrograde can be found in Section III. Here the original material is presented in mm. 52-55 (p. 12), and its retrograde version comes in at mm. 56-59 (p. 13) in the contrabassoon, trombone 2, cellos and double basses. Not all the instruments utilized in the original presentation are involved in the retrograde version; for instance, the tuba and trombone 1 repeat the original material while horns 1 and 2 add contrapuntal material. Finally, the last three measures of the piece are an almost complete retrograde version of m. 130 (p. 30).

Another important feature in *De azufre y sal* is the use of thirteen *taleas* with thirteen *colors*, an old technique used in isorhythmic motets from the thirteenth and fourteenth centuries. As in alchemy, where the boundaries between science (chemistry) and art were not clear, this musical form uses a rigid scientific method to create musical results which, in the end, are in no way coldly scientific. Isorhythmic motets are polyphonic compositions for three or four voices, built on the foundation of a *cantus firmus*, a preexistent melody from the repertoire of Gregorian chant that served as a structural girder for the composition. The *cantus firmus* was broken into even melodic segments, separated by rests, and sung to a rigid repetitive rhythmic pattern. One of the best examples of this technique is the *Messe de Notre Dame* by Guillaume de Machaut, although there are earlier examples. *De azufre y sal* was inspired by this idea of irregular rhythmic patterns with an established *color* (pitch material). The texture of the medieval isorhythmic motet was not organized in such a way to promote clarity of perception; this is one of the main reasons why this type of texture was used in my piece, where the listener is supposed to focus only on the global perception of the texture.

Taleas and *colors* occur only in Sections VI and VII. They are divided in two groups, as were the seven sections of the piece. Group A is in Section VI and Group B in Section VII. The *taleas* and *colors* of Group A are as follows:

Group A

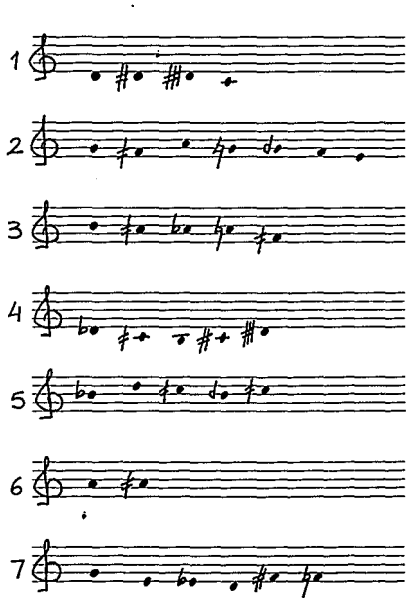


Figure 5: *Colors* in Group A.

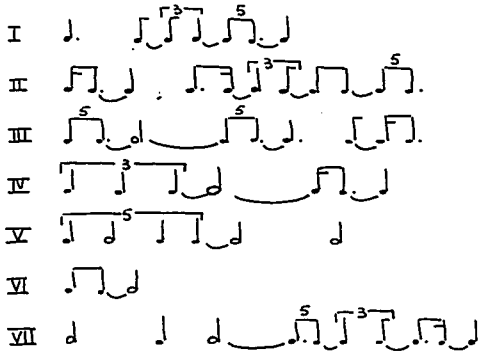


Figure 6: *Taleas* in Group A.

The use of *taleas* and *colors* in Section VI can be seen in the following outline:

Page 30 to 31

Trumpet 1	talea	color 1	(twice)
	talea I	color 3	(once)
Flute 1	talea II	color 2	(twice)
	talea VI	color 6	(once, and second time in retrograde)
Oboe 2	talea IV	color 4	(once, and second time in retrograde)
	talea II	color 2	(once)

Clarinet	talea VII	color 7	(once)
	talea VI	color 6	(once)
Horn 1	talea VII	color 7	(once)
Horn 2	talea I	color 5	(once)
Bass Clarinet	talea III	color 3	(once)

Page 32

Clarinet 1	talea V	color 5	(once)
Flute 1	talea II	color 3	(only the *color* is in retrograde)
Bassoon 1	talea VII	color 7	(once)
Horn 2	talea III	color 3	(once)
Bass Clarinet	talea VI	color 6	(once)
	talea II	color 2	(once)
Tuba	talea VII	color 7	(once)

Trombone 2	talea VI	color 6	(once, and second time in retrograde)
Horn 2	talea V	color 5	(only the *color* is in retrograde)

Page 33

Contrabassoon	talea II	color 2	(once)
Bassoon	talea I	color 1	(once)
Trombone 1	talea IV	color 4	(once)
	talea VI	color 6	(once, and second time in retrograde)
Trombone 2	talea III	color 5	(once; only the *talea* in retrograde)

Figure 7: Disposition of *colors* and *taleas* in pp. 30-33.

The *taleas* and *colors* in Group B occur only in Section VII, mm. 188 - 190 (p. 44). This short passages acts as a link, a reminder, of what happened in m. 130 (p. 3). The *taleas* in Group B are different from the *taleas* in Group A in both their character and the manner in which they operate. First, they appear only once (except *talea* II and *color* 2); and second, they contain rests and thus contrast the legato sound of the *taleas* in Group A:

Group B

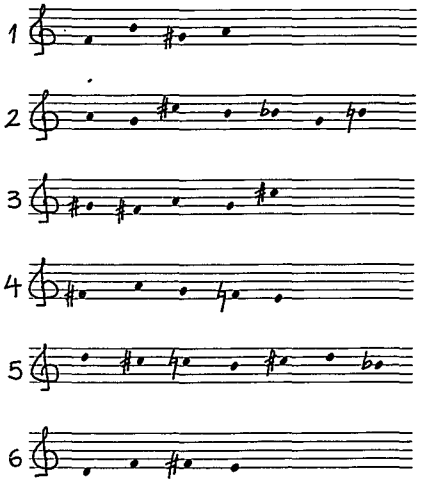


Figure 8: *Colors* in Group B.

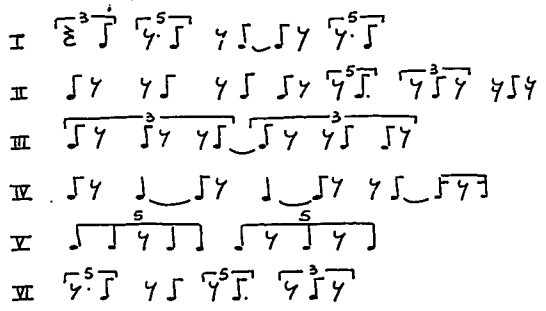


Figure 9: *Taleas* in Group B

The following outline shows the disposition of *taleas* and *colors* in Section VII, mm. 188-190, p. 44:

Page 44

Violas (1-3)	talea III	color 4	(twice)
Bass clarinet	talea II	color 2	(once)
Flute 1	talea I	color 1	(once)
Oboe 2	talea IV	color 3	(once)
Clarinet	talea VI	color 6	(once)
Trumpet 1	talea V	color 5	(once)
Voilins II (1-3)	talea 2	color 2	(once)

Figure 10: Disposition of *colors* and *taleas* in p. 44.

In both passages containing *taleas* and *colors* , other material is also present. This helps to create a blurred texture, in which the *taleas* and *colors* are not too exposed and thus able to blend more smoothly with the rest of the instruments.

Conclusion

In this analysis, three parameters were discussed in detail: formal structure, pitch organization and rhythm. However, each of these should be regarded as an integral part of a whole piece; each is only a component that must remain in close connection with other important parameters of the music such as orchestration, dynamics, and tempo (which were discussed briefly). Only the combination of all these elements makes *De azufre y sal* interesting to listeners and more than simply a set of analytical commentaries.

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De azufre y sal

for orchestra

Natalia Gaviola
Faculty of Music
McGill University, Montreal
November, 1997

A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfillment of the requirements of the degree of Master of Music.

INSTRUMENTATION

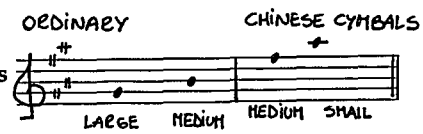
2 Flutes (second flute doubling piccolo)
2 Oboes
1 Clarinet in Bb
1 Bass Clarinet
2 Bassoon (second bassoon doubling contrabassoon)

2 French Horn in F
2 Trumpet in C
2 Trombone
1 Tuba

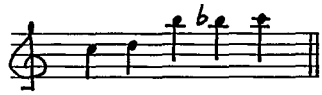
Piano

Percussion I — Vibraphone, marimba, large bass Drum and Glockenspiel.
Percussion II — Large temple block, large, medium and small tam-tams four suspended cymbals, crotales and one bow.

4 suspended cymbals



crotales



8 Violins I
6 Violins II
6 Violas
4 Cello
2 Double bass

The score is written in C with the usual transpositions (contrabassoon, crotales, glockenspiel and double bass).

The approximate duration is 12' 30".

PERFORMANCE NOTES

Accidentals are valid only for the notes to which they are attached. A repeated note which is altered remains altered unless changed by a natural sign.

Grace notes are always played before the beat.

All the strings always play senza vibrato.

 crescendo from niente (unperceivable attack)

 decrescendo towards niente

 1/4 tone sharp
 3/4 tone sharp
 1/4 tone flat
 3/4 tone flat

 Strings: the appearance of this symbol indicates playing exactly over the bridge and not as close as possible. In this way the characteristics of playing sul ponticello are emphasized as well as the production of uncontrolled harmonics.

p.o. ordinary position
s.t. sul tasto
s.p. sul ponticello
m.v. molto vibrato

 vary speed of the trill continuously between rapido and lento.

 "Bend" the pitch slightly lower (towards the end of a note).

 Slow glissando, played directly on the strings in the low register of the piano with a rubber ball mallet to create, a blurred effect.

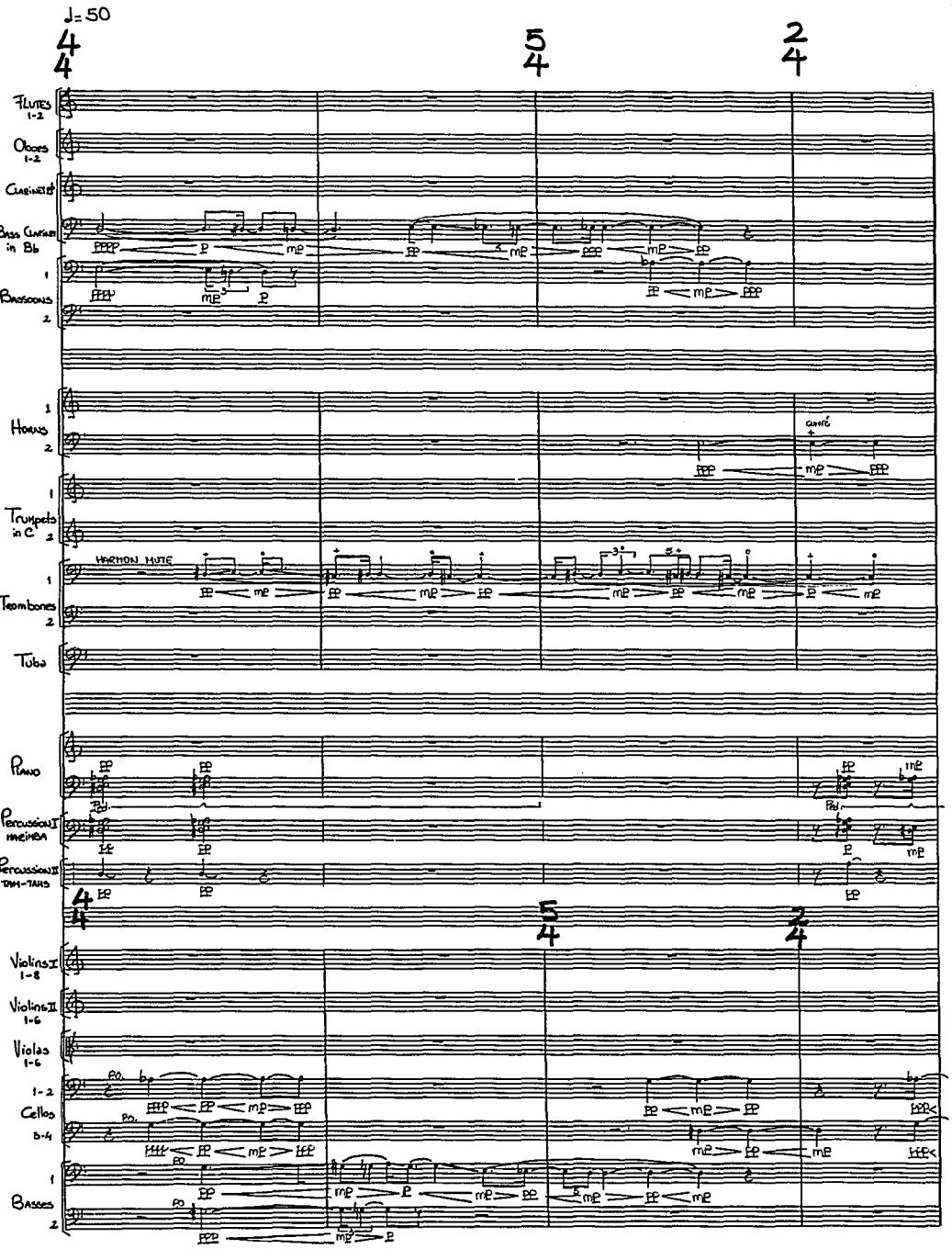
Piano: strike strings low register with the palm of the hand.

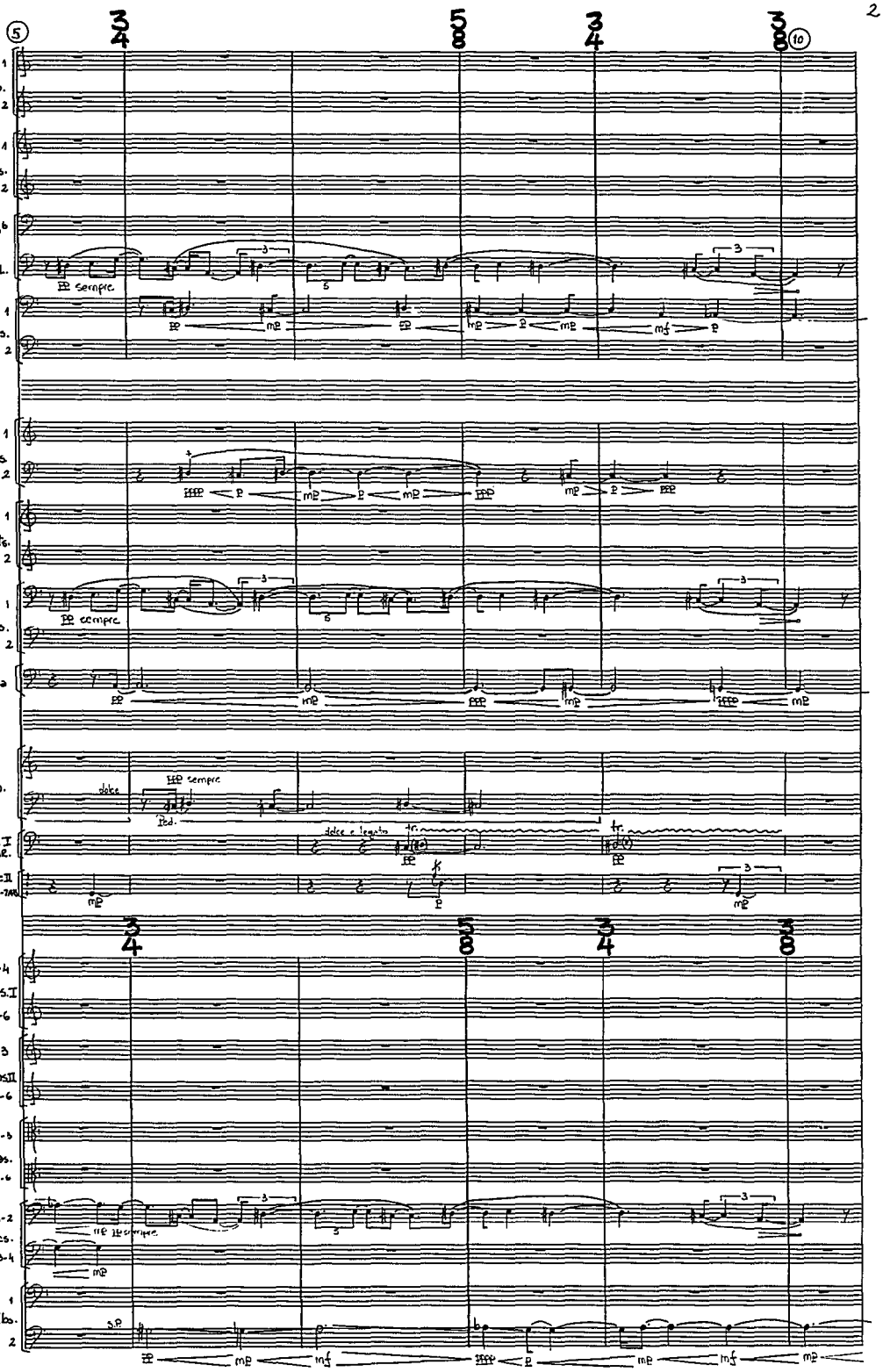
Pizzicati in the piano are always played with the fingernail.

Mute — mute directly with the finger on the strings between the tuning pins and the hammer and hold the sostenuto pedal.

De azufre y sal

Natalia Gaviola
(1997)

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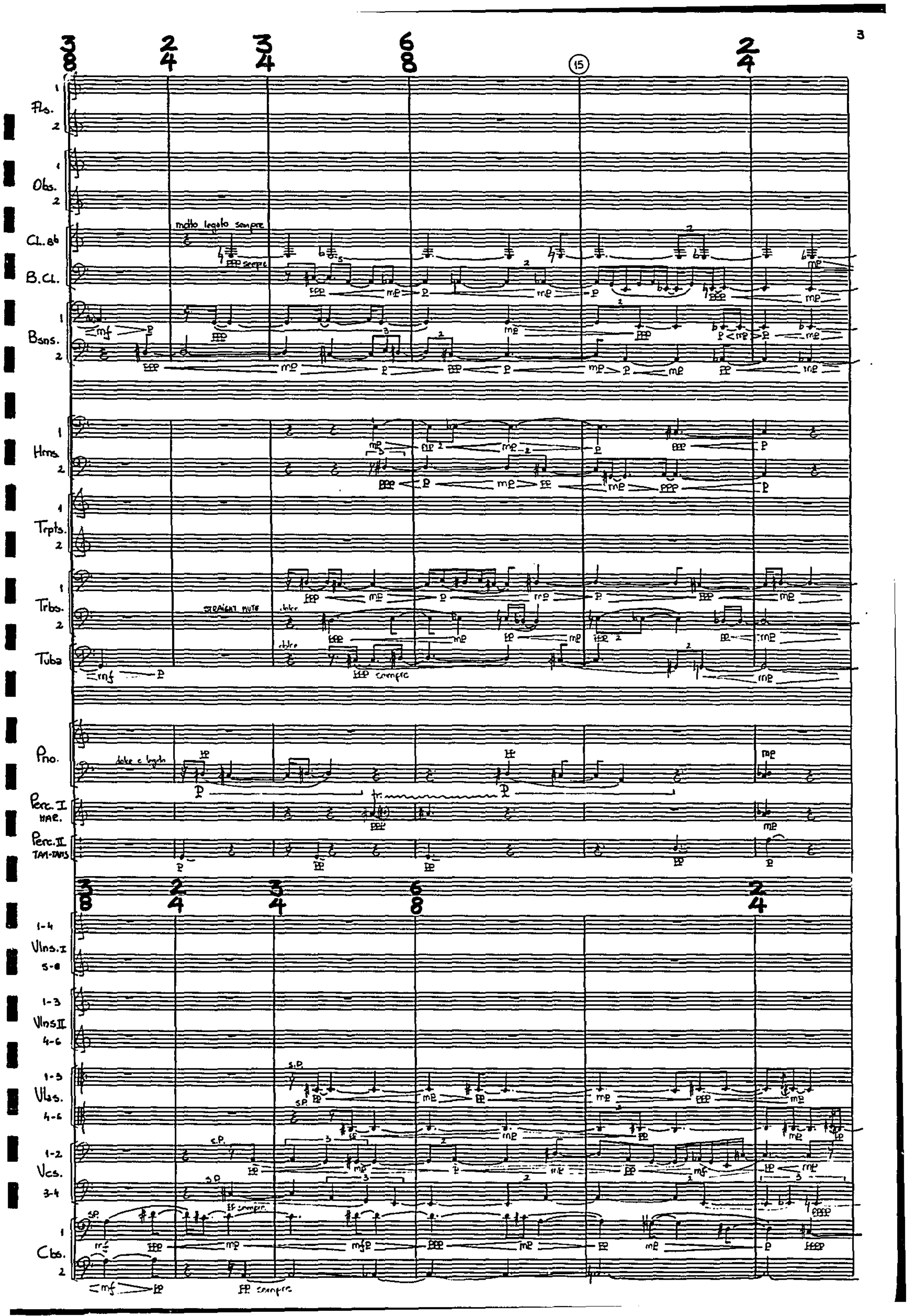
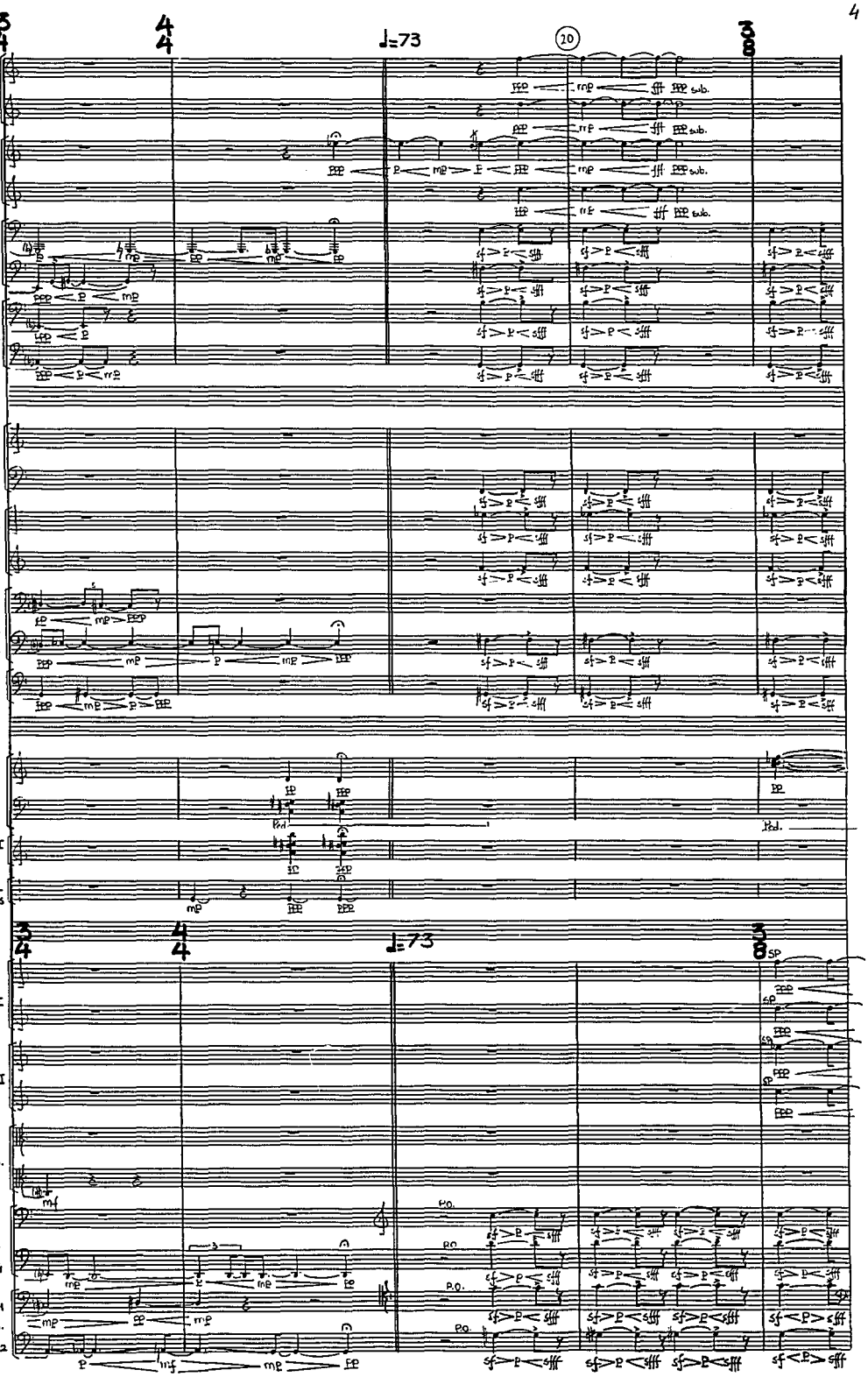
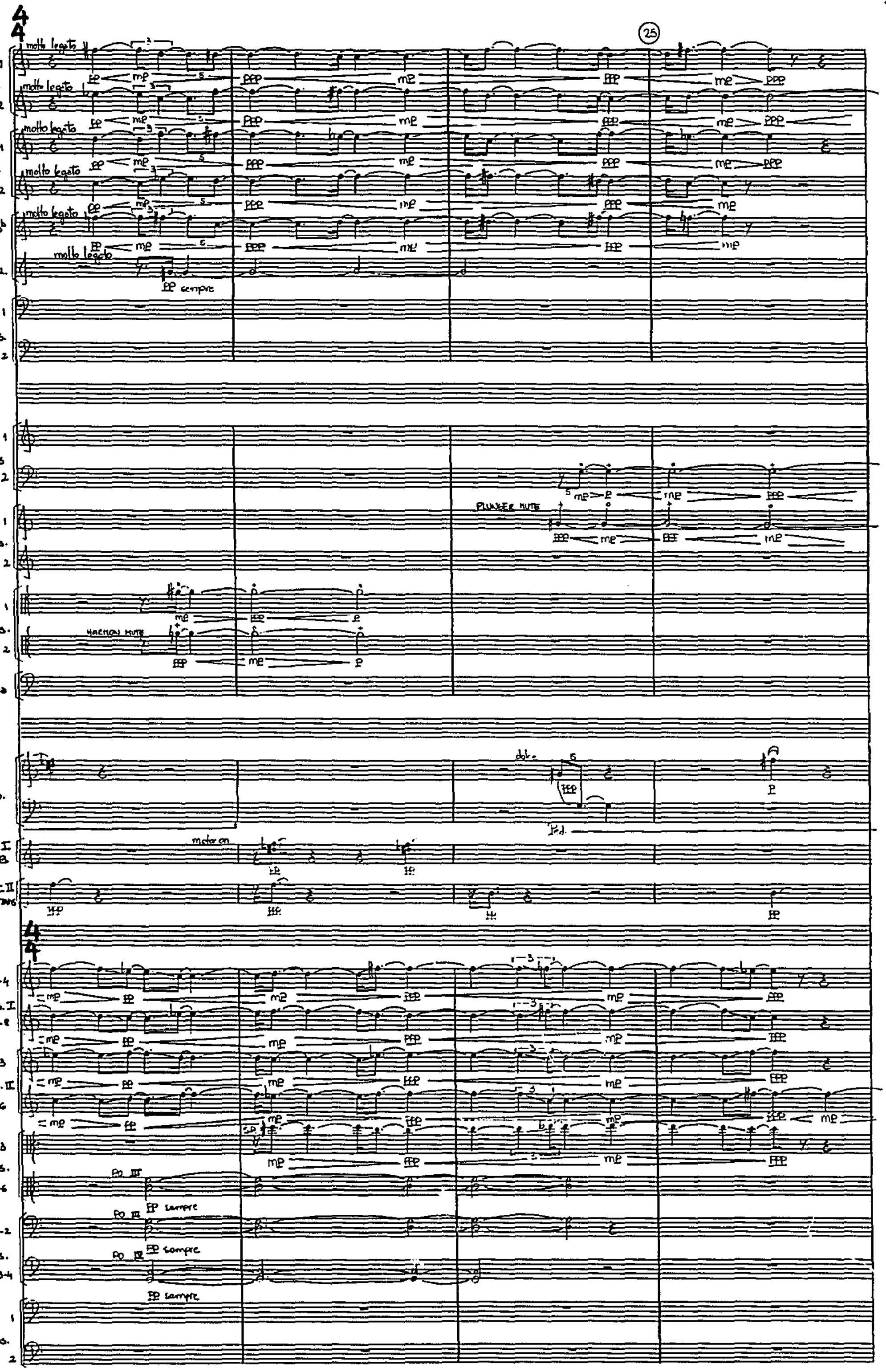
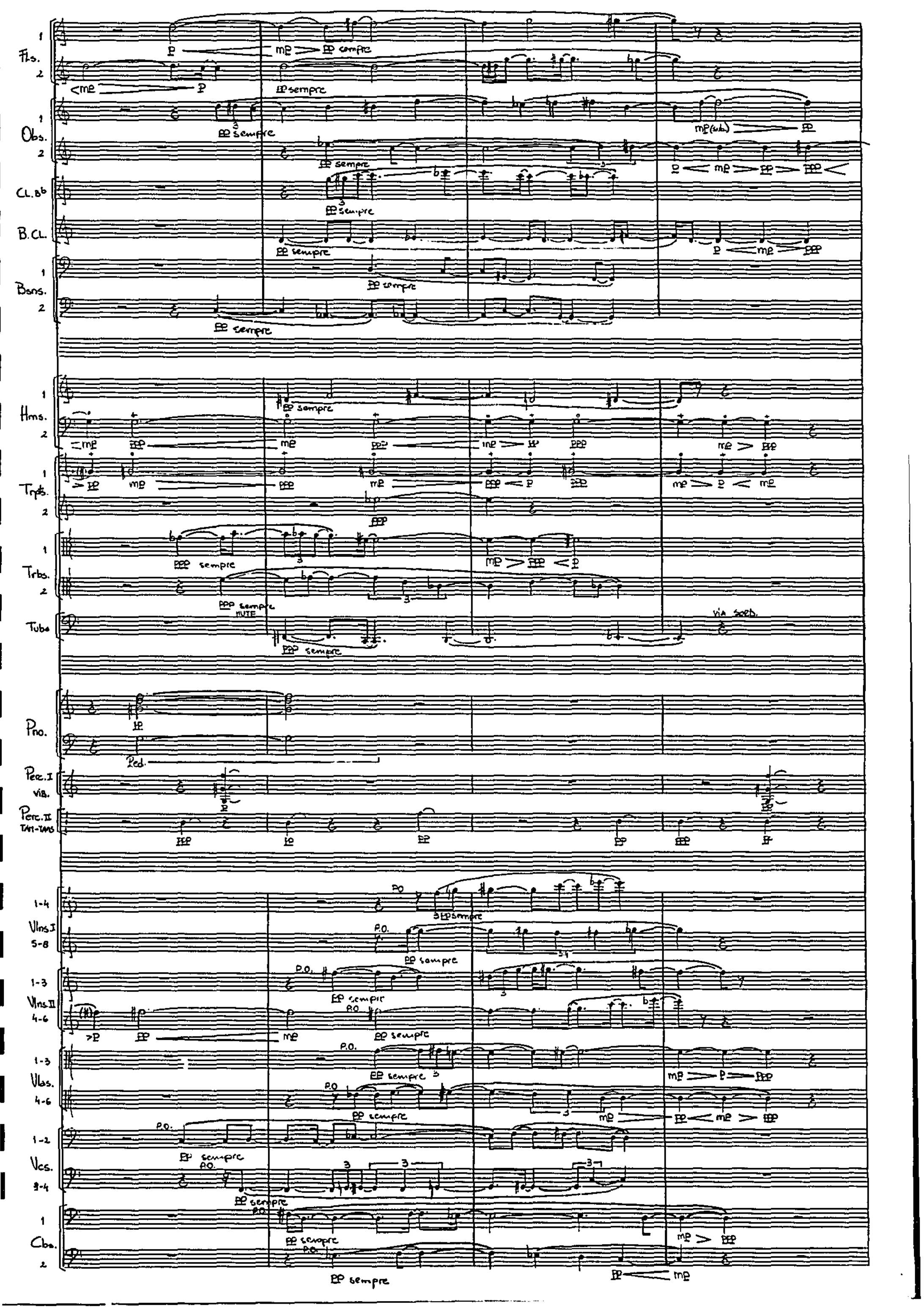
10
Fls. 1 2
Obs. 1 2
Cl. B♭
B.Cl.
pp sempre
Bsns. 1 2
Hrns. 1 2
Trpts. 1 2
Trbo. 1 2
Tuba
Pno.
dolce
pp sempre
Ped.
dolce e legato
Perc. I MAR.
Perc. II TAM-TAM
Vlns. I 1-4
5-6
Vlns. II 1-3
4-6
Vlas. 1-3
4-6
Vcs. 1-2
3-4
Cbs. 1
2
mp
mf
p
ff


Fls.
Obs.
Cl. 8b
B. Cl.
Bsns.
Hrns.
Trpts.
Trbs.
Tuba
Pno.
Perc. I
Perc. II
Vlns. I
Vlns II
Vlas.
Vcs.
Cbs.
molto legato sempre
STRAIGHT MUTE
dolce e legato
sempre


3/4
4/4
♩=73
10
3/8
Fls.
Obs.
Cl.♭
B.Cl.
Bsns.
Hns.
Trpts.
Trbs.
Tuba
Pno.
Perc. I
Hae.
Perc. II
Tam-Tams
1-4
Vlns. I
5-6
1-3
Vlns. II
4-6
1-3
Vlas.
4-6
1-2
Vcs.
3-4
1
Cbs.
2
sub.
Ped.
sp
p.o.


molto legato
Fls.
Obs.
Cl. B♭
B. Cl.
pp sempre
Bsns.
Hrns
Trpts.
PLUNGER MUTE
Trbs.
HARMON MUTE
Tuba
Pno.
dolce
Ped.
Perc. I
vib
motor on
Perc. II
TAM-TAM
Vlns. I
Vlns. II
Vlas.
Vcs.
Cbs.
25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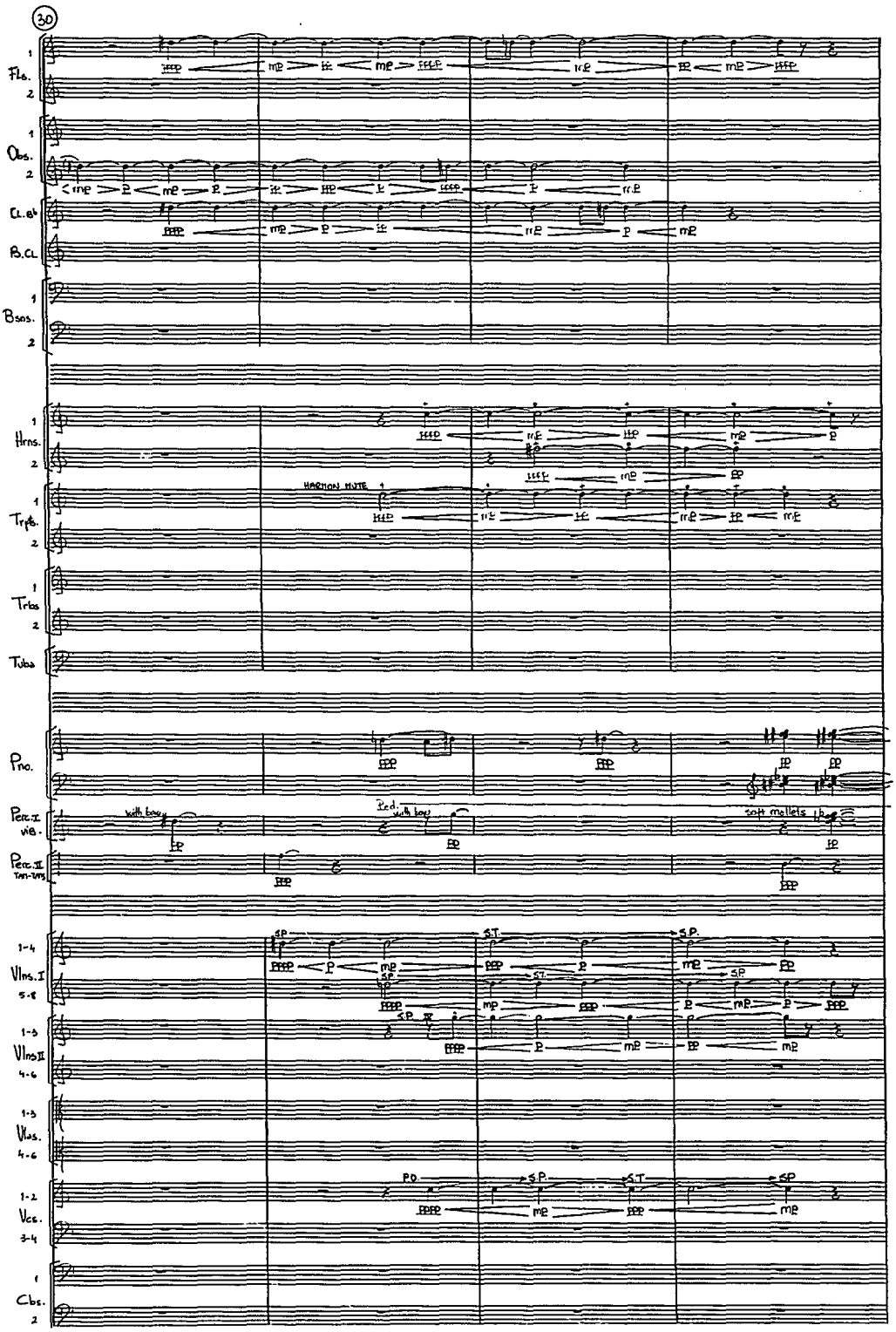
Obs.
CL. B♭
B. CL.
Bsns.
Hns.
Trpts.
Trbs.
Tuba
Pno.
Perc. I vib.
Perc. II Tam-Tams
Vlns. I
Vlns. II
Vlas.
Vcs.
Cbs.
pp sempre
ppp sempre
MUTE
via sord.
Ped.
P.O.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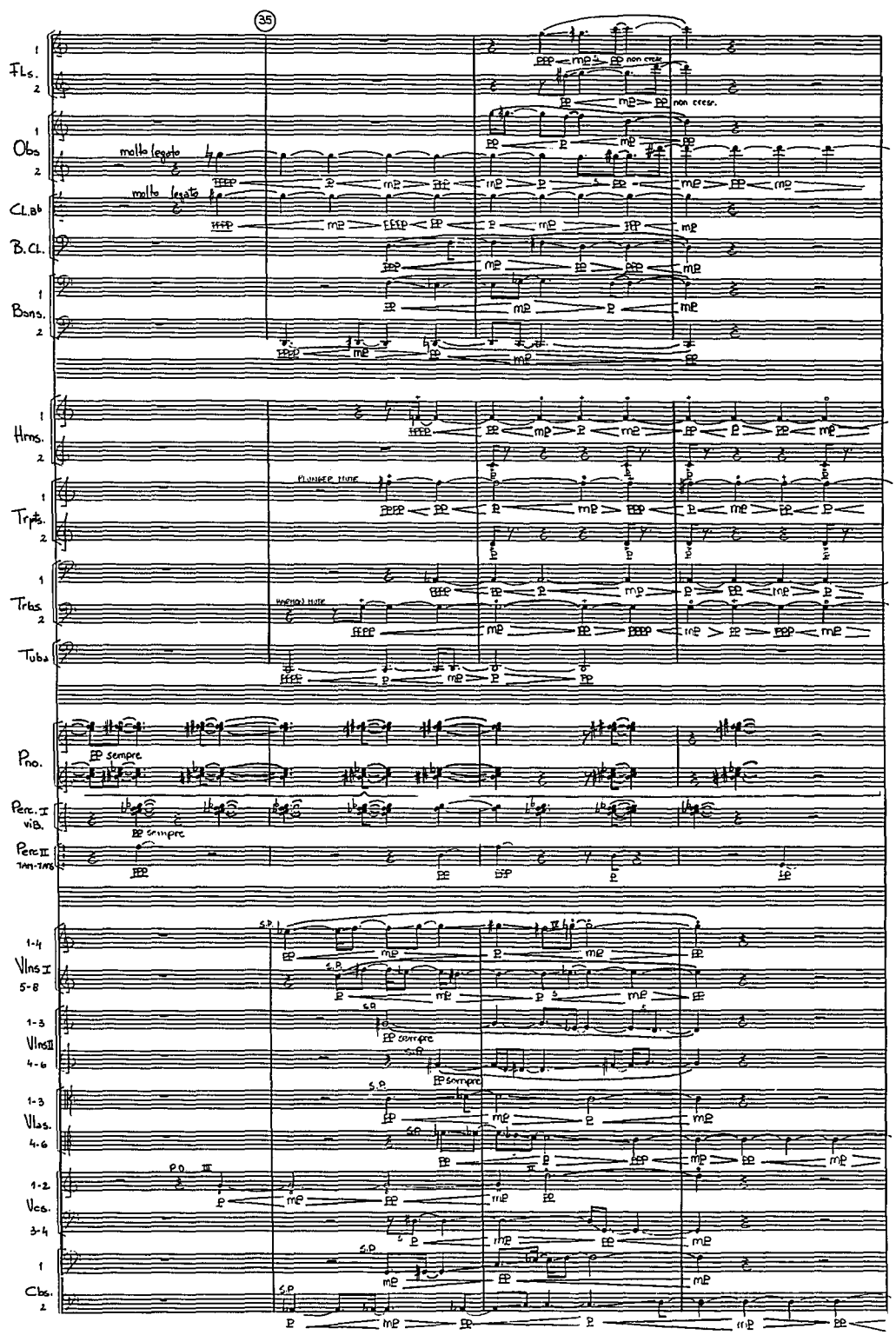
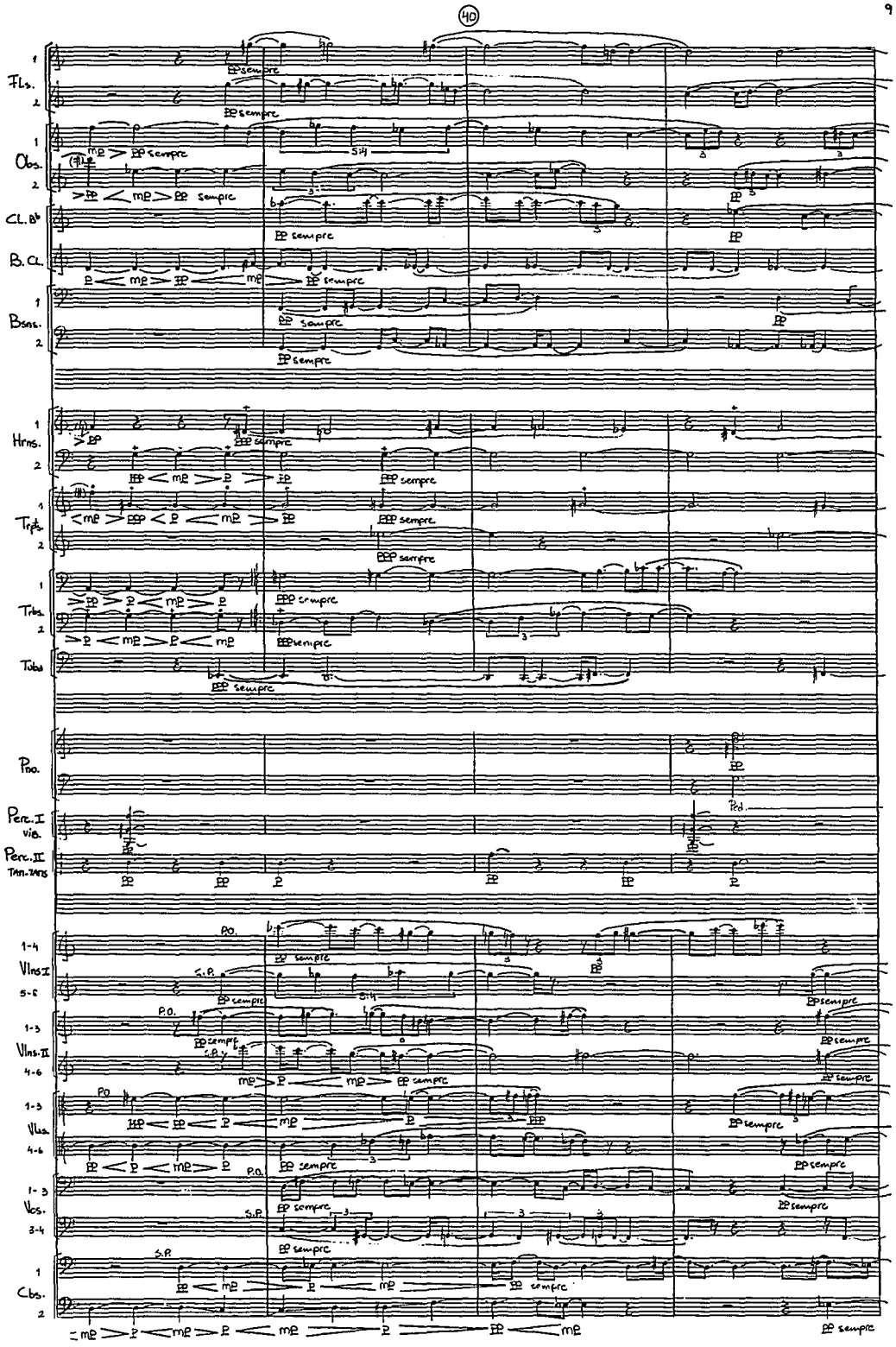
Fls.
Obs.
Cl. in B♭
B.Cl.
Bsns.
Hrns.
Trpts.
Trbs.
Tuba
Pno.
Perc. I vib.
Perc. II Tom-Toms
Vlns. I
Vlns. II
Vlas.
Vcs.
Cbs.
HARMON MUTE
with bow
Ped.
soft mallets
S.P.
S.T.
P.O.


35
Fls. 1 2
Obs. 1 2
molto legato
molto legato
Cl.B♭
B.Cl.
Bons. 1 2
Hrns. 1 2
PLUNGER MUTE
Trpts. 1 2
Trbs. 1 2
Tuba
Pno.
Perc. I vib.
Perc II TAM-TAMS
Vlns I 1-4 5-8
Vlns II 1-3 4-6
Vlas. 1-3 4-6
Vcs. 1-2 3-4
Cbs. 1 2
non cresc.
sempre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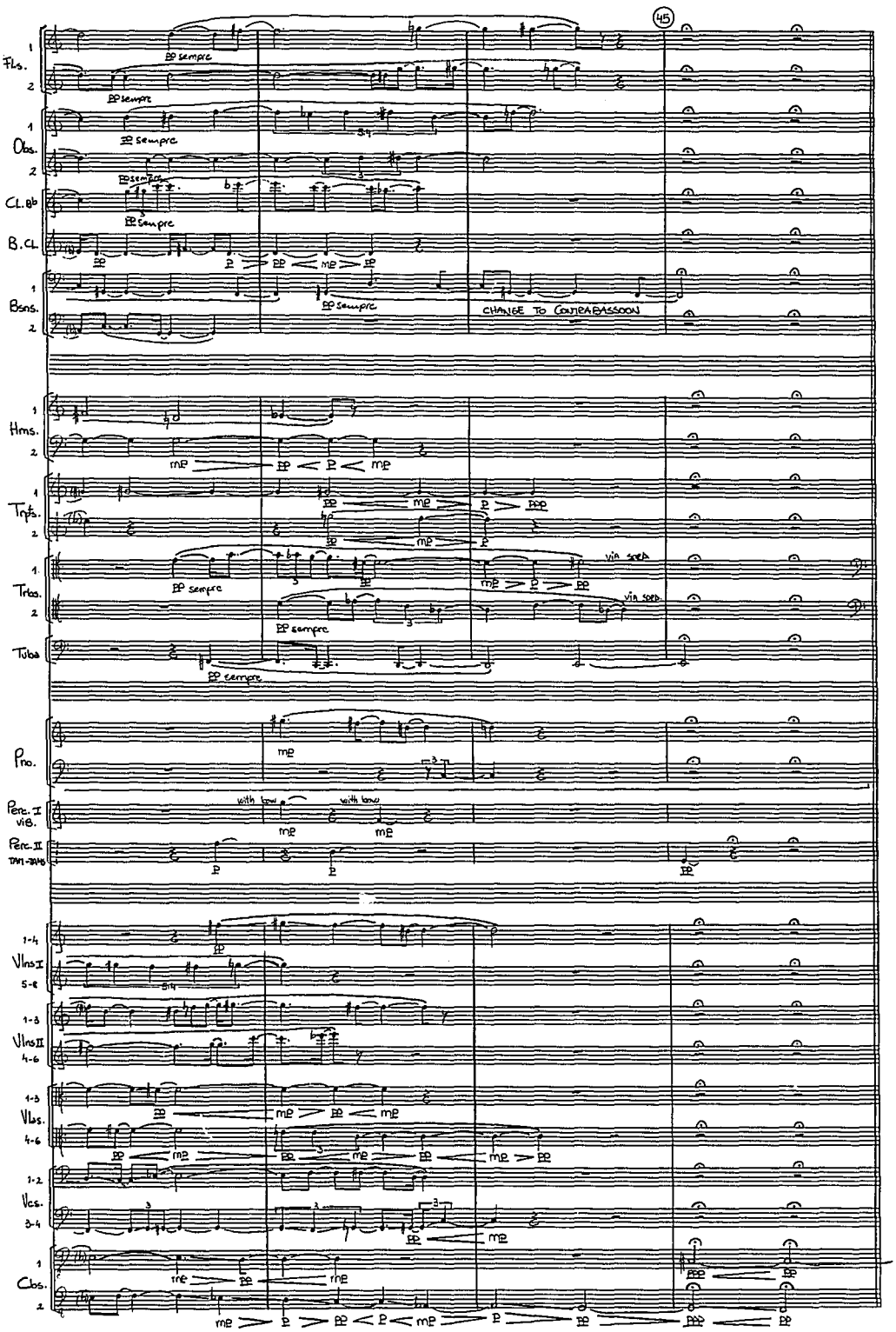
Fls.
Obs.
Cl. B♭
B. Cl.
Bsns.
Hrns.
Trpts.
Tbns.
Tuba
Pno.
Perc. I
vib.
Perc. II
Tam-Tams
Vlns. I
Vlns. II
Vlas.
Vcs.
Cbs.
sempre
S.P.
P.O.
Ped.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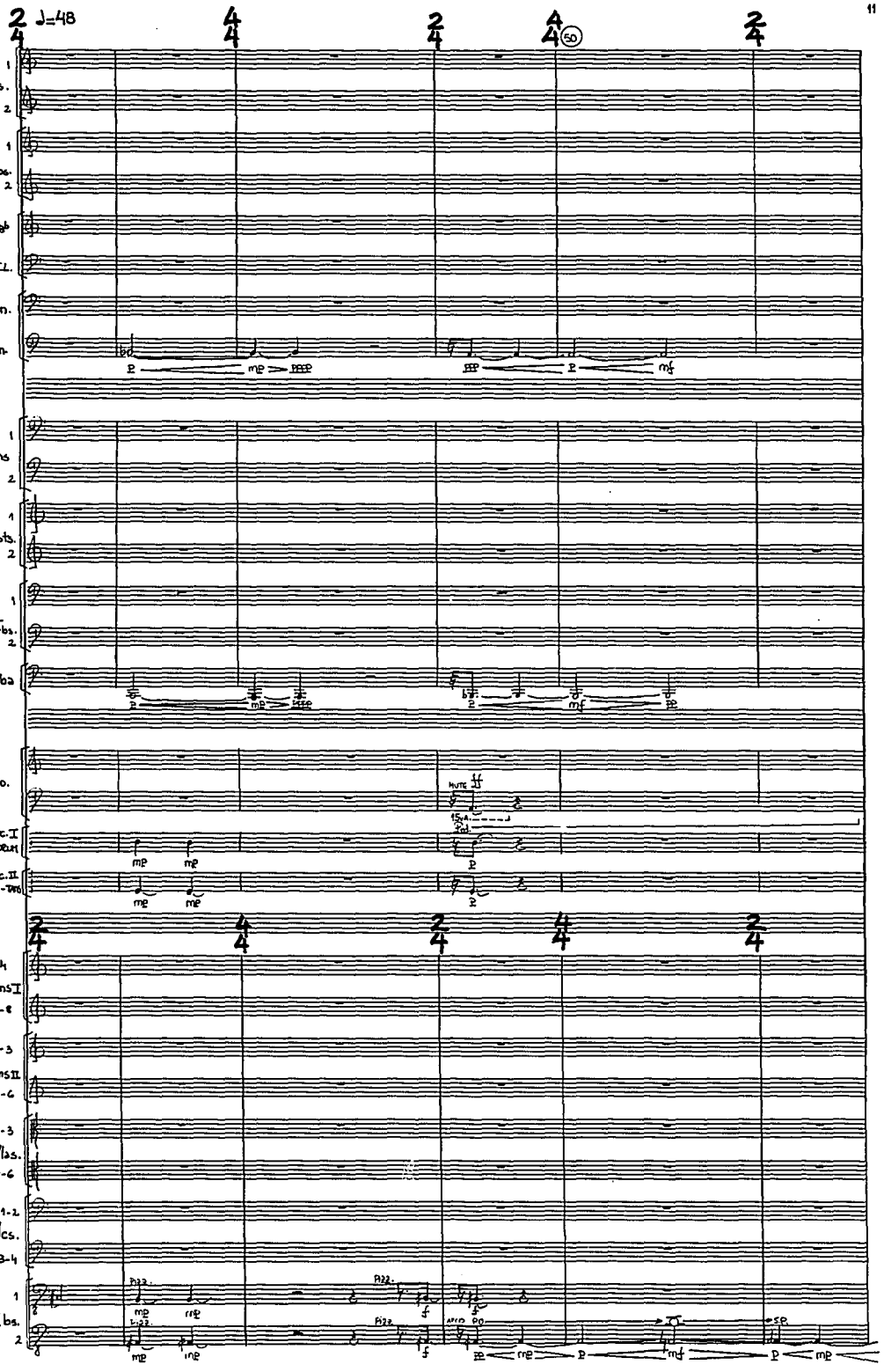
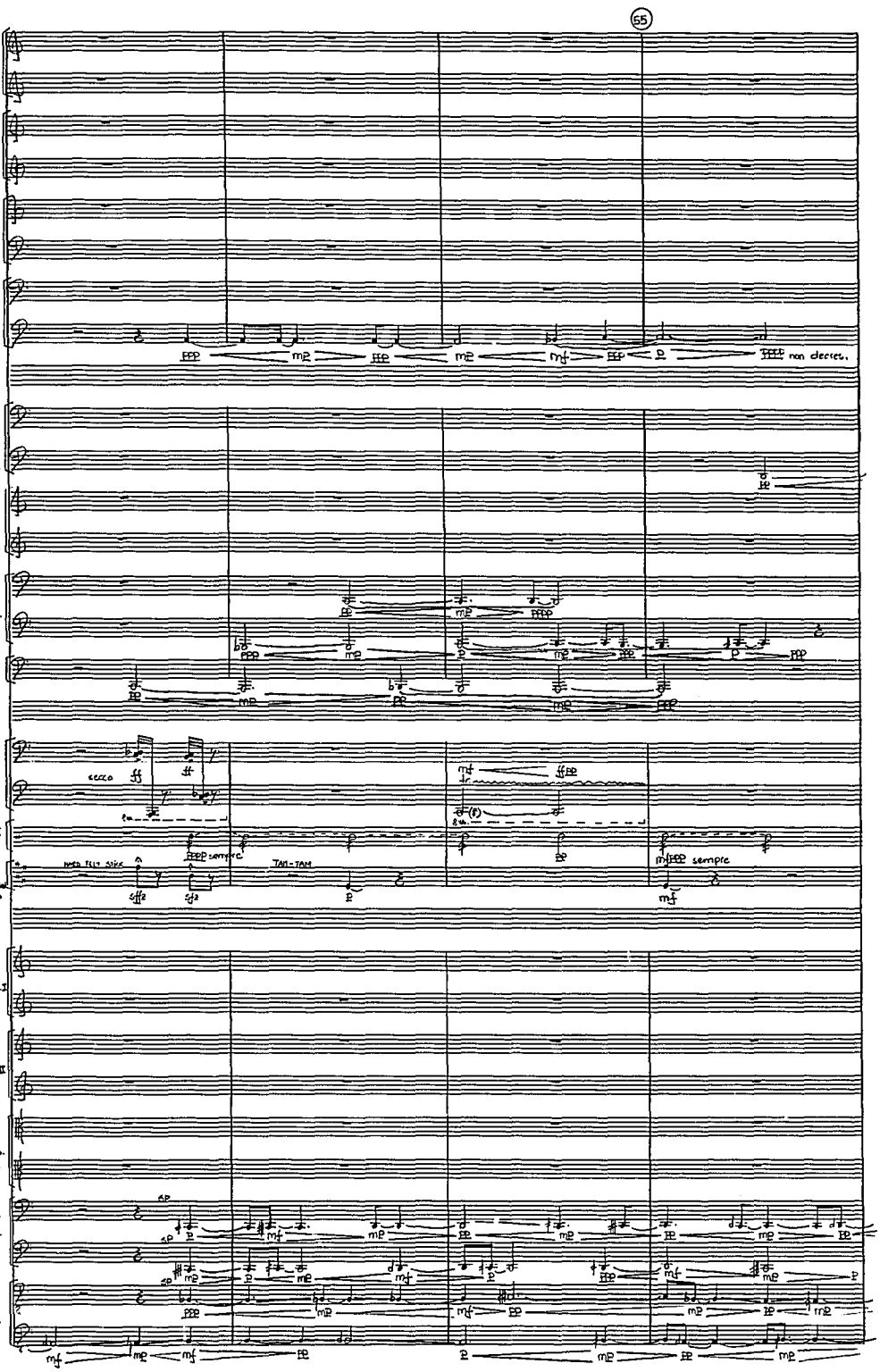
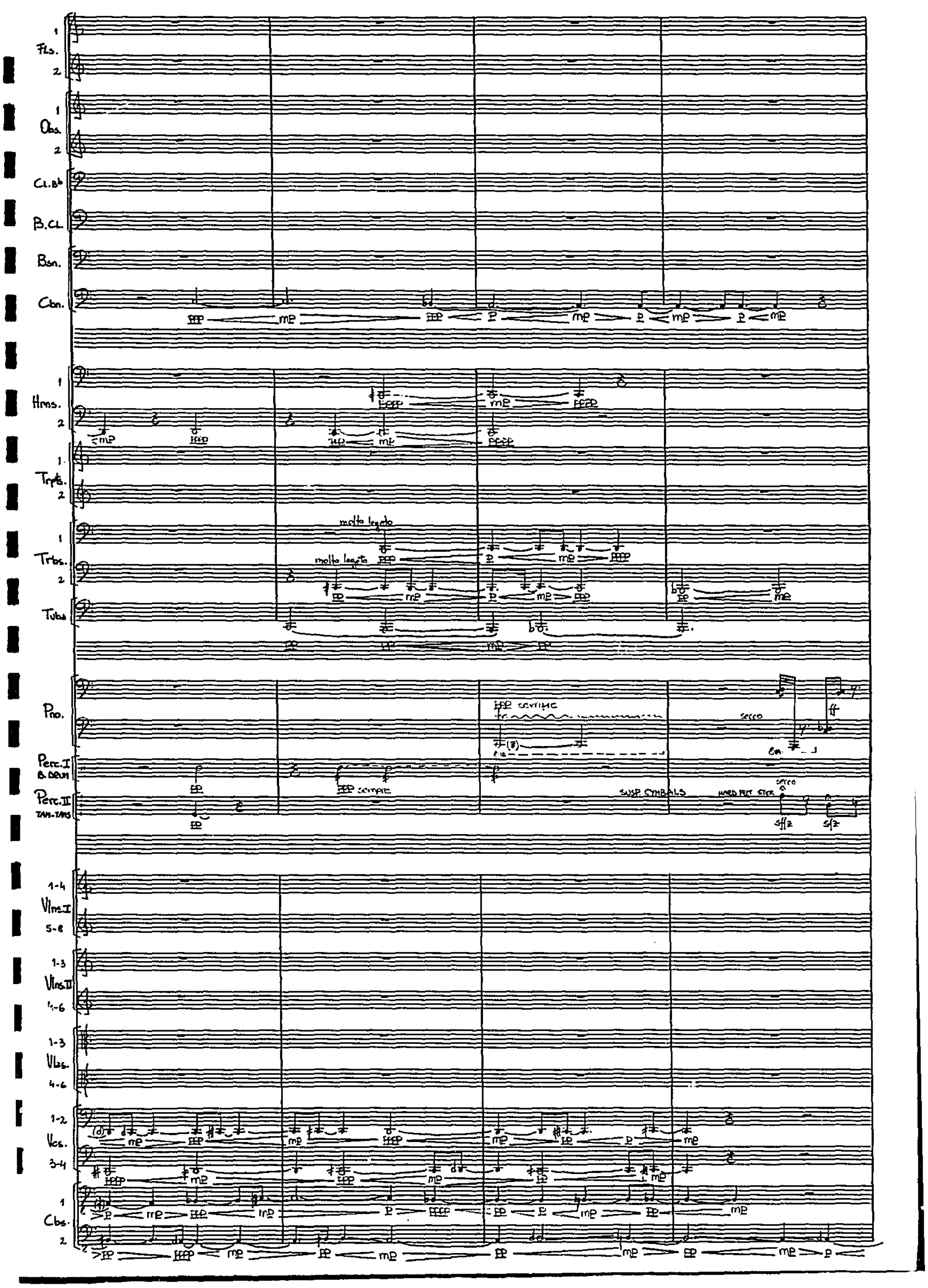
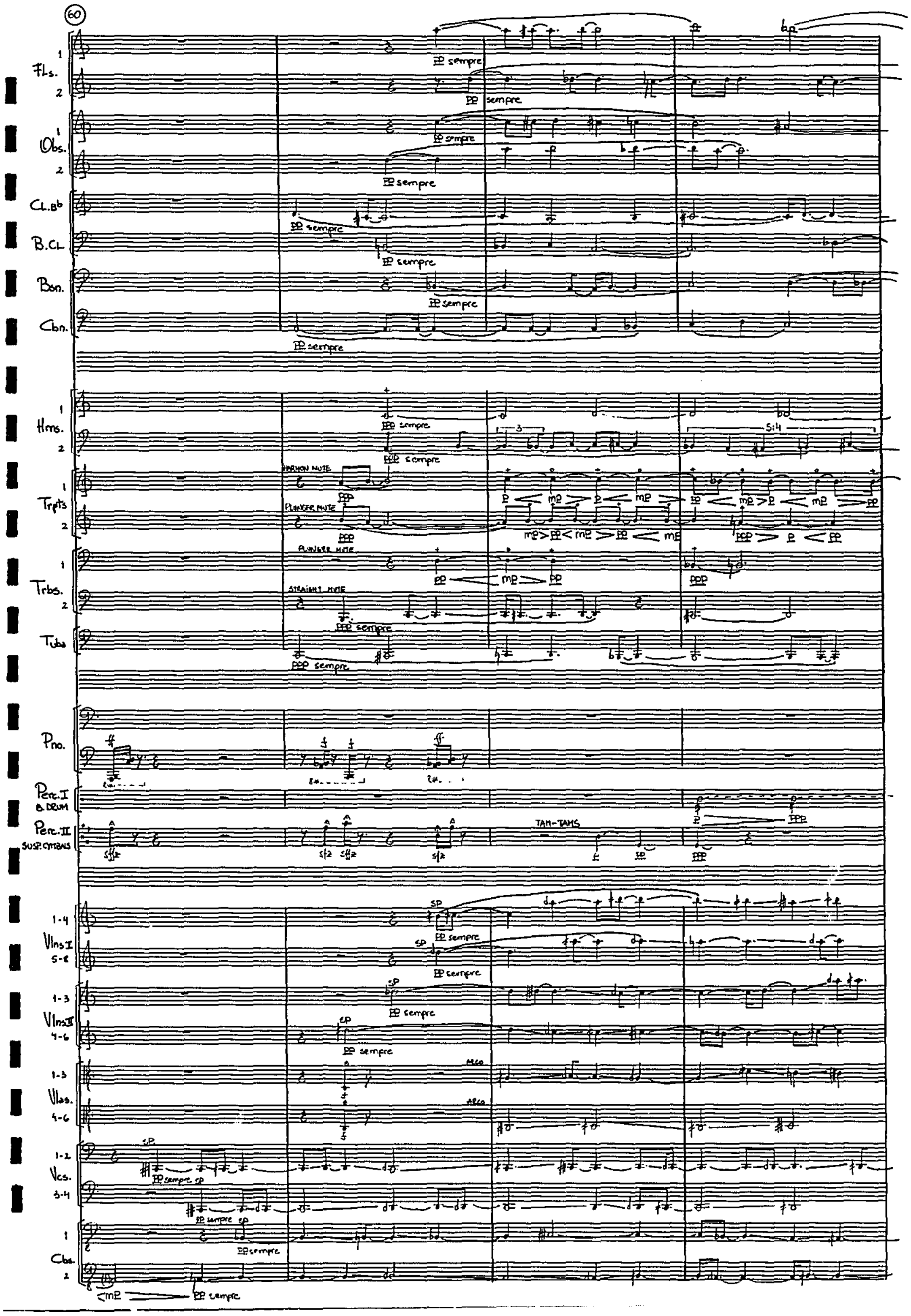
Fls.
Obs.
Cl. Bb
B. Cl.
Bsns.
CHANGE TO CONTRABASSOON
Hrns.
Trpts.
Trbs.
Tuba
Pno.
Perc. I vib.
Perc. II
Vlns I
Vlns II
Vlas.
Vcs.
Cbs.
pp sempre
with bow
via sord.


J=48
50
Fls.
Obs.
Cl. Eb
B.Cl.
Bsn.
Cbn.
Hrns
Trpts.
Trbs.
Tuba
Pno.
Perc.I
B. Drum
Perc.II
Tam-Tams
1-4
Vlns I
5-8
1-3
Vlns II
4-6
1-3
Vlas.
4-6
1-2
Vcs.
3-4
1
Cbs.
2
Muta
Pizz.
Arco


55
Fls.
Obs.
Cl. B♭
B. Cl.
Bsn.
Cbn.
non decres.
Hns.
Trpts.
Trbs.
Tuba
Pno.
cresc
Perc. I
B. Drum
Perc. II
suspended cymbals
HARD FELT STICK
TAM-TAM
sempre
Vlns. I
Vlns. II
Vlas.
Vcs.
Cbs.


Fls.
Obs.
Cl. B♭
B. Cl.
Bsn.
Cbn.
Hrns.
Trpts.
Trbs.
Tuba
Pno.
Perc. I B. Drum
Perc. II Tam-Tams
Vlns. I
Vlns. II
Vlas.
Vcs.
Cbs.
molto legato
ppp sempre
secco
Susp. Cymbals
Hard Felt Stick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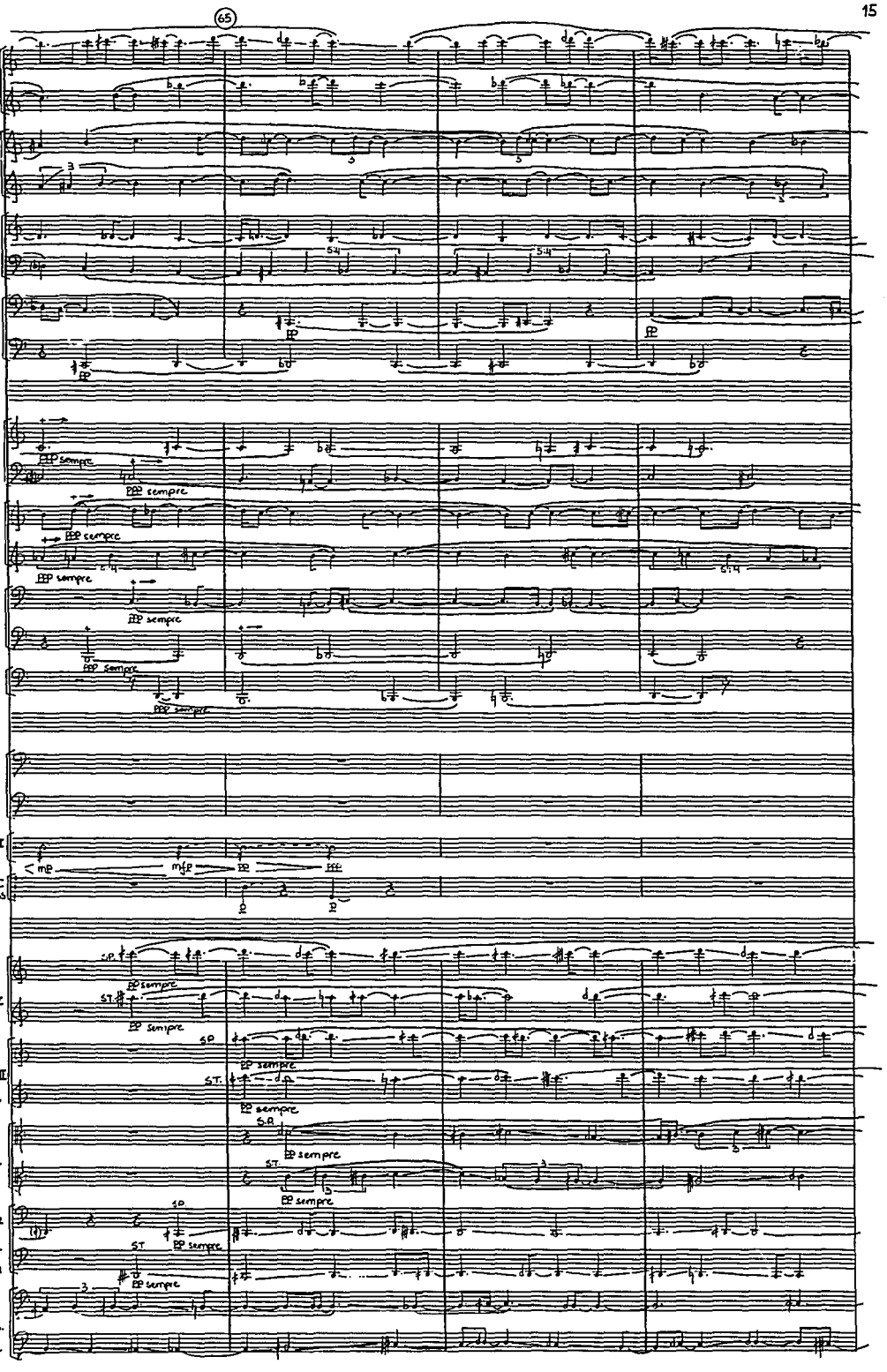
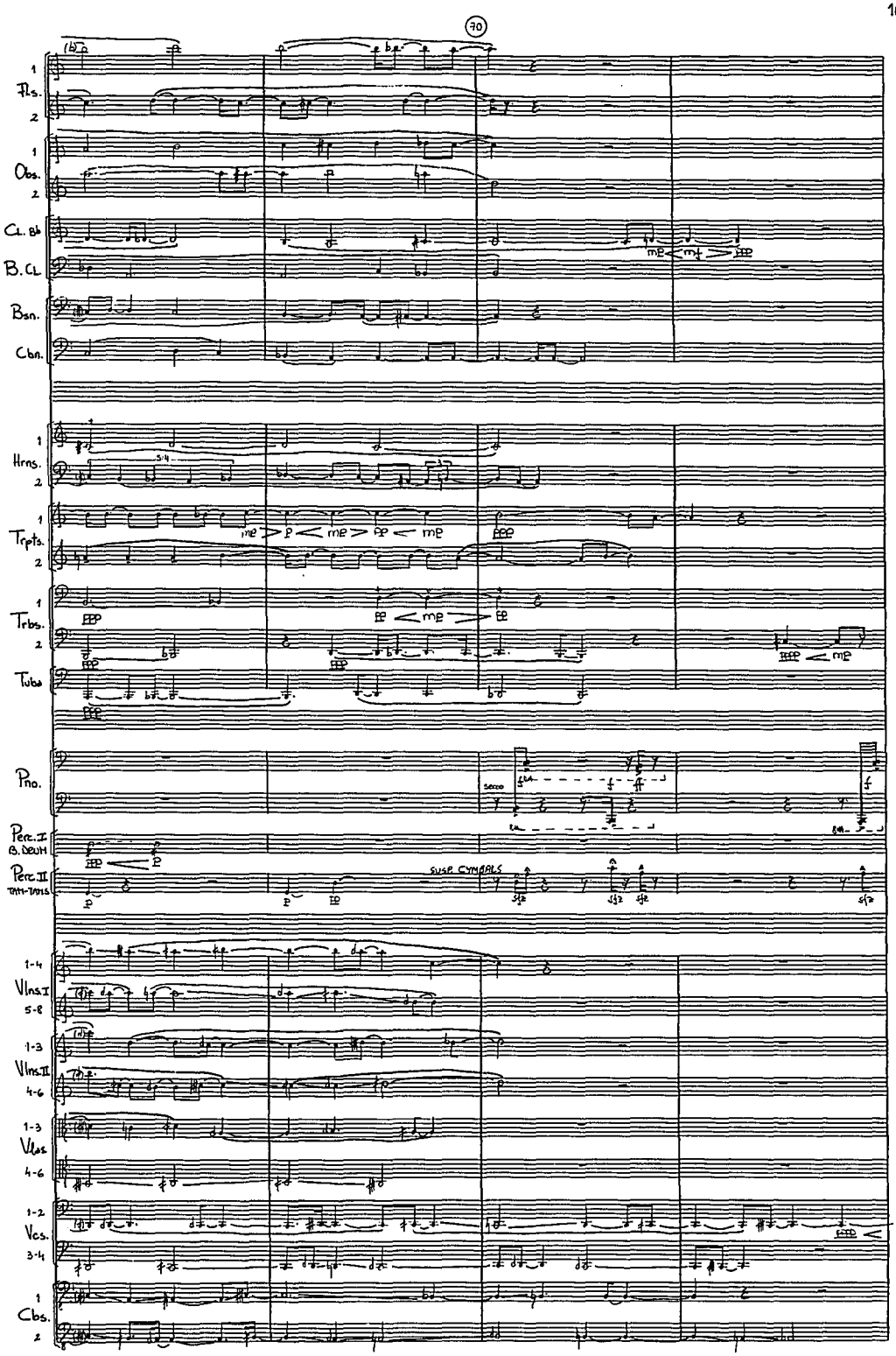
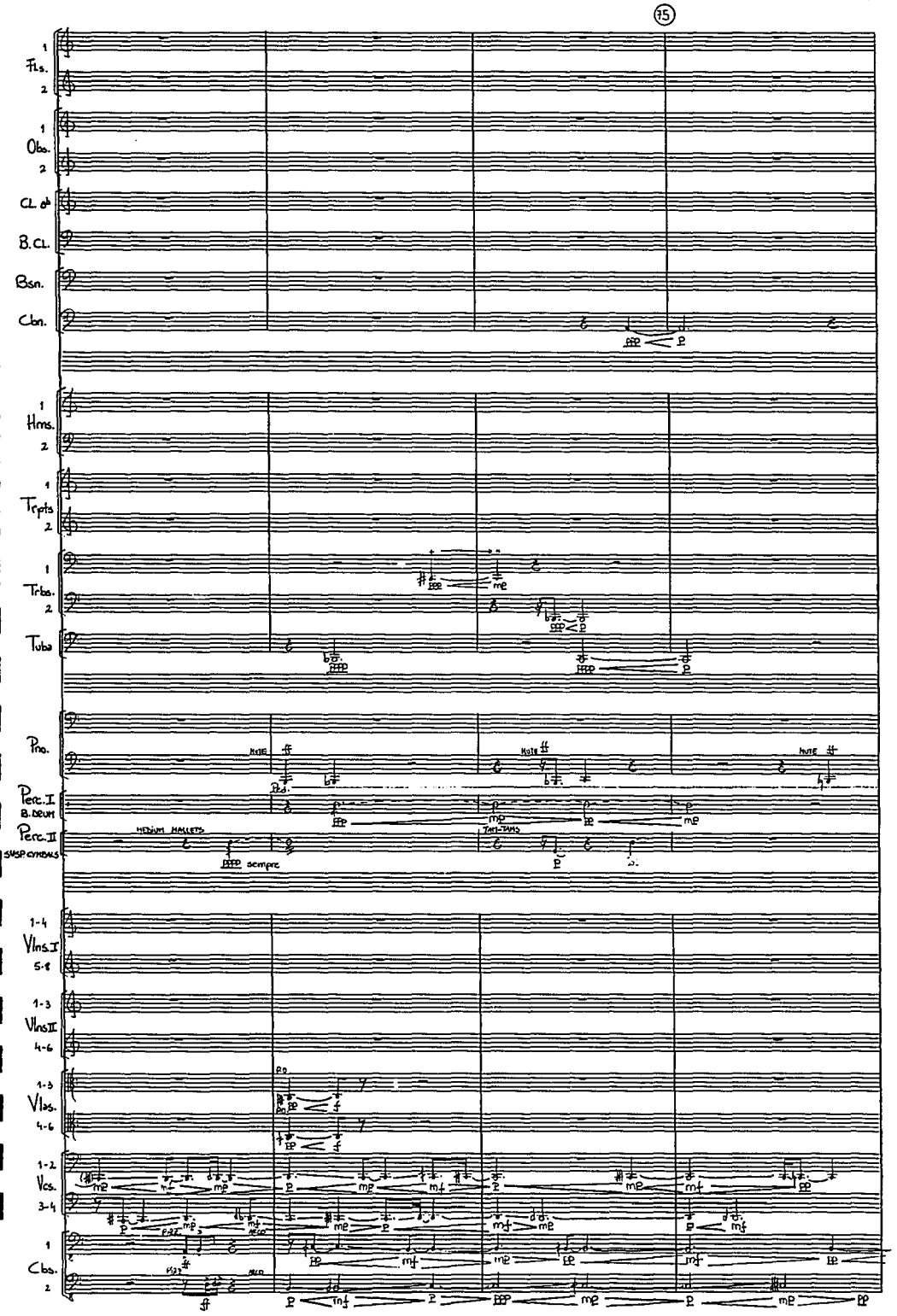
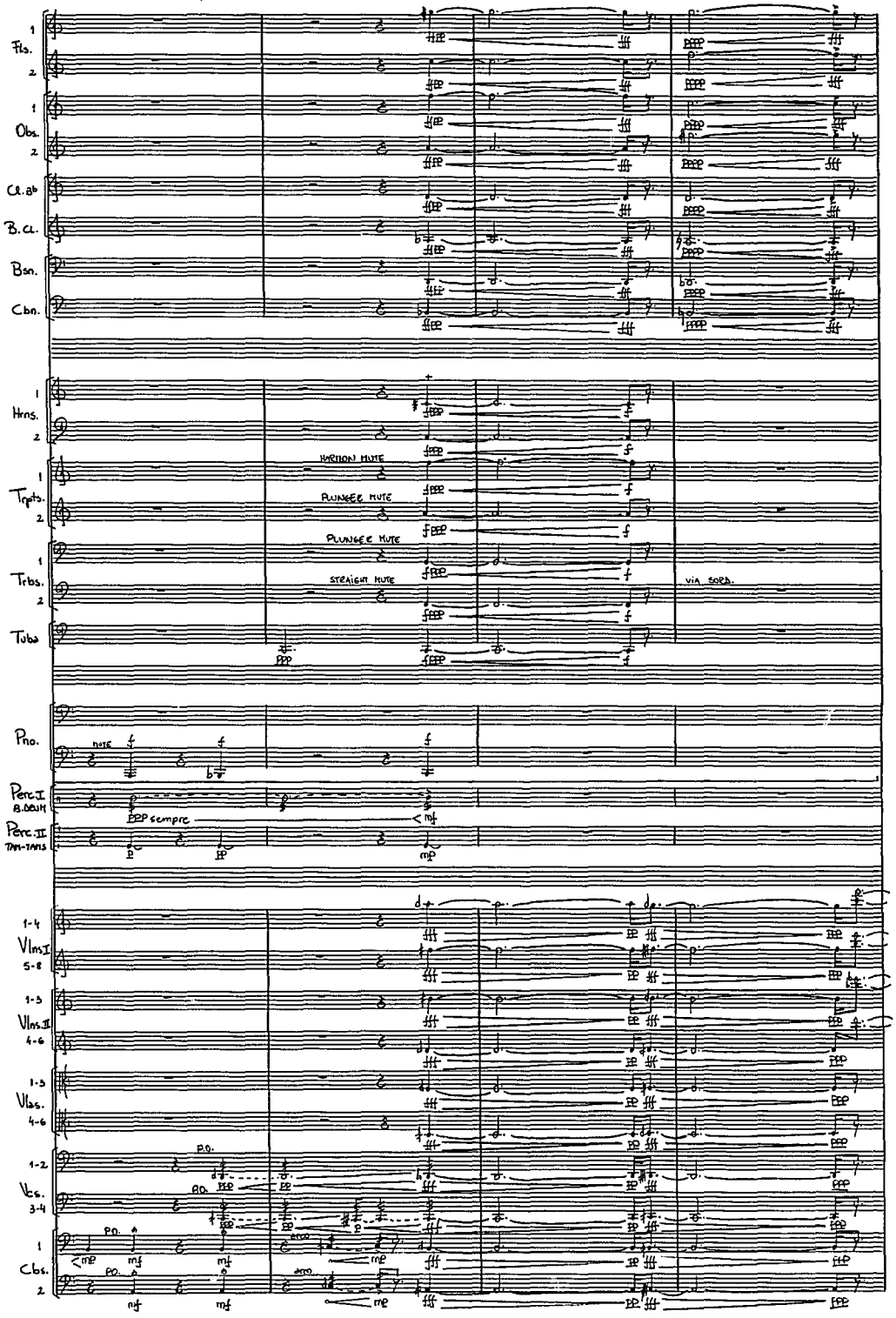
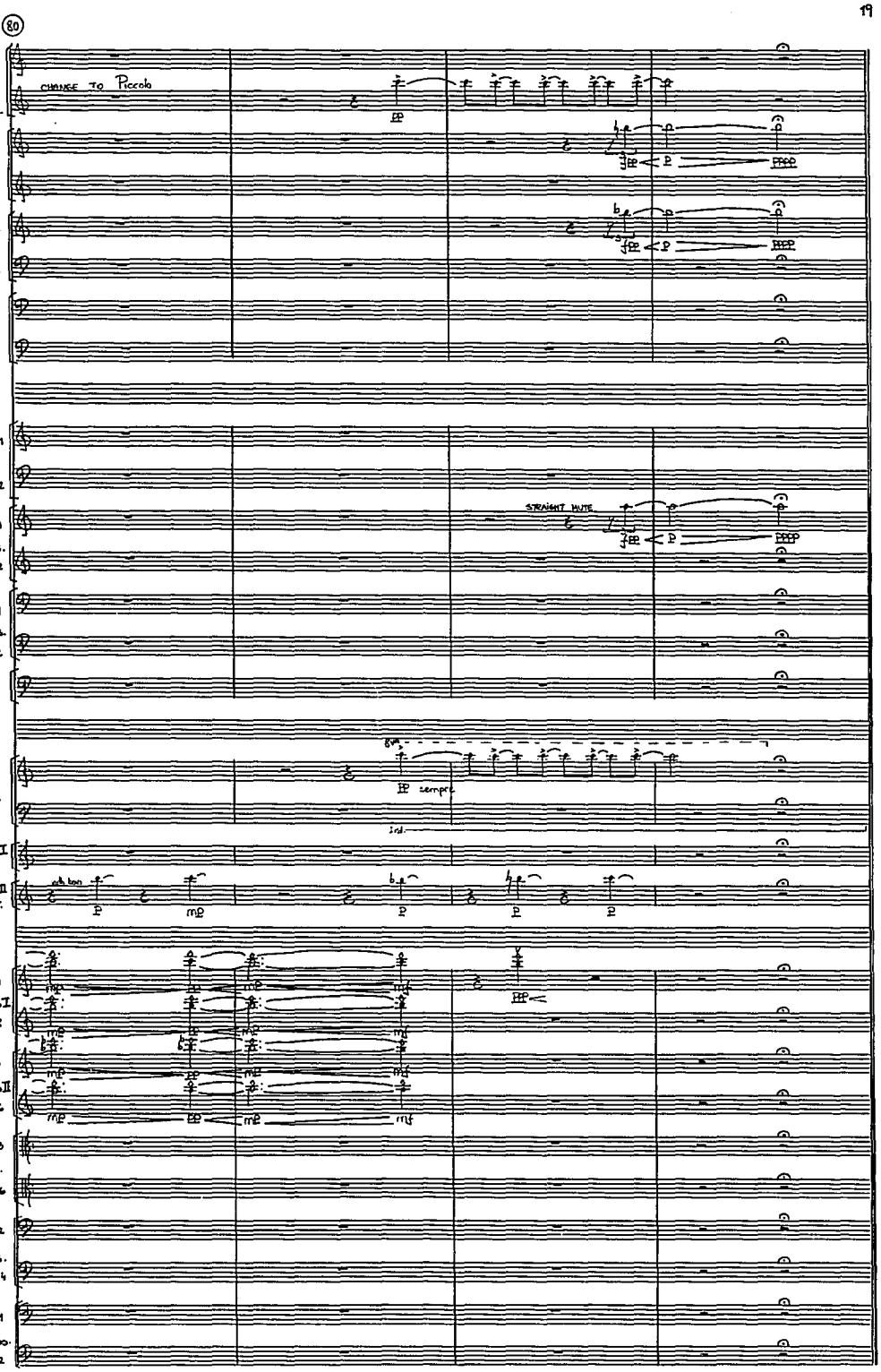
Fls.
Obs.
Cl. B♭
B. Cl.
Bsn.
Cbn.
Hns.
Trpts
Trbs.
Tuba
Pno.
Perc. I B. Drum
Perc. II Susp. Cymbals
Vlns I
Vlns II
Vlas.
Vcs.
Cbs.
pp sempre
ppp sempre
Harmon mute
Plunger mute
Straight mute
Tam-Tams
Arco
5:4
3

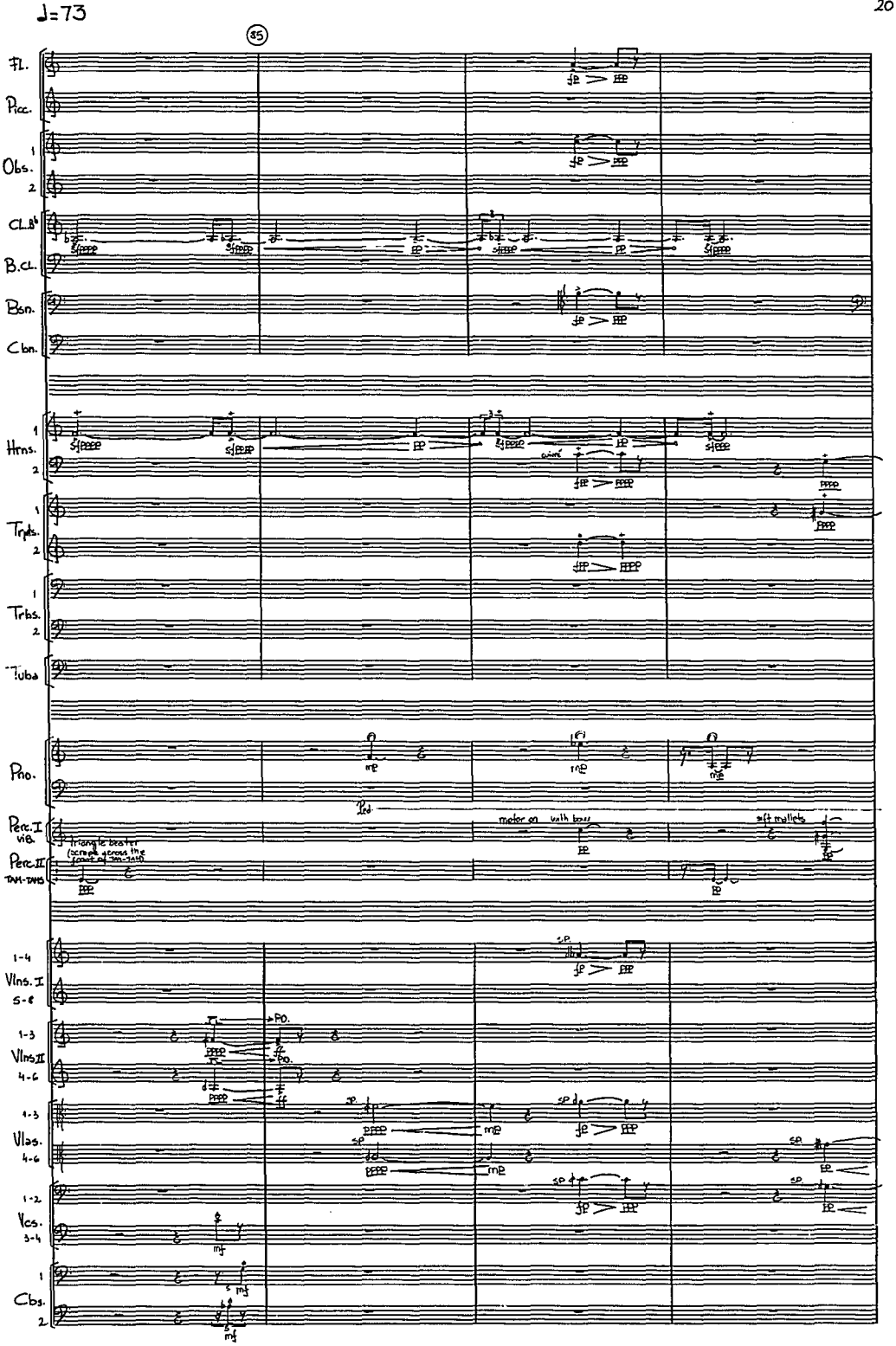

65
Fls.
Ob.
Cl. Bb
B.Cl.
Bsn.
Cbn.
Hrns.
Tpts
Trbs.
Tuba
Pno.
Perc. I
B. DRUM
Perc. II
TAM-TAMS
Vlns I
Vlns II
Vlas.
Vcs.
Cbs.
pp sempre
ppp sempre
mp
mfp
ST.
SP

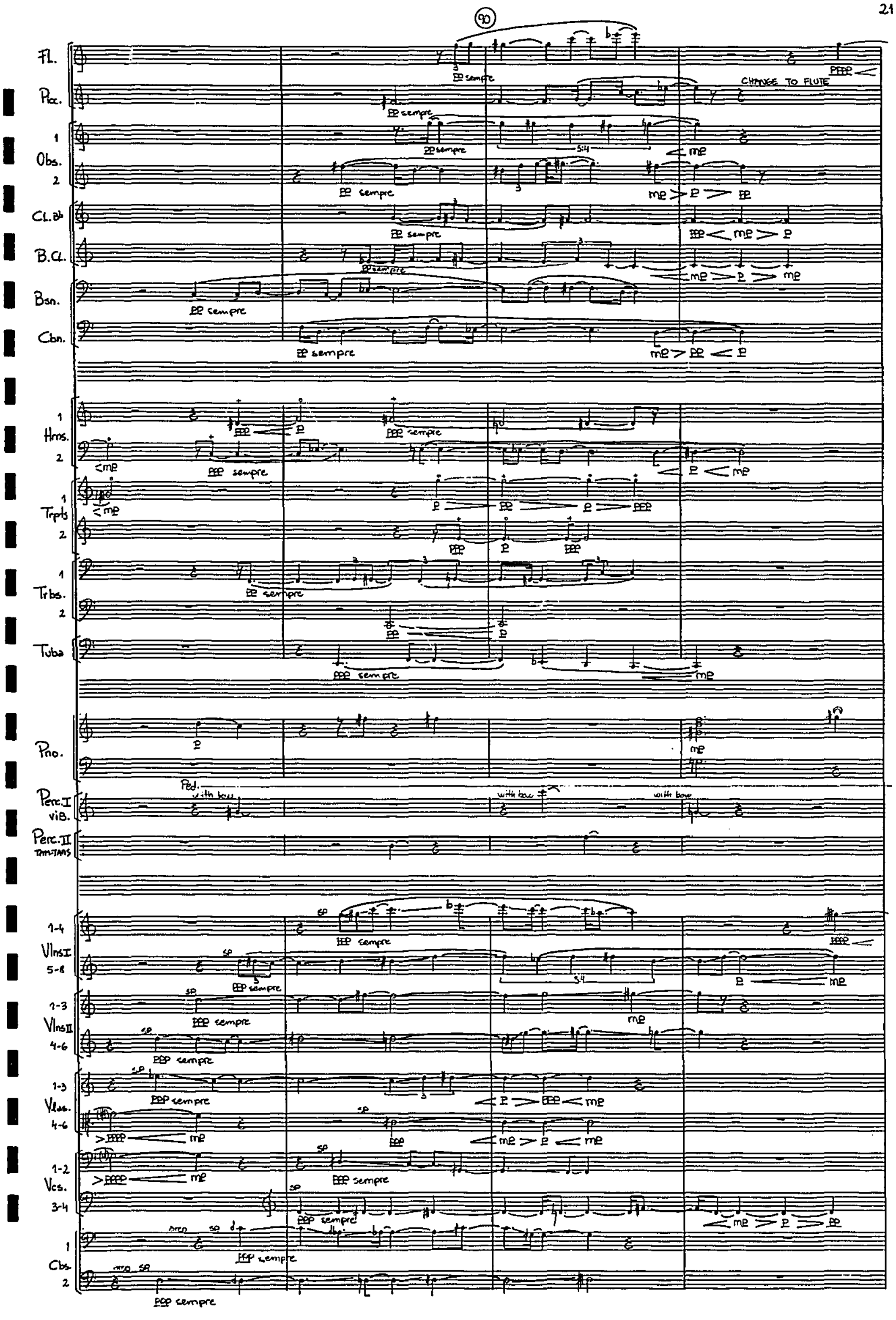

70
Fls.
Obs.
Cl. Bb
B. Cl.
Bsn.
Cbn.
Hrns.
Trpts.
Trbs.
Tuba
Pno.
Perc. I
B. Drum
Perc. II
Tam-Tams
SUSP CYMBALS
Vlns. I
Vlns. II
Vlas.
Vcs.
Cbs.

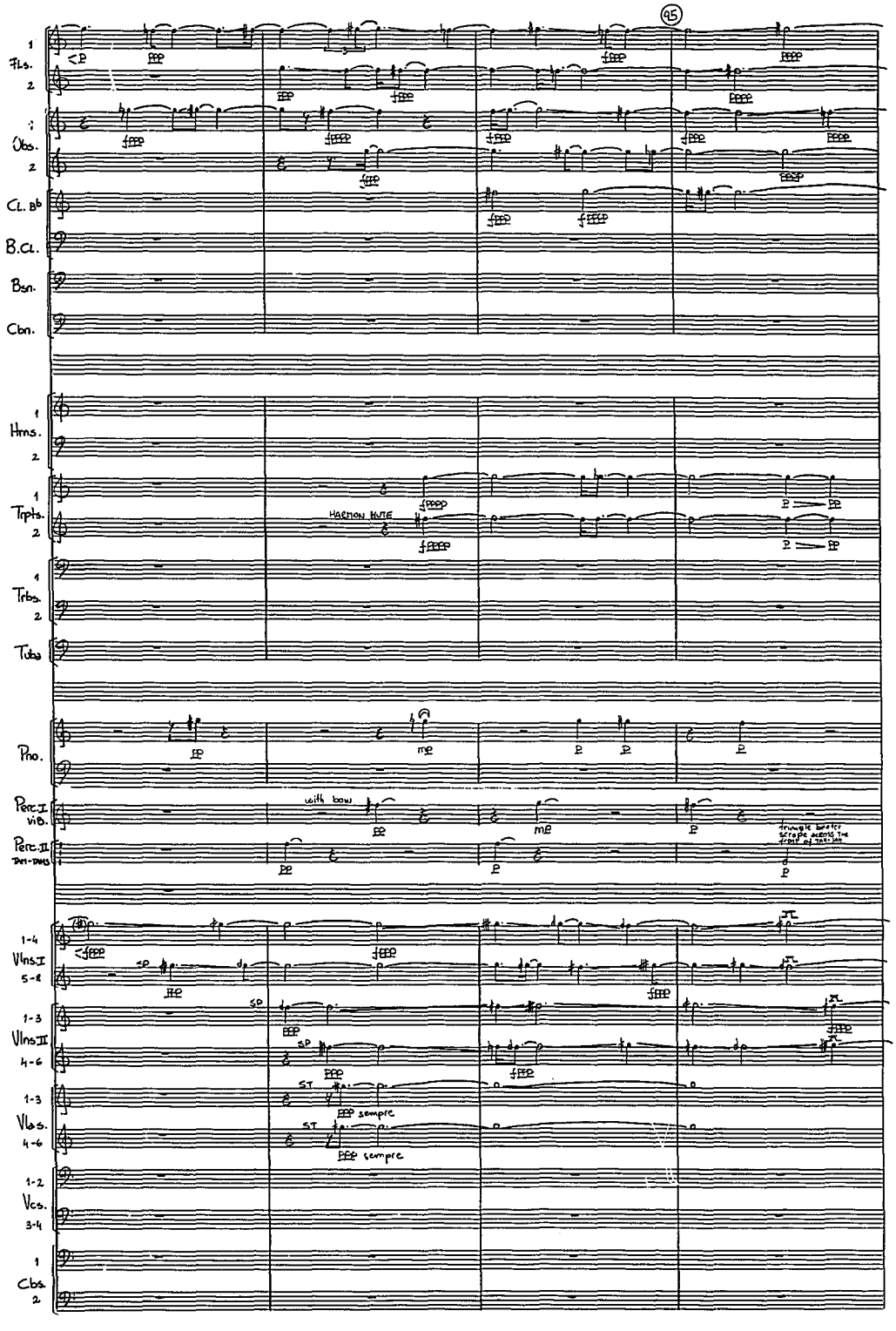

75
Fls.
Obs.
Cl. eb
B.Cl.
Bsn.
Cbn.
Hrns.
Trpts
Trbs.
Tuba
Pno.
Perc.I
B.DRUM
Perc.II
SUSP.CYMBALS
MEDIUM MALLETS
sempre
Vlns.I
Vlns.II
Vlas.
Vcs.
Cbs.

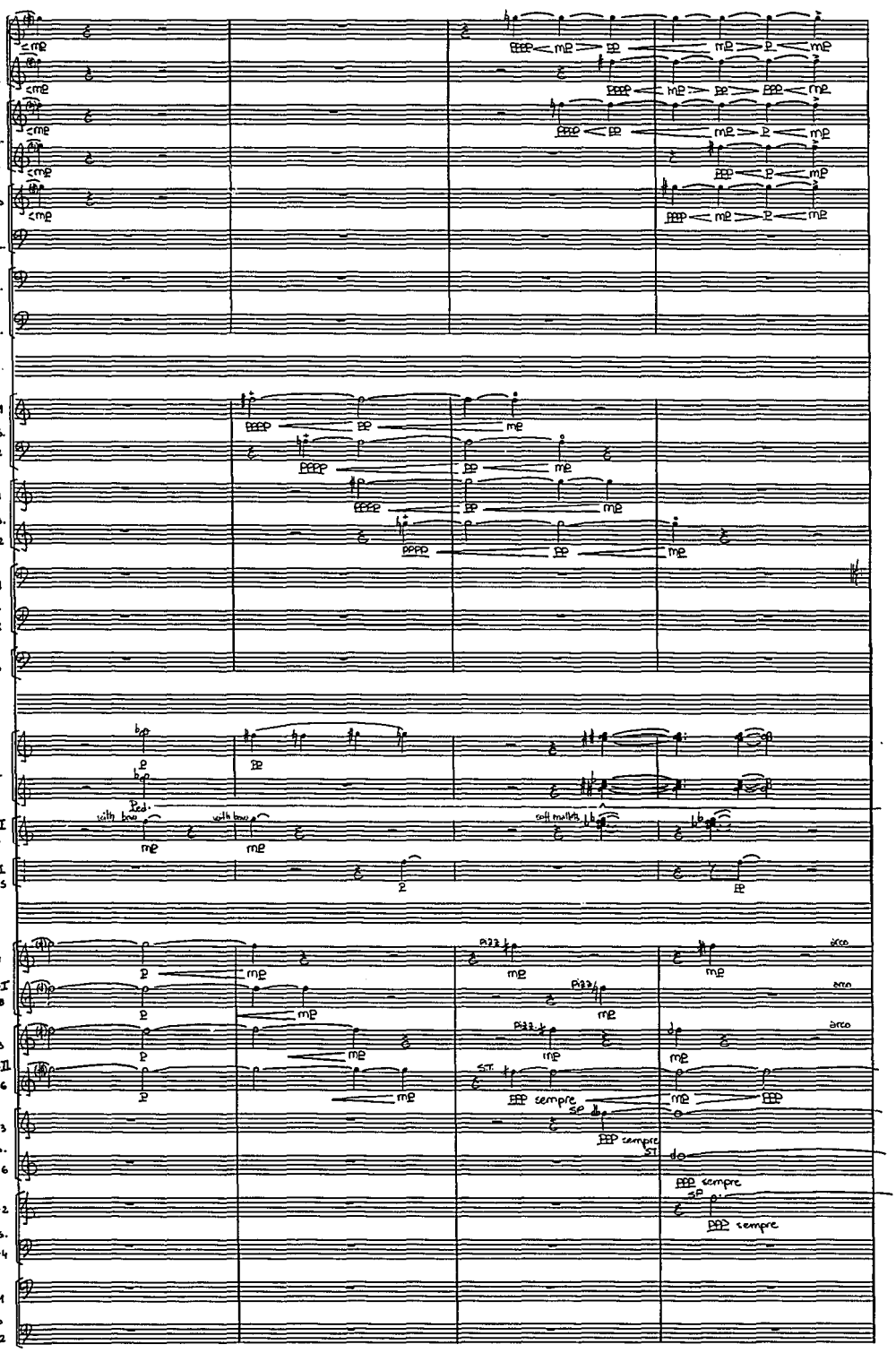

Fls. 1 2
Obs. 1 2
Cl. Bb
B. Cl.
Bsn.
Cbn.
Hrns. 1 2
HARMON MUTE
Tpts. 1 2
PLUNGER MUTE
PLUNGER MUTE
Trbs. 1 2
STRAIGHT MUTE
VIA SORD.
Tuba
Pno.
Perc. I BASS DRUM
pp sempre
Perc. II TAM-TAMS
Vlns. I 1-4 5-8
Vlns. II 1-3 4-6
Vlas. 1-3 4-6
Vcs. 1-2 3-4
Cbs. 1 2
p.o.
mf
mp

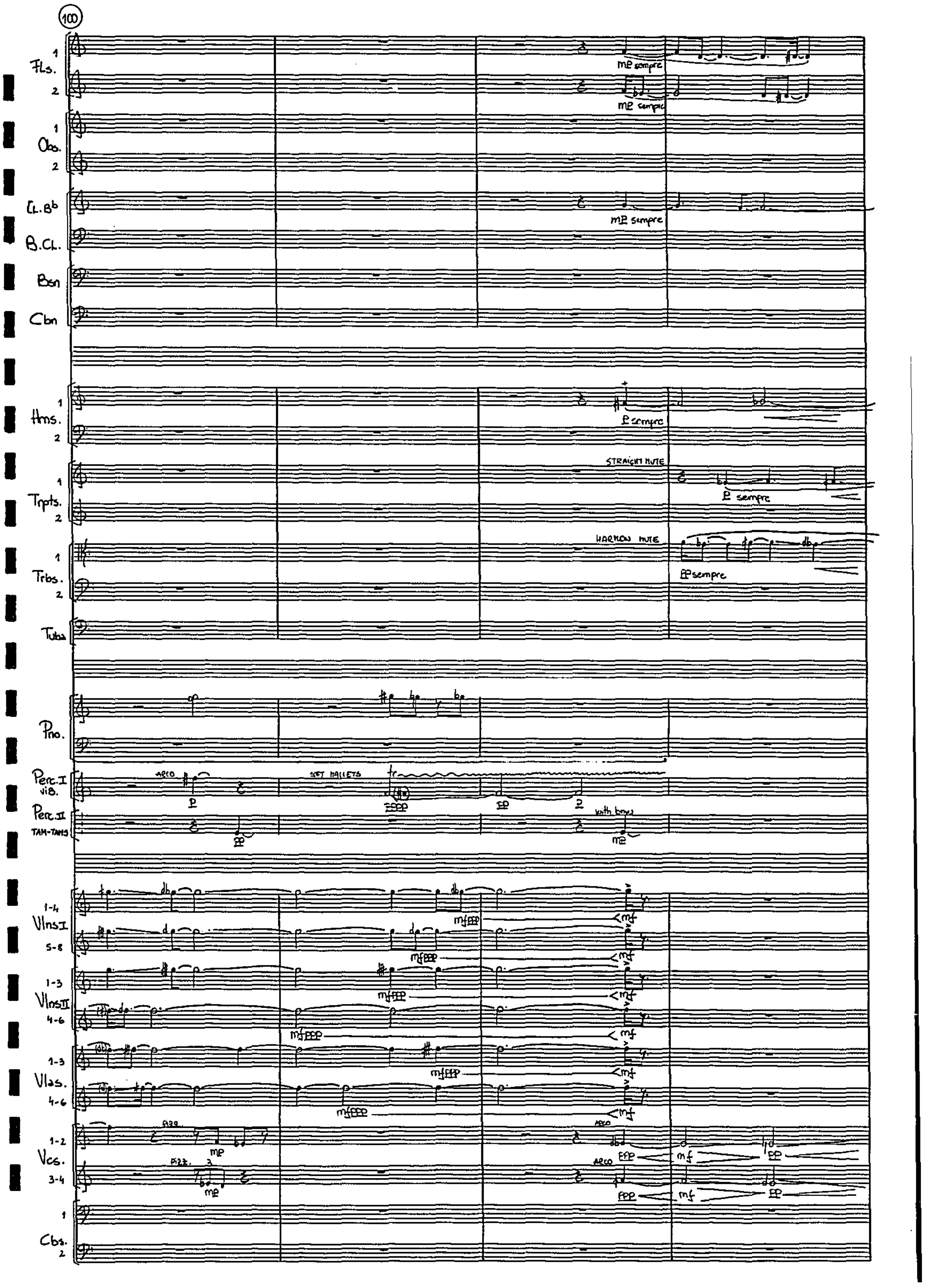

80
Fl.
CHANGE TO Piccolo
Picc.
1
Obs.
2
Cl. B♭
B.Cl.
Bsn.
Cbn.
1
Hrns.
2
1
Trpts.
2
STRAIGHT MUTE
1
Trbs.
2
Tuba
Pno.
Perc.I
Perc.II
CROT.
1-4
Vlns.I
5-8
1-3
Vlns.II
4-6
1-3
Vlas.
4-6
1-2
Vcs.
3-4
1
Cbo.
2

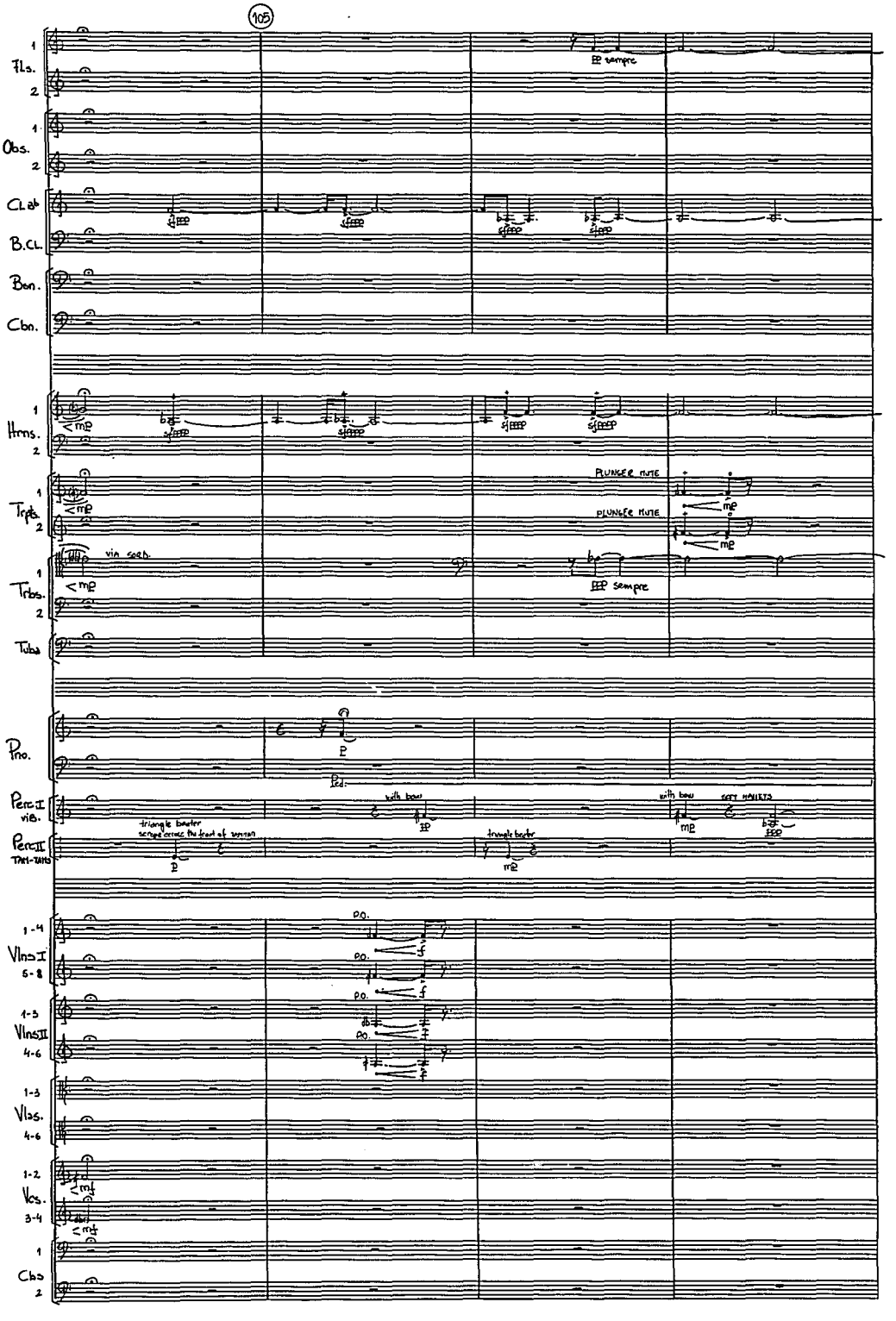

♩=73
35
Fl.
Picc.
Obs.
1
2
Cl.B♭
B.Cl.
Bsn.
Cbn.
Hrns.
Trpts.
Trbs.
Tuba
Pno.
Perc.I
Vib.
Perc.II
Tam-Tams
Triangle beater
(scrape across the
front of Tam-tam)
motor on with bow
soft mallets
1-4
Vlns. I
5-8
1-3
Vlns. II
4-6
Vlas.
Vcs.
Cbs.
sp.
Po.

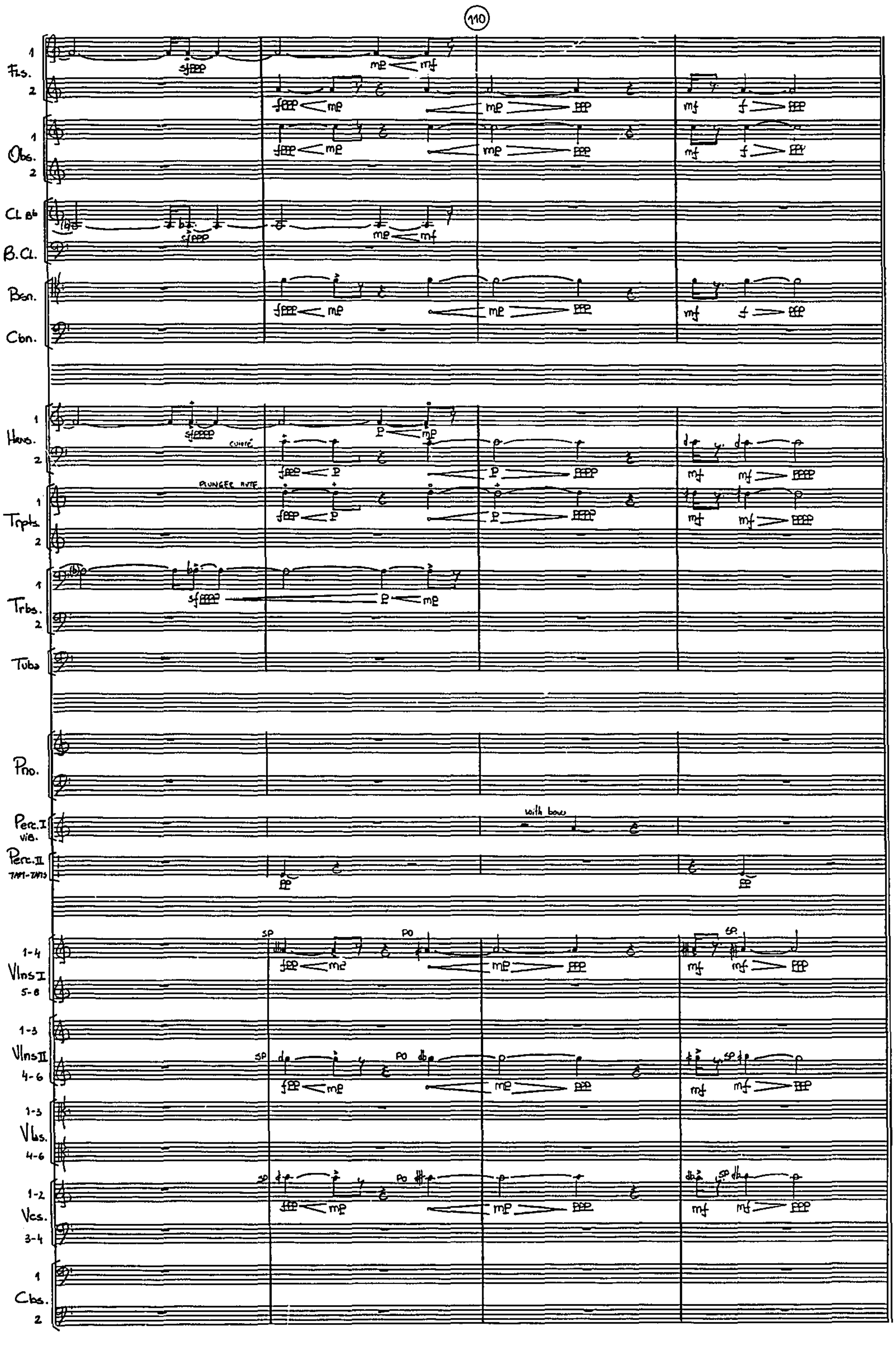

90
Fl.
Picc.
Obs.
Cl. B♭
B.Cl.
Bsn.
Cbn.
Hrns.
Trpts
Trbs.
Tuba
Pno.
Perc. I
VIB.
Perc. II
TAM-TAMS
Vlns I
Vlns II
Vlas.
Vcs.
Cbs.
pp sempre
ppp sempre
CHANGE TO FLUTE
with bow
Ped.

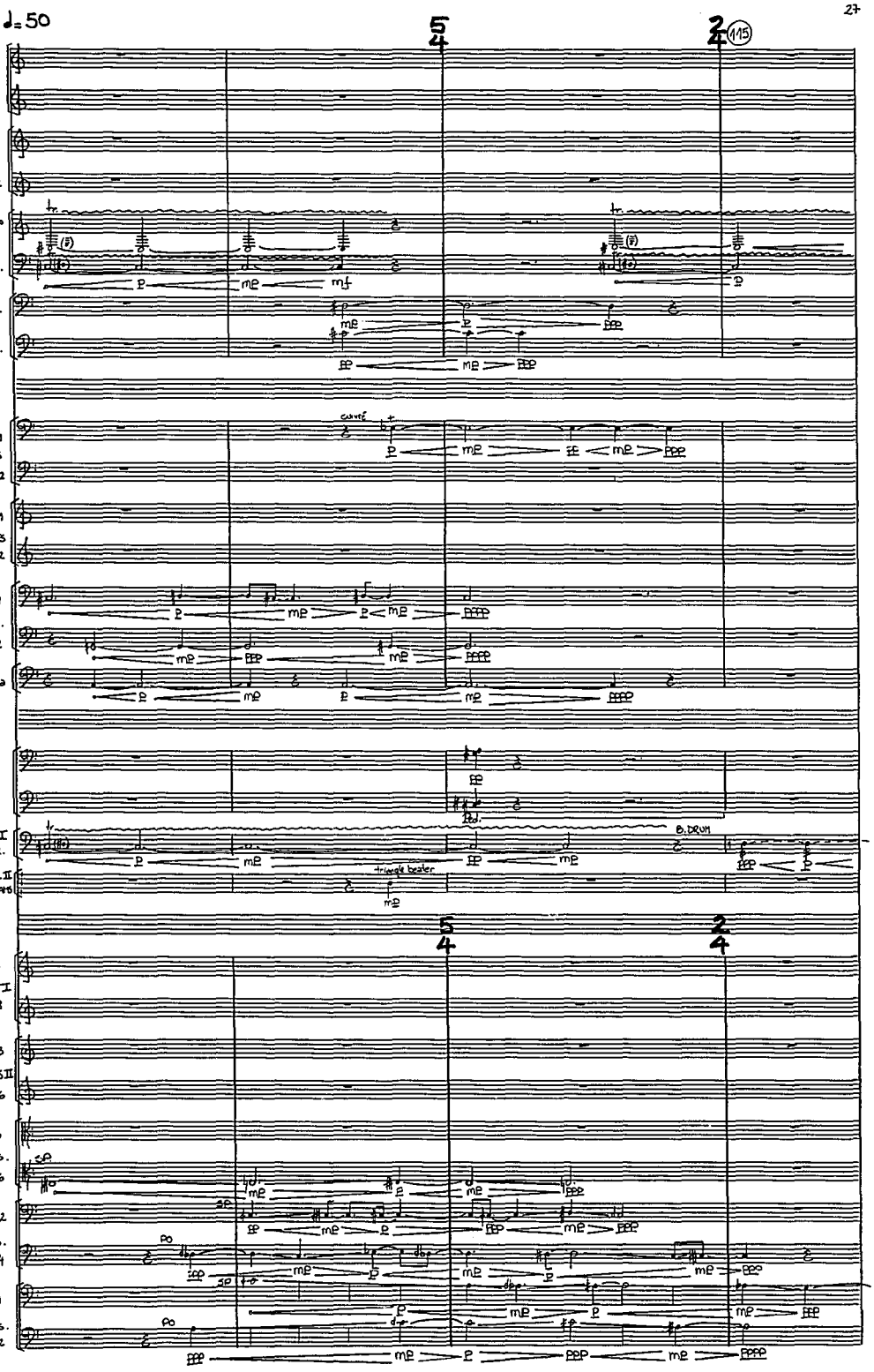

95
Fls.
Obs.
Cl. B♭
B.Cl.
Bsn.
Cbn.
Hrns.
Tpts.
HARMON MUTE
Trbs.
Tuba
Pno.
Perc.I Vib.
with bow
Perc.II Tam-Tams
triangle beater scrape across the front of instrument
Vlns.I
Vlns.II
Vlas.
Vcs.
Cbs.
sempre
sempre

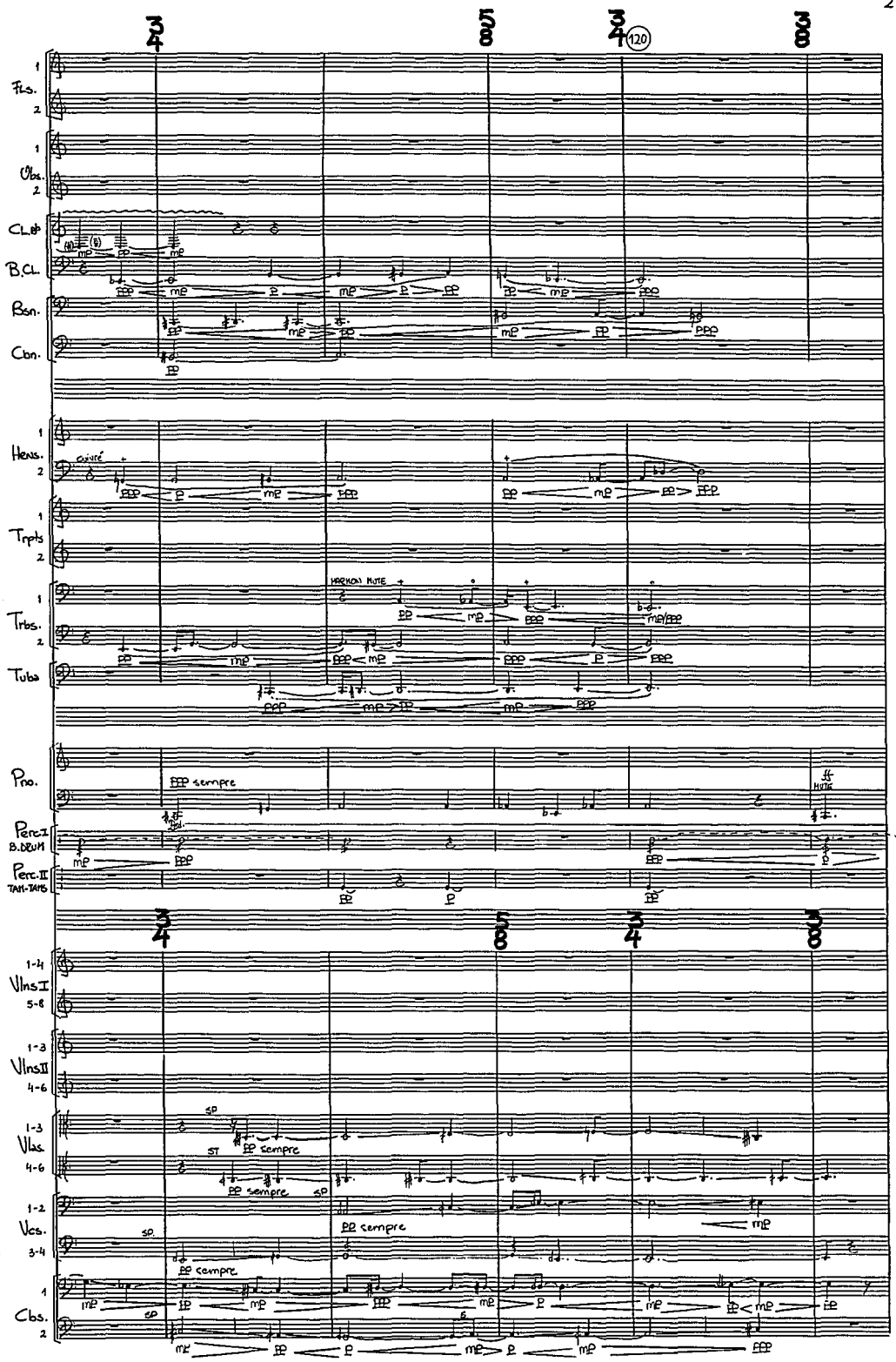

Fl.s.
Obs.
Cl.s
B.Cl.
Bsn.
Cbn.
Hrns.
Trpts.
Trbs.
Tuba
Pno.
Perc.I
vib.
Perc.II
TAM-TAMS
Vlns.I
Vlns.II
Vlas.
Vcs.
Cbs
with bow
soft mallets
sempre
arco

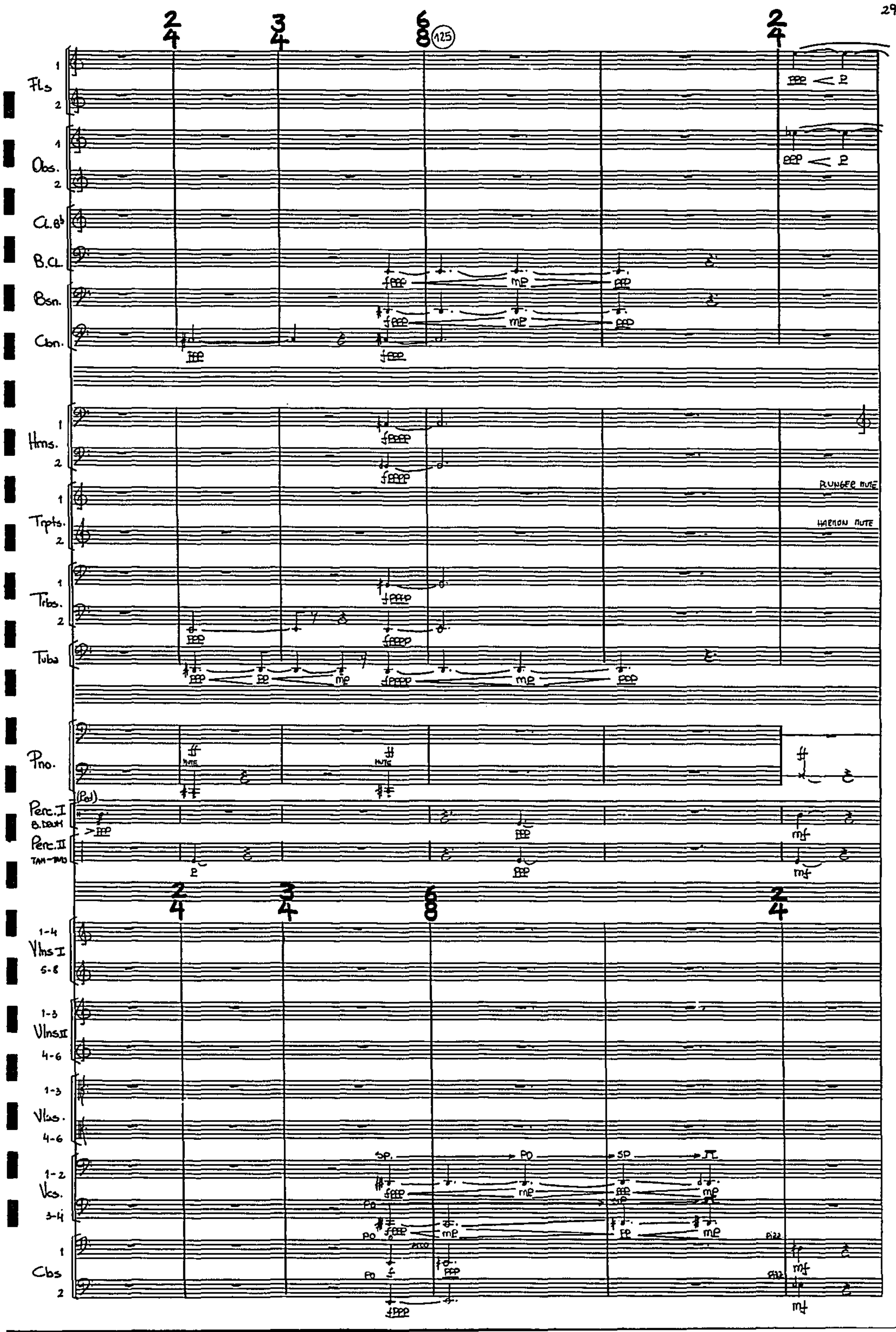

100
Fls.
Obs.
Cl. B♭
B.Cl.
Bsn
Cbn
Hms.
Trpts.
Trbs.
Tuba
Pno.
Perc. I vib.
Perc. II TAM-TAMS
Vlns I
Vlns II
Vlas.
Vcs.
Cbs.
mp sempre
p sempre
STRAIGHT MUTE
HARMON MUTE
pp sempre
ARCO
SOFT MALLETS
with bow
PIZZ.
mfppp

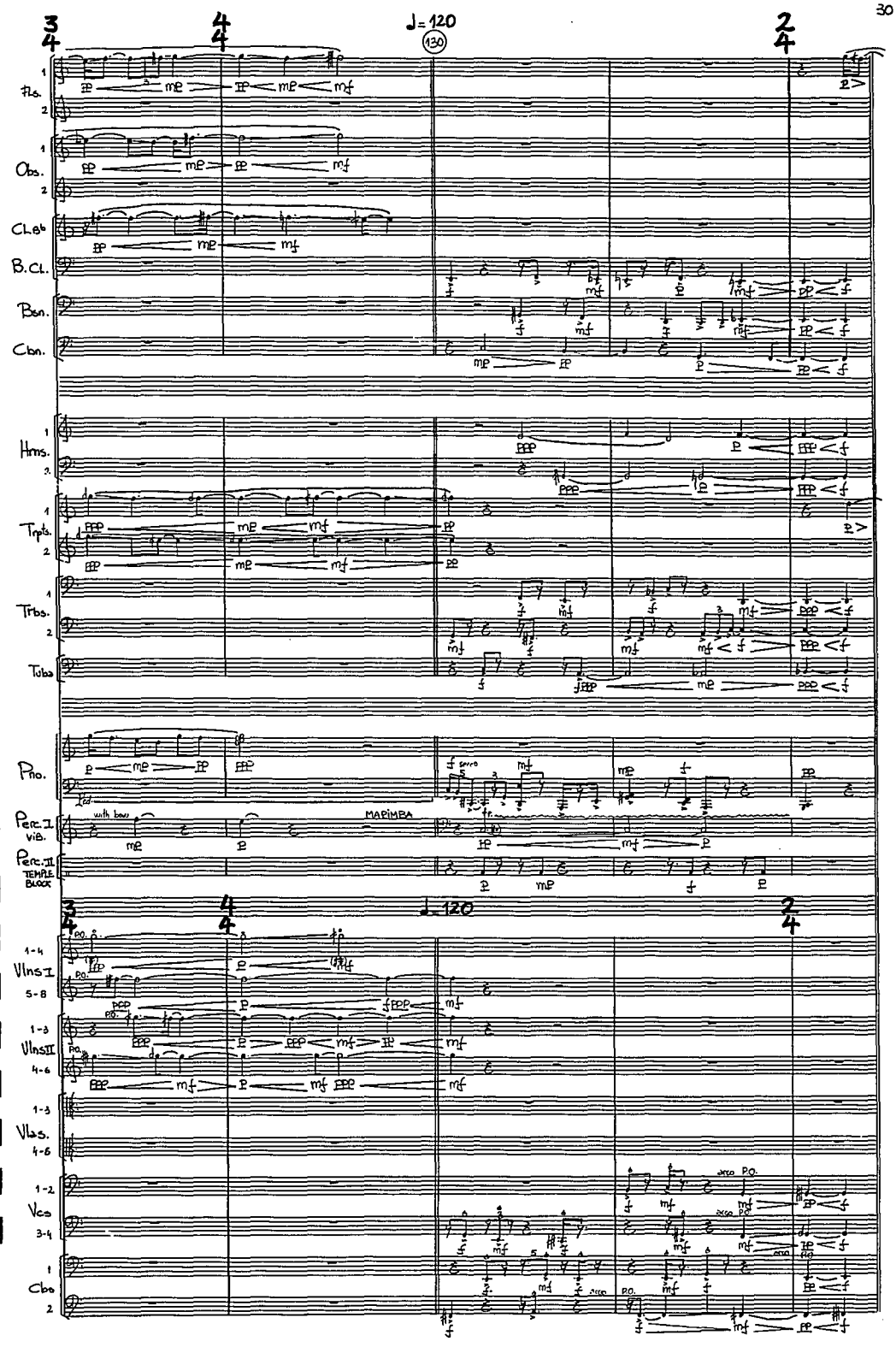

105
Fls.
Obs.
Cl.
B.Cl.
Bsn.
Cbn.
Hrns.
Trpts.
Trbs.
Tuba
Pno.
Perc I
vib.
Perc II
TAM-TAMS
Vlns I
Vlns II
Vlas.
Vcs.
Cbs
ff sempre
PLUNGER MUTE
vln sect.
with bow
soft MALLETS
triangle beater
scraped across the front of tamtam
triangle beater

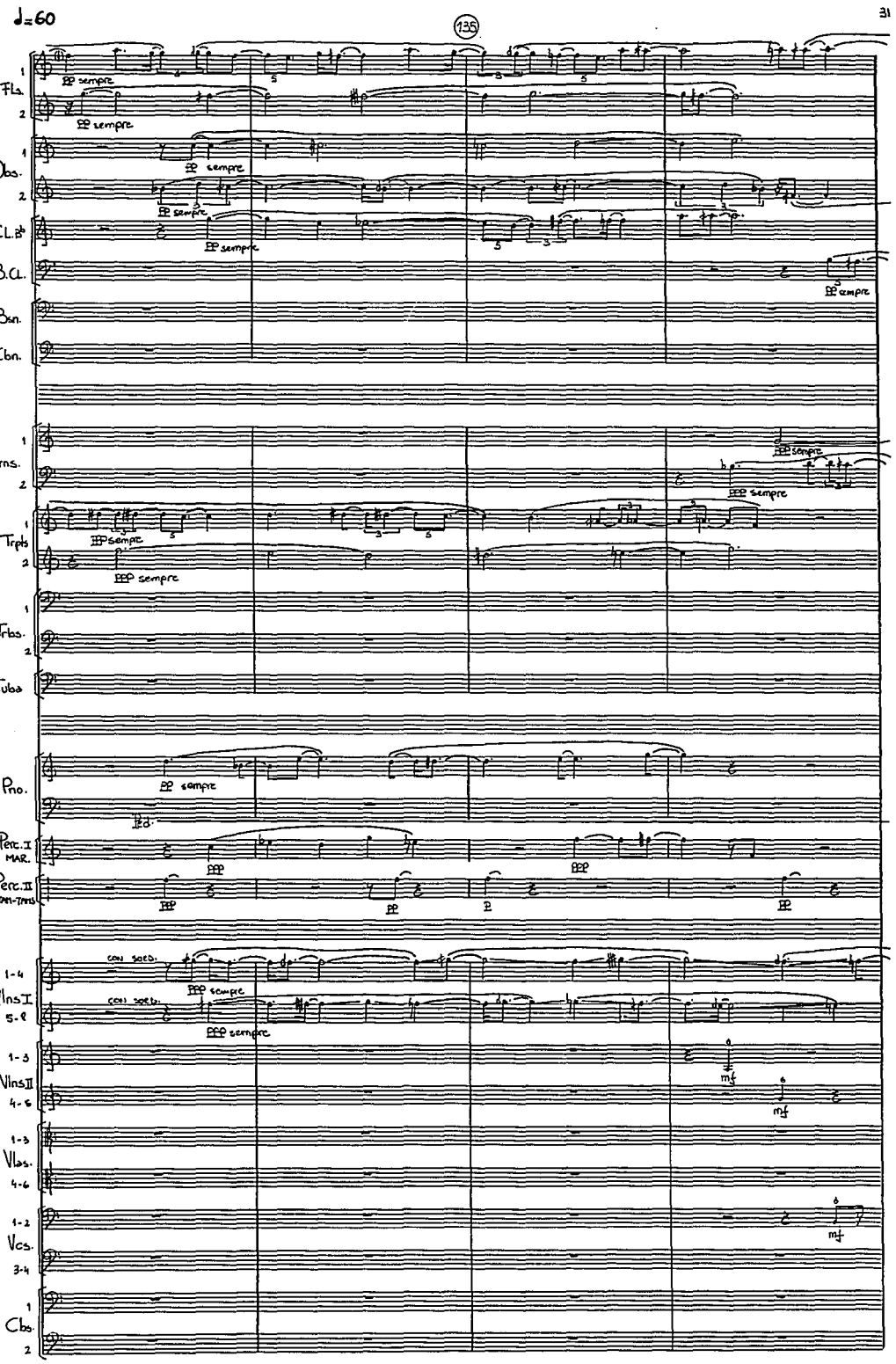

110
Fls.
Obs.
Cl. B♭
B.Cl.
Bsn.
Cbn.
Hns.
cuivré
PLUNGER MUTE
Trpts.
Trbs.
Tuba
Pno.
Perc. I
vib.
with bow
Perc. II
Vlns I
Vlns II
Vlas.
Vcs.
Cbs.

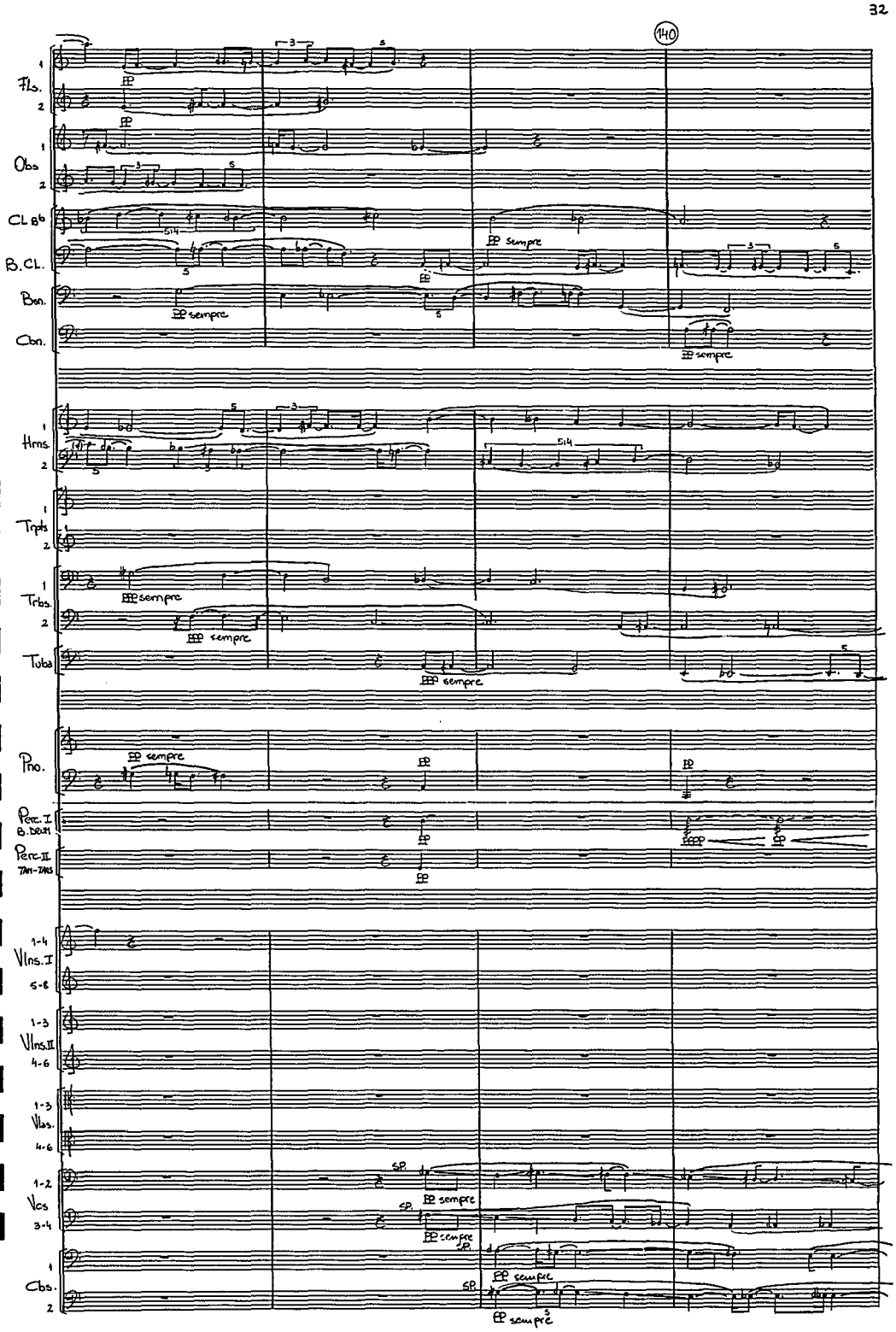

♩= 50
5/4
2/4
(115)
Fl.s.
Obs.
Cl. Bb
B.Cl.
Bsn.
Cbn.
Hrns
Trpts
Trbs.
Tuba
Pno.
Perc.I
MAR.
Perc.II
TAM-TAMS
B.DRUM
triangle beater
Vlns I
Vlns II
Vlas.
Vcs.
Cbs.

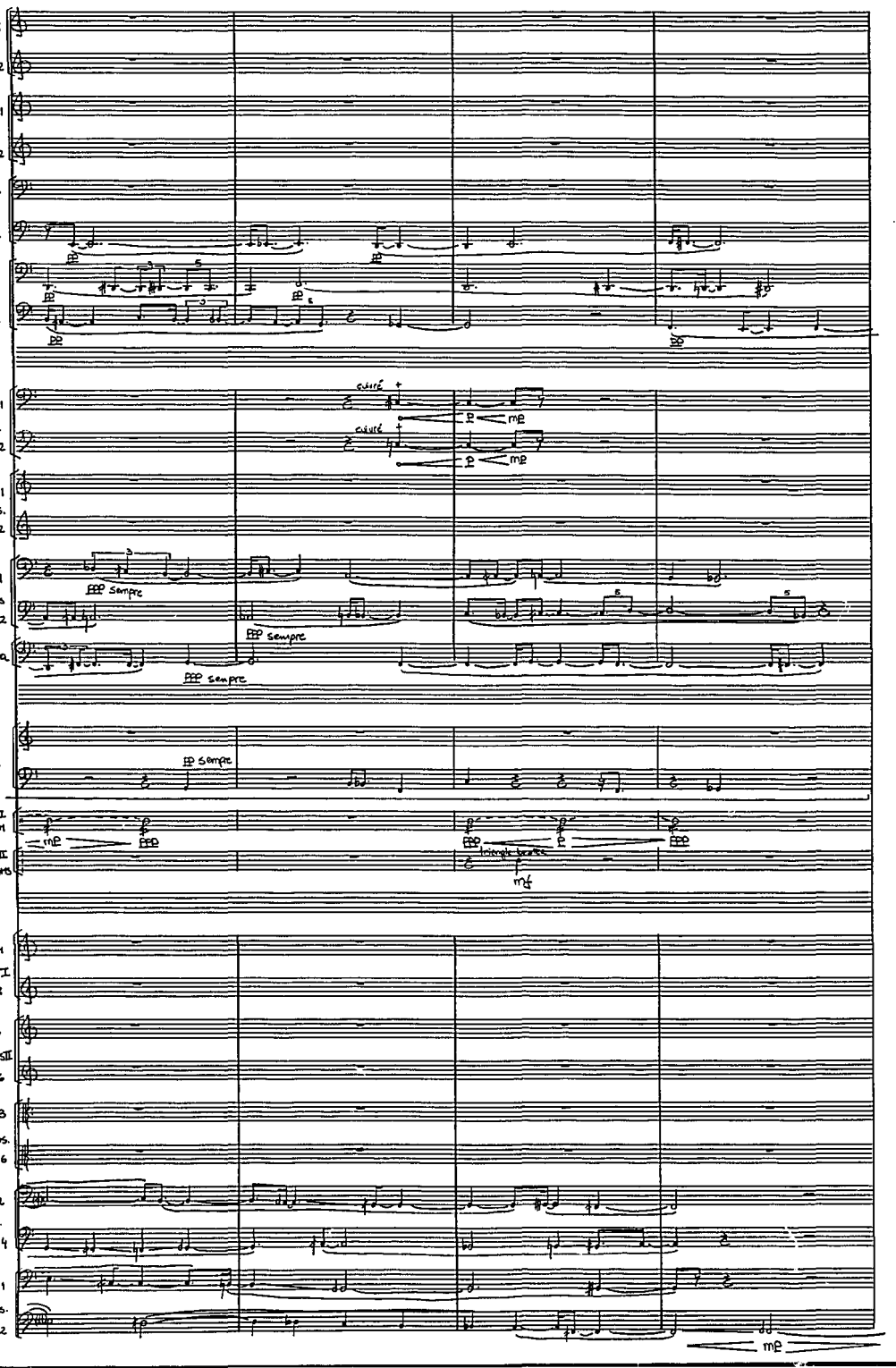

Fls.
Obs.
Cl.♭
B.Cl.
Bsn.
Cbn.
Hens.
Trpts
Trbs.
Tuba
Pno.
Perc I
B.DRUM
Perc II
TAM-TAMS
Vlns I
Vlns II
Vlas.
Vcs.
Cbs.
HARMON MUTE
MUTE
pp sempre
sp
st

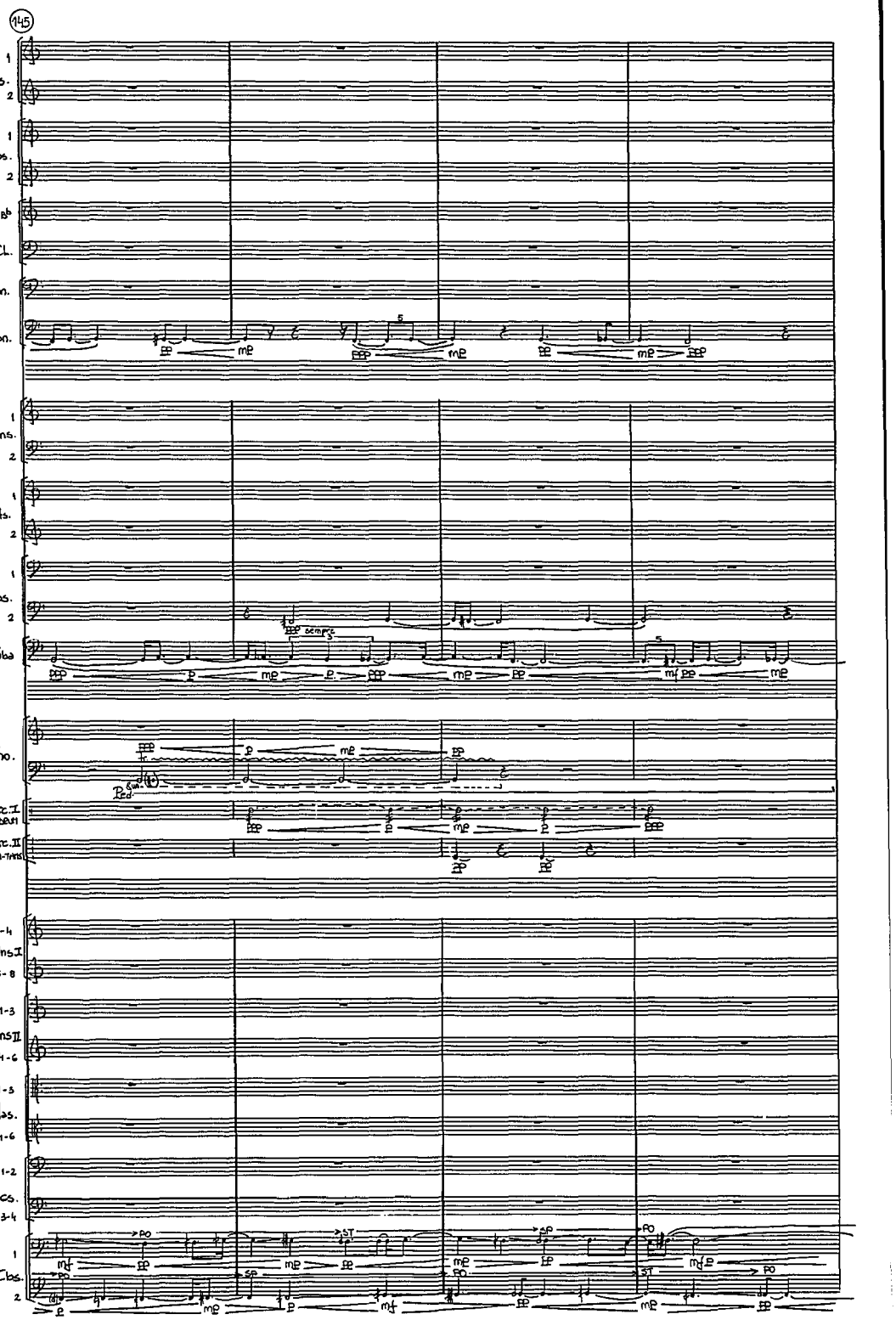

125
Fls
Obs.
B.Cl.
Bsn.
Cbn.
Hns.
Trpts.
Trbs.
Tuba
Pno.
Perc. I
Perc. II
Vlns I
Vlns II
Vlas.
Vcs.
Cbs
RUBBER MUTE
HARMON MUTE

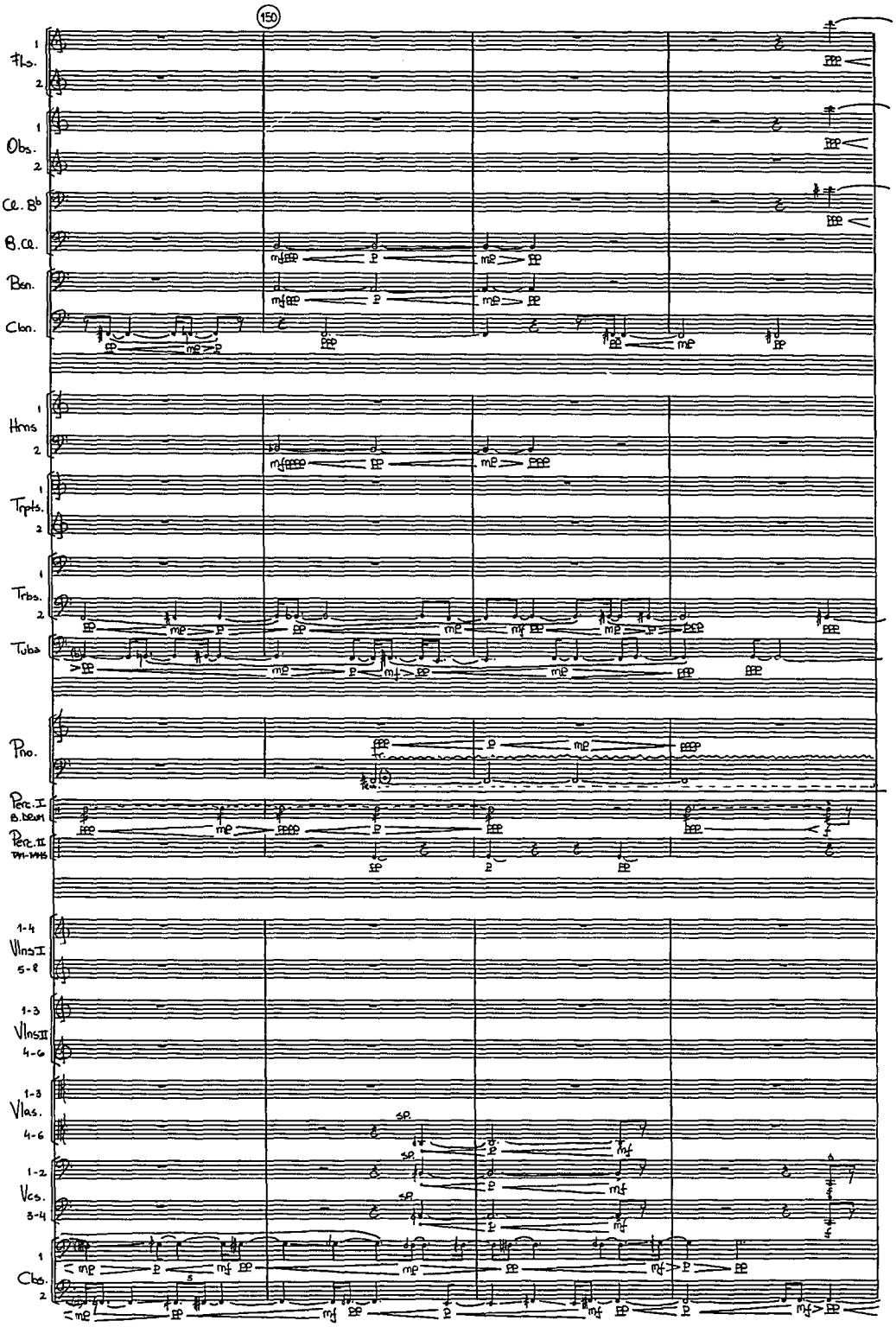

3/4
4/4
♩= 120
(130)
2/4
Fls.
Obs.
Cl.♭
B.Cl.
Bsn.
Cbn.
Hrns.
Tpts.
Trbs.
Tuba
Pno.
Perc.I vib.
with bow
MARIMBA
Perc.II TEMPLE BLOCK
♩= 120
Vlns I
Vlns II
Vlas.
Vcs
Cbs
arco
P.O.

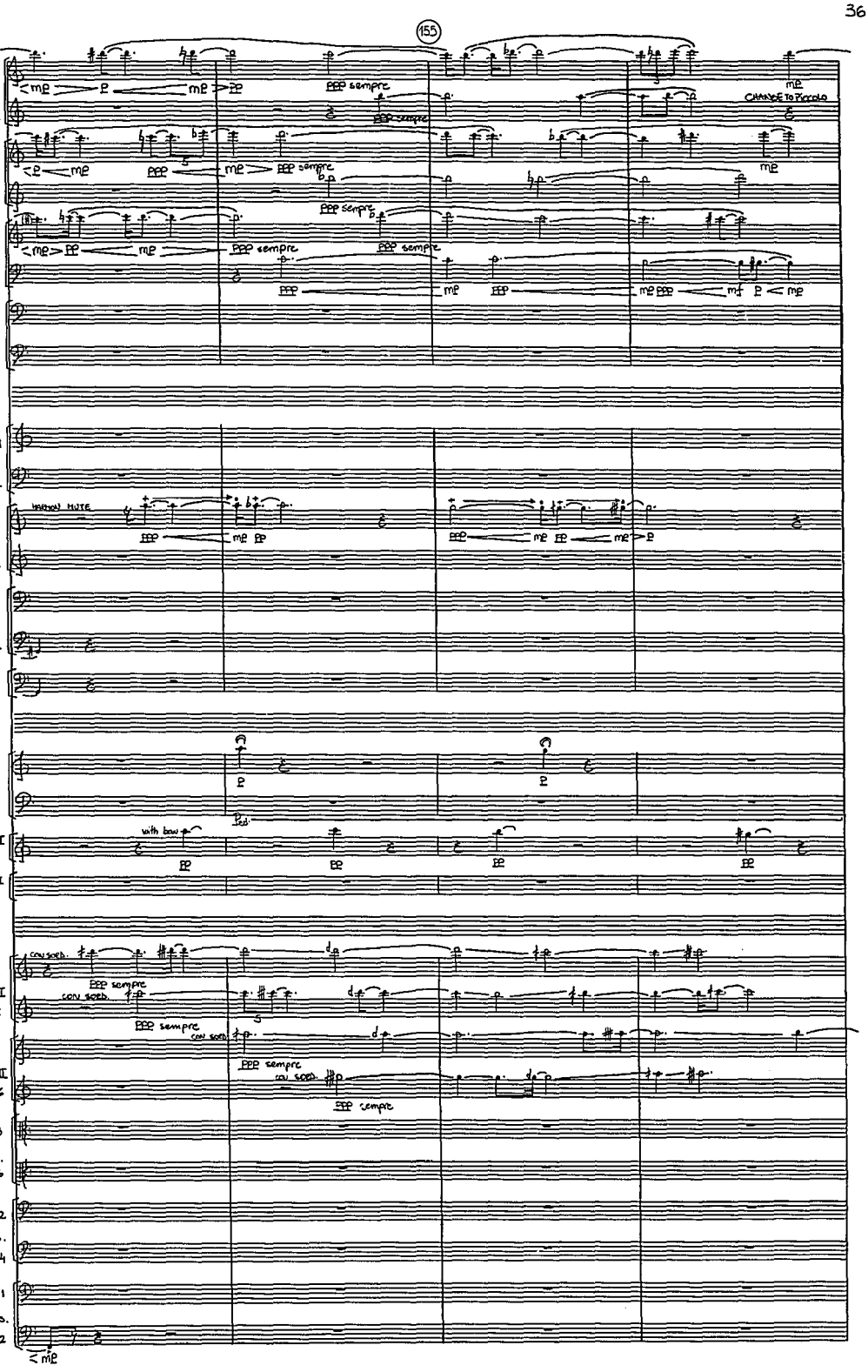

♩=60
135
Fls.
Obs.
Cl.B♭
B.Cl.
Bsn.
Cbn.
Hrns.
Trpts
Trbs.
Tuba
Pno.
Perc.I MAR.
Perc.II TAM-TAMS
VlnsI
VlnsII
Vlas.
Vcs.
Cbs.
pp sempre
ppp sempre
fff
ff
f
mf
con sord.

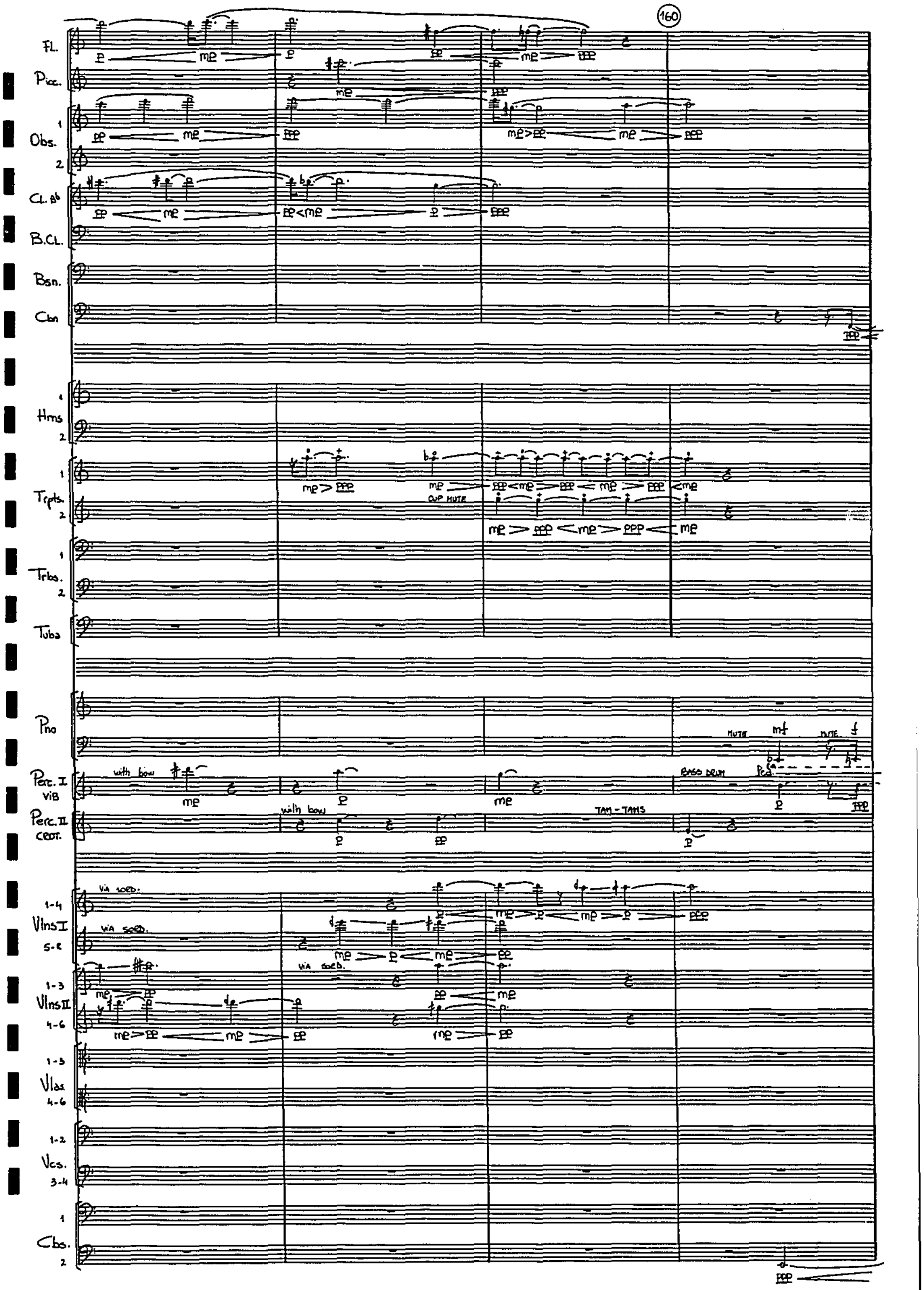

140
Fls.
Obs
CL B♭
B.CL.
Bsn.
Cbn.
Hrns.
Tpts
Trbs.
Tuba
Pno.
Perc. I
B. DRUM
Perc. II
TAM-TAMS
Vlns. I
Vlns. II
Vlas.
Vcs
Cbs.
pp sempre
sp

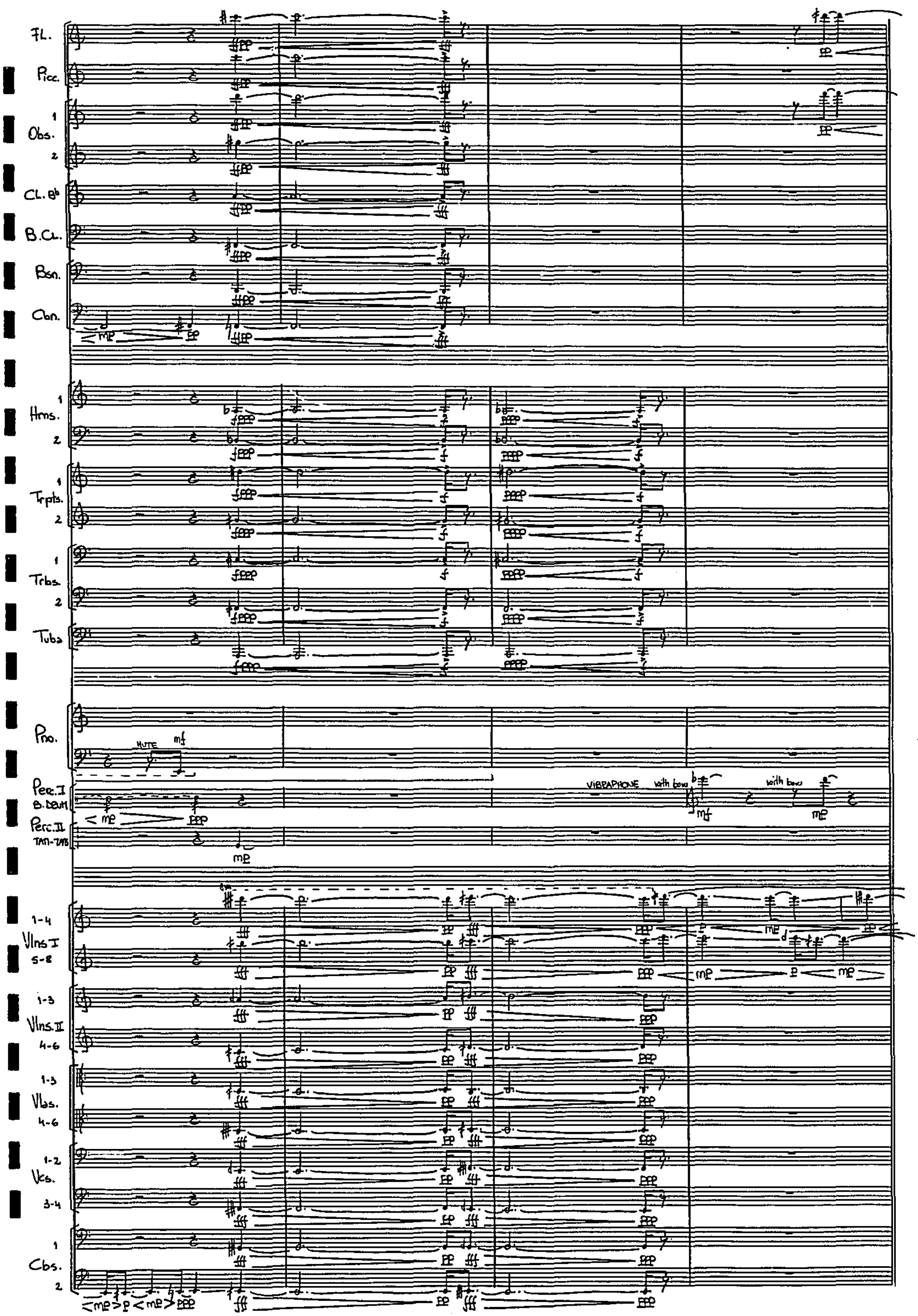

Fls.
Obs.
Cl. B♭
B.Cl.
Bsn.
Cbn.
Hrns.
Tpts.
Trbs.
Tuba
Pno.
Perc. I
B.DRUM
Perc. II
TAM-TAMS
Vlns I
Vlns II
Vlas.
Vcs.
Cbs.
cuivré
sempre
triangle beater

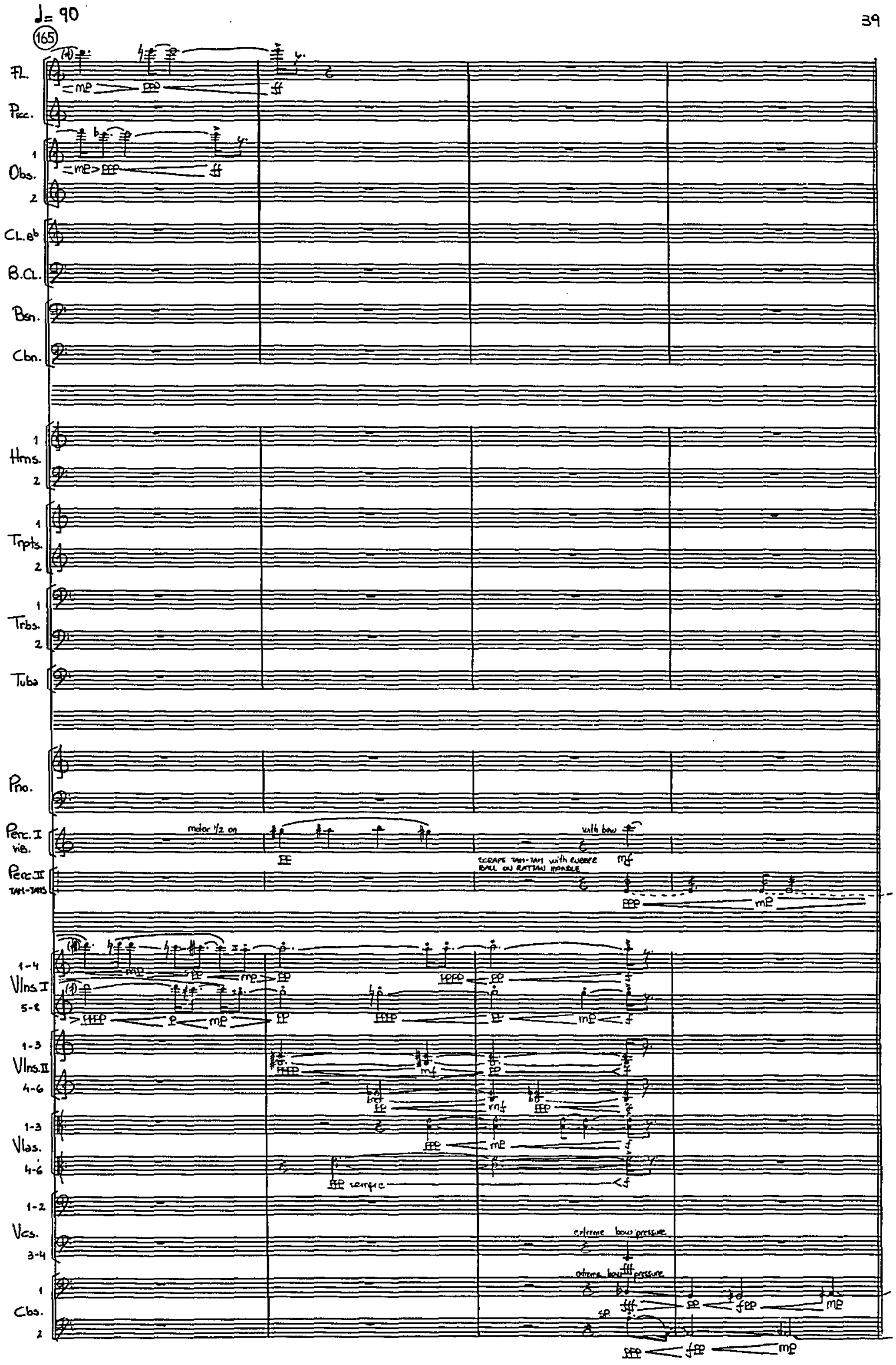

145
Fls.
Obs.
Cl. Bb
B.Cl.
Bsn.
Cbn.
Hrns.
Trpts.
Trbs.
Tuba
Pno.
Perc.I
B.DRUM
Perc.II
TAM-TAMS
Vlns.I
Vlns.II
Vlas.
Vcs.
Cbs.

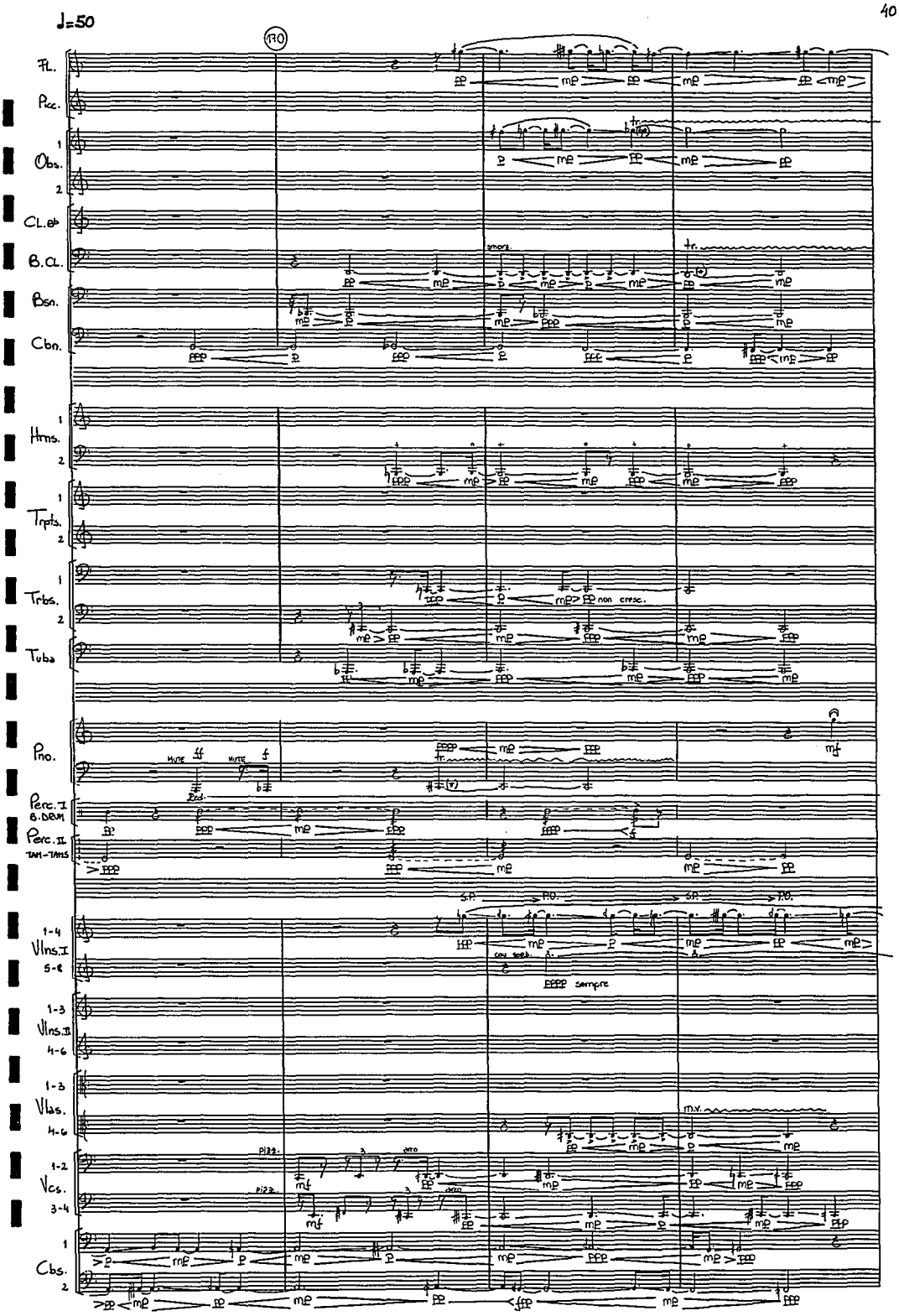

150
Fls.
Obs.
Cl. Bb
B.Cl.
Bsn.
Cbn.
Hrns
Tmpts.
Trbs.
Tuba
Pno.
Perc.I
B.Drum
Perc.II
Tri-Tams
1-4
Vlns I
5-8
1-3
Vlns II
4-6
1-3
Vlas.
4-6
1-2
Vcs.
3-4
Cbs.
1
2
sp.

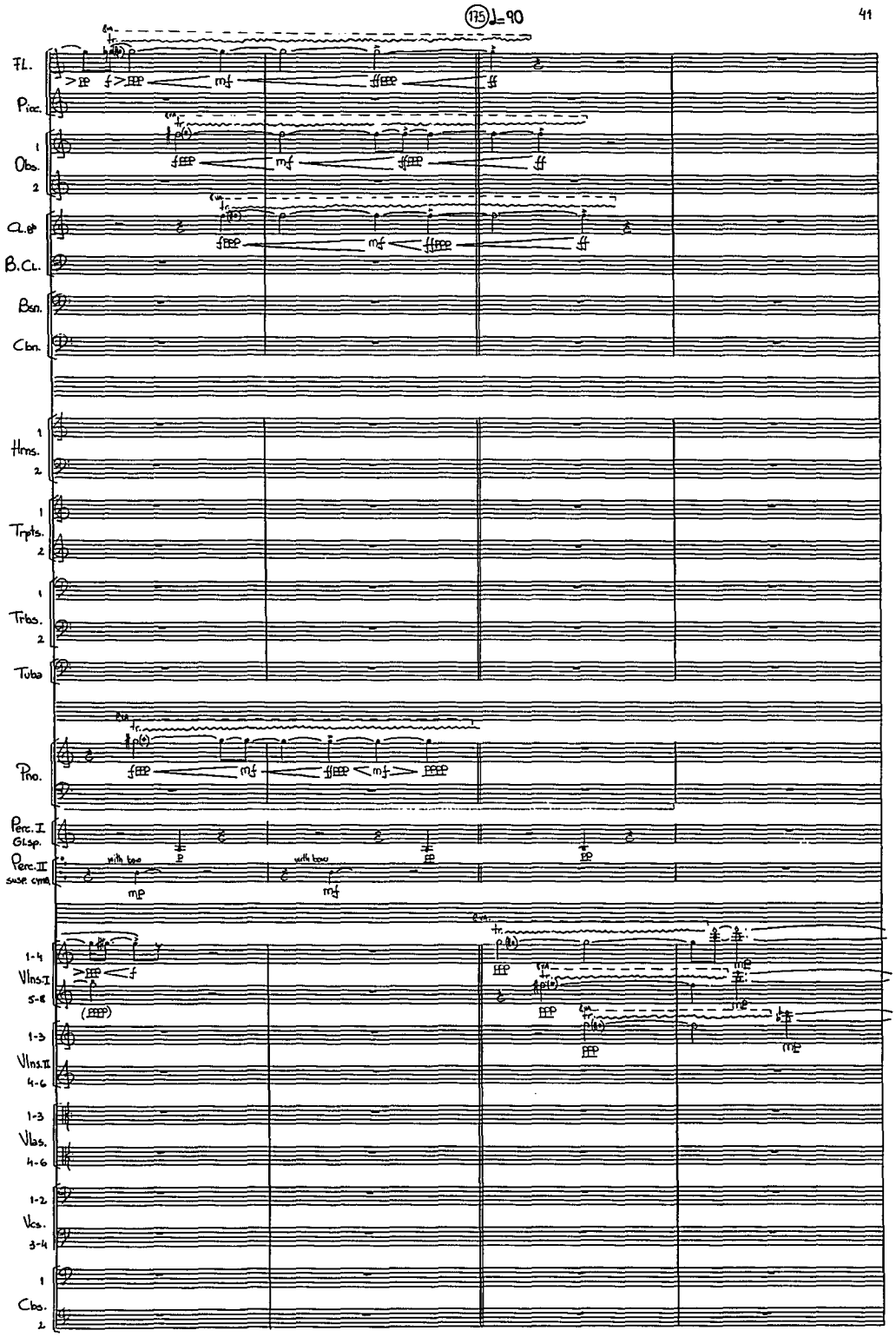

155
Fls.
Obs.
Cl. eb
B.Cl.
Bsn.
Cbn.
Hrns.
Trpts.
Trbs.
Tuba
Pno.
Perc. I vib.
Perc. II
Vlns I
Vlns II
Vlas.
Vcs.
Cbs.
CHANGE TO PICCOLO
HARMON MUTE
with bow
Ped.
con sord.

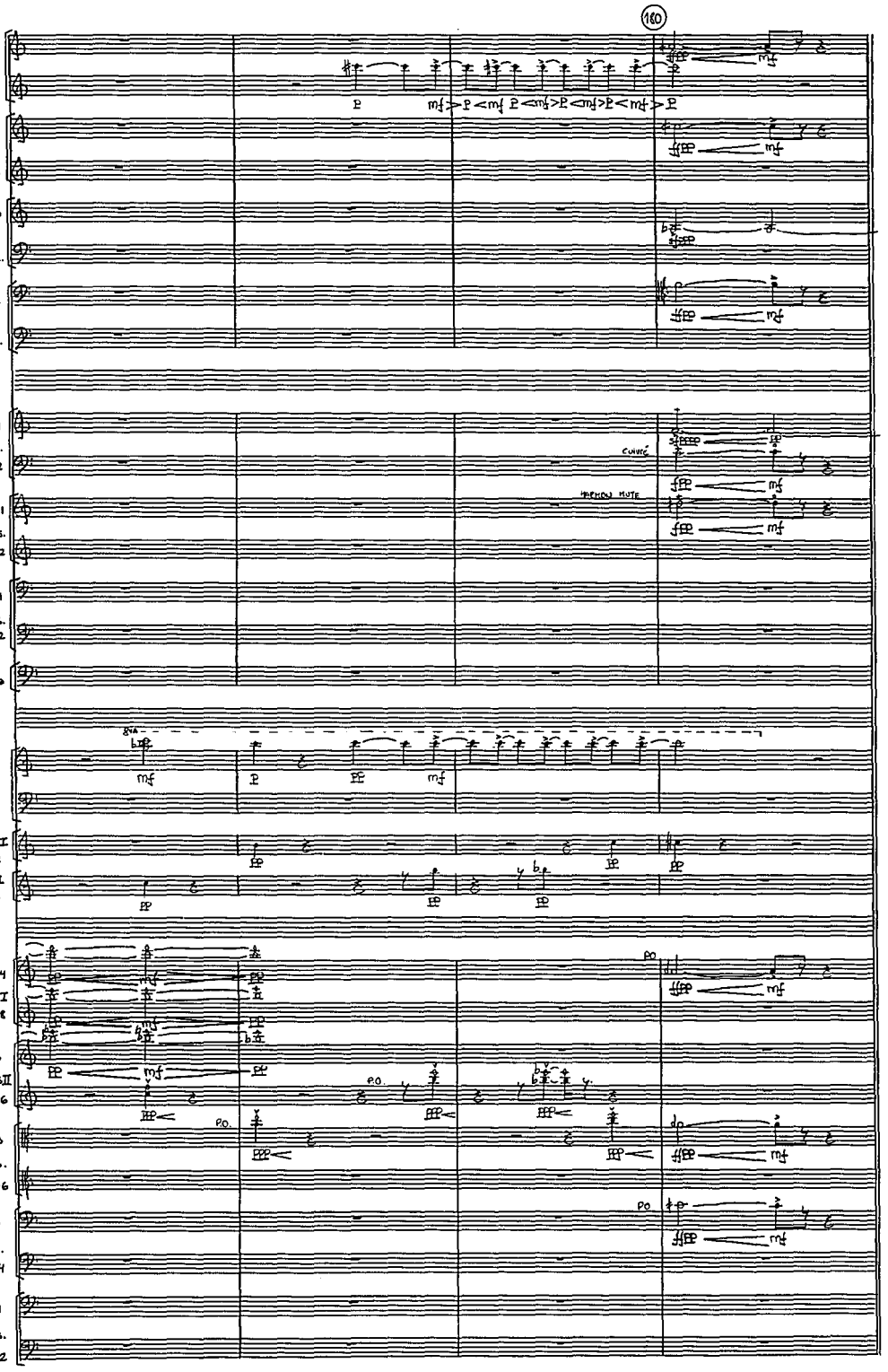

160
Fl.
Picc.
Obs.
Cl. B♭
B.Cl.
Bsn.
Cbn
Hrns
Trpts.
cup mute
Trbs.
Tuba
Pno
mute
Ped.
Perc. I
Vib
with bow
bass drum
Perc. II
Crot.
with bow
tam-tams
Vlns I
via sord.
Vlns II
via sord.
Vlas
Vcs.
Cbs.


Fl.
Picc.
Obs.
Cl. B♭
B. Cl.
Bsn.
Cbn.
Hrns.
Trpts.
Trbs.
Tuba
Pno.
MUTE
Perc. I
B. DRUM
Perc. II
TAM-TAM
VIBRAPHONE
with bow
Vlns I
Vlns II
Vlas.
Vcs.
Cbs.

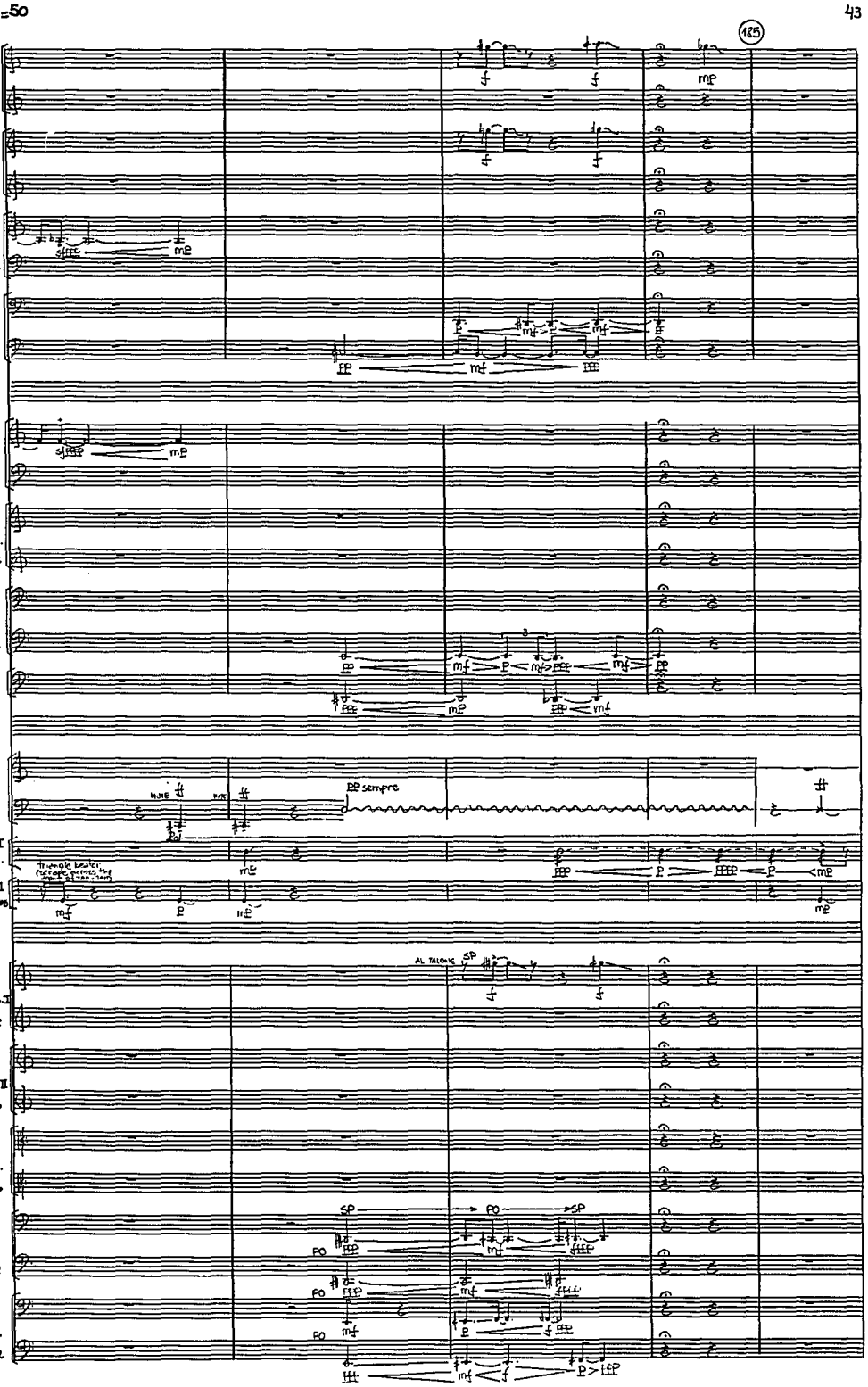

♩= 90
165
Fl.
Picc.
Obs.
Cl. e♭
B.Cl.
Bsn.
Cbn.
Hrns.
Trpts.
Trbs.
Tuba
Pno.
Perc. I vib.
motor ½
with bow
Perc. II tam-tams
scrape tam-tam with
ball on rattan handle
Vlns. I
Vlns. II
Vlas.
sempre
Vcs.
extreme bow pressure
Cbs.
extreme bow pressure

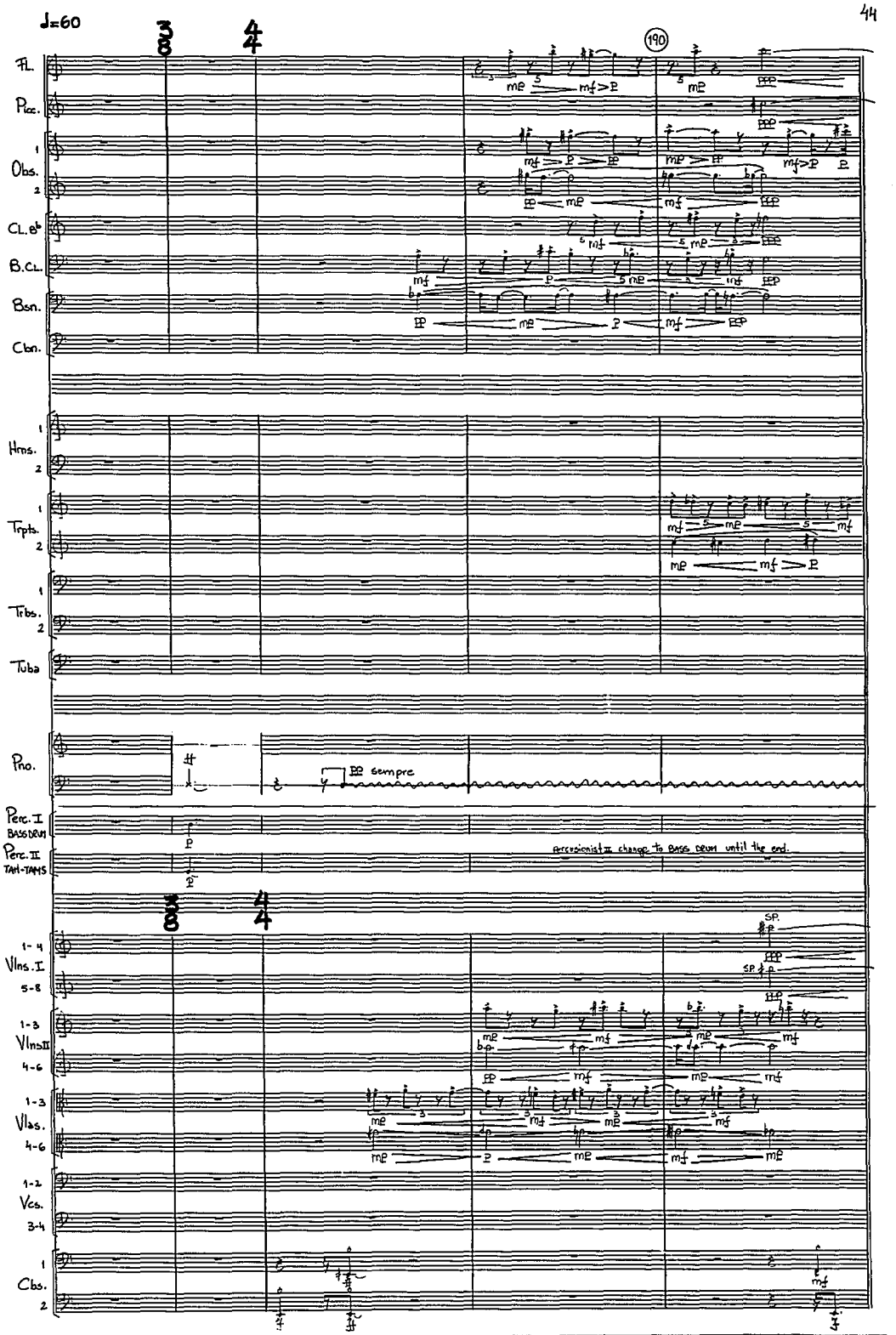

♩=50
170
Fl.
Picc.
Obs.
Cl.eb
B.Cl.
Bsn.
Cbn.
Hrns.
Trpts.
Trbs.
Tuba
Pno.
Perc.I
B.DRUM
Perc.II
TAM-TAMS
Vlns.I
Vlns.II
Vlas.
Vcs.
Cbs.
sempre
non cresc.
sempre

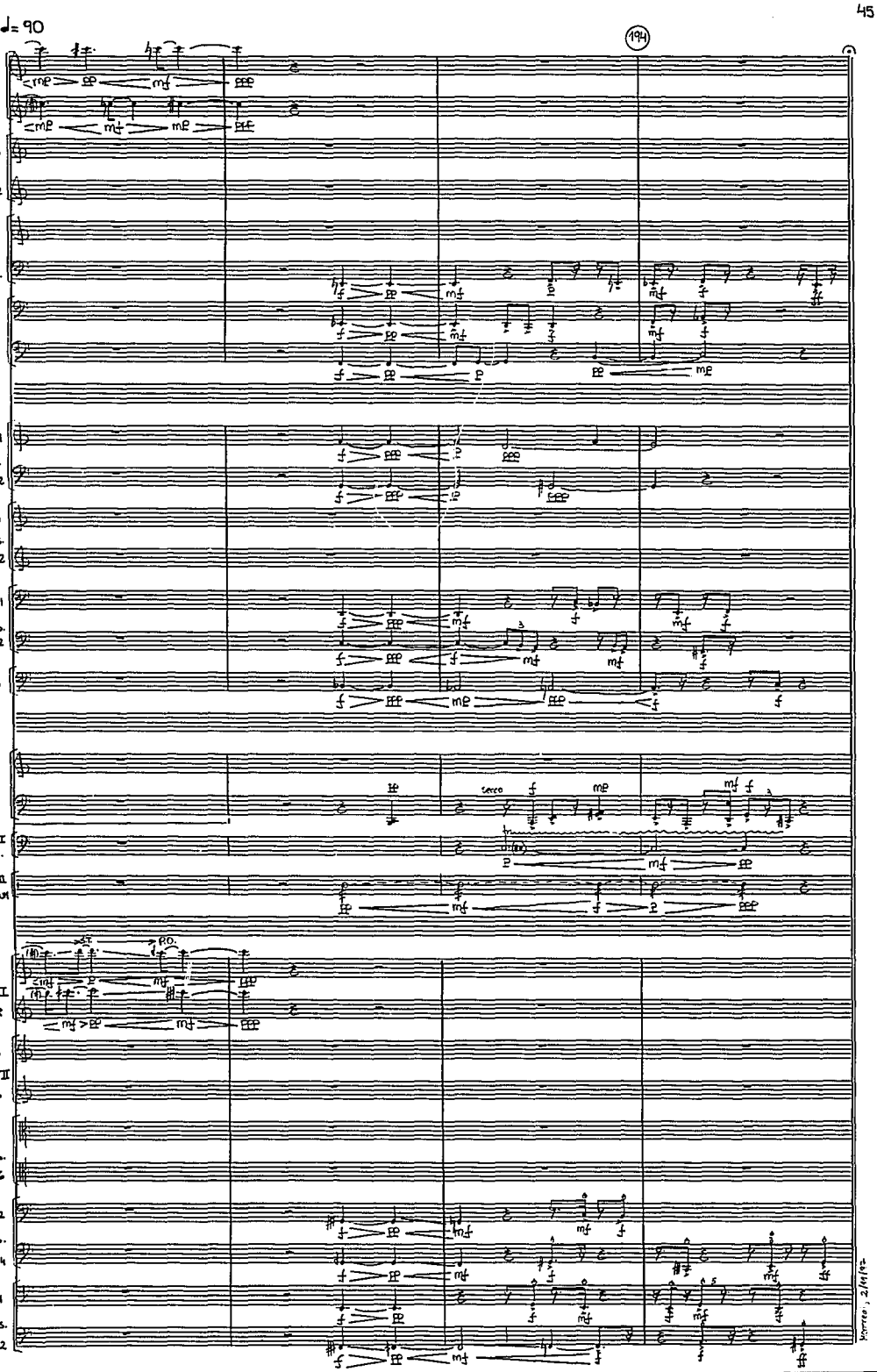

175 ♩=90
Fl.
Picc.
1
Obs.
2
Cl.
B.Cl.
Bsn.
Cbn.
1
Hrns.
2
1
Trpts.
2
1
Trbs.
2
Tuba
Pno.
Perc. I
Glsp.
Perc. II
susp. cym.
with bow
with bow
1-4
Vlns. I
5-8
1-3
Vlns. II
4-6
1-3
Vlas.
4-6
1-2
Vcs.
3-4
1
Cbs.
2


160
Fl.
Picc.
1
Obs.
2
Cl. Eb
B.Cl.
Bsn.
Ctn.
1
Hrns.
2
CUIVRÉ
1
Trpts.
2
1
Trbs.
2
Tuba
Perc. I
Glse.
Perc. II
Cast.
1-4
Vlns. I
5-6
1-3
Vlns. II
4-6
1-3
Vlas.
4-6
1-2
Vcs.
3-4
1
Cbs.
2

♩=50


185
Fl.
Picc.
1
Obs.
2
Cl.Eb
B.Cl.
Bsn.
Cbn.
1
Hrns.
2
1
Trpts.
2
1
Trbs.
2
Tuba
Pno.
Perc.I
Glsp.
Perc.II
TAM-TAM
Solo
Vlns.I
2-8
1-3
Vlns.II
4-6
1-3
Vlas.
4-6
1-2
Vcs.
3-4
1
Cbs.
2
pp sempre
al talone
sp
po


J=60
190
Fl.
Picc.
Obs. 1
Obs. 2
Cl. B♭
B.Cl.
Bsn.
Cbn.
Hrns. 1
Hrns. 2
Trpts. 1
Trpts. 2
Trbs. 1
Trbs. 2
Tuba
Pno.
sempre
Perc. I BASS DRUM
Perc. II TAM-TAMS
Percussionist II change to Bass Drum until the end.
Vlns. I 1-4
Vlns. I 5-8
Vlns. II 1-3
Vlns. II 4-6
Vlas. 1-3
Vlas. 4-6
Vcs. 1-2
Vcs. 3-4
Cbs. 1
Cbs. 2


♩= 90
194
Fl.
Picc.
Obs.
Cl. B♭
B.Cl.
Bsn.
Cbn.
Hrns.
Trpts.
Trbo.
Tuba
Pno
Perc. I
MAR.
Perc II
B. DRUM
Vlns. I
Vlns. II
Vlas.
Vcs.
Cbs.