

Fission

**Michael Winter (2003)
revised (2006)**

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32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
+0 +45 -12 +30 -31 +6 +41 -27 +2 +28 -49 -29 -14 -2 +4 +5 +0 -12 -31 +41 +2 -49 -14 +4 +0 -31 +2 -14 +0 +2 +0 +0

Series

Notes:

30 26 22 18
15 13 11 9

Flute

28 20
14 10
7 5

Clarinet

16
8
4
2

Trp./
Hn.

24
12
6
3

Vibraphone

32 31 30 28 26 25 24 22 21 20 19 18 17
16 15 14 13 12 11 10 9
8 7 6 5

Pno. I

4 3
2
1

32 31 29 28 27 25 23 22 21 20 19 18 17
16 15 14 13 12 11 10 9
8 7 6 5

Pno. II

4 3
2
1

31 29 23 17

Violin I

27 25 21 19

Violin II

31 29 23 21

Viola

27 25 19 17

Cello

* **Instrumentation:** Though it is preferred to play this piece with the full ensemble, it may be played with just pianos. If played with the large ensemble, the second piano part, the viola part, and the cello part are optional. Of utmost importance is that all pitches are weighted equally in that they all sound and no pitch is more prominent than the others. Doublings in most of the parts are encouraged if possible so long as all instruments and pitches remain equally prominent. Any instrument except the pianos may be substituted by an instrument of similar timbre in the same part (or instruments that differ in timbre from the instruments in the other parts), so that a significant timbral distinction between parts (represented by a staff or staff group) is maintained.

* To the left is a display of the available notes for each instrument. These notes are the closest pitches in the 12-tone equal-tempered system to the desired sounding pitches and harmonics of Bb1 (represented by harmonic numbers above each staff) to be played.

* Listed above (on this page) is the harmonic series from Bb1 to Bb6 spanning 5 octaves and 32 harmonics. Written in the staff are the closest pitches in the 12-tone equal-tempered system to the desired sounding pitches. Above each note is a harmonic number of Bb1 and a cent deviation, in one-hundredths of a tempered semitone, from the closest tempered pitch.

* Included are two scores and a harmonic scheme. The first is written "as played" and the second is written as close to "as sounds."

* For the score written as close to as "as sounds," the deviations presented on this page are assumed throughout. These deviations can be determined by matching the harmonic number above the staves to the left (displayed on this page) with the harmonic number on the staff above (also displayed on this page), which also shows the cent deviation from the closest tempered pitch in a traditional notation system. It is understood and acceptable that the pitches played by the Vibraphones will be two cents flat.

* The score written "as played" includes all appropriate transpositions. Cent deviations are included only in the Flute and Clarinet parts because they will need to adjust their embouchure to play the desired pitches. With correct tunings of the pianos, the players can play as if they are playing in 12-tone equal-temperament. The Trumpet, Horn, and Vibraphones require no alternate tuning.

* The Trumpet and Horn share the two staves bracketed by a curly brace in the score that is written "as sounds" and share the dynamic between the staves. In the score that is written "as played," the Trumpet and Horn have separate staves.

* Though a Trumpet in C and a Clarinet in Bb are preferred, a Trumpet in Bb and a Clarinet in A are acceptable. However, the players must transpose accordingly if an alternate instrument is used.

* Piano I cues each segment. The other performers should not play a newly available pitch until the cue. Available pitches from the previous segment should be given their full duration.

Notes For All Instrumentalists Except The Pianists:

* Each measure includes available pitches. Performers should give preference to pitches that are not sounding and should, in general, not repeat a note until they have played through all available pitches in a given segment. The Violinists may play double stops.

* The dynamics given below the staves are general for the entire ensemble except for the pianos, which should always be in the foreground without being too obtrusive. Each tone should enter and exit as imperceptibly as possible and may be from two to five seconds long with the duration equally divided between the crescendo and decrescendo portions of the tone ($n \xrightarrow{\text{X}} n$; where X is the given dynamic). In general, lower tones in the series should be longer than higher tones.

Notes For The Pianists:

* Piano tones are to be played at the dynamic written in between the staves and should always be in the foreground without being too obtrusive.

* The measures with notes under the feathered beams, which indicate a ritardando, are played linearly.

* For the available pitches given in a measure, tone durations should be analogous to pitch height so that lower tones sound longer than higher tones. All octaves should be played at approximately half the duration of the lower tone. Below is an approximated guide of tone durations for each segment (marked by rehearsal letters). Given are durations for all Bb's. The other tone durations should be approximated by the guidelines above.

* The piece should increase in density over time. The piano players should start sparse and add more voices throughout the work. As more pitches become available, the pianists should play more chords and arpeggios that can illuminate the divisions that are laid out in the Harmonic Scheme.

A	B	C	D	E	End
Bb6 -- 4"	Bb6 -- 2"	Bb6 -- 1"	Bb6 -- .5"	Bb6 -- .25"	Bb6 -- As fast as possible
Bb5 -- 8"	Bb5 -- 4"	Bb5 -- 2"	Bb5 -- 1"	Bb5 -- .5"	Bb5 -- Half as fast as Bb6
	Bb4 -- 8"	Bb4 -- 4"	Bb4 -- 2"	Bb4 -- 1"	Bb4 -- Half as fast as Bb5
		Bb3 -- 8"	Bb3 -- 4"	Bb3 -- 2"	Bb3 -- Half as fast as Bb4
			Bb2 -- 8"	Bb2 -- 4"	Bb2 -- Half as fast as Bb3
				Bb1 -- 8"	Bb1 -- Half as fast as Bb2

Tunings For The Pianos and Violins:

* Except for the octave between Bb5 and Bb6, both pianos are tuned the same. The appropriate cent deviations for most keys and the corresponding strings can be determined by matching the harmonic number given above the staves to the left with those given with the cent deviation on the staff at the top of this page. Any tone that is sharp by more than 6 cents from the nearest tempered semitone is tuned down from the next highest key. The 32nd harmonic in both pianos should sound from the B7 key tuned down 100 cents in order to facilitate the 31st harmonic to sound from the Bb6 key tuned down 55 cents.

* Given below is the scordatura of the strings expressed as cent deviations from the traditional tempered tuning. Also given is the natural harmonic that will be played and the corresponding key of the piano that sounds that same tone. The string can be tuned with a tuner that displays cent deviations, but should always fine tune to the pianos before the performance if possible.

* This scordatura has been given to make it easier for the players in that they only have to play natural harmonics. However, these tunings are not mandatory. Players may tune however they like and also play artificial harmonics and stopped tones so long as all pitches in the series sound equally prominent and are in tune.

Violin I
E ↑ E+28 Tune 2nd Harmonic to F6 of Piano II (23)
A ↓ Ab+30 Tune 4th Harmonic to Ab6 of Piano II (29)
D ↑ D+43 Tune 6th Harmonic to Bb6 of Piano I (31)
G ↑ G+19 Tune 5th Harmonic to B5 of Piano I (17)

Violin II
E ↓ Eb-29 Tune 2nd Harmonic to Eb6 of Piano I (21)
A ↓ G+6 Tune 4th Harmonic to G6 of Piano II (27)
D ↓ D-13 Tune 5th Harmonic to Gb6 of Piano II (25)
G ↓ Gb-4 Tune 6th Harmonic to Db6 of Piano I (19)

Viola
A ↓ Ab+30 Tune 4th Harmonic to Ab6 of Piano II (29)
D ↑ D+43 Tune 6th Harmonic to Bb6 of Piano I (31)
G ↓ G-41 Tune 7th Harmonic to F6 of Piano II (23)
C ↓ B-15 Tune 10th Harmonic to Eb6 of Piano I (21)

Cello
A ↑ A+37 Tune 7th Harmonic to G6 of Piano II (27)
D ↓ D-13 Tune 10th Harmonic to Gb6 of Piano II (25)
G ↑ G+47 Tune 11th Harmonic to Db6 of Piano I (19)
C ↓ B+5 Tune 16th Harmonic to B5 of Piano I (17)

Fission

Score Written "As Played"

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(revised 2006)

A

0' 1' 2' 3' 4'

Flute

Clarinet in Bb

Trumpet in C

Horn in F

Vibraphone

Piano I

Piano II

Violin I

Violin II

Viola

Cello

** Bowed

pp poco a poco cresc.

Pedale Sempre

* * * * *

-12 +41 -49 +4

-31 -14

pp poco a poco cresc.

pp poco a poco cresc.

Pedale Sempre

pp poco a poco cresc.

Pedale Sempre

* Piano I starts piece. Tones represented by black noteheads should be struck simultaneously with a dynamic slightly louder than the given marking at the beginning of every measure before playing the following available pitches (white noteheads).

** Vibraphone bowed throughout entire piece.

*** Cent deviations for these notes and all octave transpositions assumed throughout entire piece. If the Clarinets cannot hit the higher tones at a reasonably low dynamic, then the tones should be initially played by the Flutes and then later taken by the Clarinets when the ensemble reaches a dynamic comfortable for the clarinets to play those tones.

B

4' 5' ca 4'' 5'04'' 6'04'' 7'04''

Fl.

Cl.

Trp.

Hn.

Vibe.

Pno. I

Pno. II

** String Harmonic

Vln. I

** String Harmonic

VI. II

** String Harmonic

Vla.

** String Harmonic

Vlc.

p poco a poco cresc.

f

p poco a poco cresc.

pp poco a poco cresc.

p poco a poco cresc.

pp poco a poco cresc.

pp poco a poco cresc.

pp poco a poco cresc.

* If the piece is performed with two pianos, the black noteheads should only be performed by Piano II.

** Markings indicate which string and which natural harmonic to play. These markings are assumed throughout the entire piece.

7'04" 8'04" 9'04" ca 6" 3 9'10"

Fl. (mp)

Cl. (mp)

Trp. (mp)

Hn. (mp)

Vibe. (mp)

Pno. I (mp ff)

Pno. II (mp)

Vln. I (mp)

VI. II (mp)

Vla. (mp)

Vlc. (mp)

Fl. *mp poco a poco cresc.*

Cl. *mp poco a poco cresc.*

Trp. *mp poco a poco cresc.*

Hn. *mp poco a poco cresc.*

Vibe. *mp poco a poco cresc.*

Pno. I *mp poco a poco cresc.* *f*

Pno. II *mp poco a poco cresc.* *f*

Vln. I *mp poco a poco cresc.*

VI. II *mp poco a poco cresc.*

Vla. *mp poco a poco cresc.*

Vlc. *mp poco a poco cresc.*

D

12'10"
ca 8"

12'18"

13'18"

14'18"

Fl. *f poco a poco cresc.*

Cl. *f poco a poco cresc.*

Trp. *f poco a poco cresc.*

Hn. *f poco a poco cresc.*

Vibe. *f poco a poco cresc.*

Pno. I *fff* *f poco a poco cresc.* *fff*

Pno. II *f poco a poco cresc.* *fff*

Vln. I *f poco a poco cresc.*

Vl. II *f poco a poco cresc.*

Vla. *f poco a poco cresc.*

Vlc. *f poco a poco cresc.*

14'18"

14'28"

16'28"

The musical score for measures 6-8 is divided into two systems. The first system includes Flute (Fl.), Clarinet (Cl.), Trumpet (Trp.), Horn (Hn.), and Vibraphone (Vibe.). The second system includes Piano I (Pno. I), Piano II (Pno. II), Violin I (Vln. I), Violin II (Vln. II), Viola (Vla.), and Violoncello (Vlc.).

Key performance instructions include:

- Dynamic markings: *fff* (fortissimo) and *ppp* (pianissimo), with a decrescendo (*decresc.*) between them.
- Tempo/Performance instruction: *ca 10"* (approximately 10 seconds).
- Starred notes (*) in the Piano I and II parts indicate specific performance considerations.

* Regardless of whether Piano II is available, this run should be a continuous ritardando. For example, if the piece is only performed with one piano, no extra time should be given between the notes that would be alternated with Piano II in a multi-piano realization.

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Score Written As Close To "As Sounds"

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A

0' 1' 2' 3' 4'

Flute

Clarinet

Trumpet/
Horn

Vibraphone

Piano I

Piano II

Violin I

Violin II

Viola

Cello

pp poco a poco cresc.

**** Bowed**

pp poco a poco cresc.

Pedale Sempre

pp poco a poco cresc.

pp poco a poco cresc.

pp poco a poco cresc.

pp poco a poco cresc.

* Piano I starts piece. Tones represented by black noteheads should be struck simultaneously with a dynamic slightly louder than the given marking at the beginning of every measure before playing the following available pitches (white noteheads).

** Vibraphone bowed throughout entire piece.

*** If the Clarinets cannot hit the higher tones at a reasonably low dynamic, then the tones should be initially played by the Flutes and then later taken by the Clarinets when the ensemble reaches a dynamic comfortable for the clarinets to play those tones.

B

4' 5' ca 4" 5'04" 6'04" 7'04"

Fl. *p poco a poco cresc.*

Cl. *p poco a poco cresc.*

Trp./Hn. *p poco a poco cresc.*

Vibe. *p poco a poco cresc.*

Pno. I *p f p poco a poco cresc.*

Pno. II *p p poco a poco cresc.*

Vln. I *pp poco a poco cresc. p poco a poco cresc.*

Vln. II *pp poco a poco cresc. p poco a poco cresc.*

Vla. *pp poco a poco cresc. p poco a poco cresc.*

Vlc. *pp poco a poco cresc. p poco a poco cresc.*

* If the piece is performed with two pianos, the black noteheads should only be performed by Piano II.

7'04" 8'04" 9'04" ca 6" 9'10"

Fl. (mp)

Cl. (mp)

Trp./Hn. (mp)

Vibe. (mp)

Pno. I (mp ff)

Pno. II (mp)

Vln. I (mp)

Vln. II (mp)

Vla. (mp)

Vlc. (mp)



9'10"

10'10"

11'10"

12'10"

Fl. *mp poco a poco cresc.*

Cl. *mp poco a poco cresc.*

Trp./Hn. *mp poco a poco cresc.*

Vibe. *mp poco a poco cresc.*

Pno. I *mp poco a poco cresc.* **f**

Pno. II *mp poco a poco cresc.* **f**

Vln. I *mp poco a poco cresc.*

Vln. II *mp poco a poco cresc.*

Vla. *mp poco a poco cresc.*

Vlc. *mp poco a poco cresc.*

Detailed description: This page of a musical score covers measures 9'10'' to 12'10''. It features ten staves for various instruments: Flute (Fl.), Clarinet (Cl.), Trumpet/Horn (Trp./Hn.), Vibraphone (Vibe.), Piano I (Pno. I), Piano II (Pno. II), Violin I (Vln. I), Violin II (Vln. II), Viola (Vla.), and Violoncello (Vlc.). The score is in common time (C) and begins with a dynamic marking of *mp poco a poco cresc.* for all instruments. The Piano parts (Pno. I and II) show a progression from *mp* to **f** by the end of the section. The woodwinds and strings play sustained chords and textures. Vertical dashed lines indicate the measure numbers 9'10'', 10'10'', 11'10'', and 12'10''.

14'18"

14'28"

16'28"

ca 10"

ca 10"

The musical score consists of ten staves for various instruments: Flute (Fl.), Clarinet (Cl.), Trumpet/Horn (Trp./Hn.), Vibraphone (Vibe.), Piano I (Pno. I), Piano II (Pno. II), Violin I (Vln. I), Violin II (Vln. II), Viola (Vla.), and Violoncello (Vlc.). The score is divided into two main sections by a dashed line. The first section, from 14'18'' to 14'28'', features a complex rhythmic pattern in the woodwinds and strings, with a 'ca 10'' annotation above the Flute staff. The second section, from 14'28'' to 16'28'', is marked with a large 'E' in a box and includes a dynamic marking of *fff* followed by a decrescendo to *ppp*. The Piano I part includes a dense, rapid run of notes in the right hand, also marked with *fff* and a decrescendo to *ppp*. The Piano II part has a similar run in the right hand, with the left hand playing a simple accompaniment. The string parts (Vln. I, Vln. II, Vla., Vlc.) play a rhythmic pattern of eighth notes, also marked with *fff* and a decrescendo to *ppp*.

* Regardless of whether Piano II is available, this run should be a continuous ritardando. For example, if the piece is only performed with one piano, no extra time should be given between the notes that would be alternated with Piano II in a multi-piano realization.

