Daniel Fox

String Quartet

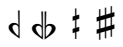
(2018)

Performance Notes

Accidentals hold for the register and measure in which they occur.

Accidental signs with an *arrow* indicate slight deformations of the equal tempered tuning. They are indicated in places where 1) the intonation should be altered by the performer to create acoustic beating or 2) on the seventh harmonic, which deviates audibly from equal temperament.

Quartertones are equal tempered.



Sul ponticello. The performer should interpret "P" as *poco sul ponticello*. Contrary to the literal meaning of the nomenclature, the bow should be nearer to but not on the bridge.

P

Sul tasto. Although some variation should be used, "T" should generally be interpreted as *molto sul tasto*.

T

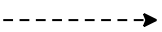
Diamond noteheads indicate a light touch with the left hand at the pitch that would sound if ordinary pressure were used. The light touch (harmonic touch) causes a harmonic to sound if the finger position is at a node of the string.

The *arrival note* of a glissando is indicated in parentheses. It has no rhythmic value.

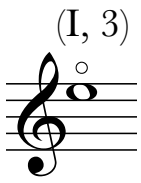
Flautando.

FL

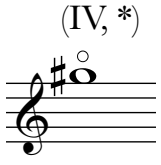
Dashed arrow. A gradual transition between playing techniques. Draw out the transitional sounds.



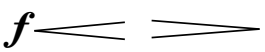
Harmonics are notated by showing the sounding pitch with an open circle above the notehead. The string and harmonic number are given. In the example here—for the cello—the 3rd harmonic of the first string (I, 3) is indicated. The performer is left to decide at which node to play the desired sound. Substitute harmonics should *not* be used. For example, the cello should not play the E5 indicated here as the 10th harmonic of string IV, not that this substitution is likely to be particularly tempting



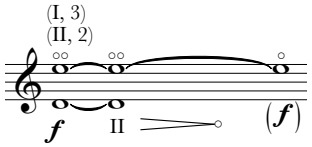
Violin G#5 Harmonic. The violinists produces an overtone sounding a G#5 by playing at the left hand position of a slightly flat D4 on the fourth string. The left hand pressure will need to be between ordinary and light. This is not a part of the harmonic series of that string but nonetheless exists as an exceptional mode of vibration. To produce it will require some exploration of left-hand pressure and position as well as bow pressure. More left-hand and bow pressure will be needed than is used for standard harmonics.



Dynamics. Hairpins without a destination dynamic indicate small and expressive uses of dynamics to shape phrasing. The example shown here indicates a slight increase and decrease within the general range of ***f***.

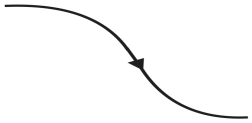


Double-Stop Dynamics. The dynamics may change independently for each note in a double-stop by altering the angle of the bow and thus the relative bow pressure on each note. The string number or pitch is specified before the dynamic marking if only one string is to be effected. In the example here for the cello (m. 25), the ***f*** dynamic is maintained for the E5 on string I while the D4 on string II fades to silence.



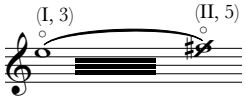
Dead Stop. An abrupt cessation of sound is indicated with an accent over the following rest. Abruptly stop the motion of the bow while maintaining contact with the string.

Bow Wander. The bow is moved between *ponticello* and *tasto* while pointing the bow in the direction of motion and applying substantial bow pressure: On a down-bow lead the movement with the heel of the bow so that the bow is *not* perpendicular to the string, but at an oblique angle; on an up-bow lead the movement with the point to form an oblique angle. For example, if on an up-bow the bow is transitioning from *ponticello* to *tasto*, then the bow should be angled so that the point is closer to the scroll and the heel closer to the bridge. This creates timbral variation.

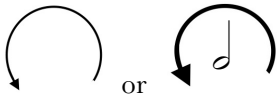


Medium pressure in the left hand. The string should be pressed with a weight in between ordinary and harmonic pressure. This is used often during glissandi to produce a diffuse sense of pitch.

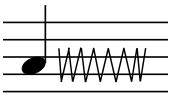
Obscured Harmonic Pitch is indicated by a slash through the notehead. By altering the pressure and position of the finger of the left hand the pitch of a harmonic is obscured so that noise is heard in place of a clear pitch. This only occurs in the context of bow tremolo. See mm. 1, 6, and 7.



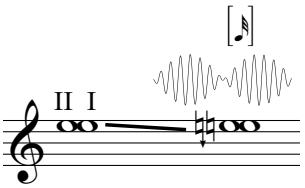
Circular bowing. An approximately circular motion implies that some of the bow motion is parallel to the string; this motion can result in timbral shading of the fundamental pitch (when *tasto* or *ponticello*), harmonics (particularly when *ponticello*), and a noisy moan (from the motion parallel to the string). These qualities should be varied by exploring the weight and speed of the bowing, but generally substantial bow pressure should be used. The during of one circle is often indicated by placing a note within the icon.



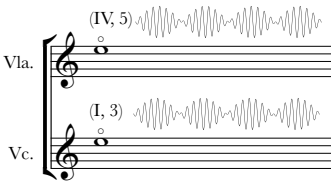
Left-Hand Shake or *Glissando-Vibrato*. The left hand undergoes a rapid, unmeasured oscillation parallel to the string. The displacement from the indicated note should not be more than about a whole step. See mm. 14 and 57.



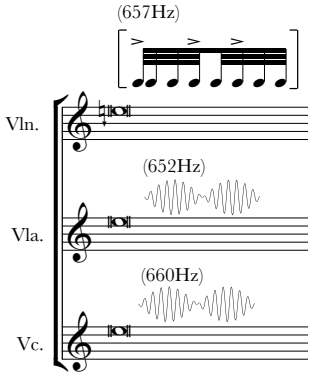
Acoustic Beating. Type 1: Microtonal deformations are used to create acoustic beating within a single instrument through a quasi-unison double-stop. The tuning of the stopped note is altered to attain acoustic beating with the rhythm indicated in brackets. The example here is for the violin. See mm. 100-102.



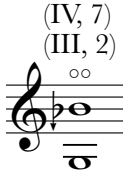
Acoustic Beating. Type 2: Acoustic beating is created between pairs of instruments using natural harmonics. (This results from a) the standard tuning of the strings and b) the harmonic series.) The standard but very careful tuning of the instruments to each other and between the strings of each instrument using just tuned fifths is important for the production of the acoustic beating at the desired rhythm. But once this initial tuning is done, no fine adjustments need to be made by the player: certain harmonics are "naturally" out of tune with eachother. For example (I, 3) on the cello has a frequency of 660Hz (1 Hz = 1 Hertz = 1 cycle per second) and (IV, 5) on the viola has a frequency of approximately 652Hz. They beat at about 8Hz. Similarly, (II, 7) on the cello and (IV, 8) on the viola beat at approximately 16Hz. These can be found, for example, at m. 5 and m. 94.



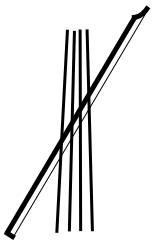
Acoustic Beating. Type 3: Non-isochronous (or uneven) acoustic beating is obtained using three instructments. One pair of instruments creates Type 2 beating. The third instrument alters the tuning of a stopped note to deform the beating between the other two instruments to become the rhythm indicated in brackets. For example, in mm. 10-12 the cello plays (I, 3) and the viola plays (IV, 5) creating an 8Hz beating. The first violin joins in by altering the tuning of a stopped E5 on string II. This should be done so that the steady pulse of the beating between the viola and cello is deformed and no longer steady. By m. 12 the acoustic beating should take on the specific (uneven) rhythm indicated in square brackets. The bowing should be smooth and continuous and the left hand position stable once the desired rhythm is obtained. See the web links above to hear a sine tone version of this. The violinists can use the sound sample of the 8Hz beating between 652Hz and 660Hz sine tones to practice deforming it to the desired rhythm.



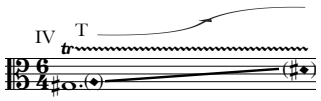
Unstable Double-Stop Harmonics. Some double-stop harmonics do not sound easily together. The player should explore the range of sounds possible in these cases, but the exploration should focus on subtle changes rather than drastic changes in the sound. The example here is for the cello. Sometimes a difference tone can be produced and the performer should explore this possibility.



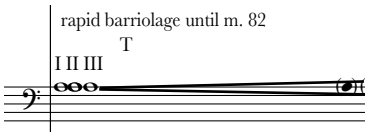
Bow Angle. This specifies the angle between the bow and the string and should be played *sul tasto* with a slow bow speed and substantial pressure. The bow should be nearly parallel to the string. Bring out low frequency moans and minimize squeaks. *Strive for a low pitched and fluctuating moan*. More frequent changes in bowing direction than are indicated may be used in order to maintain the bow angle. Touching the string off of a harmonic node with medium pressure should be used to reduce the sounding of harmonics and high-pitched squeaks. It may help to alter the standard position at which the instrument is held, though this should be done only to the degree that it helps to produce the sound.



Timbral-Trill-Glissando. The base note is fingered with ordinary pressure and the trill note is fingered with light pressure. The trill note continuously varies position as the base note remains unchanged. This is normally played in conjunction with *bow wander* or *circular bowing*, both of which lead to an unstable, somewhat chaotic fluctuation in the pitch and timbre. The example here is for viola.



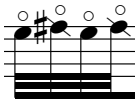
Quasi-Unison Barriolage. Rapid barriolage is played on two to three strings. The fingering uses one open string and one or two stopped strings to begin with a unison and then, through a slow glissando, expands to a chromatic cluster. In the example here for cello, string I is open, but strings II and III fingered. The fingered pitches gradually glissando, eventually deforming the unison to a chromatic cluster of three notes. See mm. 12, 50, and 55.



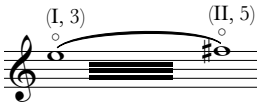
Harmonic Bowing. Light, fast bowing is used to bring out varying harmonics rather than the fundamental pitch. Moving toward the bridge helps sound higher harmonics and moving toward the fingerboard helps sound lower harmonics. This is used in conjunction with a strong vibrato and slow glissando. Rather than settling on a fixed pattern, the performer should approach these gestures as an exploration and seek new variations with each performance, continually varying which harmonic sounds. It may prove helpful to practice this first on an open string in order to see the level of control of harmonics possible and then to work on a stopped string with the glissando and vibrato.

Imitate beating rhythm. Mimic beating rhythm. At times the performer is asked to make the rhythmic element of a gesture imitate or mimic the beating rhythm created by other instruments. This is often contrasted with the production of a rhythm independent of the activity in other instruments. See mm. 12, 13, 14, 26.

Obscured Pitch. In measures 1 and 2 the cellist should use a medium pressure on the sounding F#5 harmonic—indicated in this instance by a back-slash—to obscure the pitch of the F#5 (but not of the E5). The left hand pressure is gradually lightened to allow the pitch to sound clearly by m. 3.

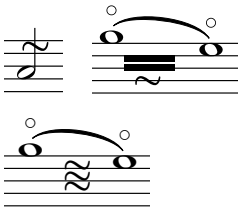


Measured Tremolo. (Alternating.) Thirty-second note tremolos should be measured and evenly articulated. They should contrast with the *erratic tremolo* defined below. *Alternating* indicates that the order of notes should be strictly respected so that, for example, in m. 3 when the cello sounds the E5 the viola sounds the G5 and when the cello sounds the F# the viola sounds the E5. The goal is to maintain continuity of the E5 as it hockets between instruments.



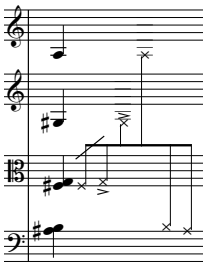
Erratic. This indication asks the player to perform in a divided mental state. The notated gesture is begun but then is erratically modified a number of times throughout the gesture to be a little faster or a little slower. It is applied to *barriolage*, *bowing*, *bowed tremolo*, and *bow wander*.

Erratic Hash Marks. Erratic Tremolo. Apply the directions for *Erratic* to these bowing gestures. These erratic gestures should contrast with the even, measured bowing of the standard tremolo. In the first example here, the performer begins to bow at the eighth note subdivision but instead of rhythmically even eighth notes, the rhythm will be erratically varied so that each bow stroke is actually shorter or longer than an eighth note. In the second example shown here, the 32nd note alternation of bowing is made slightly erratic—notice that only one of the hash marks is wavy. In the third example the rhythm of alternation in the bowing should be very erratic, varying between approximately an eighth note and a 32nd note—notice that all three hash marks are wavy. Engaging in this erratic behavior may cause the performer to lose their place within the meter. This is acceptable. They should use cues from the other performers to resume coordinating with the ensemble.



Erratic Bow Wander. Use the bow wander technique to follow an erratic path between P and T.

Systematic Loss. The x-noteheads indicate the cessation of sound. The ensemble attacks a chord together but each player stops the sounds of their pitches in a specified sequence. The releases of sounds should happen within the duration of the metric value of the initial (oval) notes. The order of releases is specified although the exact rhythm of releases is not. The rhythm of releases should be shaped in order to accentuate the loss of sound. Use a deadstop to bring attention to the loss of sound. In addition, roughly the first-half of the releases have an accent on them that is to be interpreted as a slight crescendo before dead-stopping the bow. See rehearsal **D** and thereafter.

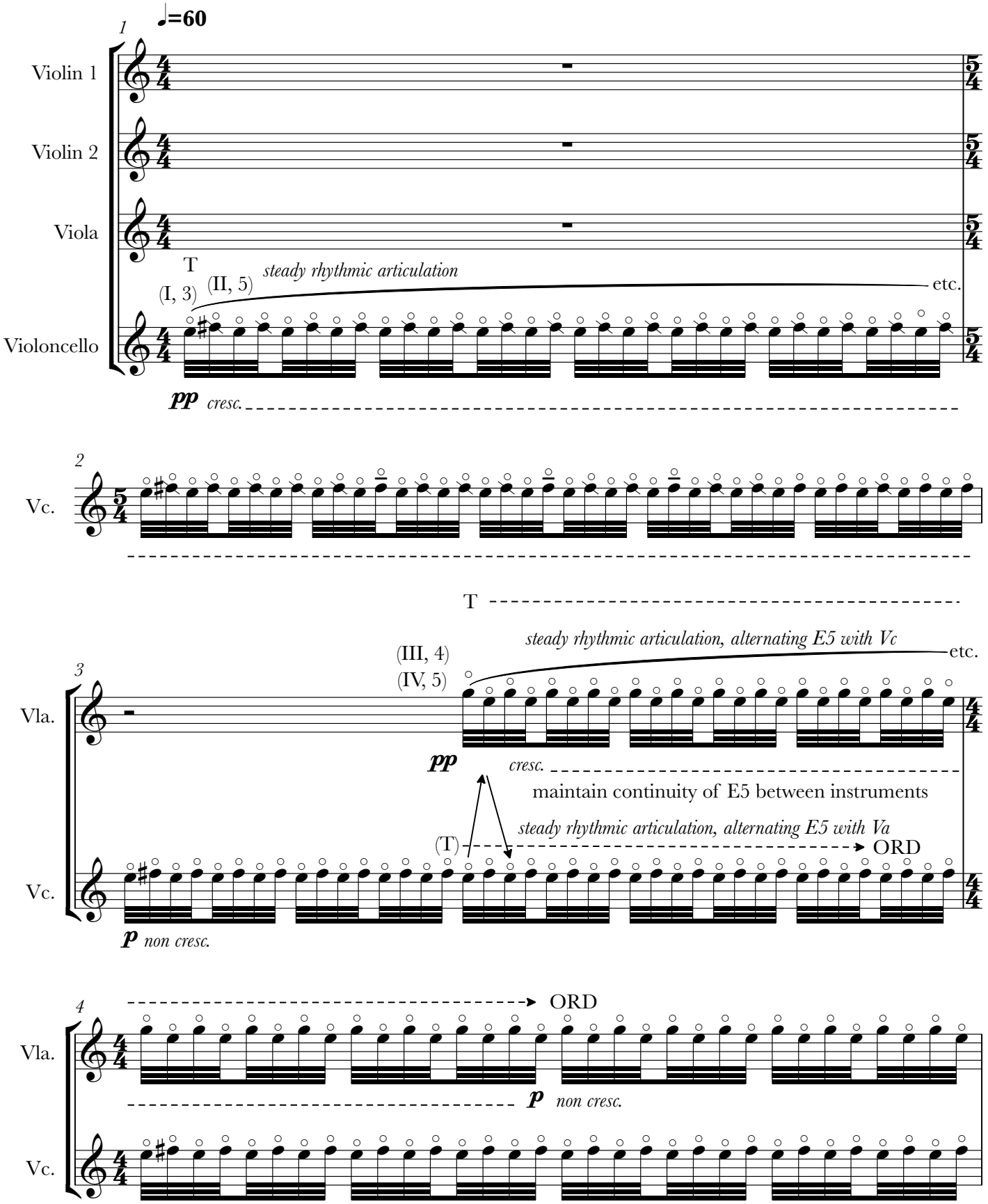


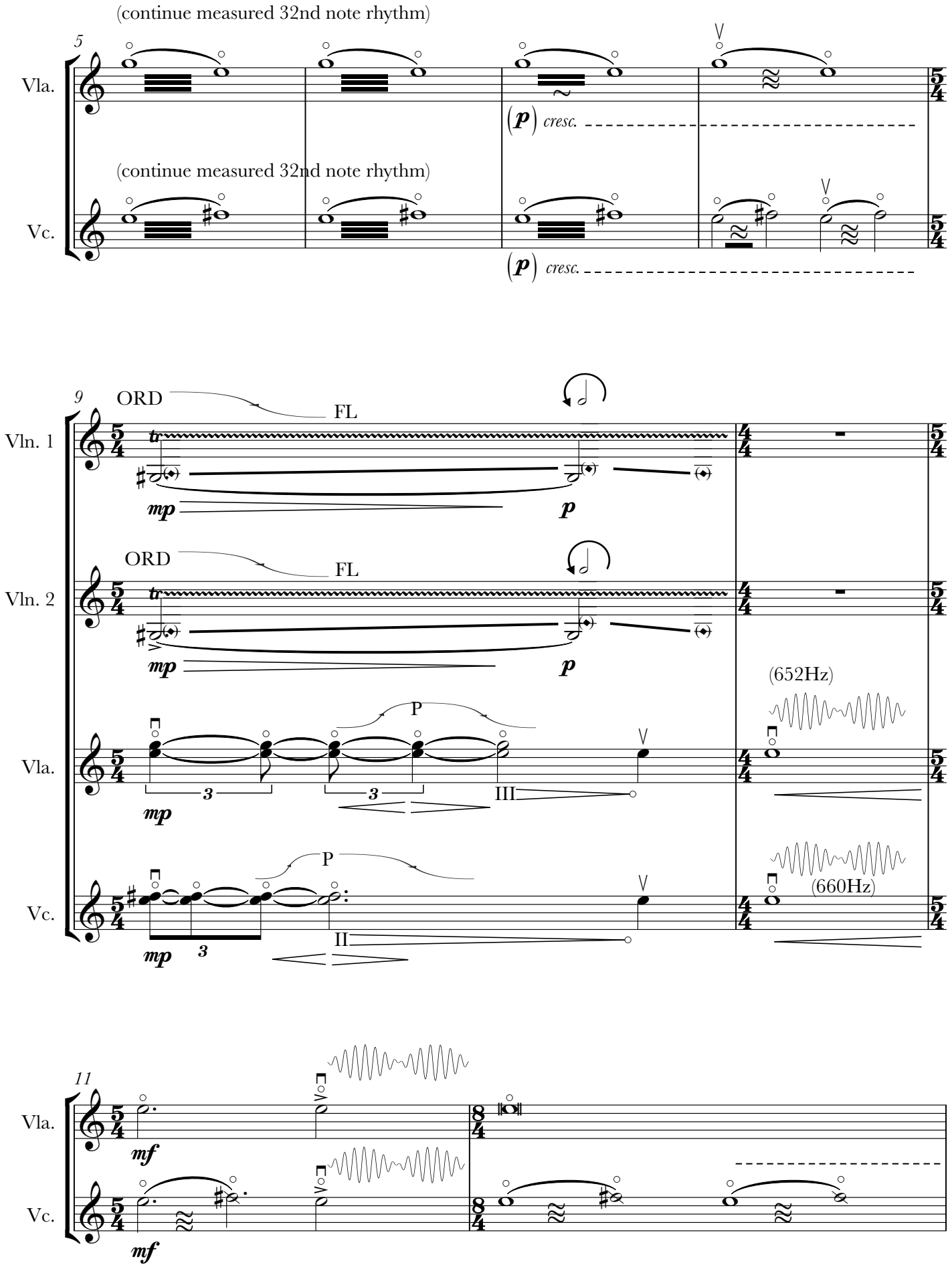
Program Note

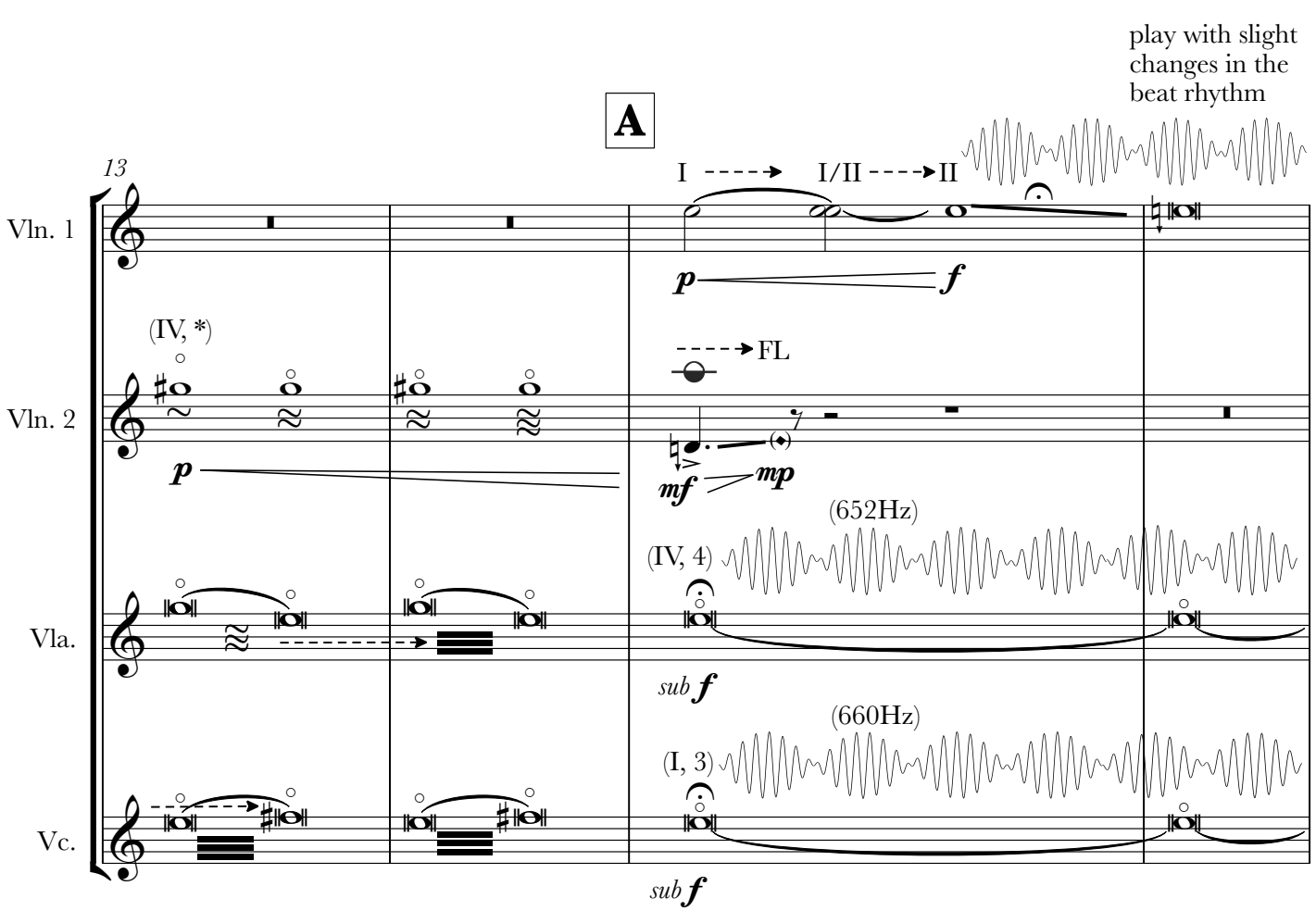
This string quartet contrasts different scales of control at which the performers shape the sounds of their instruments. At one extreme, rapid bowing articulates a steady pulse that is directly synchronized to the motion of the performer's arm. At the other extreme, the same rhythm is achieved through the interaction between instruments as an acoustic effect disarticulated from the bow arm's rhythm: the standard just-intonation of the instruments causes harmonics on the cello and viola to have conflicting tunings and thus to produce beat rhythms that the performers can turn on or off, but not regulate in speed. Progressively the performers force their instruments into states that produce more complex and unstable sounds. The moment-to-moment play of sound desynchronizes from the bodies of the performers, though it is always dependent upon their refined skill.

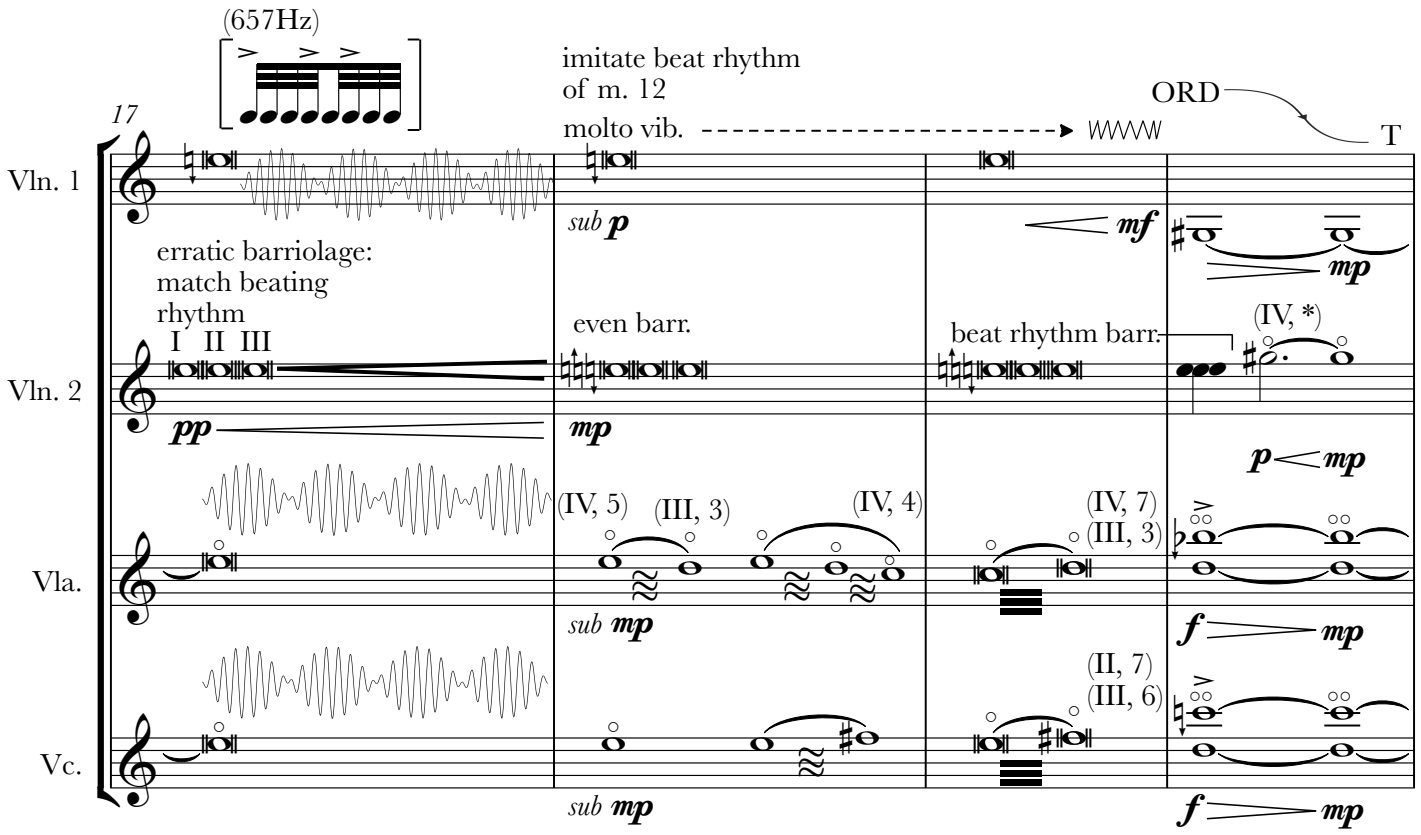
String Quartet

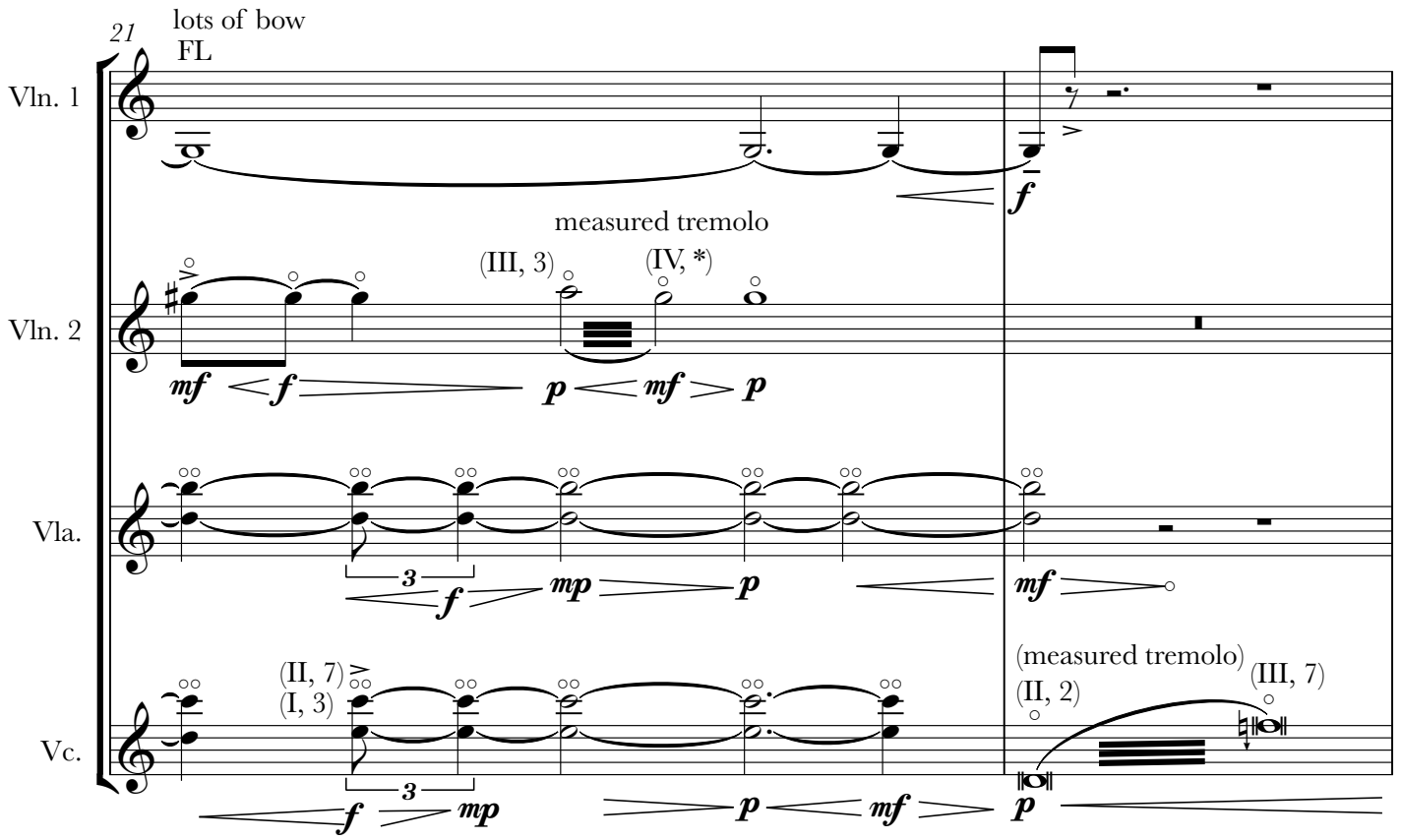
Daniel Fox

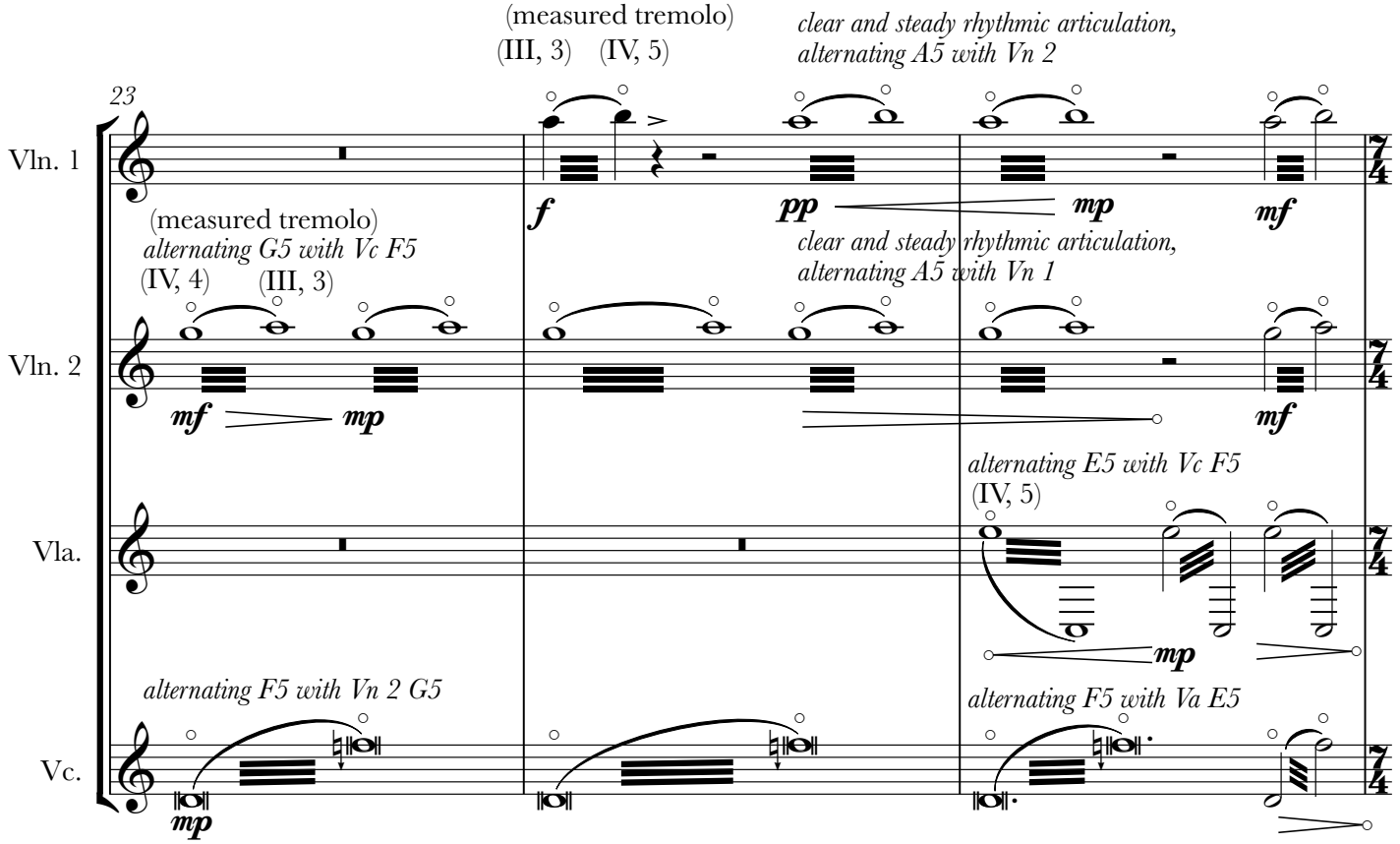


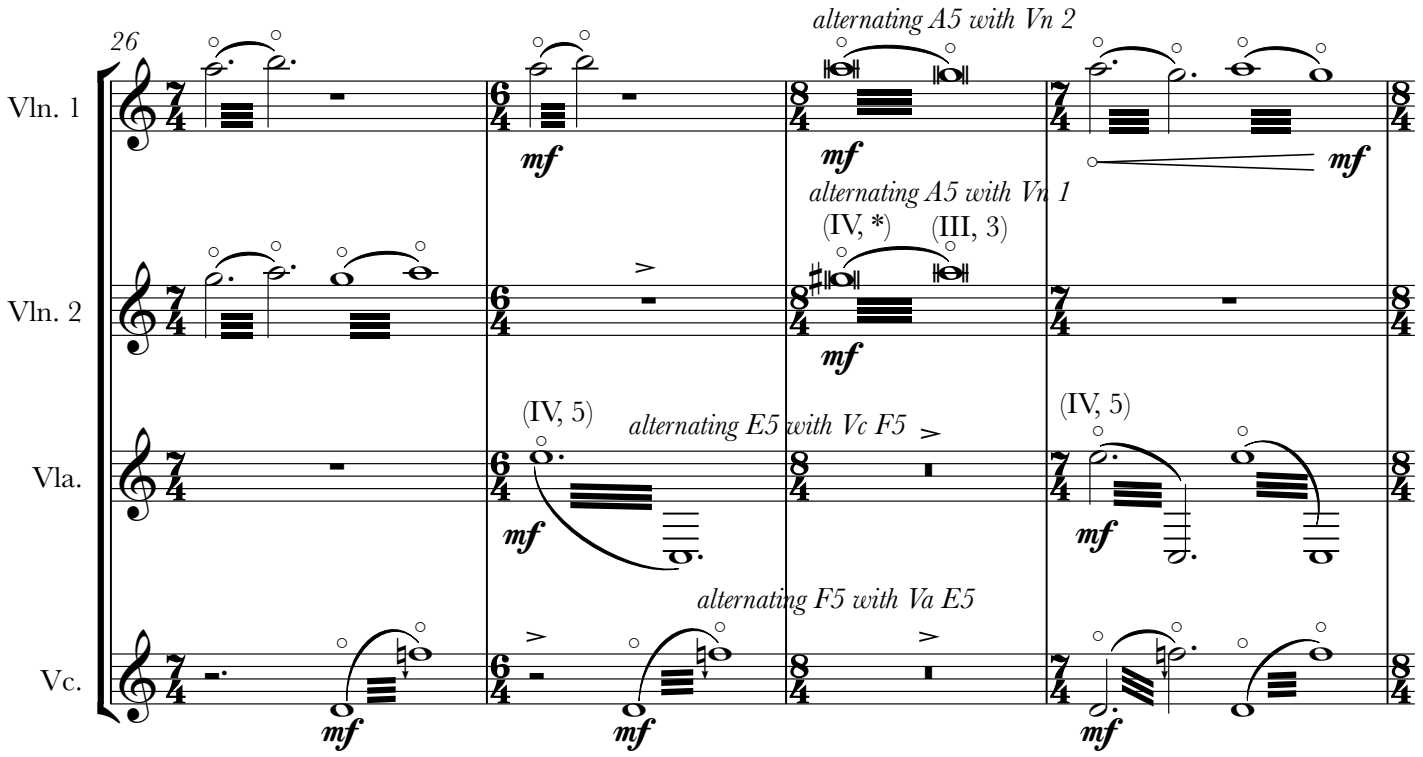


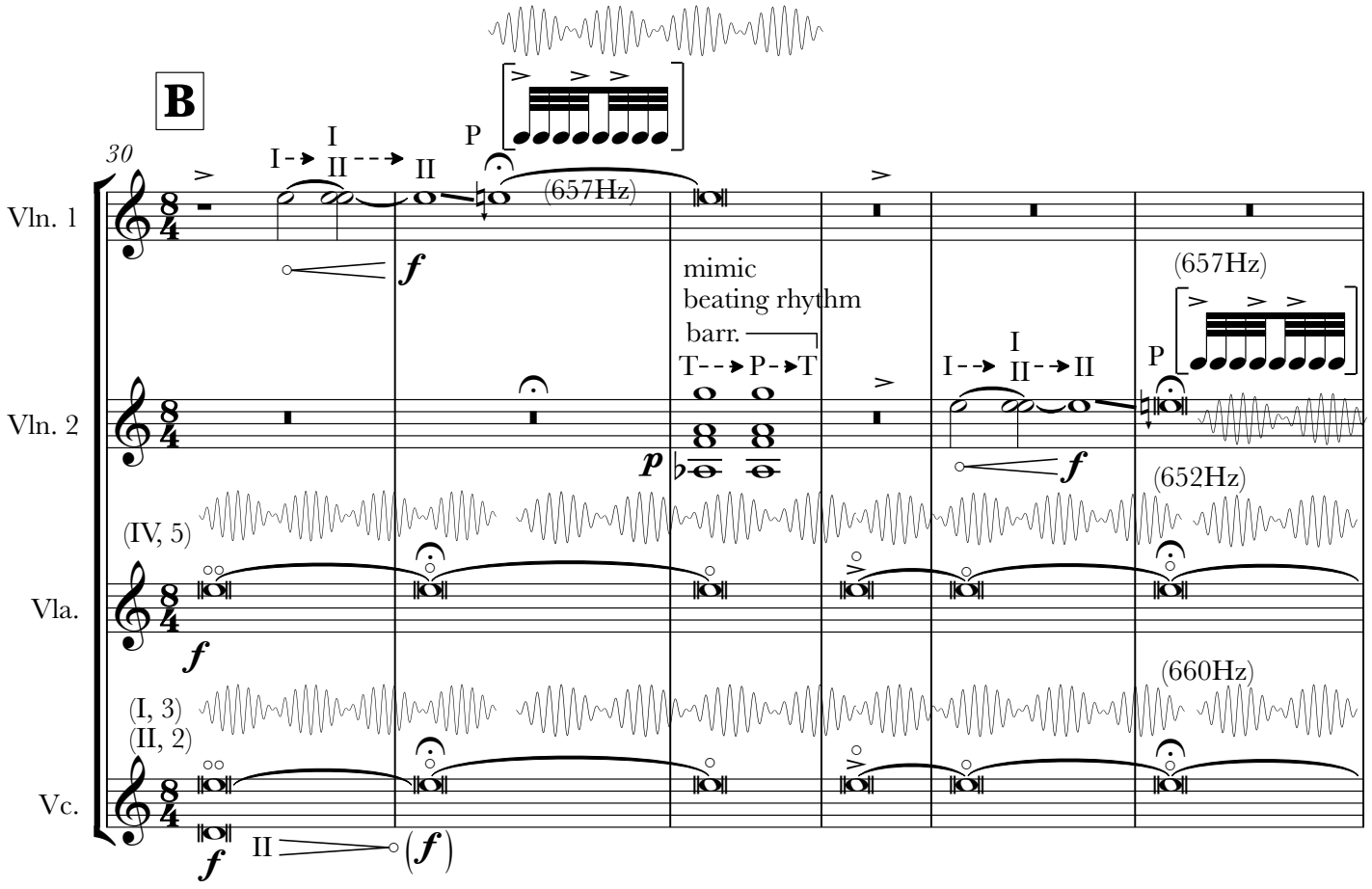

play with slight changes in the beat rhythm
A
13
I
I/II
II
Vln. 1
p
f
(IV, *)
FL
Vln. 2
p
mf
mp
(652Hz)
(IV, 4)
Vla.
sub f
(660Hz)
(I, 3)
Vc.
sub f

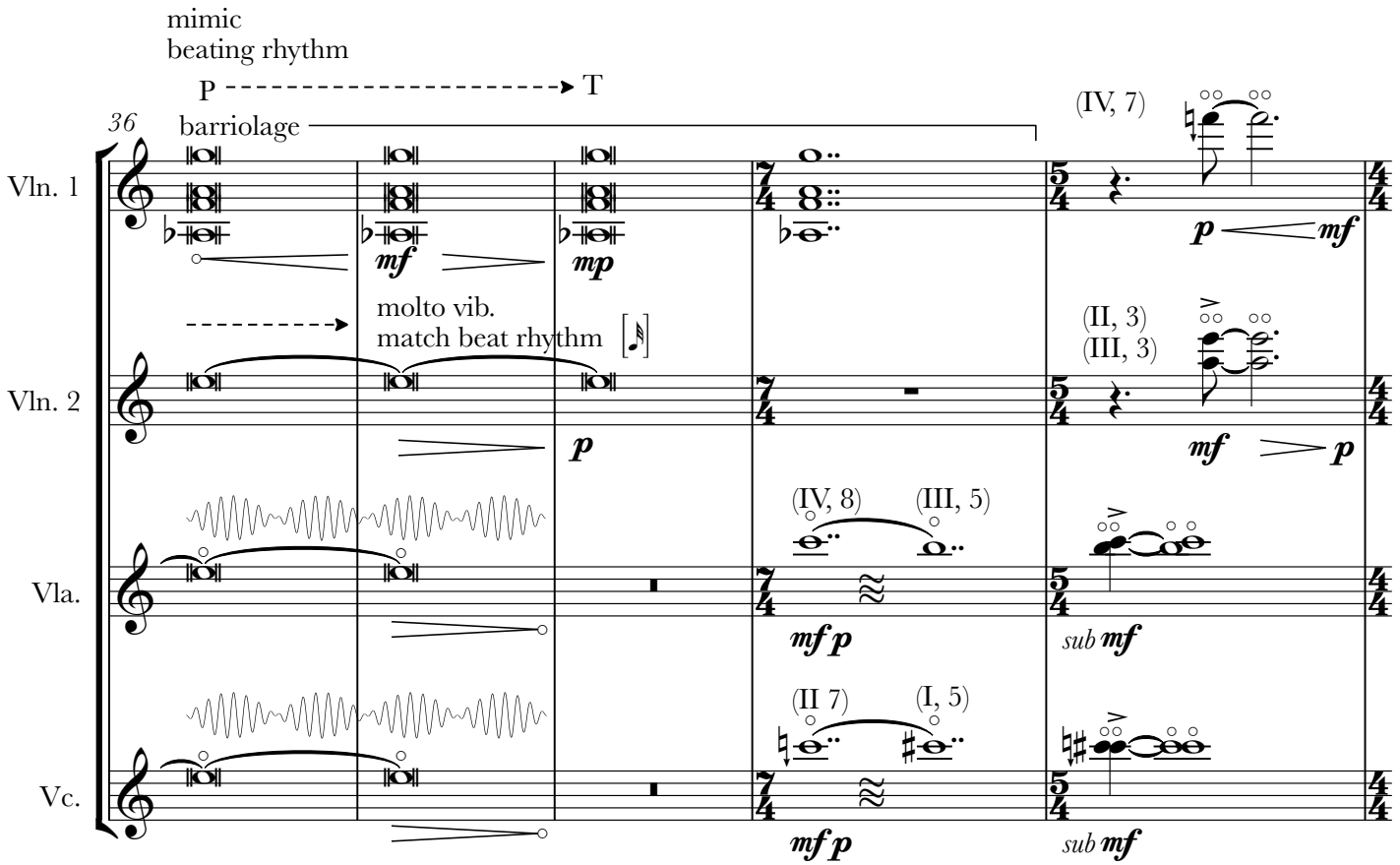

(657Hz)
imitate beat rhythm of m. 12
molto vib.
ORD
T
17
Vln. 1
sub p
mf
mp
erratic barriolage: match beating rhythm
I II III
even barr.
beat rhythm barr.
(IV, *)
Vln. 2
pp
mp
p mp
(IV, 5)
(III, 3)
(IV, 4)
(IV, 7)
(III, 3)
Vla.
sub mp
f mp
(II, 7)
(III, 6)
Vc.
sub mp
f mp

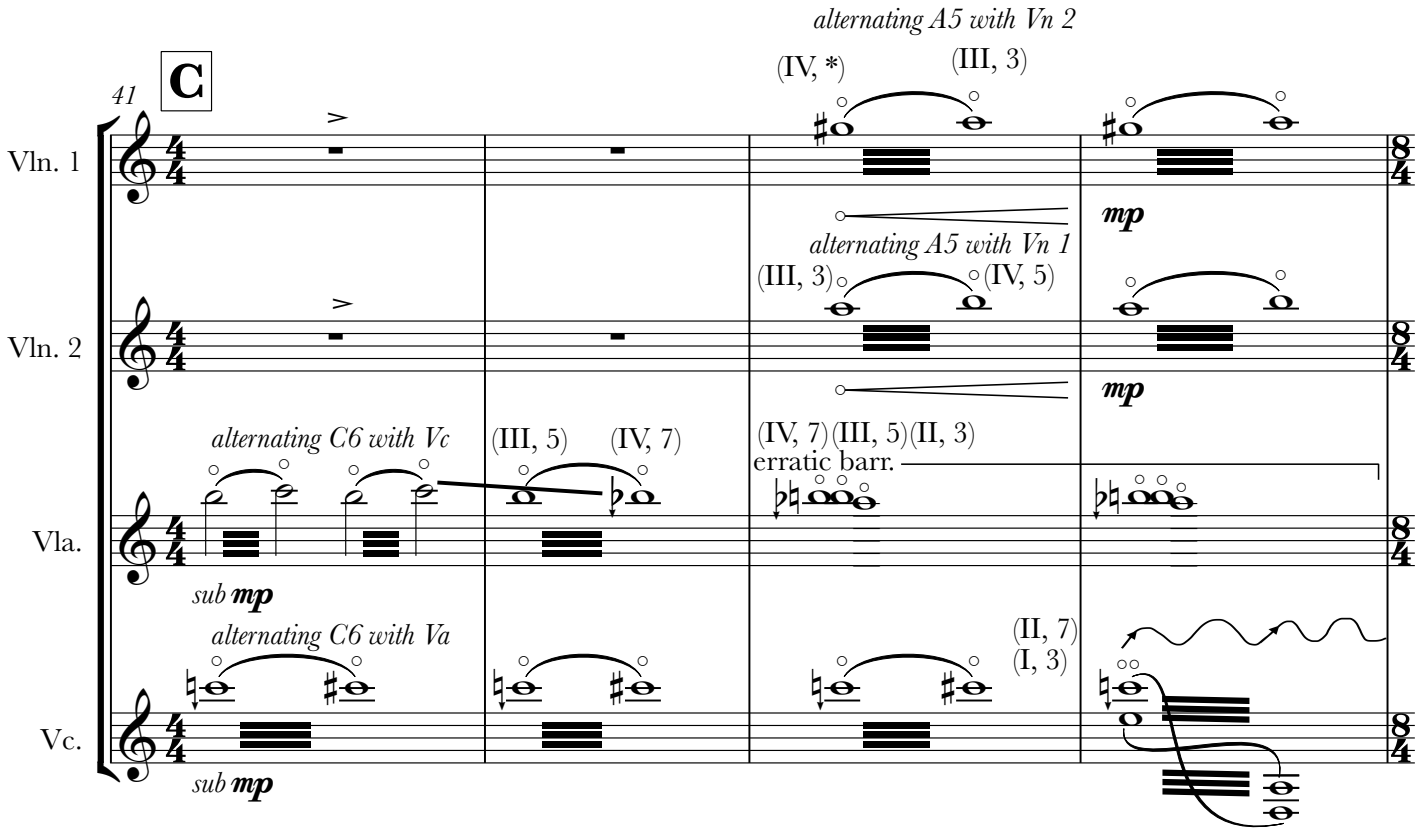

21
lots of bow
FL
Vln. 1
measured tremolo
(III, 3)
(IV, *)
Vln. 2
Vla.
(II, 7)
(I, 3)
(measured tremolo)
(II, 2)
(III, 7)
Vc.

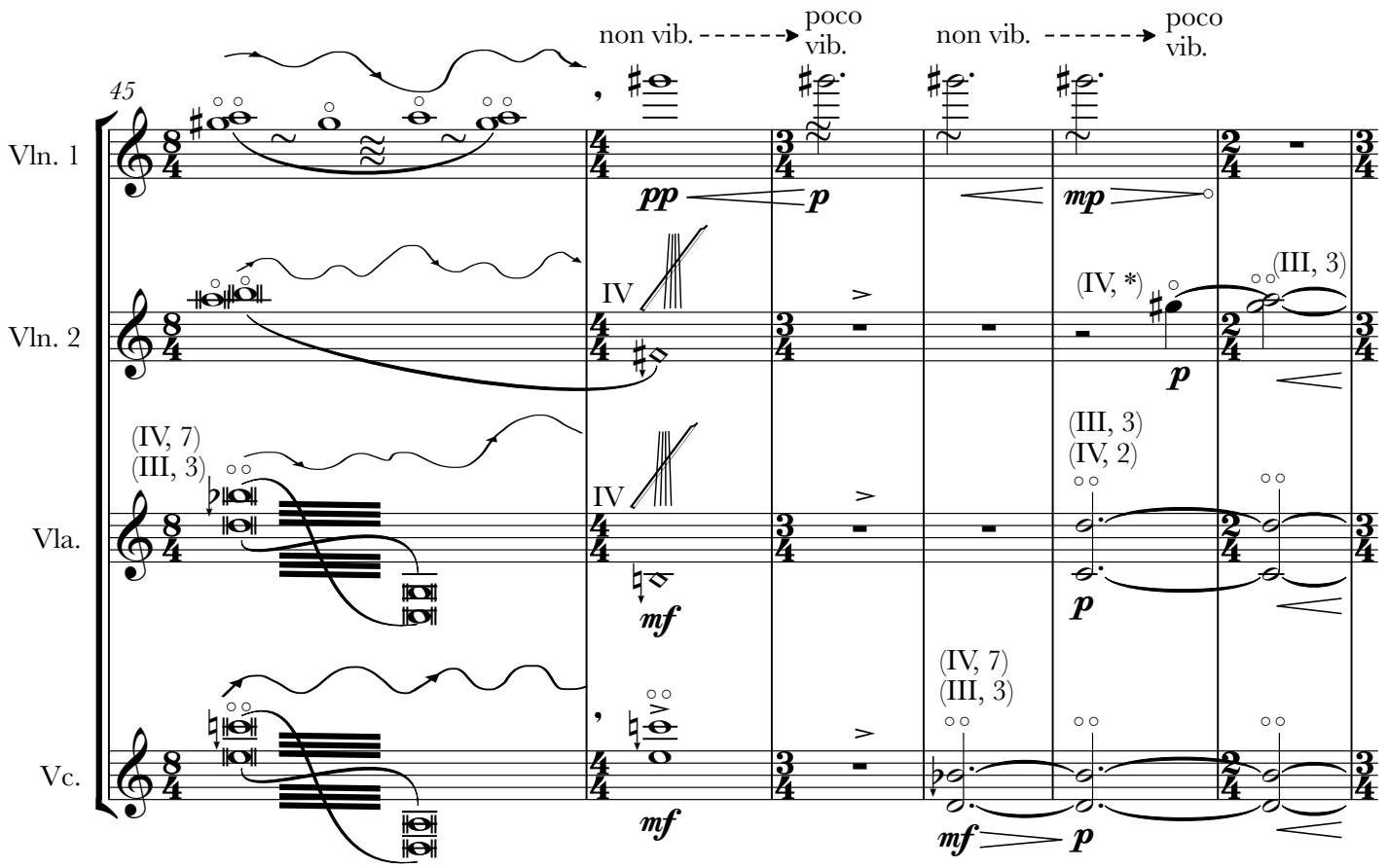

23
(measured tremolo)
(III, 3) (IV, 5)
clear and steady rhythmic articulation,
alternating A5 with Vn 2
Vln. 1
(measured tremolo)
alternating G5 with Vc F5
(IV, 4) (III, 3)
clear and steady rhythmic articulation,
alternating A5 with Vn 1
Vln. 2
alternating E5 with Vc F5
(IV, 5)
Vla.
alternating F5 with Vn 2 G5
alternating F5 with Va E5
Vc.

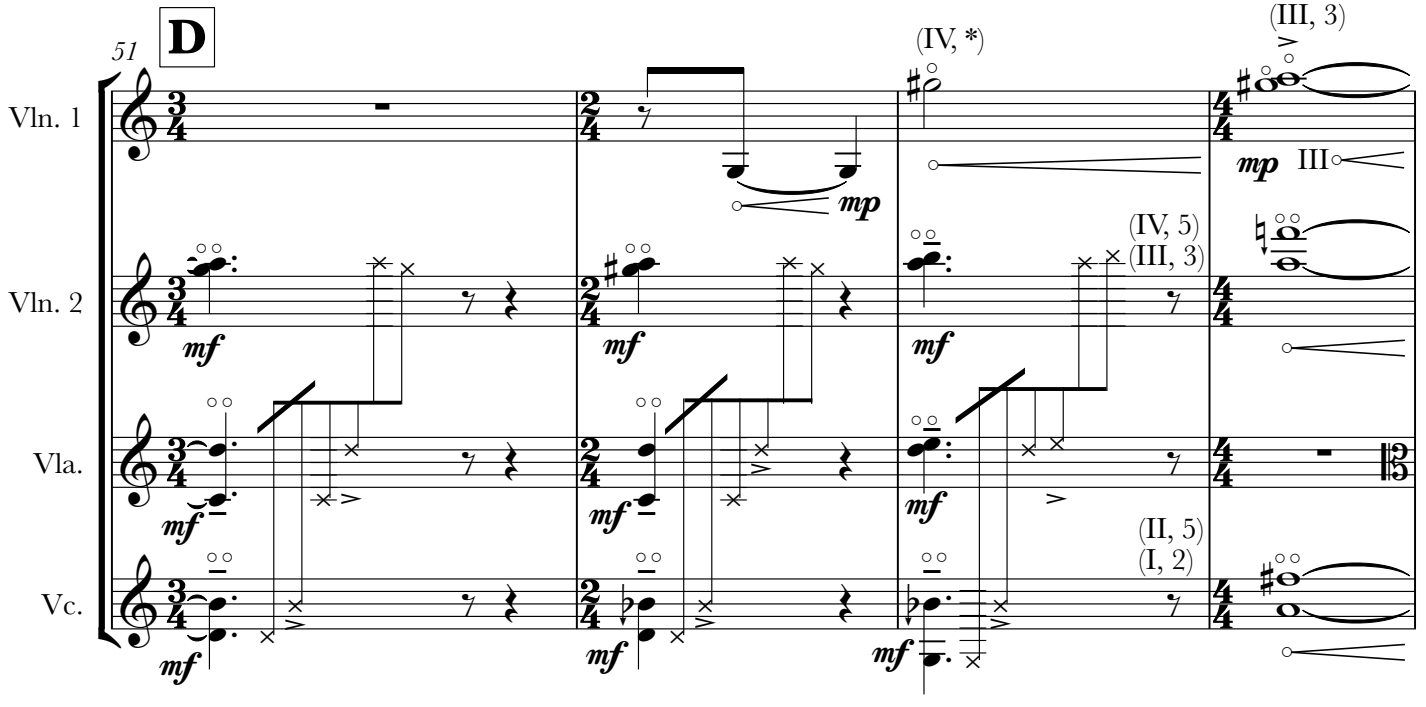

26
Vln. 1
Vln. 2
Vla.
Vc.
alternating A5 with Vn 2
alternating A5 with Vn 1
(IV, *)
(III, 3)
(IV, 5)
alternating E5 with Vc F5
(IV, 5)
alternating F5 with Va E5
mf

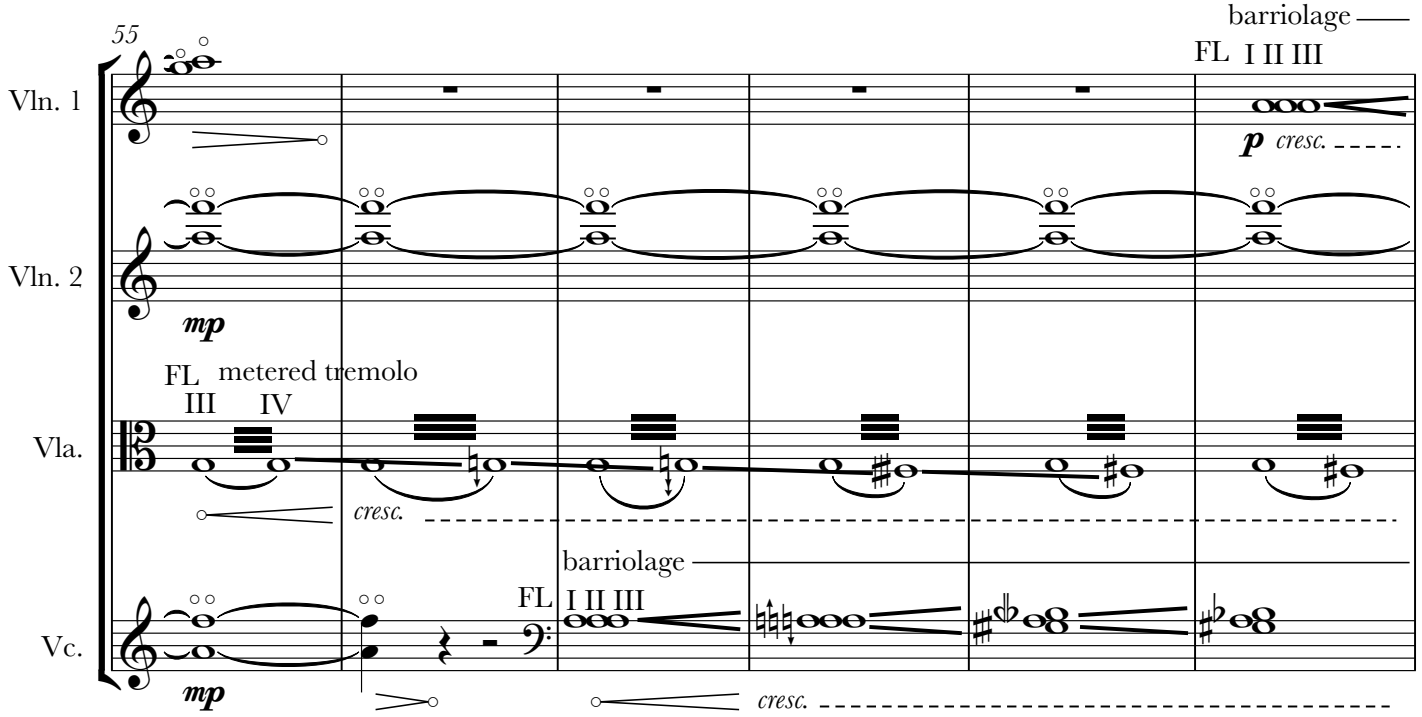

B
30
Vln. 1
Vln. 2
Vla.
Vc.
P
I
II
(657Hz)
f
mimic
beating rhythm
barr.
T
P
T
p
(657Hz)
(652Hz)
(660Hz)
(IV, 5)
(I, 3)
(II, 2)

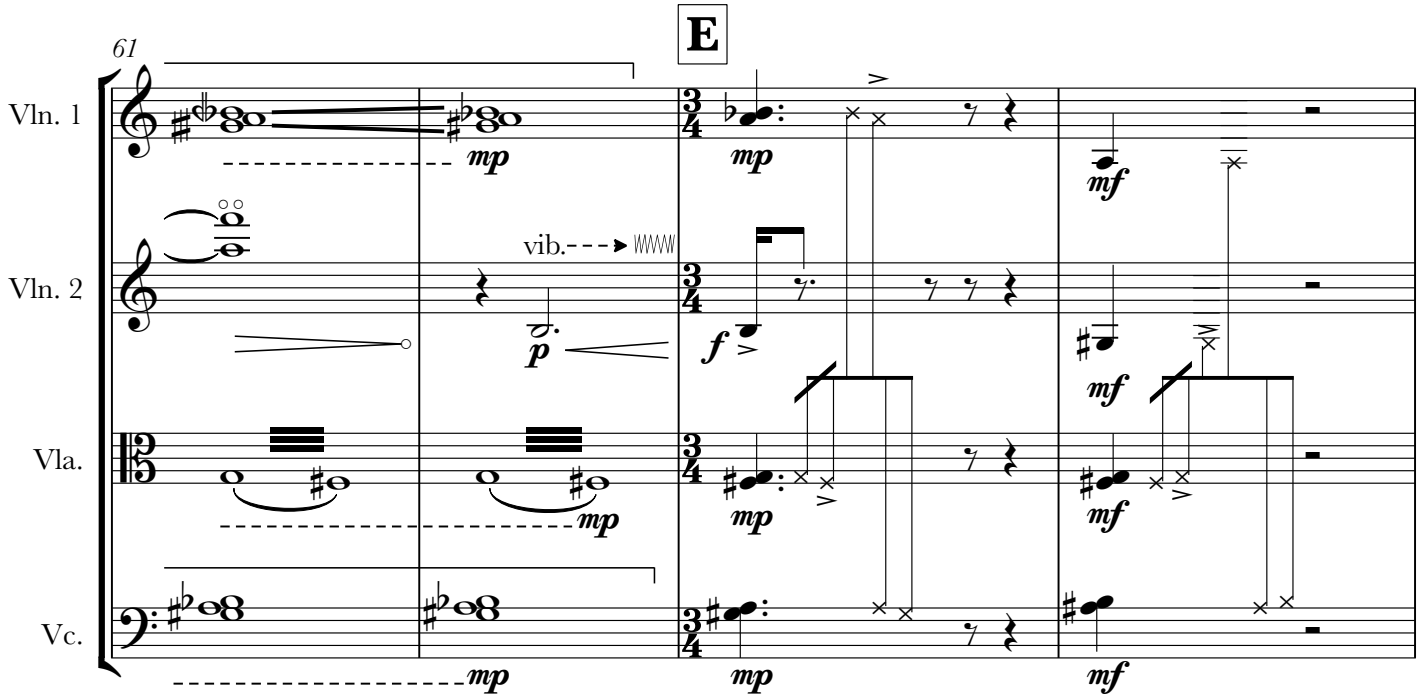

mimic
beating rhythm
P
T
36
barriolage
Vln. 1
Vln. 2
Vla.
Vc.
(IV, 7)
molto vib.
match beat rhythm
(II, 3)
(III, 3)
(IV, 8)
(III, 5)
(II 7)
(I, 5)
sub mf

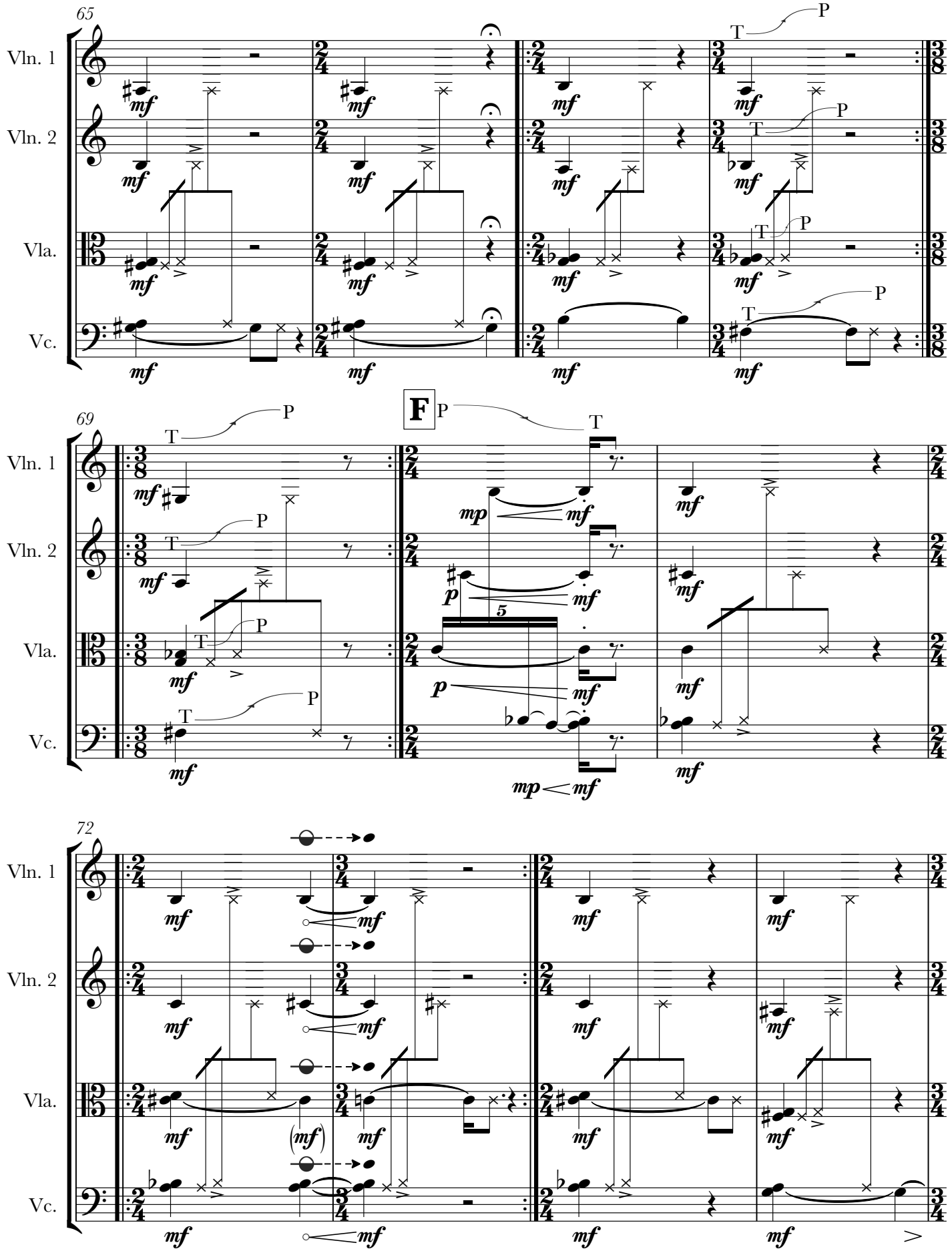

alternating A5 with Vn 2
41
C
(IV, *)
(III, 3)
alternating A5 with Vn 1
(III, 3)
(IV, 5)
alternating C6 with Vc
(III, 5)
(IV, 7)
(IV, 7)
(III, 5)
(II, 3)
erratic barr.
sub mp
alternating C6 with Va
(II, 7)
(I, 3)
sub mp

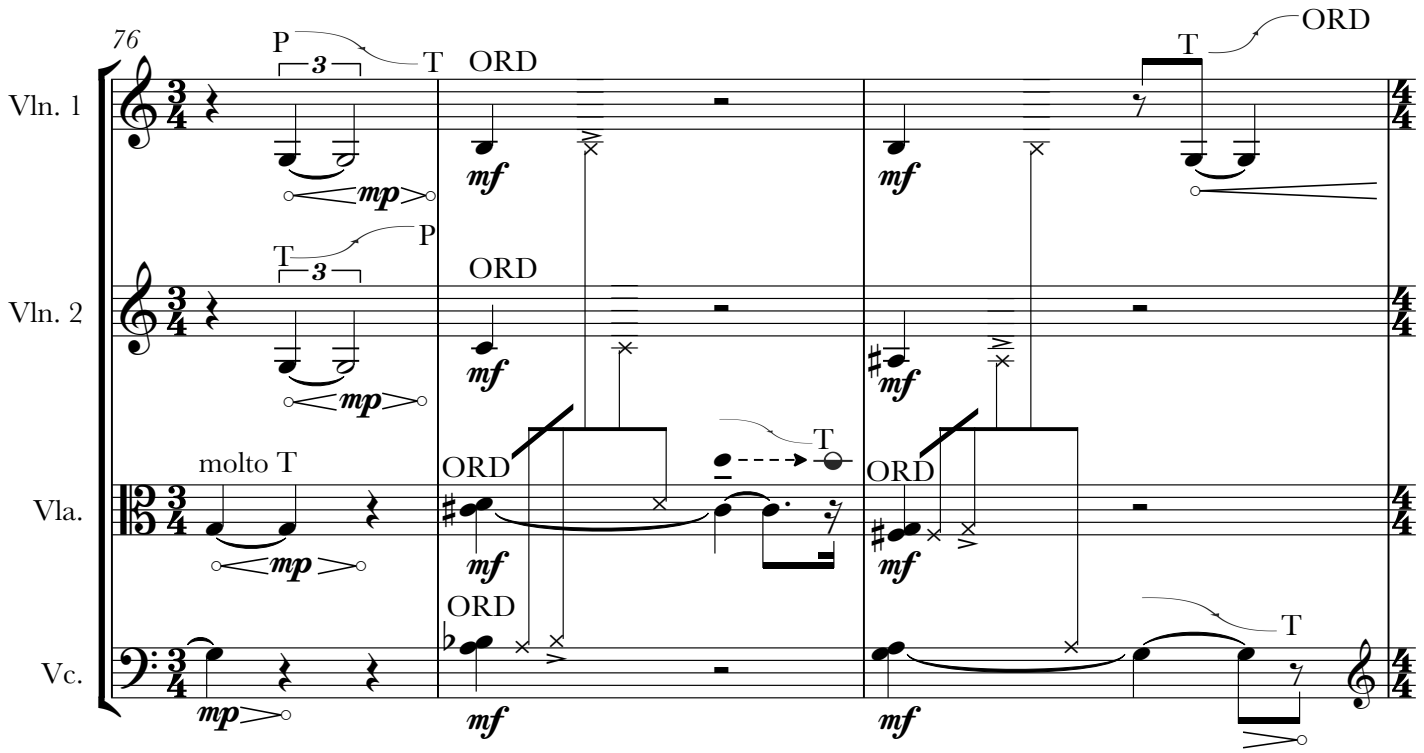

45
Vln. 1
Vln. 2
Vla.
Vc.
non vib.
poco vib.
non vib.
poco vib.
pp
p
mp
IV
(IV, *)
(III, 3)
(IV, 7)
(III, 3)
(III, 3)
(IV, 2)
mf
(IV, 7)
(III, 3)

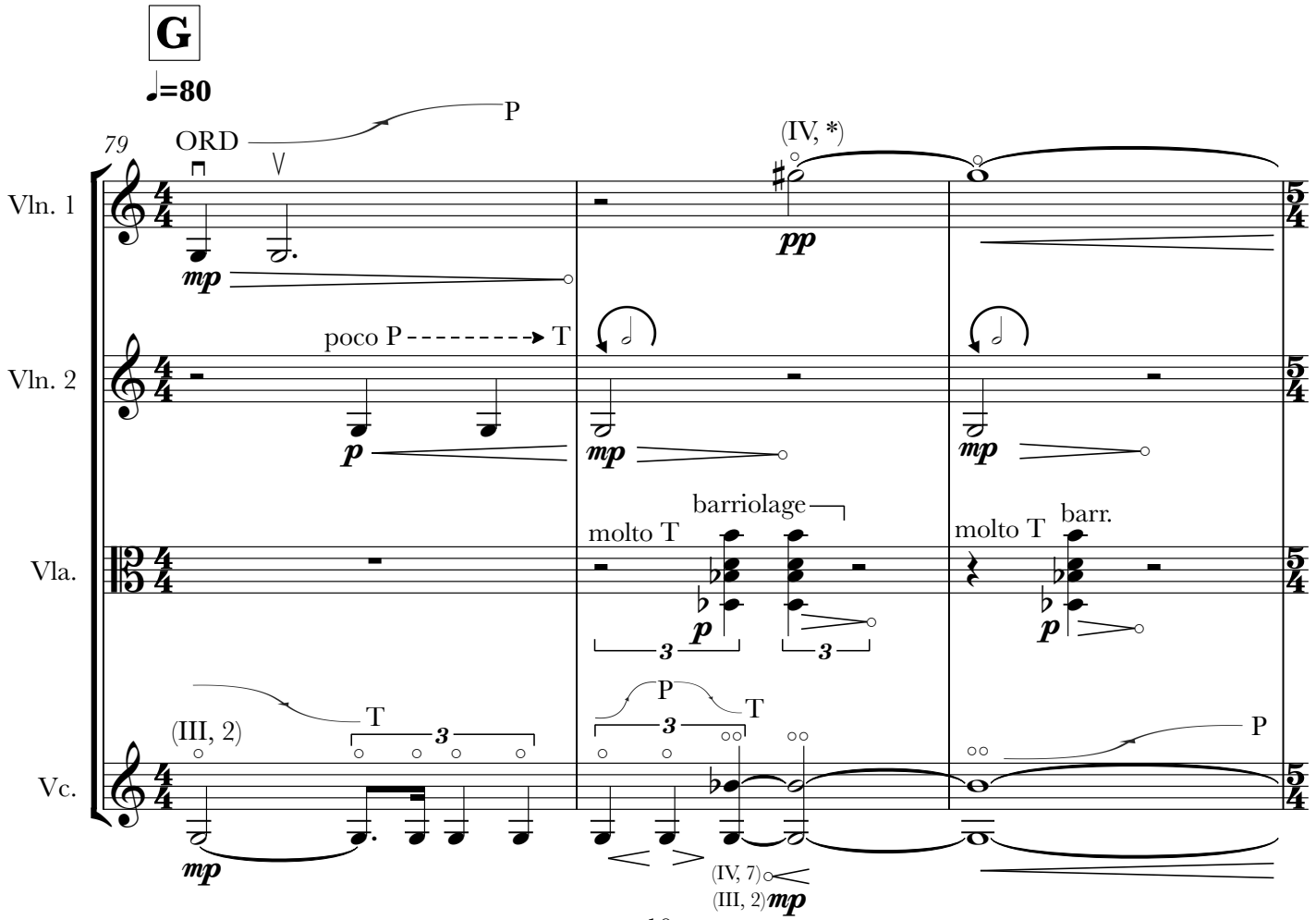

51
D
Vln. 1
Vln. 2
Vla.
Vc.
(IV, *)
(III, 3)
mp
III
(IV, 5)
(III, 3)
(II, 5)
(I, 2)
mf

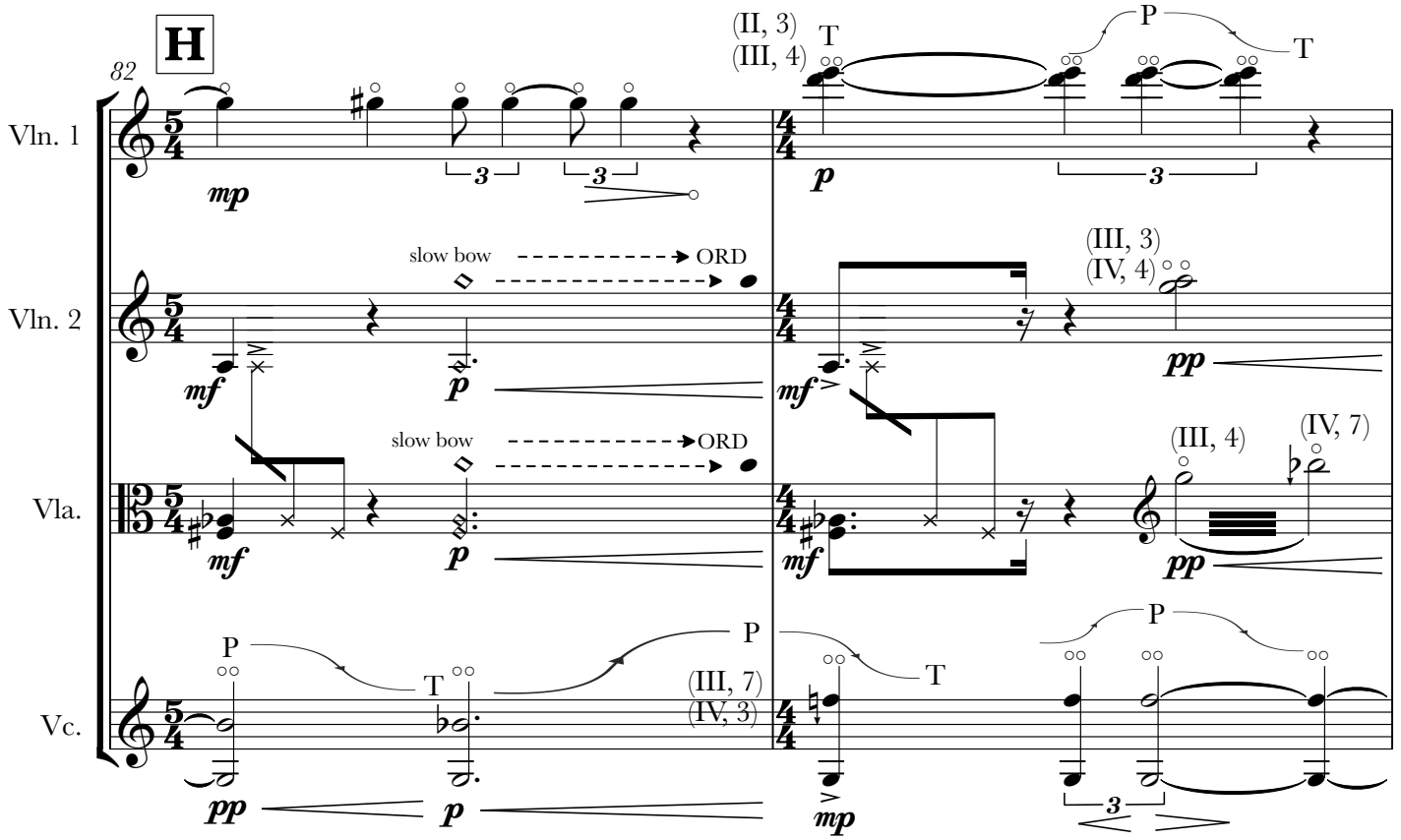

55
barriolage
FL I II III
Vln. 1
p cresc.
Vln. 2
mp
FL metered tremolo
III IV
Vla.
cresc.
barriolage
FL I II III
Vc.
mp
cresc.

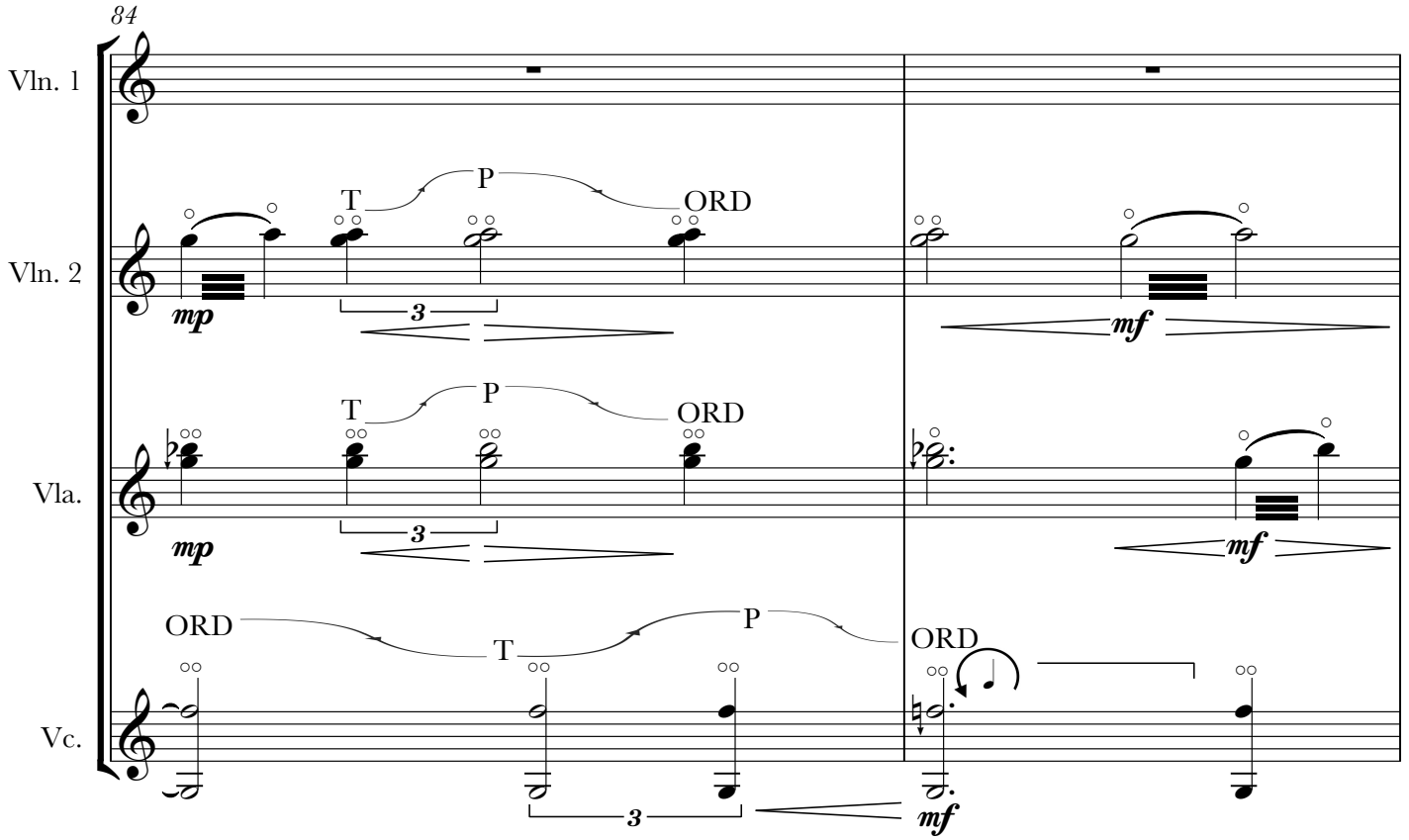

61
E
Vln. 1
mp
mp
mf
Vln. 2
vib.
p
f
mf
Vla.
mp
mp
mf
Vc.
mp
mp
mf

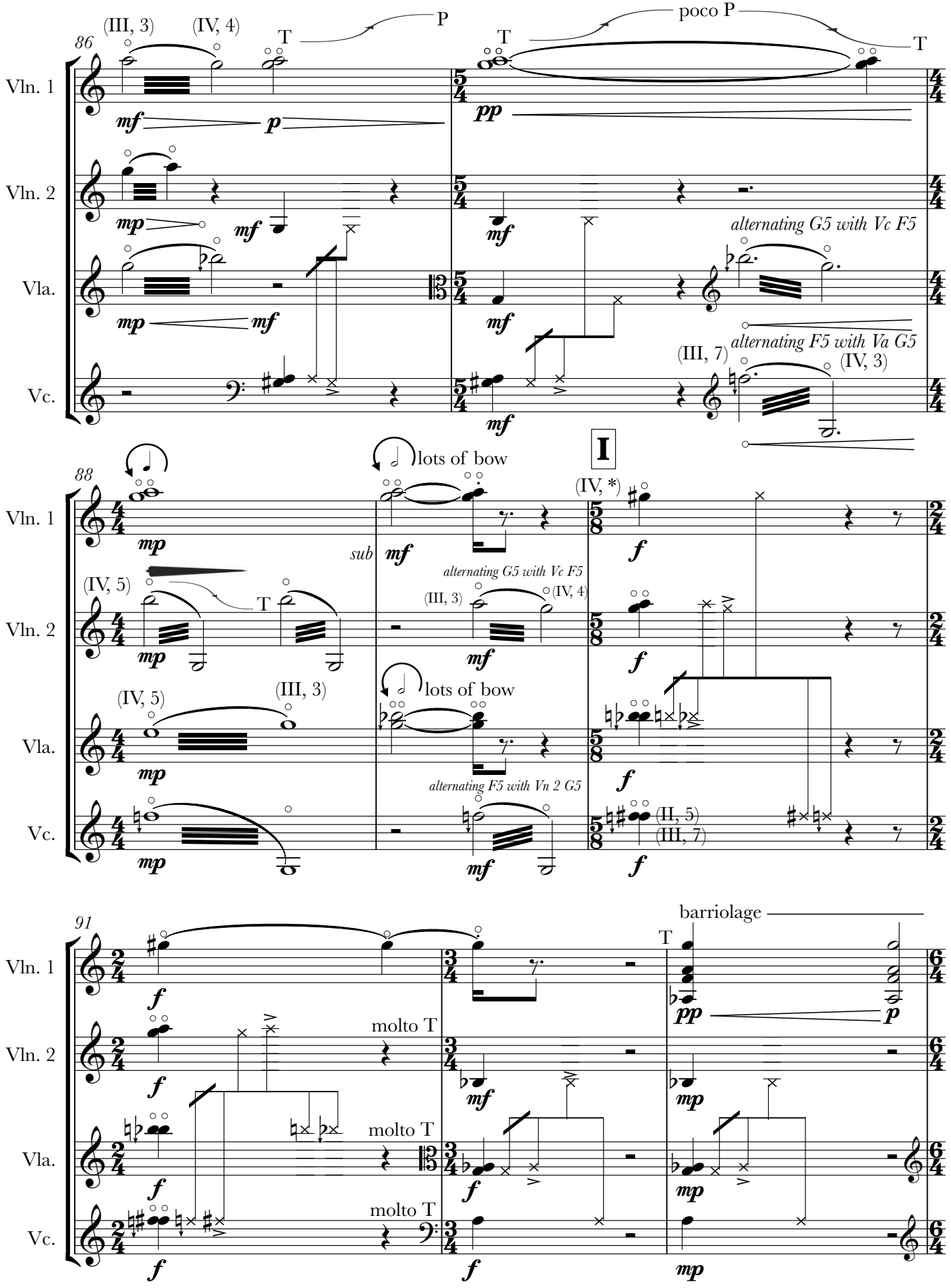

65
Vln. 1
Vln. 2
Vla.
Vc.
mf
T
P
69
F
mp
p
5
72
(mf)

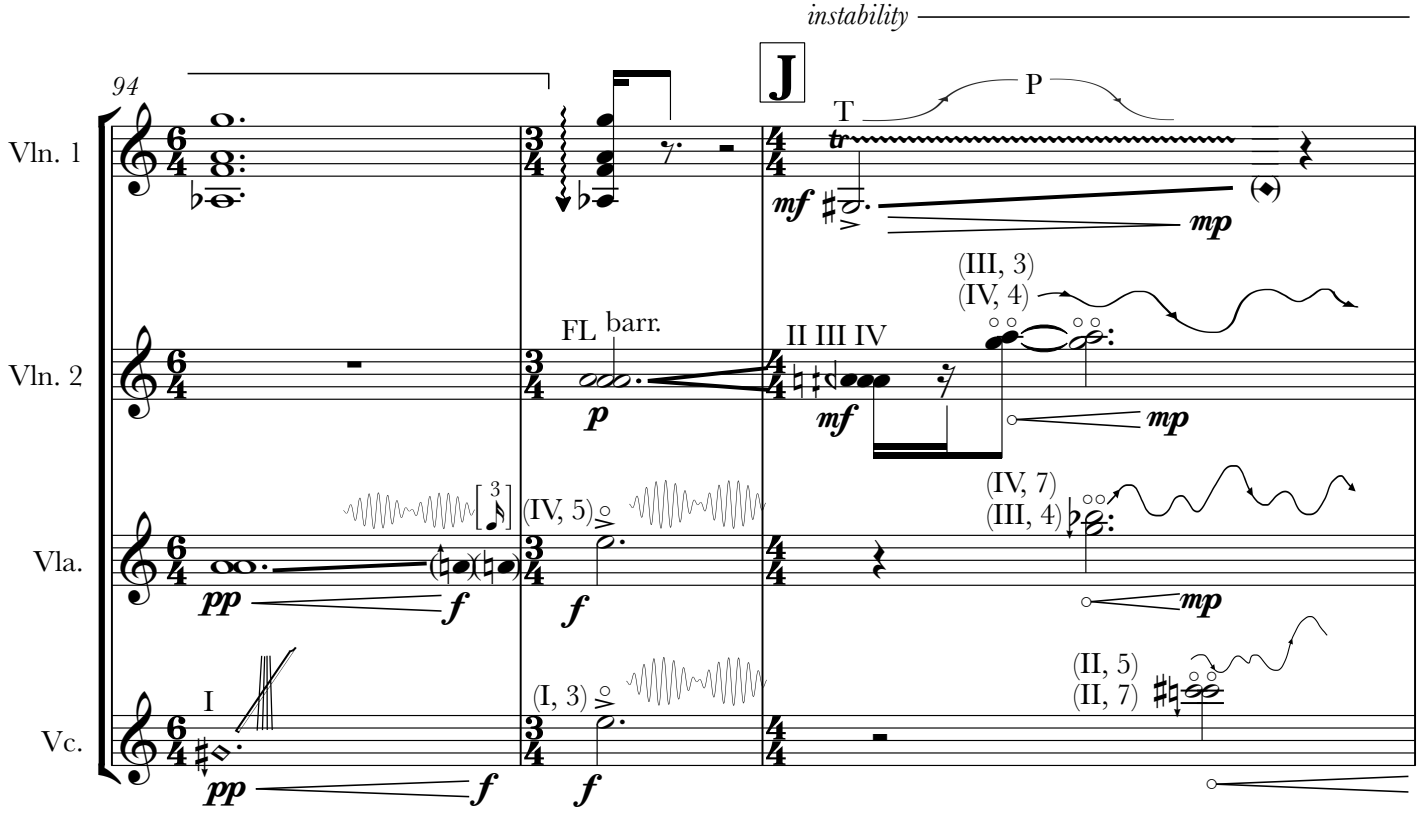

76
Vln. 1
Vln. 2
Vla.
Vc.
P
T
ORD
mp
mf
molto T

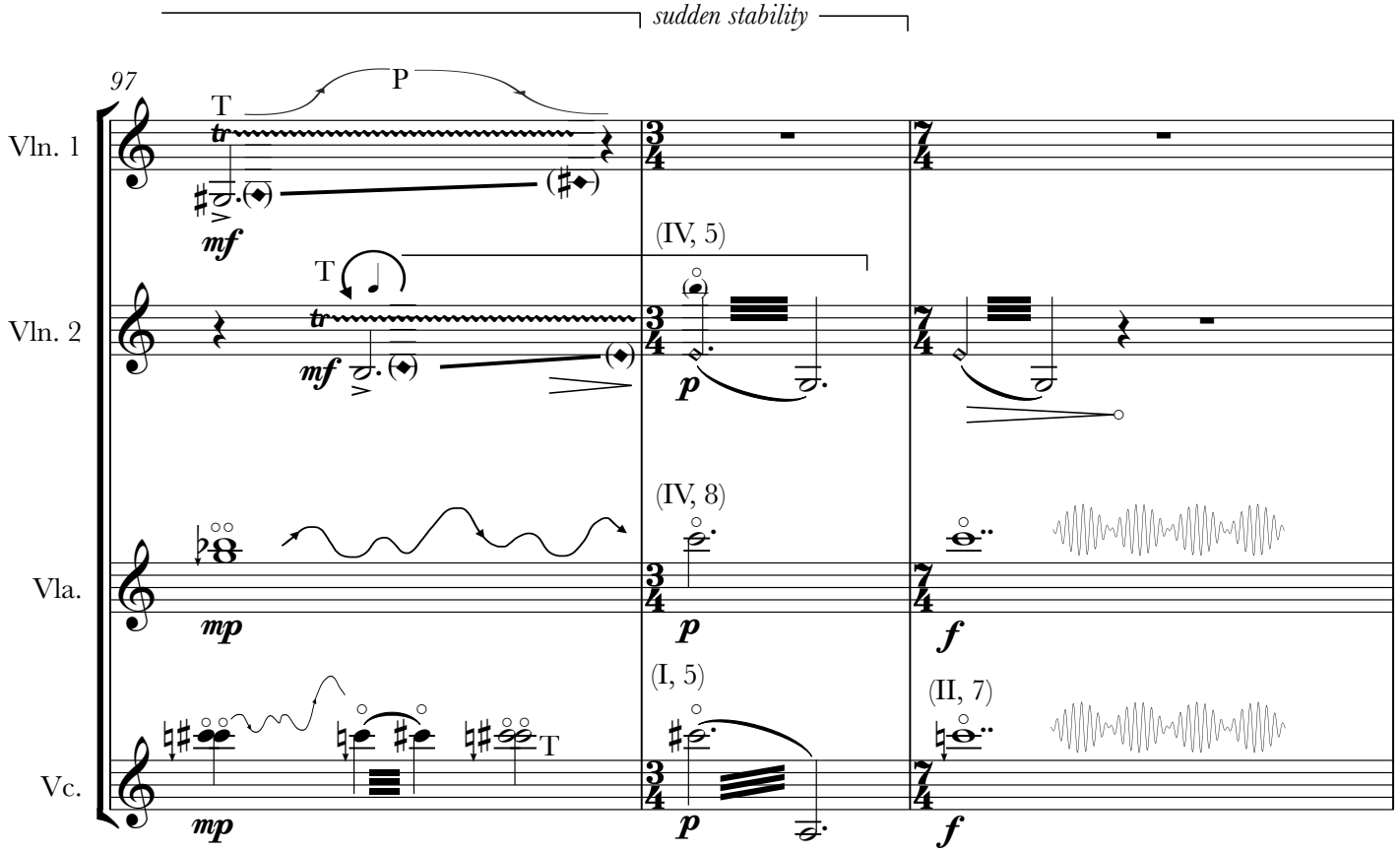

G
♩=80
79
Vln. 1
Vln. 2
Vla.
Vc.
ORD
P
(IV, *)
pp
mp
poco P
T
p
barriolage
molto T
barr.
(III, 2)
(IV, 7)
(III, 2)

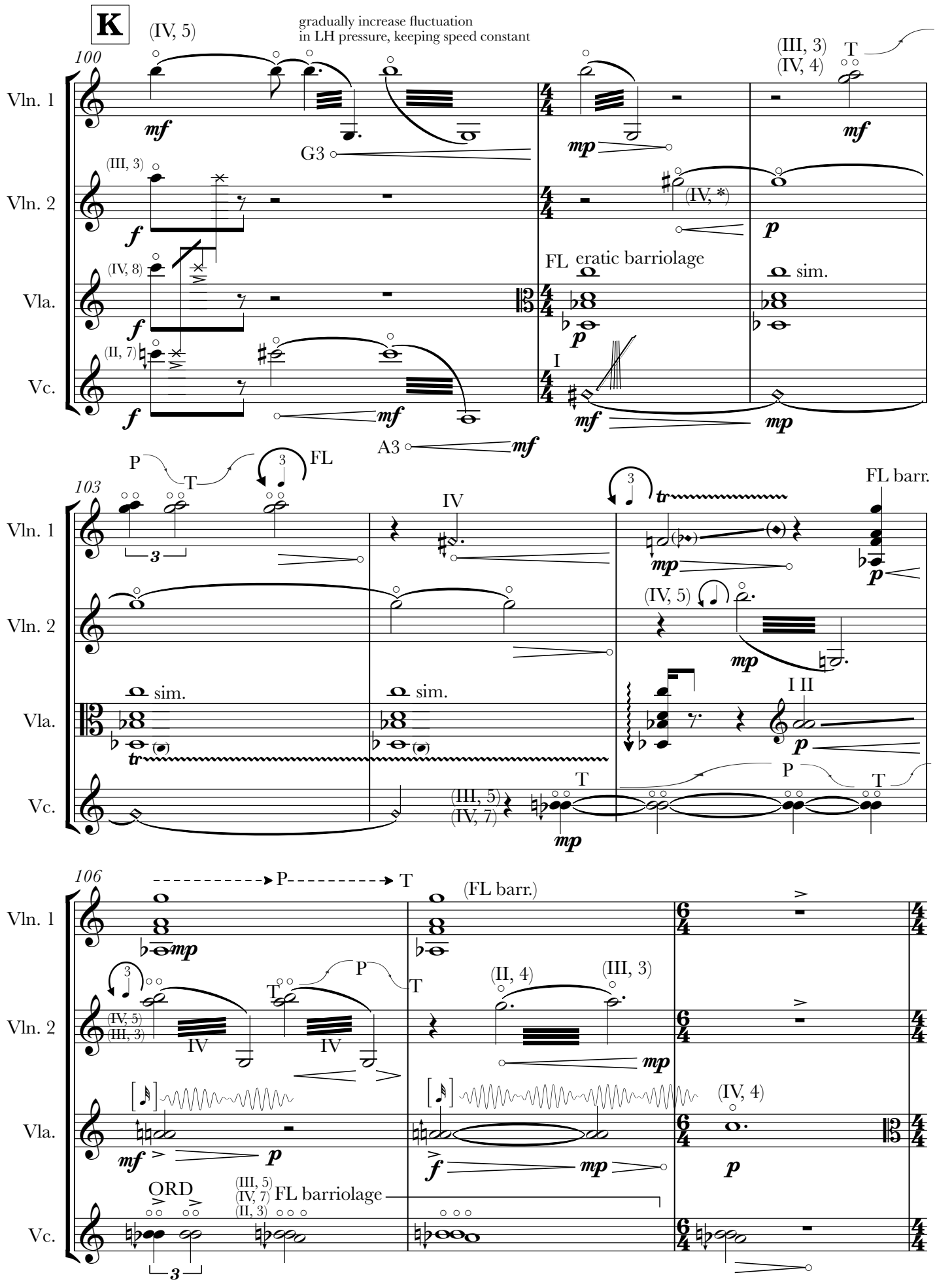

H
82
Vln. 1
Vln. 2
Vla.
Vc.
(II, 3)
(III, 4)
T
P
T
mp
p
3
slow bow
ORD
(III, 3)
(IV, 4)
mf
pp
(III, 4)
(IV, 7)
P
T
(III, 7)
(IV, 3)

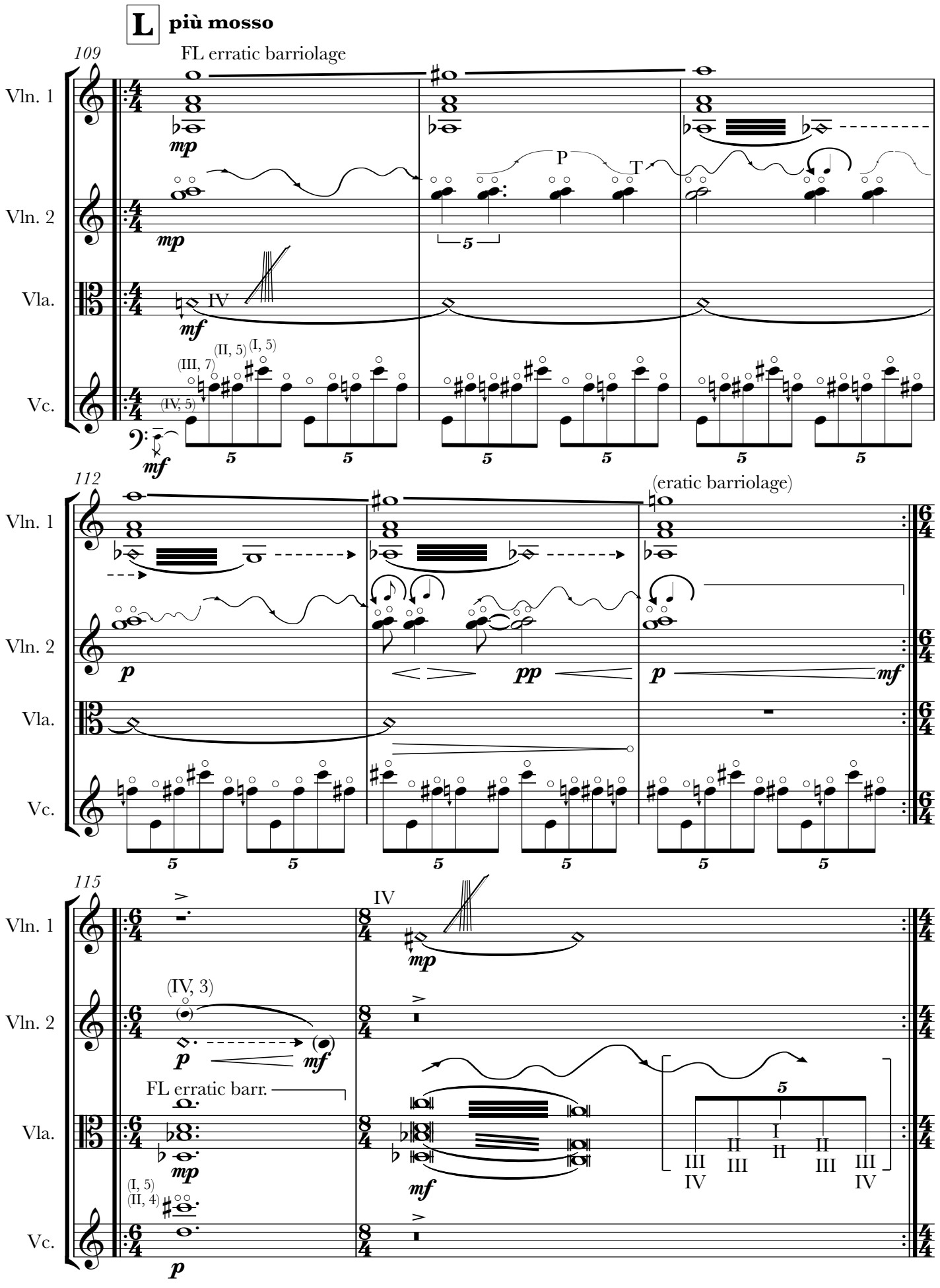

84
Vln. 1
Vln. 2
Vla.
Vc.
T
P
ORD
mp
mf
3
ORD
T
P

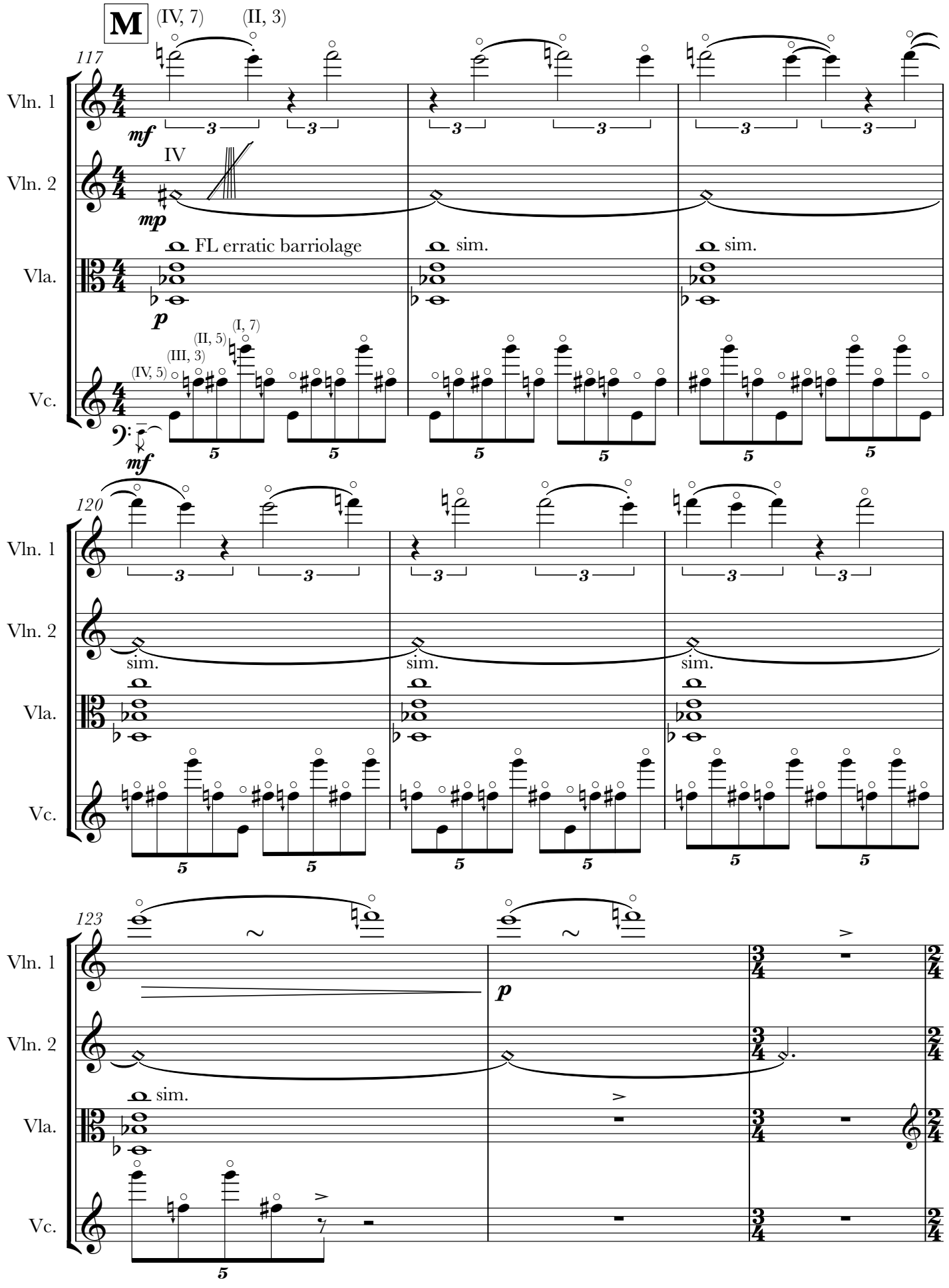

86
(III, 3)
(IV, 4)
T
P
poco P
Vln. 1
Vln. 2
Vla.
Vc.
mf
p
pp
mp
alternating G5 with Vc F5
alternating F5 with Va G5
(III, 7)
(IV, 3)
I
88
lots of bow
sub
(IV, *)
(IV, 5)
(III, 3)
(IV, 4)
alternating F5 with Vn 2 G5
(II, 5)
91
barriolage
molto T

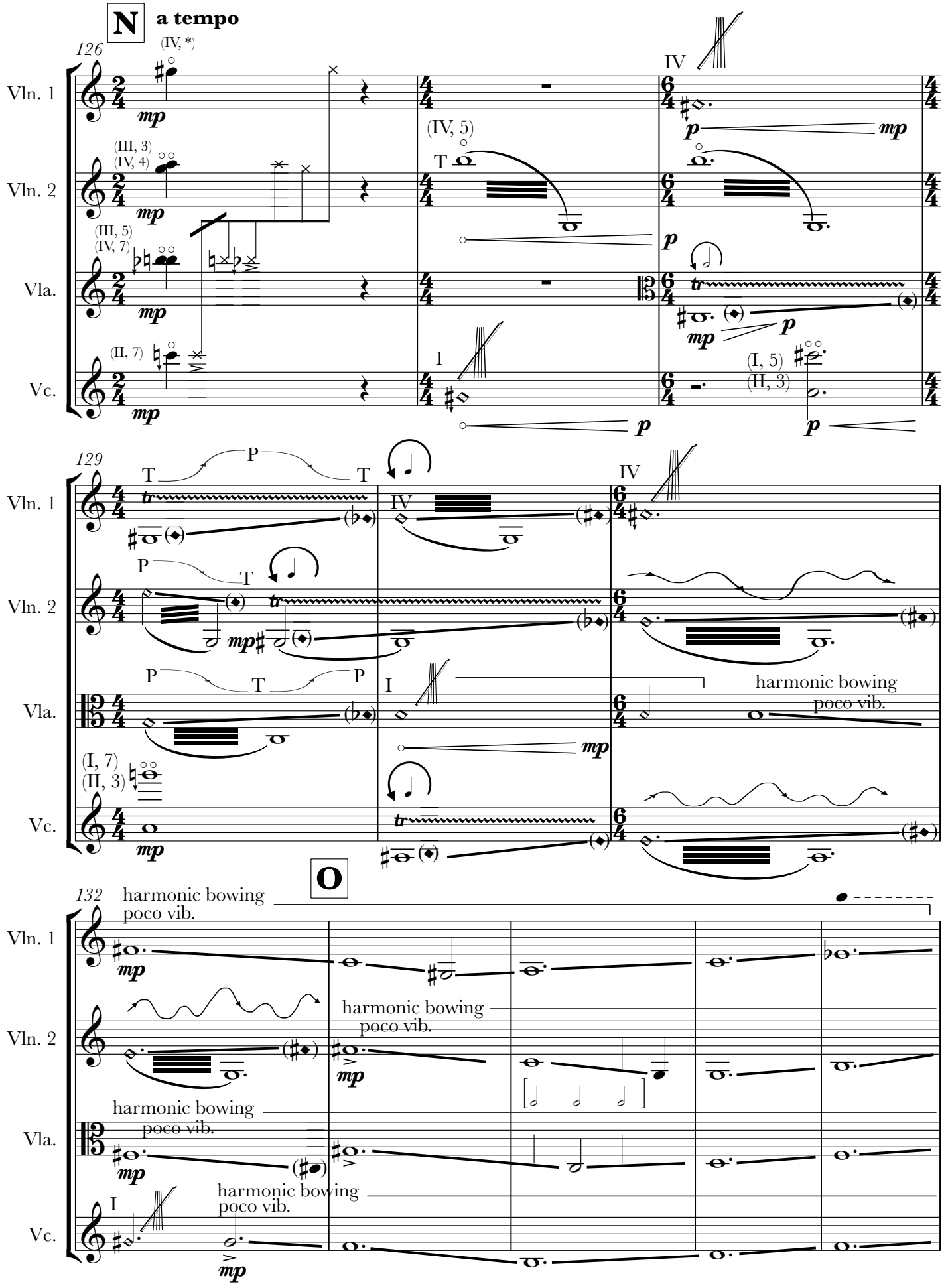

instability
94
J
Vln. 1
Vln. 2
Vla.
Vc.
T
P
mf
mp
(III, 3)
(IV, 4)
FL
barr.
II III IV
p
mf
mp
(IV, 5)
(IV, 7)
(III, 4)
pp
f
mp
I
(I, 3)
(II, 5)
(II, 7)

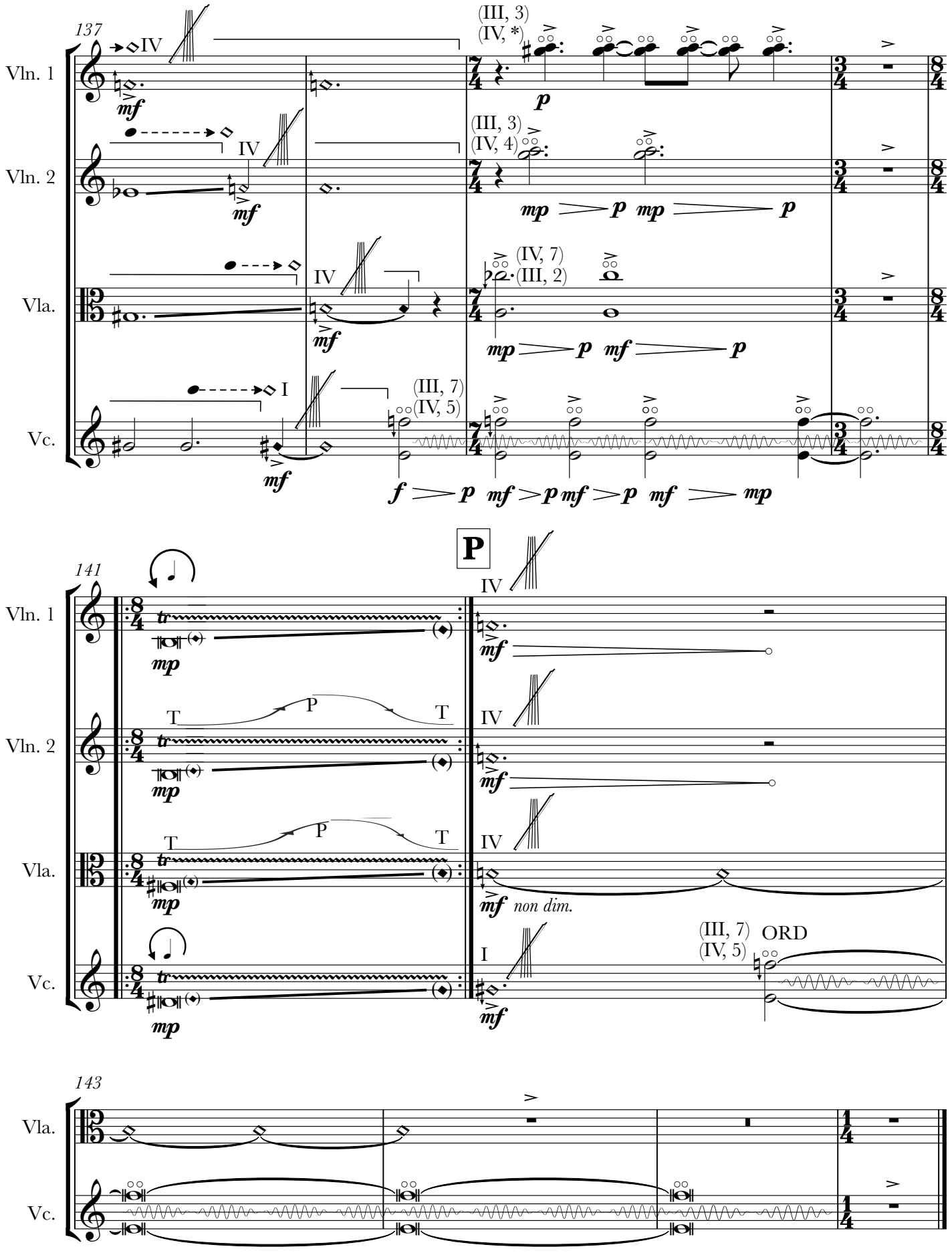

sudden stability
97
Vln. 1
Vln. 2
Vla.
Vc.
T
P
mf
(IV, 5)
p
(IV, 8)
mp
f
(I, 5)
(II, 7)


K
gradually increase fluctuation
in LH pressure, keeping speed constant
100
Vln. 1
Vln. 2
Vla.
Vc.
(IV, 5)
(III, 3)
(IV, 4)
T
G3
(IV, *)
FL eratic barriolage
sim.
I
A3
103
P
FL
IV
FL barr.
(IV, 5)
I II
(III, 5)
(IV, 7)
106
(FL barr.)
(II, 4)
(III, 3)
(IV, 4)
ORD
FL barriolage
(II, 3)


L
più mosso
109
FL erratic barriolage
Vln. 1
Vln. 2
Vla.
Vc.
mp
mf
P
T
IV
(III, 7)
(II, 5)
(I, 5)
(IV, 5)
5
112
(eratic barriolage)
p
pp
mf
115
(IV, 3)
FL erratic barr.
(I, 5)
(II, 4)
III
IV
II
I


M
(IV, 7)
(II, 3)
117
Vln. 1
Vln. 2
Vla.
Vc.
mf
IV
mp
FL erratic barriolage
sim.
p
(I, 7)
(II, 5)
(III, 3)
(IV, 5)
mf
120
sim.
123
p


N
a tempo
126
Vln. 1
Vln. 2
Vla.
Vc.
(IV, *)
(III, 3)
(IV, 4)
(III, 5)
(IV, 7)
(II, 7)
(IV, 5)
(I, 5)
(II, 3)
IV
I
T
mp
p
129
P
harmonic bowing
poco vib.
(I, 7)
(II, 3)
O
132


137
Vln. 1
Vln. 2
Vla.
Vc.
IV
I
(III, 3)
(IV, *)
(III, 3)
(IV, 4)
(IV, 7)
(III, 2)
(III, 7)
(IV, 5)
mf
p
mp
f
141
P
T
P
T
non dim.
ORD
143