IMPRINT:
Footfalls to Return

Reynold Weidenaar

1981

A Tape Composition made from the Recorded Sounds of
a Bharata-nāṭyam Dancer, a Soprano, and a Synthesizer

Lauren Paul, Recorded Dancer
Pamela Hinchman, Recorded Soprano

Duration 5:04

Program Notes

In "Imprint : Footfalls to Return," the footfalls are the sounds of the bare feet of a bharata-nāṭyam Indian dancer. Three brief dances were recorded for use as sound-source material. Throughout the piece, the dances are repeatedly presented with various electronic transformations and accompaniments. Synthesizer sounds and occasionally the voice of a soprano are also used, often triggered by the footfalls. The piece was assembled using the "classical" tape techniques of speed and direction change, extensive tape editing, and tape delay echo. Analog and digital delay were employed as well. The piece is in two equal sections, with parallel studio techniques and musical development used in each section. A score is available.

Design of the Score

The main intent of this score is to show how the piece was made. To a limited degree, the score also depicts what the listener hears. However, attempting to capture even the very finite world of electronic sounds employed in this piece in a sensible system of pictographic notation was blocked by insurmountable difficulties of symbol, space, and time. It seemed appropriate to use twentieth-century musical notation wherever possible, supplemented by description and diagram. Notation methods were drawn from *Music Notation in the Twentieth Century*, by Kurt Stone, New York: Norton, 1980.

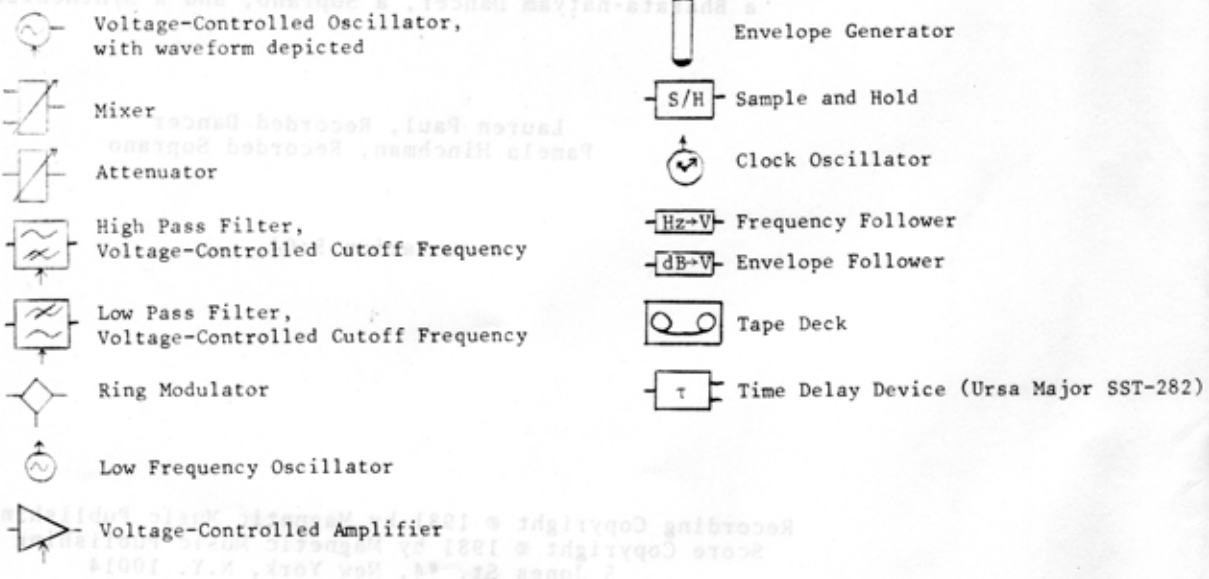
The original dance recordings were made in a large loft on 14th Street in New York with a pair of Wahrenbrock pressure-zone microphones. These capture a beautifully clear, realistic transient response and stereo perspective. Preserving and expanding this sound quality was a core consideration throughout the piece. It was also such a problem to notate that, finally, most descriptions of stereophonic treatment that did creep into the score were deleted, and the score now makes little reference--except in the patch diagrams--to this aspect of the music.

It is in fact a crucial aspect of this music, which would sound very different if the same material had been assembled in the more usual electronic fashion of ping ponging or pan-potting a palette of monophonic sounds across a stereo mixer and smearing them with some reverberation.

The master tape was mixed from stereo tapes played simultaneously on up to three tape decks, labeled Tracks A, B, C. A tape mixed from more than one track is labeled with the symbol ' added to the letter, and each component track is shown separately in the score and labeled A, B, C.

Electronic Sounds

The electronic sounds are described via synthesizer block diagrams. The symbols are adapted from *The Technique of Electronic Music* by Thomas H. Wells, New York: Schirmer, 1981. The diagrams are either abbreviated, showing only those modules relevant to the timbre, or complete, showing the entire patch.



Digital Delay Programs

The time delay device used in this piece was an Ursa Major Model SST-282 Multi-Tap Digital Delay Reverberation Processor. It accepts a mono input signal, holds it in memory, and repeatedly outputs it either left or right seven or eight times within a time span of 255 milliseconds. The user chooses one of 16 selectable delay programs; nine were used here. Although Ursa Major does not reveal the delay locations and durations of the programs, it is possible to get a reasonably accurate idea by feeding the machine a single click and measuring the resulting multiple clicks on tape. These are the figures (Ursa Major's name for each program is shown in parentheses):

		DD1 ("Room 2")	DD2 ("Room 3")	DD3 ("Room 4")	DD4 ("Fatty")	DD5 ("Cloud")	DD6 ("Slap 1")	DD7 ("Space Repeat 2")	DD8 ("Space Repeat 4")
	1	R 32ms	R 60ms	R 69ms	R 4ms	R 16ms	R 20ms	R 120ms	R 63ms
	2	L 47	L 77	L 100	L 5	L 22	L 28	L 122	L 65
	3	R 71	L 115	L 131	L 10	L 29	L 44	L 124	L 126
	4	L 85	R 137	R 167	R 18	R 35	R 55	R 127	R 128
	5	R 104	L 158	L 181	L 21	L 41	L 68	L 246	R 191
	6	R 125	R 173	R 202	R 26	R 48	R 73	R 247	L 193
Resulting	7	L 150	R 188	R 231	R 28	R 53	R 82	R 251	L 253
Sound	8	none	L 208	L 255	L 31	L 60	L 92	L 255	R 255
Quality:		small room acoustics	medium room acoustics	large room acoustics	thick	thick, spacious	short slapback	left-right slapback	left-right, left-right slapback

The programs DD1 through DD8 are so labeled in the score. The ninth program, which provides delays at 6ms and multiples thereof, is labeled 167Hz Comb Filter.

Echo and Reverberation

The SST-282 also has Echo, in which the sound is repeatedly fed back at any time interval adjustable from 1 to 255ms, and Reverberation, which is a random, diffuse return of the sound without repeated patterns of delay times. The use of these is also shown in the score.

Symbols Used in the Score


A splice in the master tape, shown over a dashed line if the splice was not made at a bar line. Splices in individual tracks are not shown.


Percussion clef: unpitched sounds


Unmetered time signature: refer to timeline


Echo ring


Two echo rings: simultaneous echoes at two rates


Reverberation ring


Proportional duration


Quasi-random pitches, within the given register and direction

Unmetered and unpulsed rhythm

Gradual accelerando


Muted or muffled sound

Staggered bar lines, to show delays between tape tracks


Accidentals affect only those notes which they precede.


Backwards notation, where a section of tape of metered notes is spliced in backwards. Noteheads are positioned to show where the attacks occur. Read the measure left-to-right.

Abbreviations Used in the Score

DD1 - Digital Delay Program 1 (see above)

F/I - Fade In

F/O - Fade Out

ms - milliseconds, thousandths of a second

n - niente

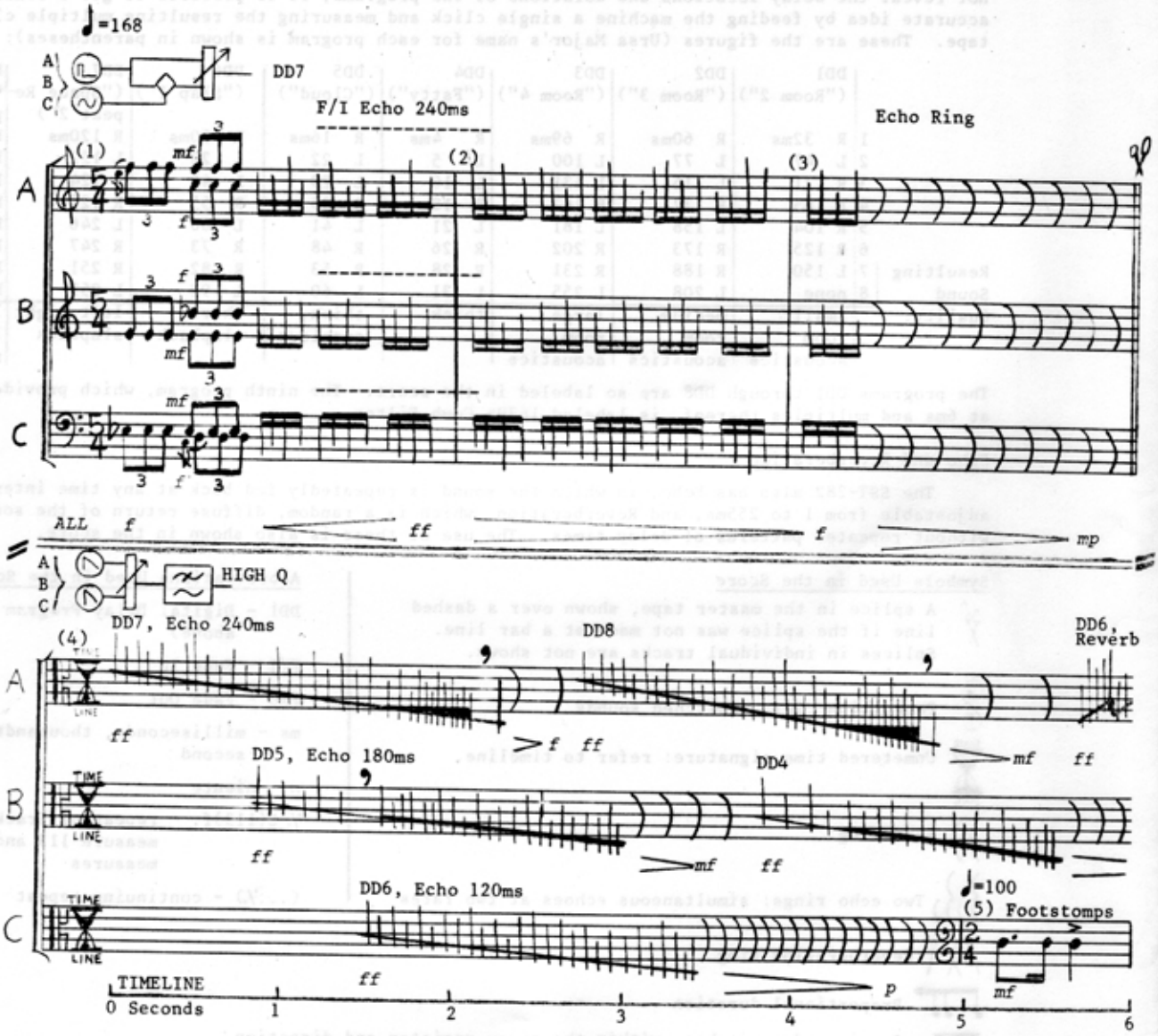
𝄋 C(113)f. - repeat of Track C, measure 113 and following measures

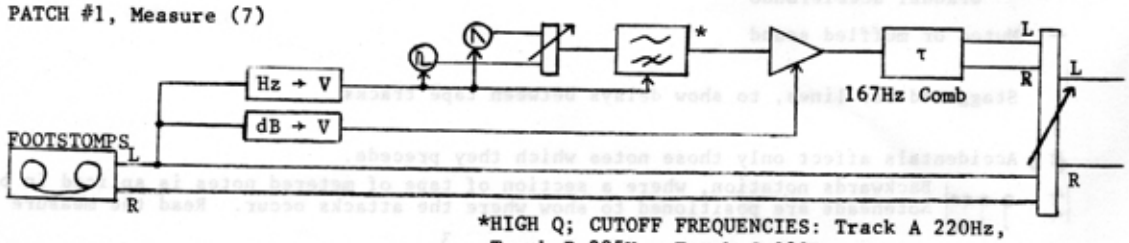
(...𝄋) - continuing repeat

IMPRINT: FOOTFALLS TO RETURN

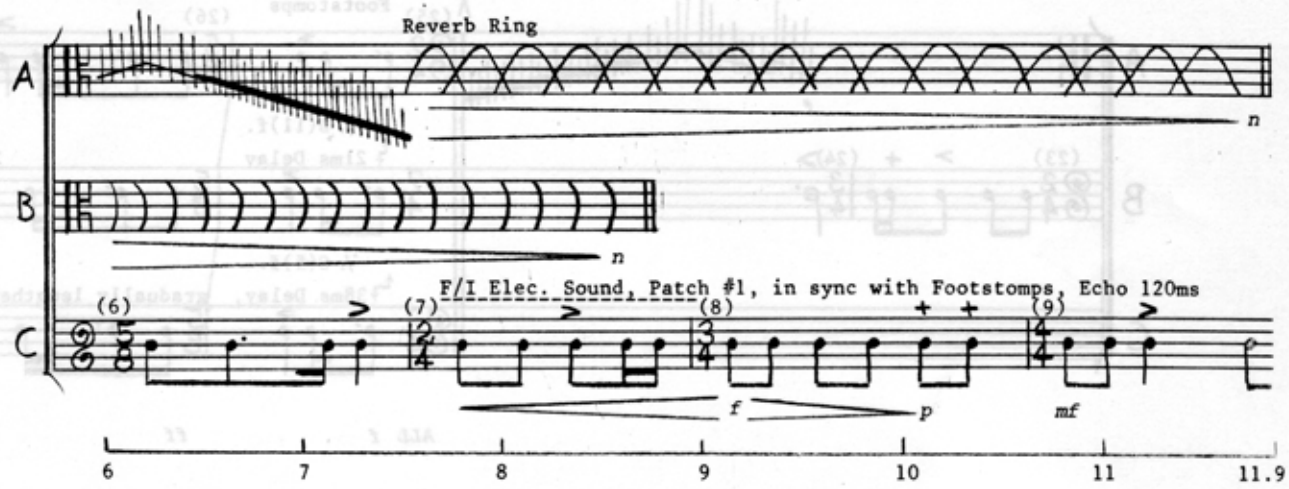
Reynold Weidenaar

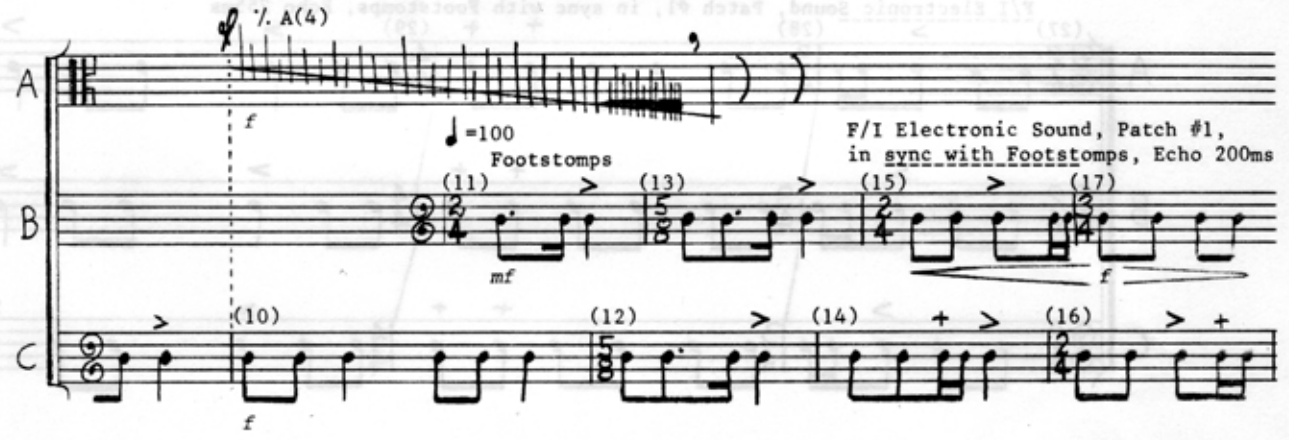
A Tape Composition made from the Recorded Sounds of
a Bharata-nāṭyam Dancer, a Soprano, and a Synthesizer

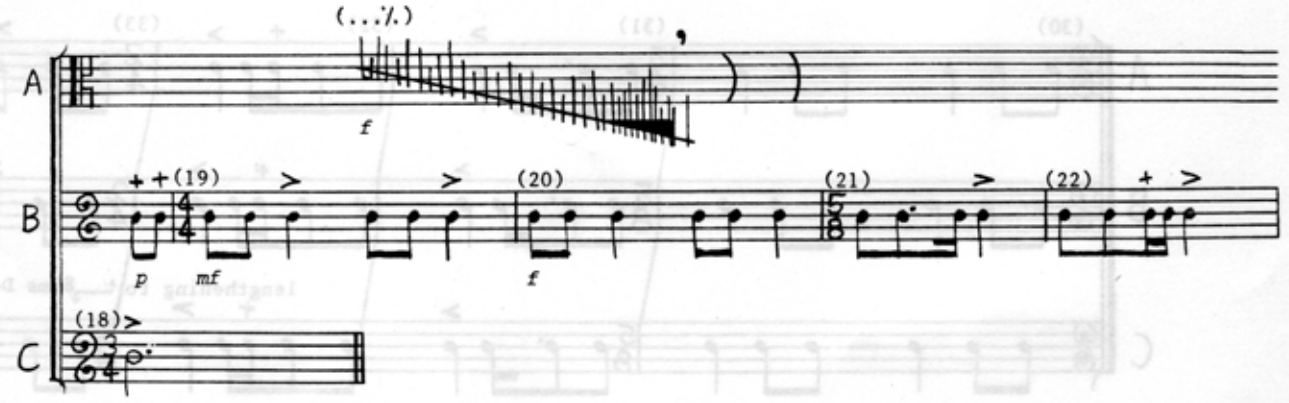


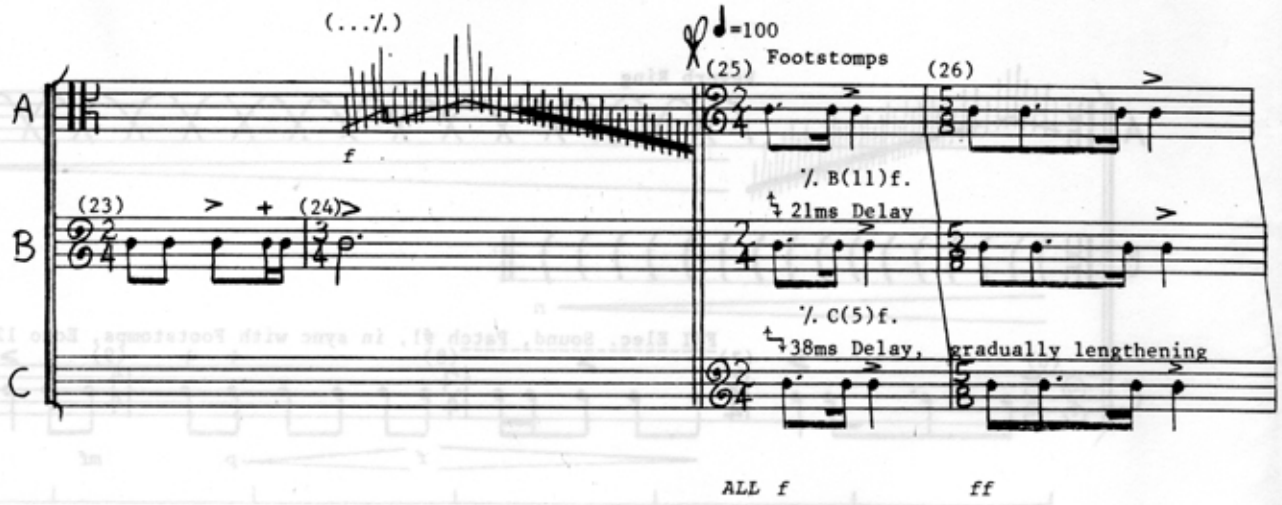


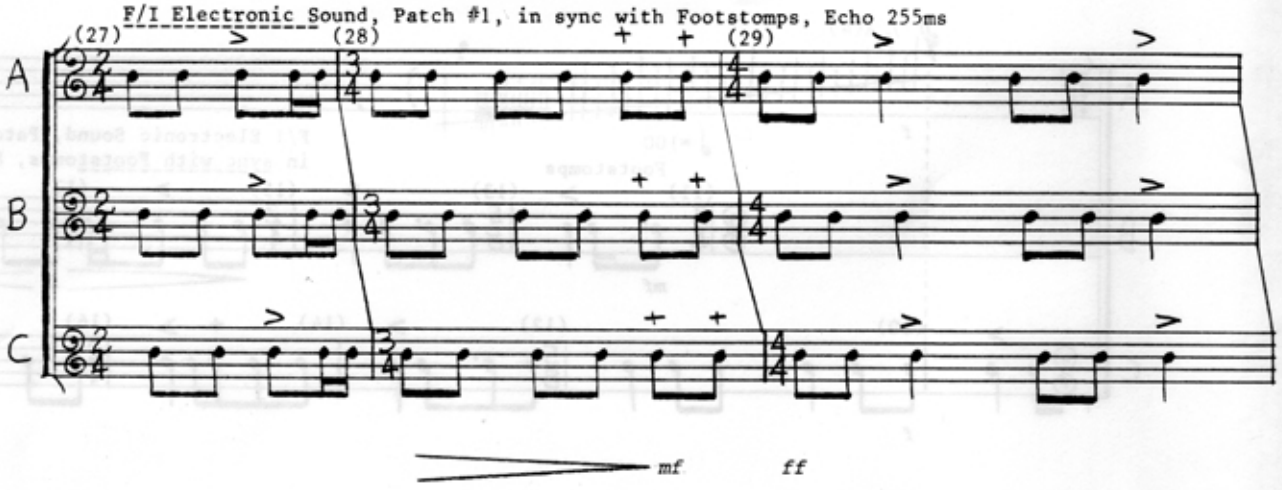
*HIGH Q; CUTOFF FREQUENCIES: Track A 220Hz,
Track B 385Hz, Track C 290Hz.

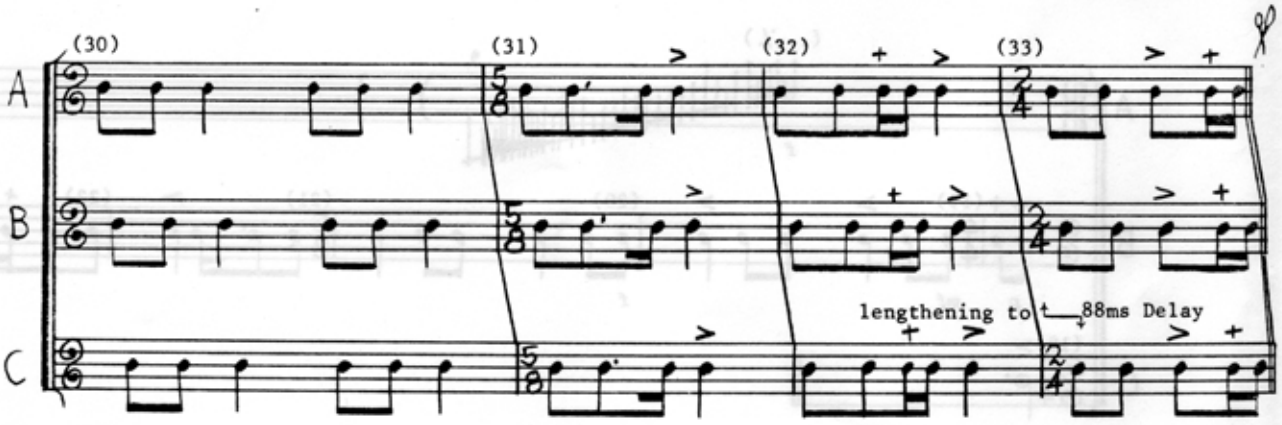

Reverb Ring
A
B
C
n
n
F/I Elec. Sound, Patch #1, in sync with Footstomps, Echo 120ms
(6)
(7)
(8)
(9)
f
p
mf
6
7
8
9
10
11
11.9

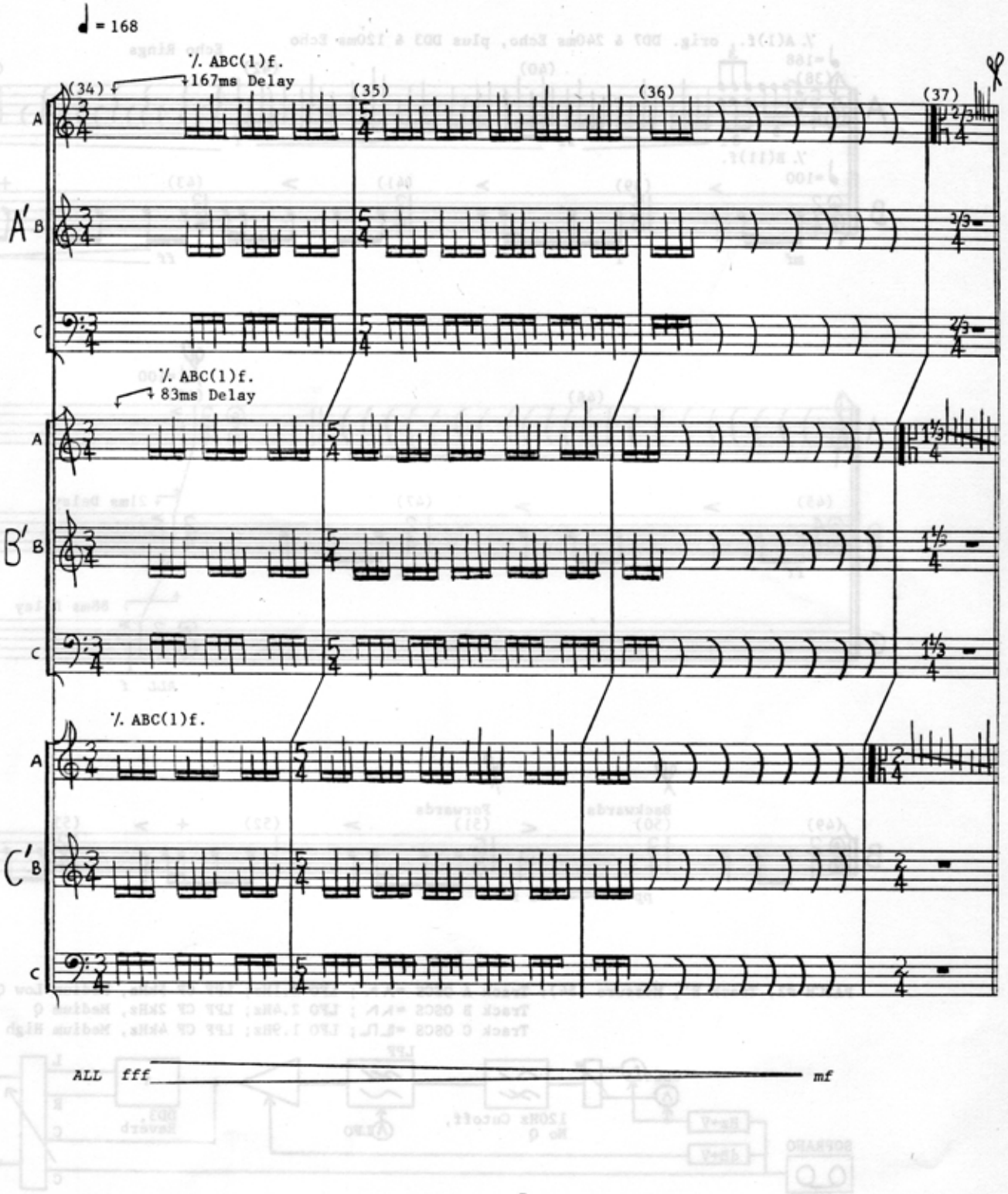

𝄋. A(4)
A
B
C
f
♩=100
Footstomps
F/I Electronic Sound, Patch #1,
in sync with Footstomps, Echo 200ms
(10)
(11)
(12)
(13)
(14)
(15)
(16)
(17)
mf
f
f

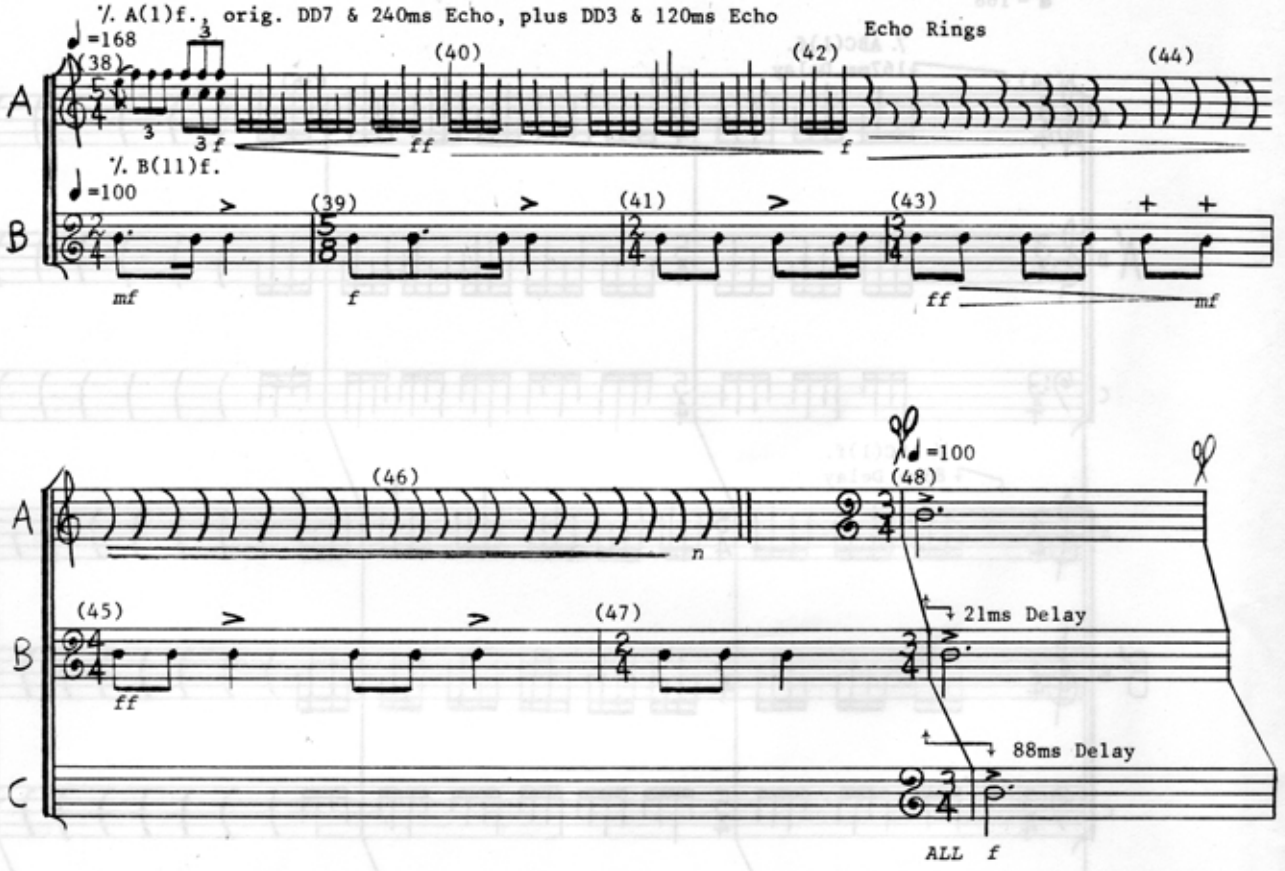

(...𝄋.)
A
B
C
f
(18)
(19)
(20)
(21)
(22)
p
mf
f


(...%.)
♩=100
Footstomps
(25)
(26)
A
B
C
f
(23)
(24)
%. B(11)f.
21ms Delay
%. C(5)f.
38ms Delay, gradually lengthening
ALL f
ff

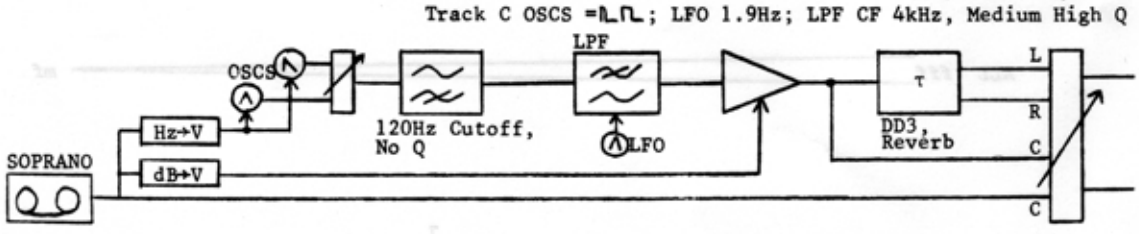

F/I Electronic Sound, Patch #1, in sync with Footstomps, Echo 255ms
(27)
(28)
(29)
A
B
C
mf
ff

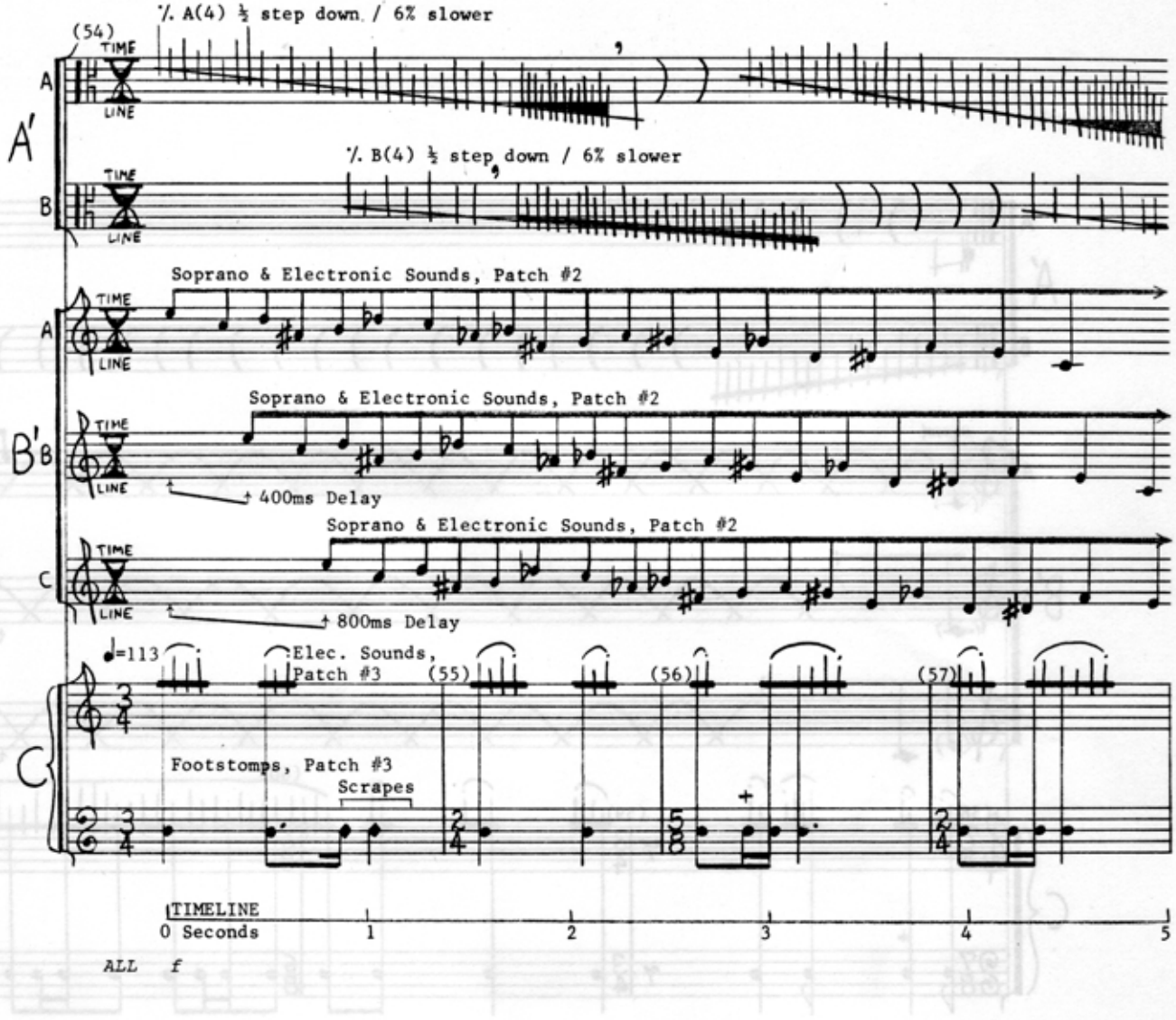

(30)
(31)
(32)
(33)
A
B
C
lengthening to 88ms Delay


♩ = 168
'/. ABC(1)f.
167ms Delay
(34)
(35)
(36)
(37)
A
A'
B
C
'/. ABC(1)f.
83ms Delay
A
B'
B
C
'/. ABC(1)f.
A
C'
B
C
ALL fff
mf

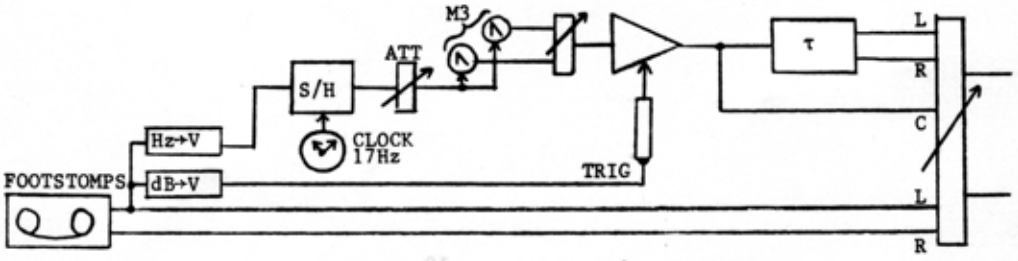


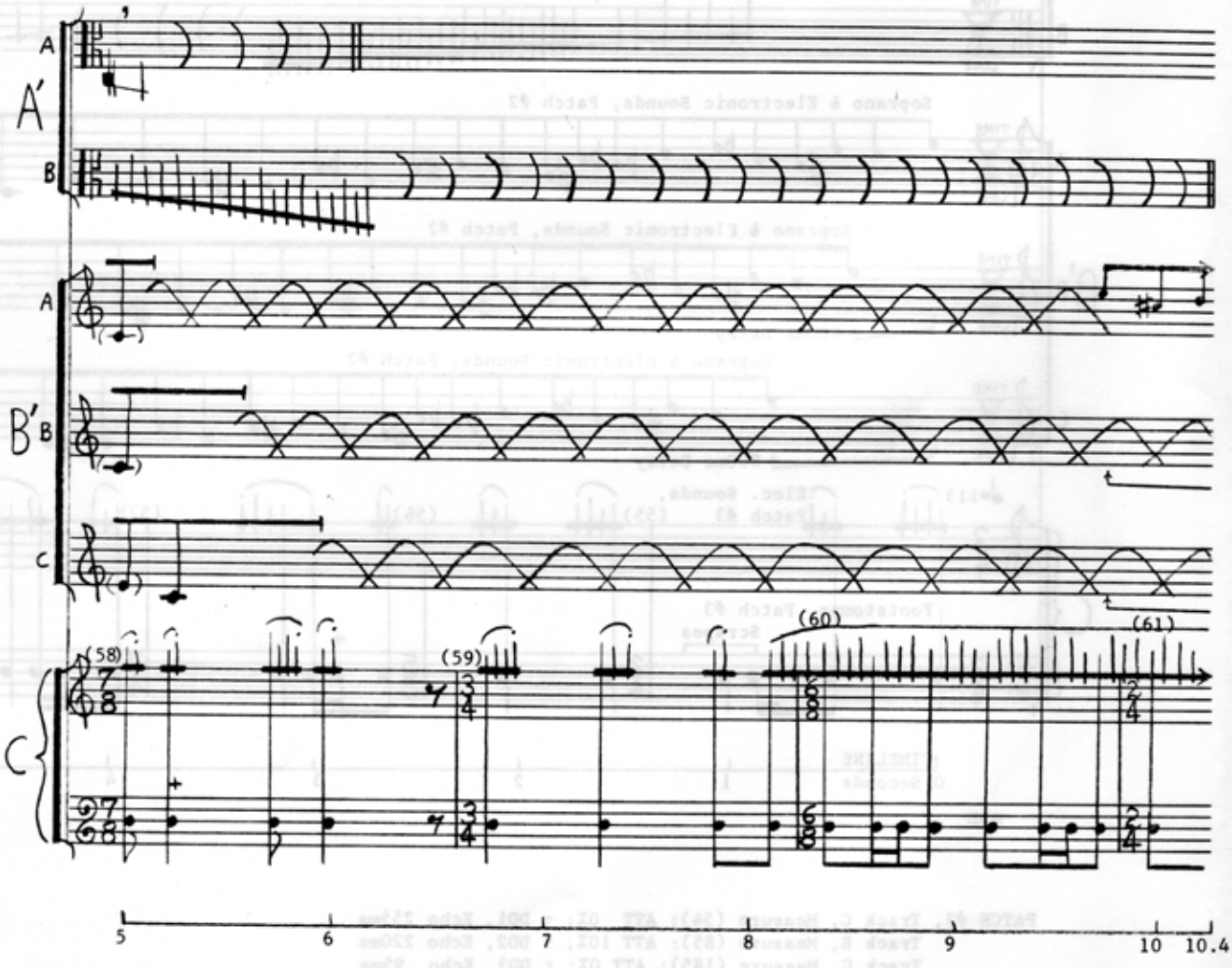
PATCH #2, Track B', Measure (54): Track A OSCS =∧∧ ; LFO 2.1Hz; LPF CF 5kHz, Medium Low Q
Track B OSCS =∧∧ ; LFO 2.4Hz; LPF CF 2kHz, Medium Q
Track C OSCS =⊓⊓; LFO 1.9Hz; LPF CF 4kHz, Medium High Q

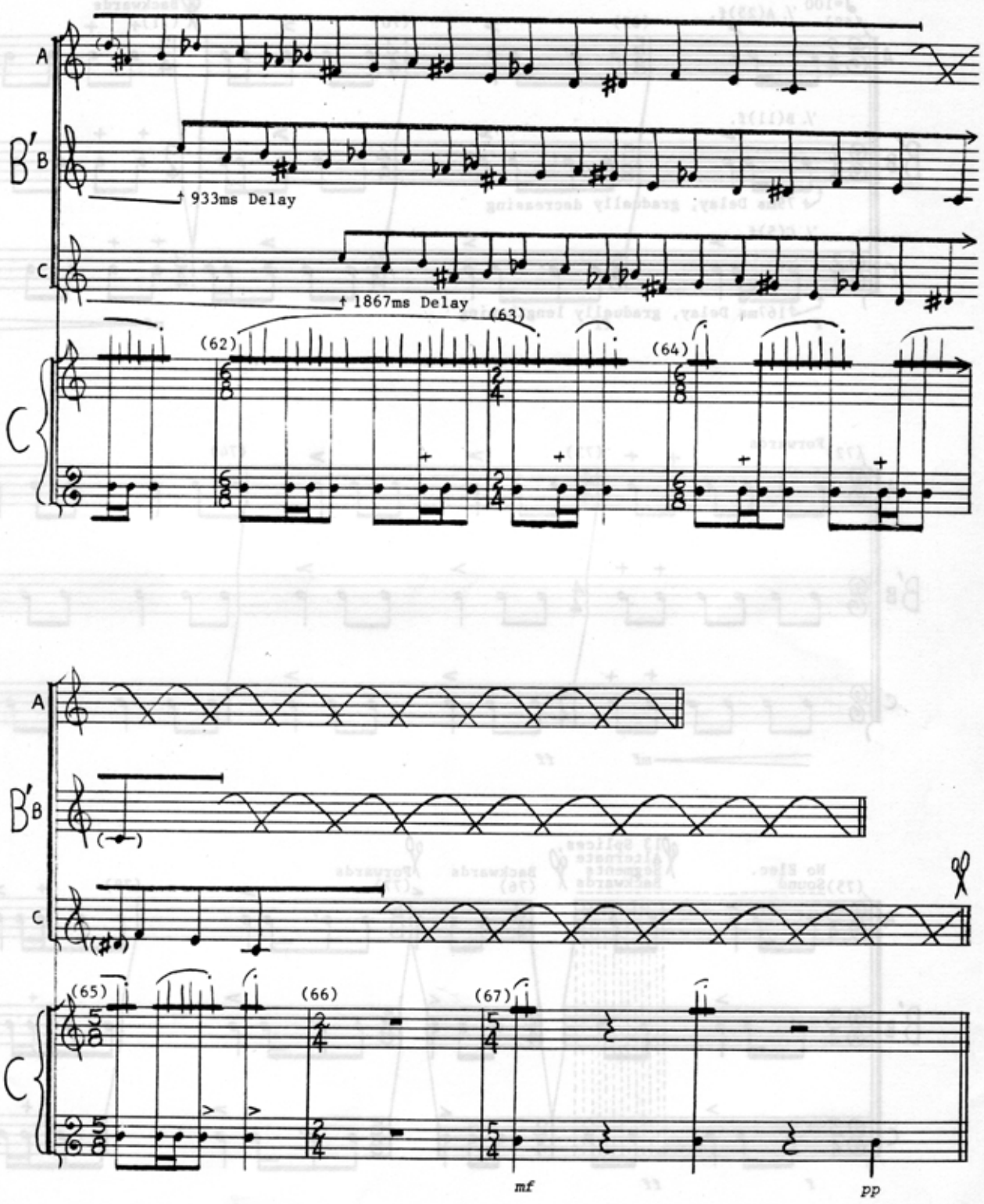


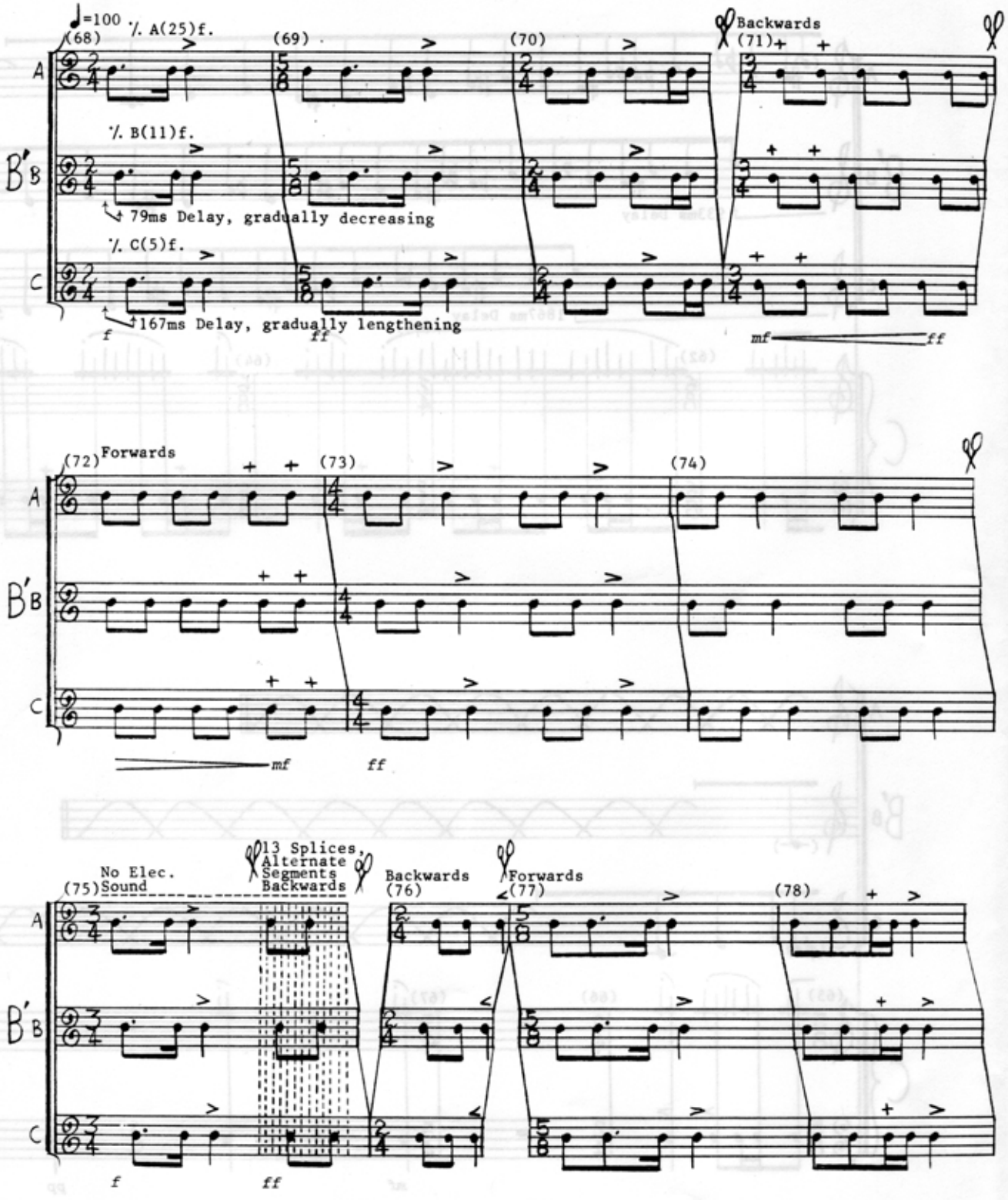


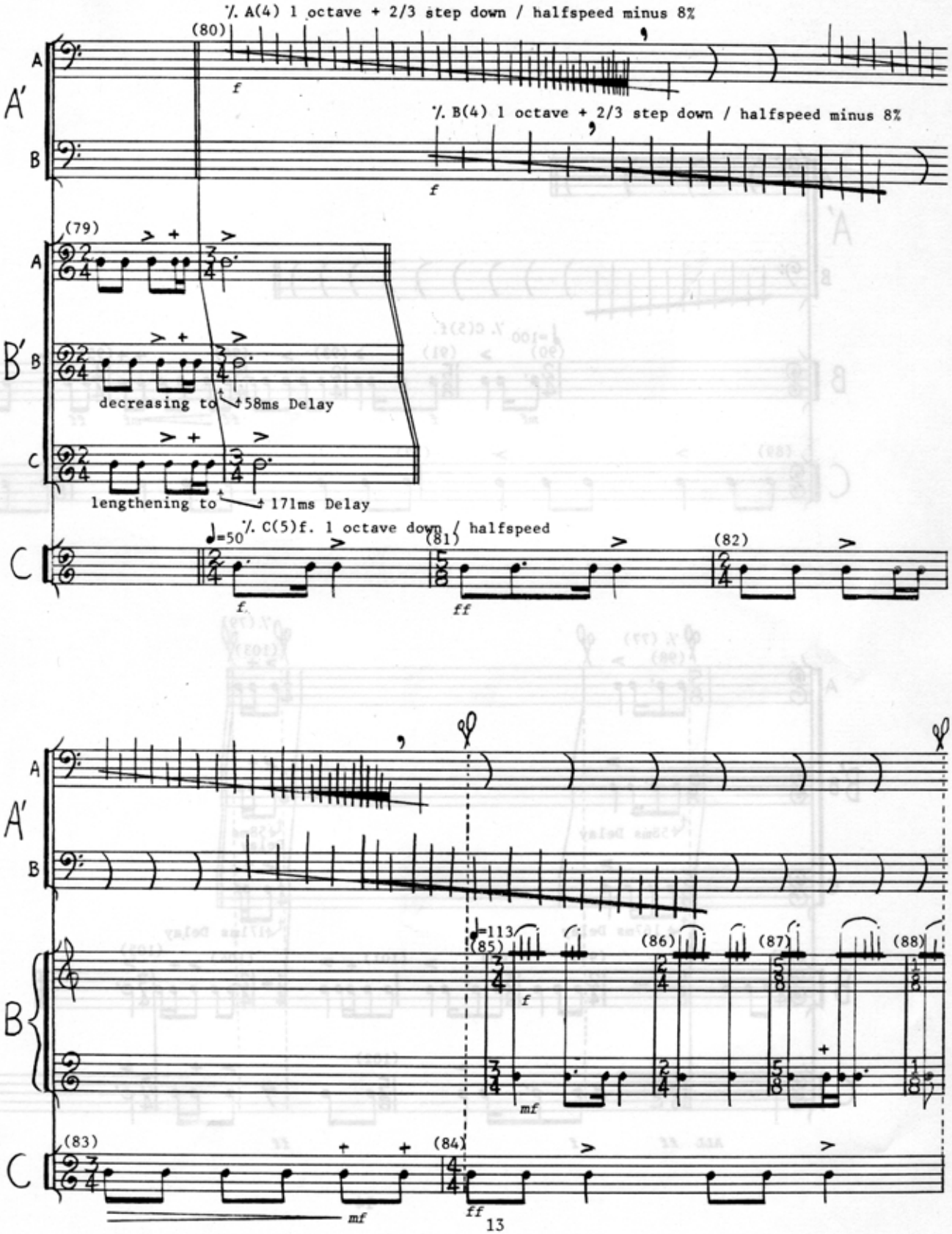
PATCH #3, Track C, Measure (54): ATT 0%; τ DD1, Echo 255ms
Track B, Measure (85): ATT 10%; τ DD2, Echo 220ms
Track C, Measure (185): ATT 0%; τ DD3, Echo 95ms

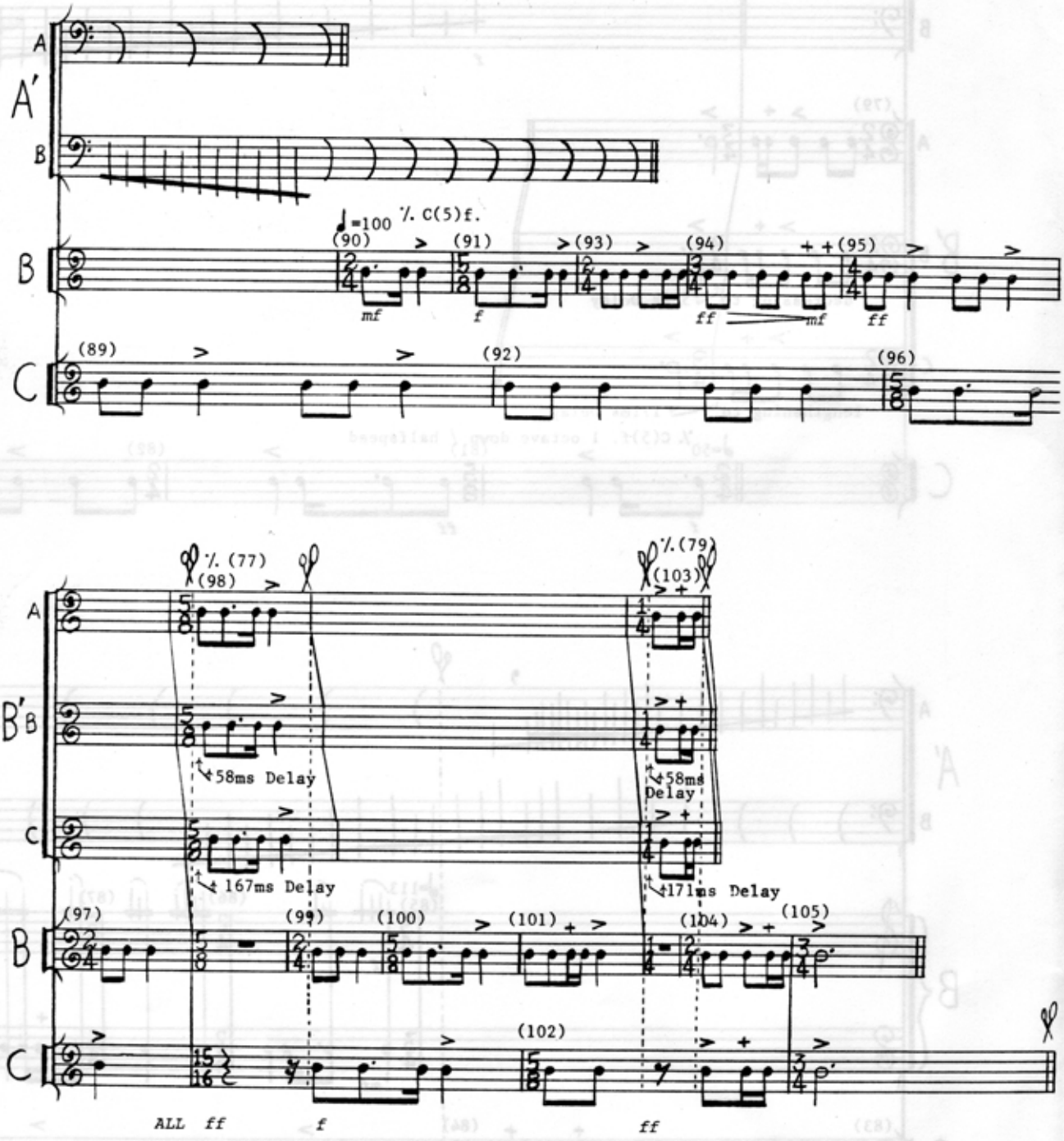


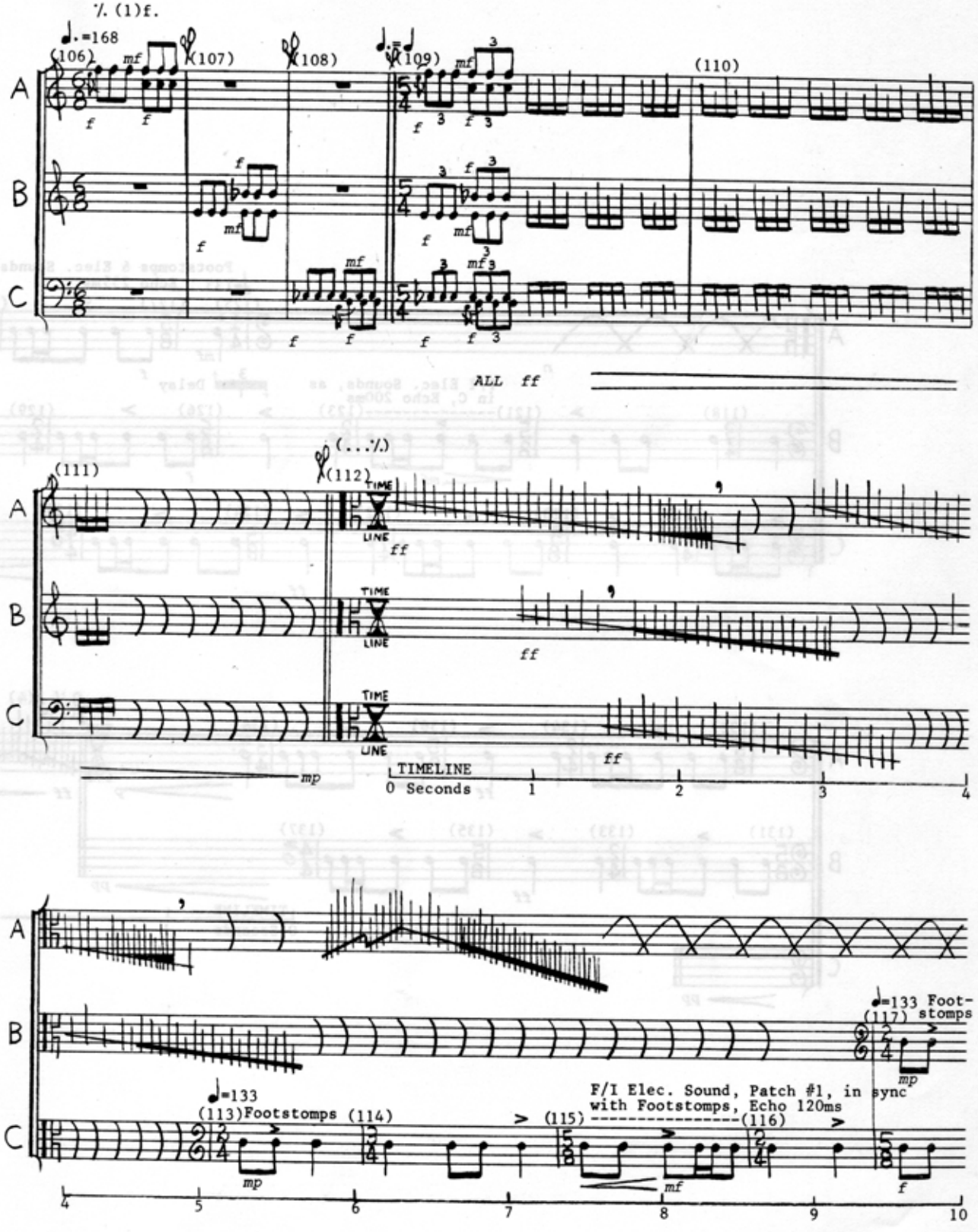

A
A'
B
A
B'B
C
C
(58)
(59)
(60)
(61)
5
6
7
8
9
10
10.4

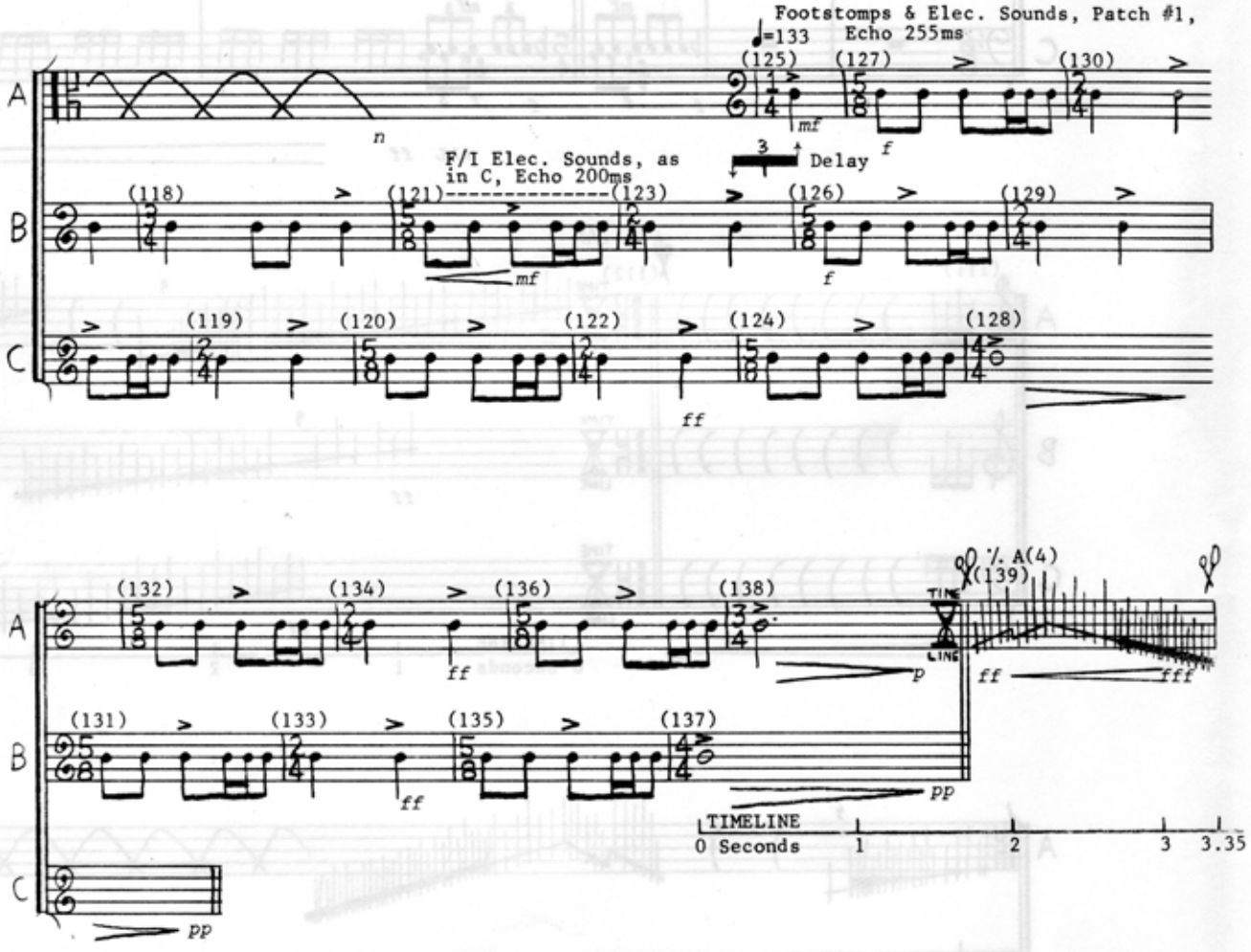

A
B'B
C
933ms Delay
1867ms Delay
(62)
(63)
(64)
(65)
(66)
(67)
mf
pp

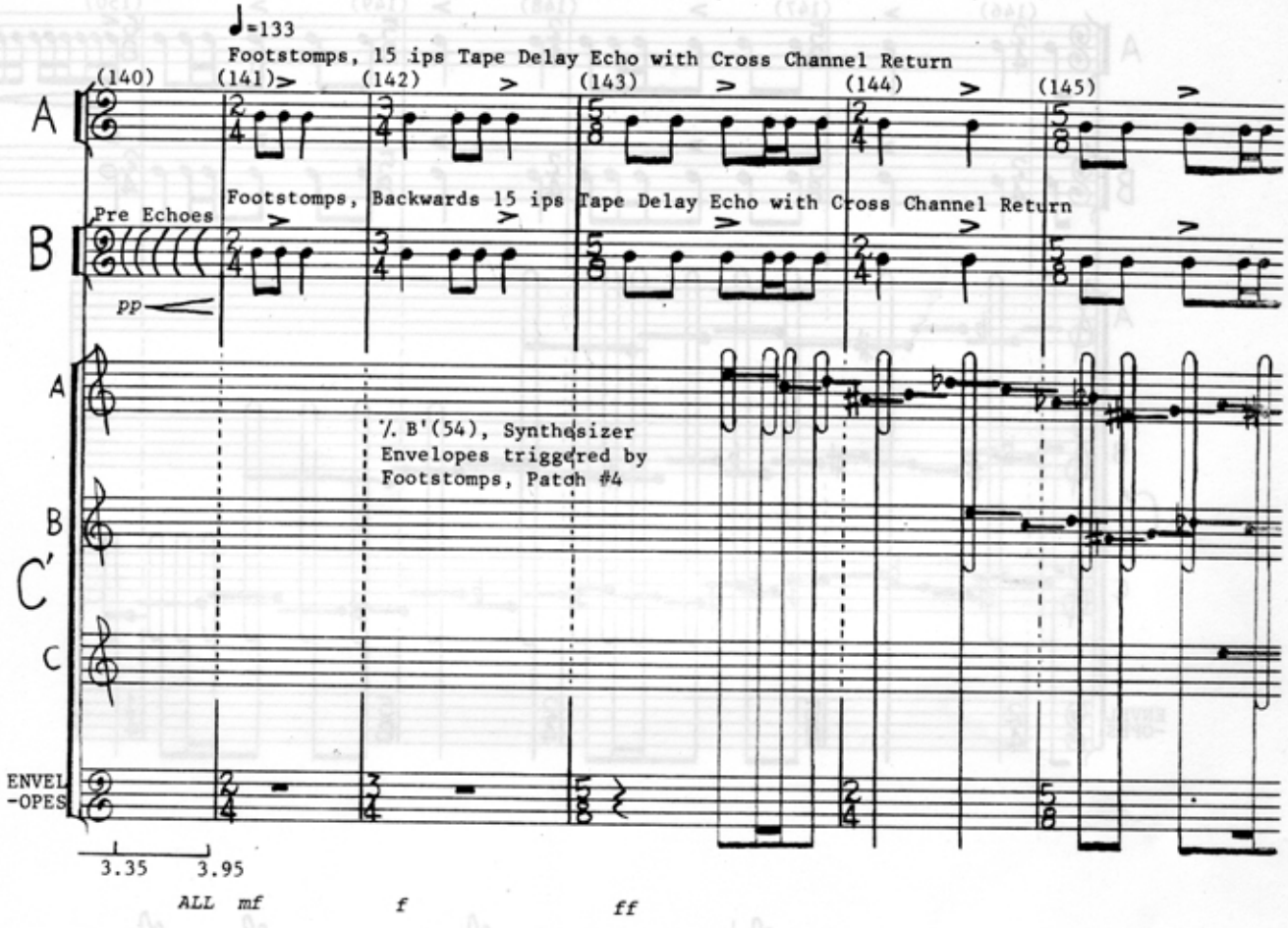

♩=100
(68)
⁄. A(25)f.
(69)
(70)
Backwards
(71)
A
⁄. B(11)f.
B'B
79ms Delay, gradually decreasing
⁄. C(5)f.
C
f
167ms Delay, gradually lengthening
ff
mf
ff
(72)
Forwards
(73)
(74)
A
B'B
C
mf
ff
No Elec.
Sound
(75)
13 Splices,
Alternate
Segments
Backwards
Backwards
(76)
Forwards
(77)
(78)
A
B'B
C
f
ff


% A(4) 1 octave + 2/3 step down / halfspeed minus 8%
(80)
A'
A
B
f
% B(4) 1 octave + 2/3 step down / halfspeed minus 8%
f
(79)
A
B'
B
decreasing to 58ms Delay
C
lengthening to 171ms Delay
% C(5)f. 1 octave down / halfspeed
♩=50
(81)
(82)
C
f
ff
A'
A
B
♩=113
(85)
(86)
(87)
(88)
B
f
mf
(83)
(84)
C
mf
ff

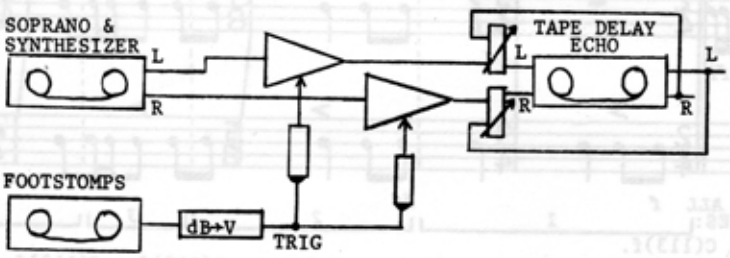

A
A'
B
B
C
♩=100
%. C(5)f.
(89)
(90)
(91)
(92)
(93)
(94)
(95)
(96)
mf
f
ff
mf
ff
%. (77)
(98)
%. (79)
(103)
A
B'B
C
58ms Delay
58ms Delay
167ms Delay
171ms Delay
(97)
(99)
(100)
(101)
(104)
(105)
(102)
ALL ff
f
ff

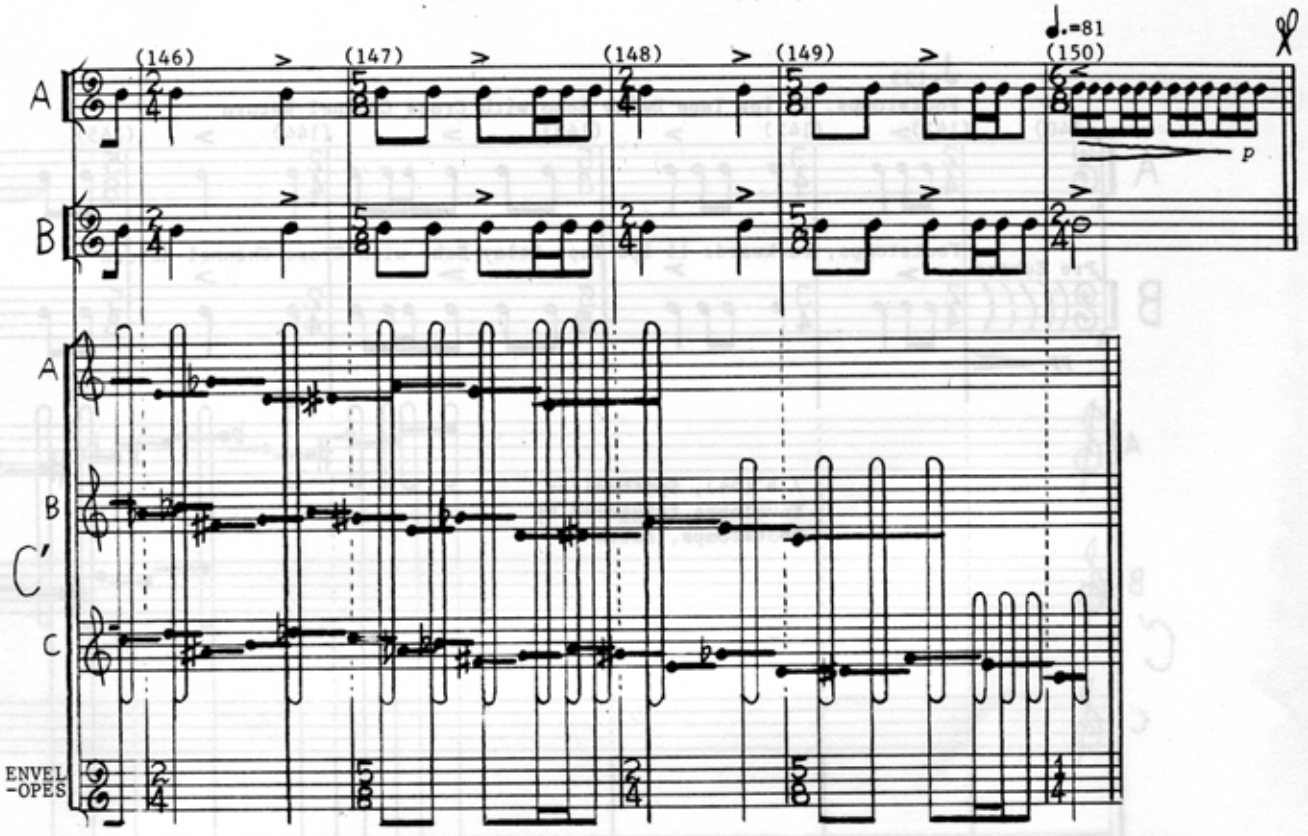

%. (1)f.
♩.=168
(106)
(107)
(108)
(109)
(110)
A
B
C
ALL ff
(...%.)
(111)
(112)
TIME
LINE
ff
mp
TIMELINE
0 Seconds
1
2
3
4
♩=133
(113)Footstomps (114)
(115)
(116)
(117) stomps
F/I Elec. Sound, Patch #1, in sync with Footstomps, Echo 120ms
mf
f
5
6
7
8
9
10

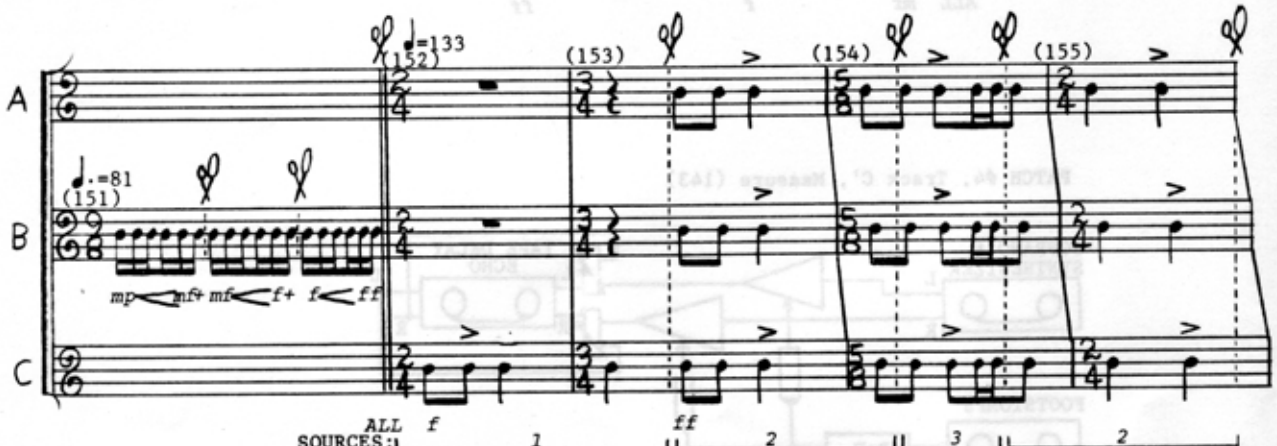

Footstomps & Elec. Sounds, Patch #1,
Echo 255ms
♩=133
A
B
C
F/I Elec. Sounds, as
in C, Echo 200ms
3
Delay
(118)
(119)
(120)
(121)
(122)
(123)
(124)
(125)
(126)
(127)
(128)
(129)
(130)
(131)
(132)
(133)
(134)
(135)
(136)
(137)
(138)
(139)
n
mf
f
ff
pp
p
fff
% A(4)
TIME
LINE
TIMELINE
0 Seconds
1
2
3
3.35



PATCH #4, Track C', Measure (143)





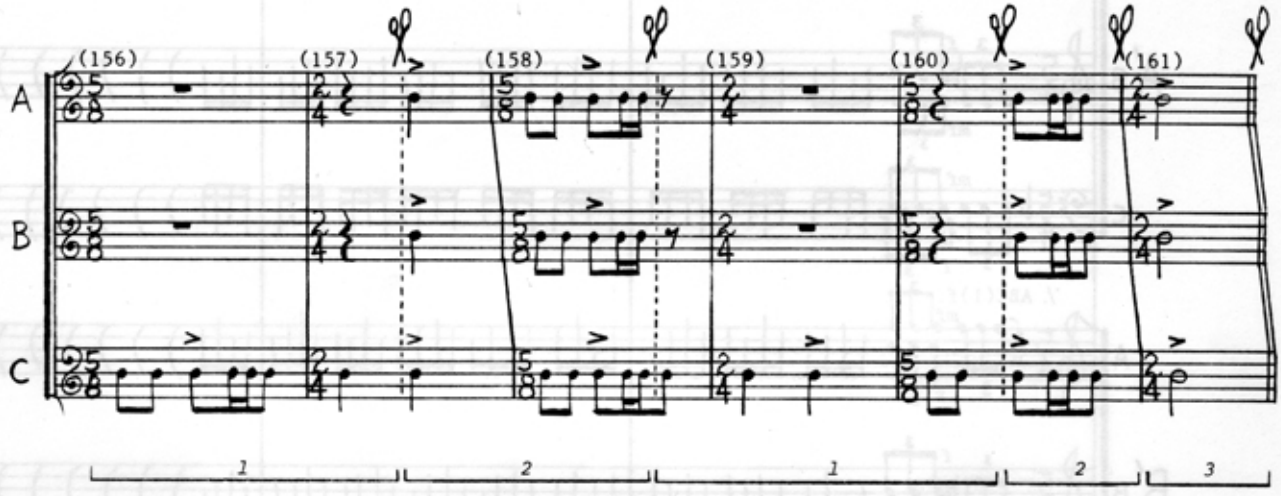


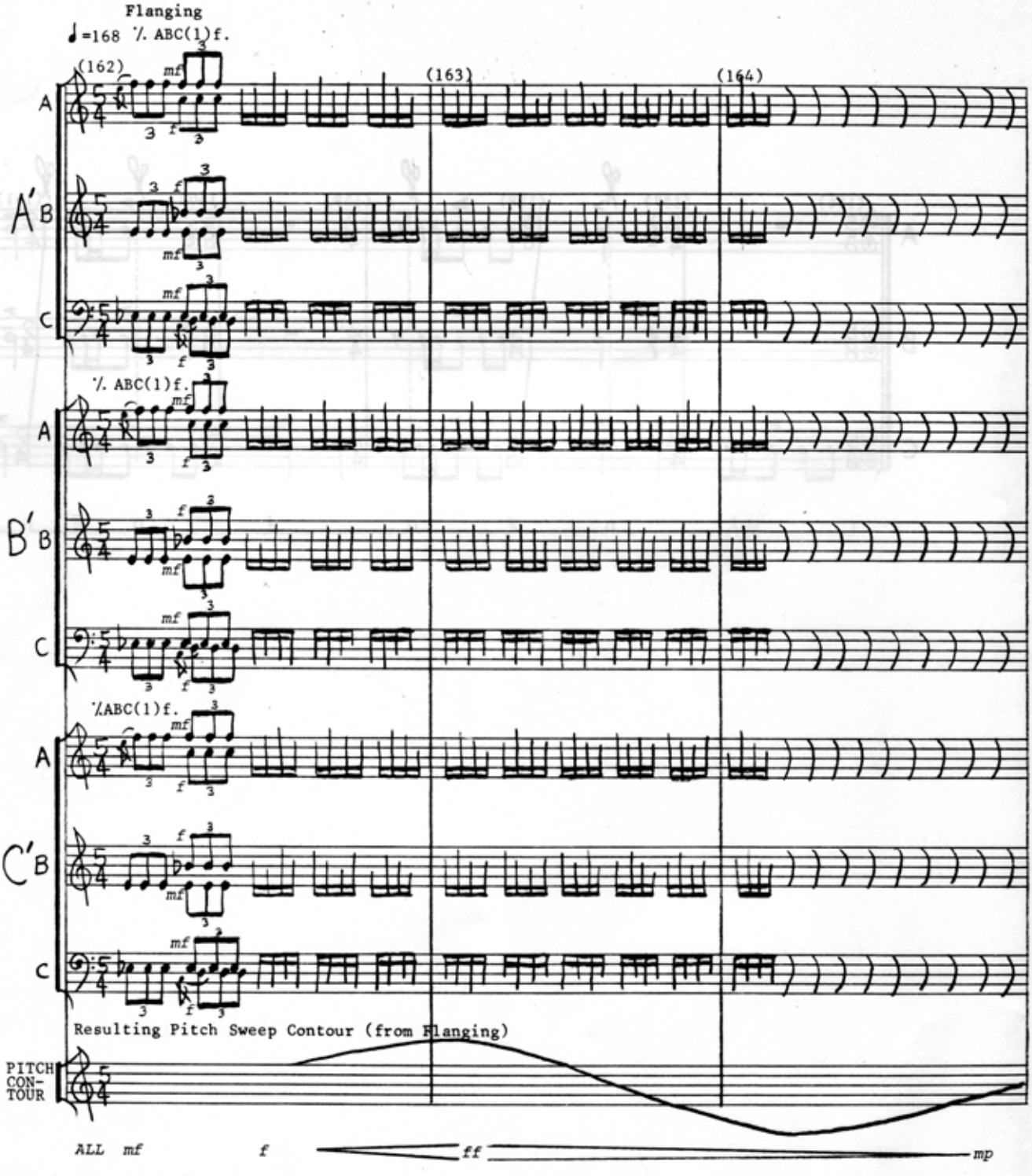
SOURCES: ALL *f* | 1 | *ff* | 2 | 3 | 2

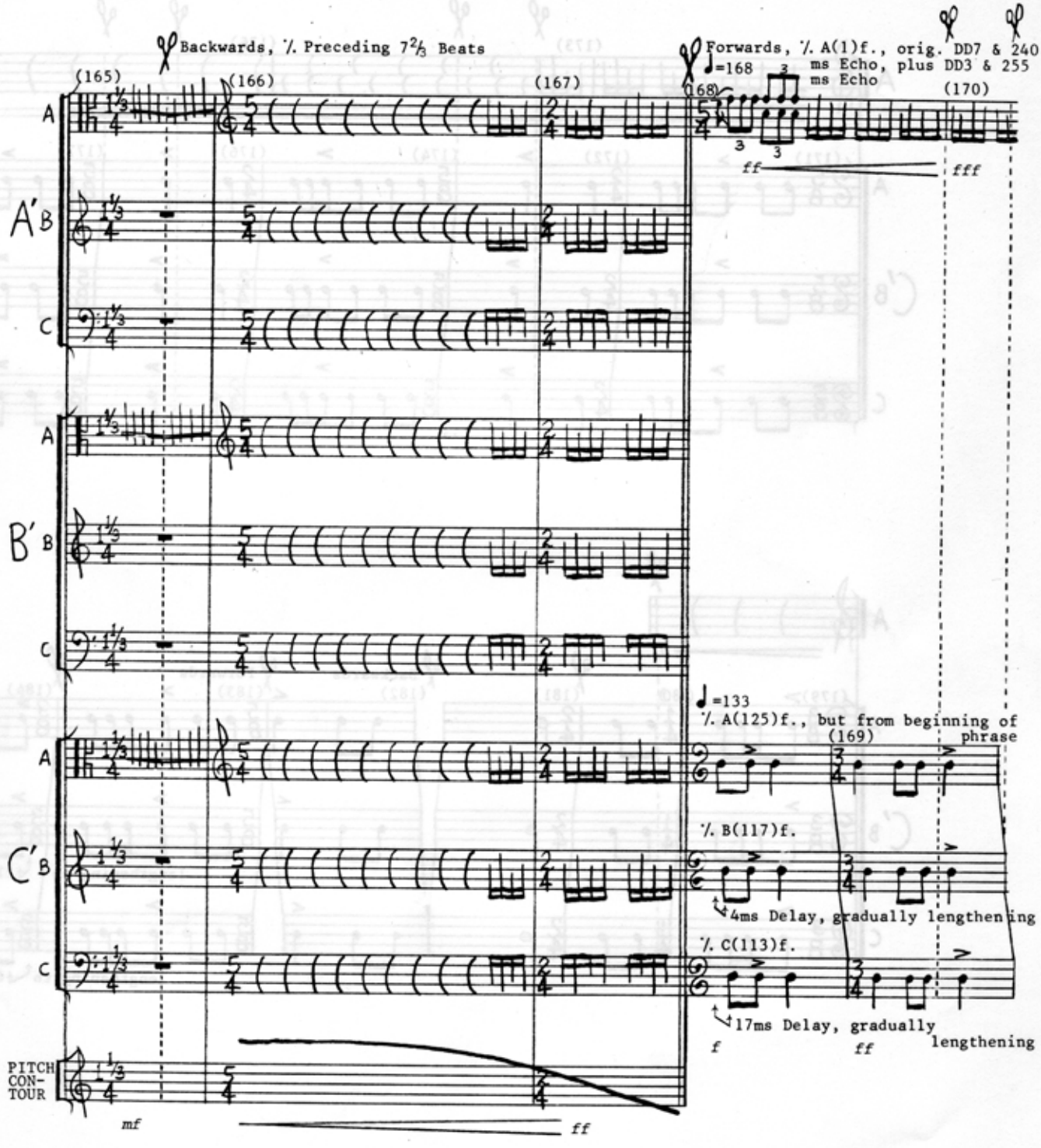
1 - ⅞ C(113)f.

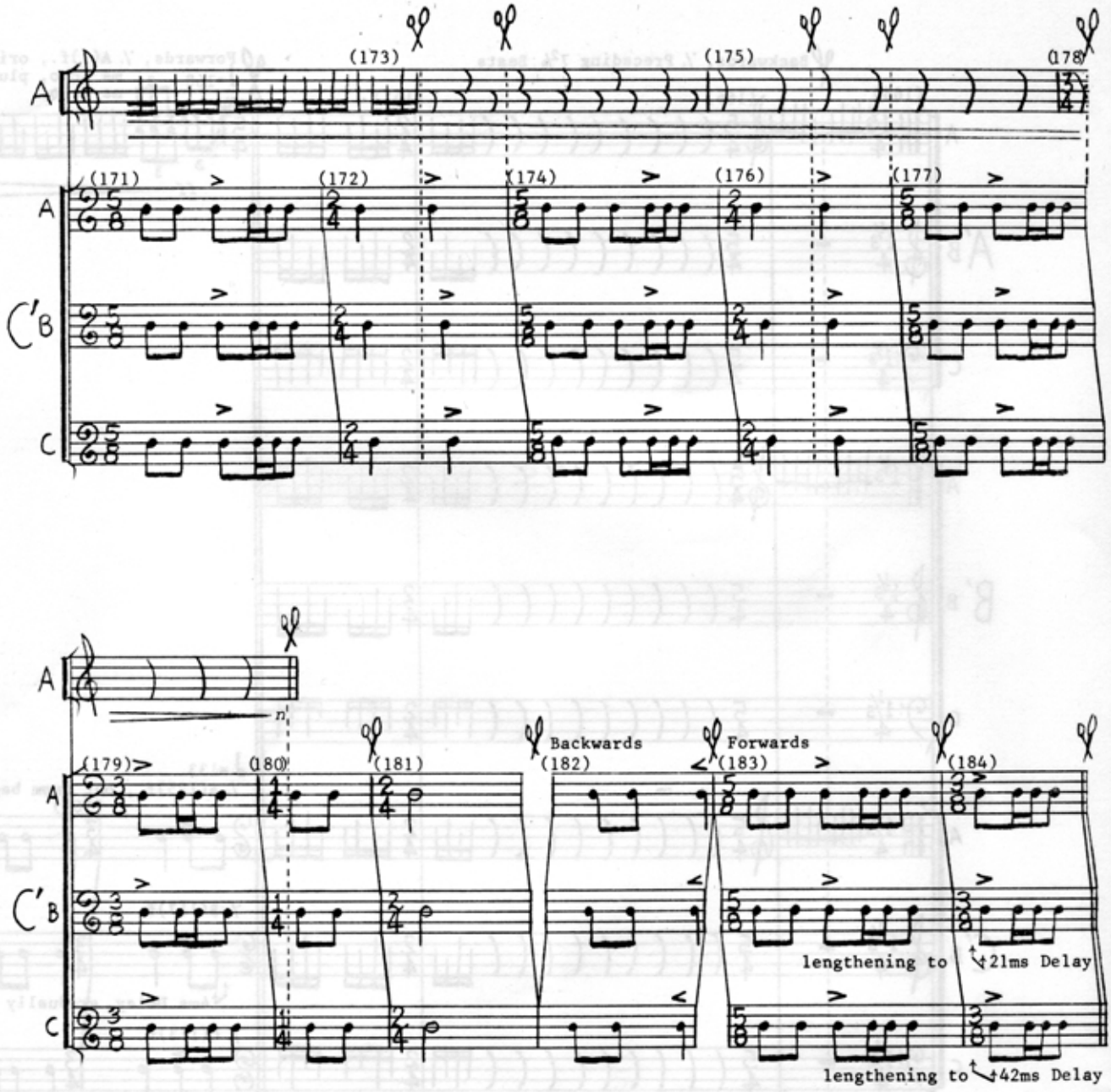
2 - ⅞ A(125)f., but from beginning of phrase, B(117)f., C(113)f. Lengthening Delays: B from 8ms to 17ms, C from 21ms to 42ms.

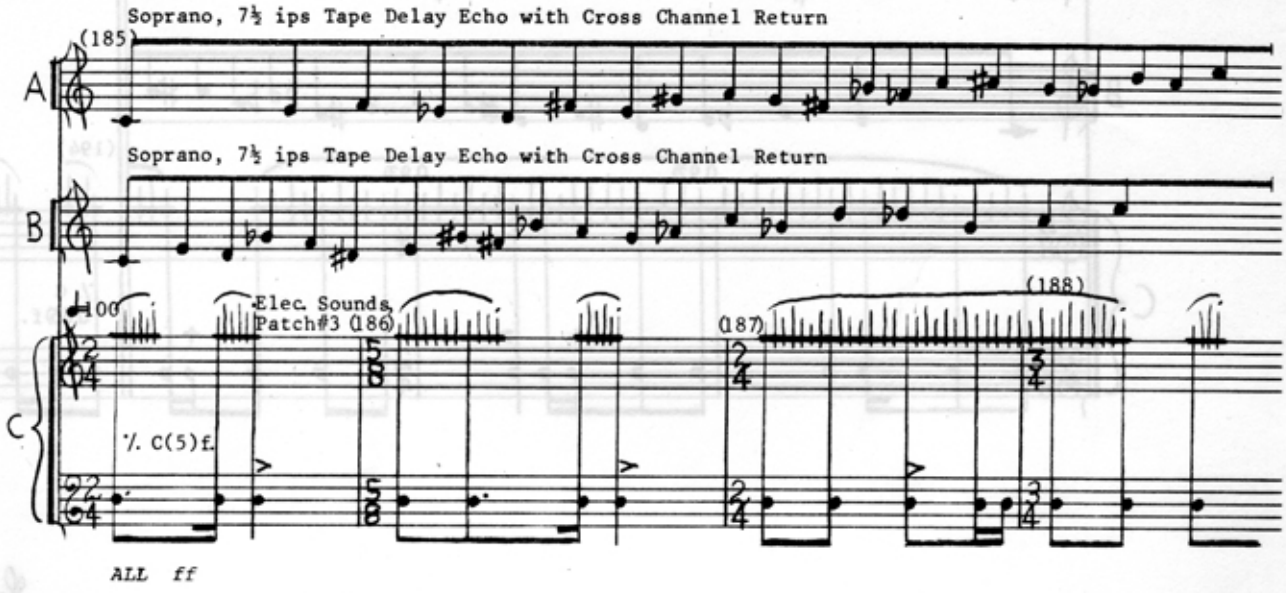
3 - As *2*, except B Delay decreasing from 50ms to 29ms, C Delay constant at 117ms.

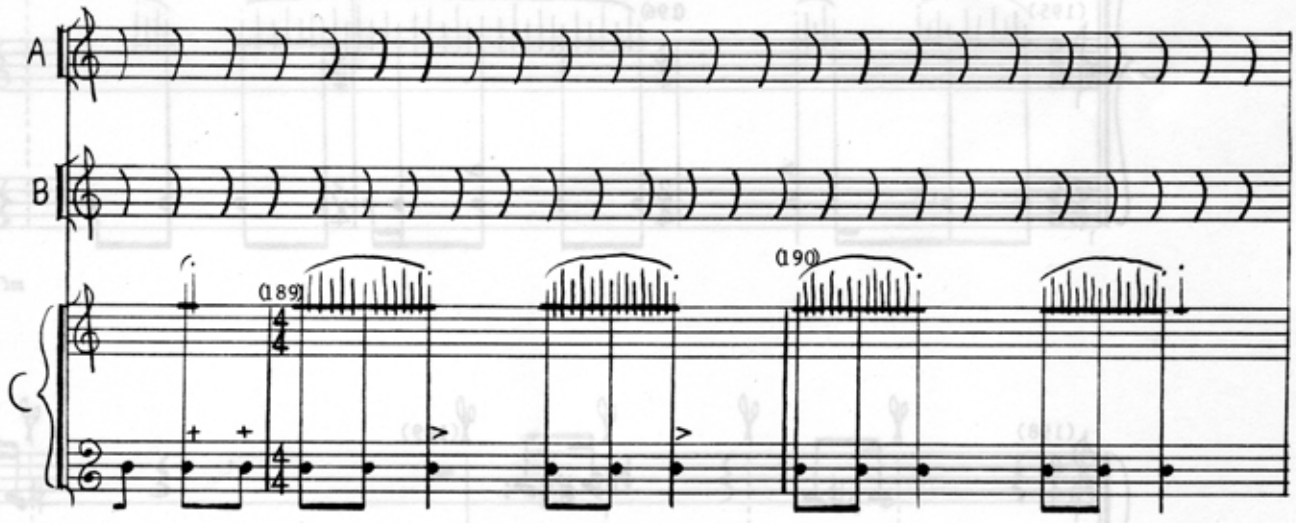

(156)
(157)
(158)
(159)
(160)
(161)
A
B
C
1
2
1
2
3

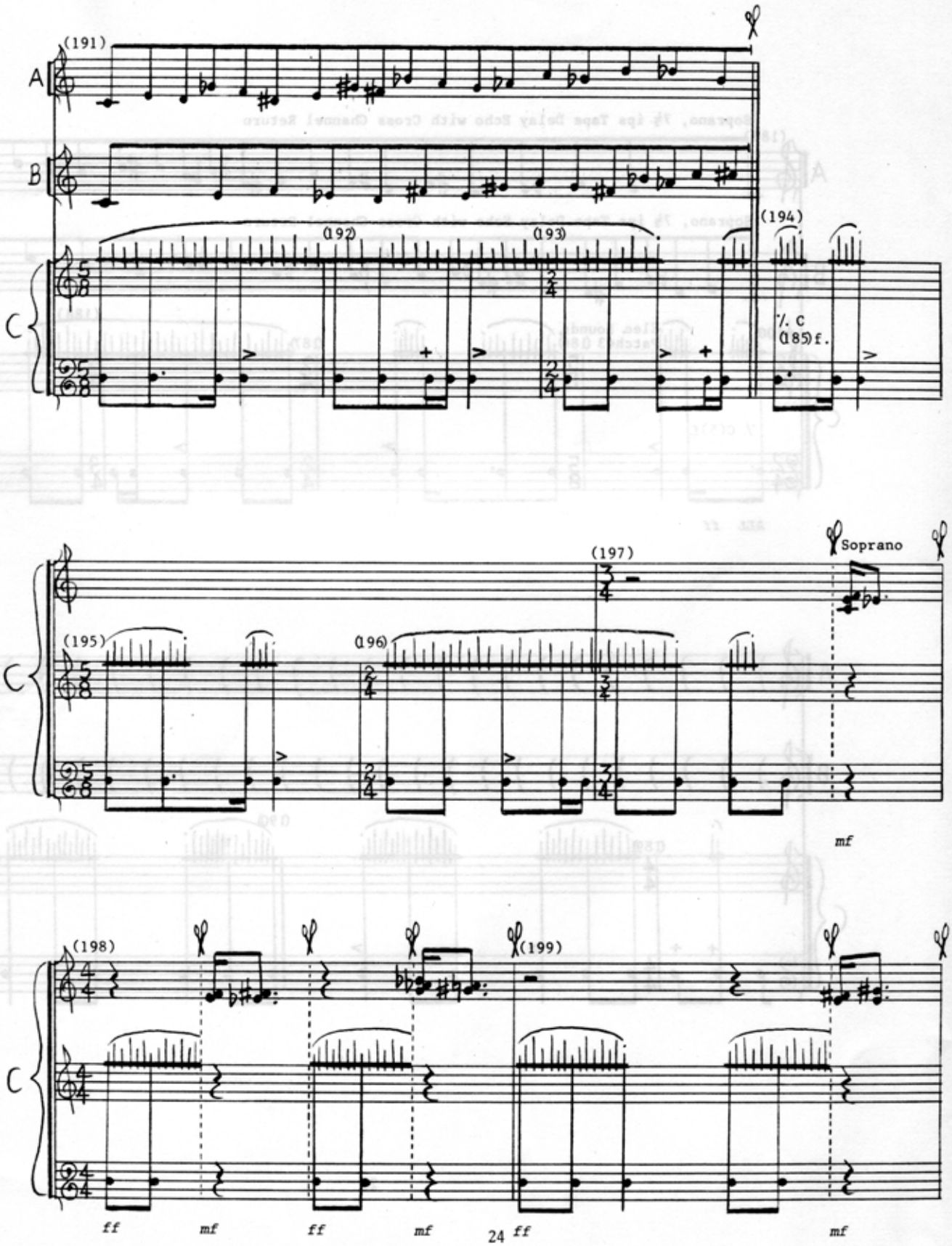

Flanging
♩=168 ⁄. ABC(1)f.
(162)
(163)
(164)
A
A′B
C
⁄. ABC(1)f.
A
B′B
C
⁄ABC(1)f.
A
C′B
C
Resulting Pitch Sweep Contour (from Flanging)
PITCH CON-TOUR
ALL mf
f
ff
mp

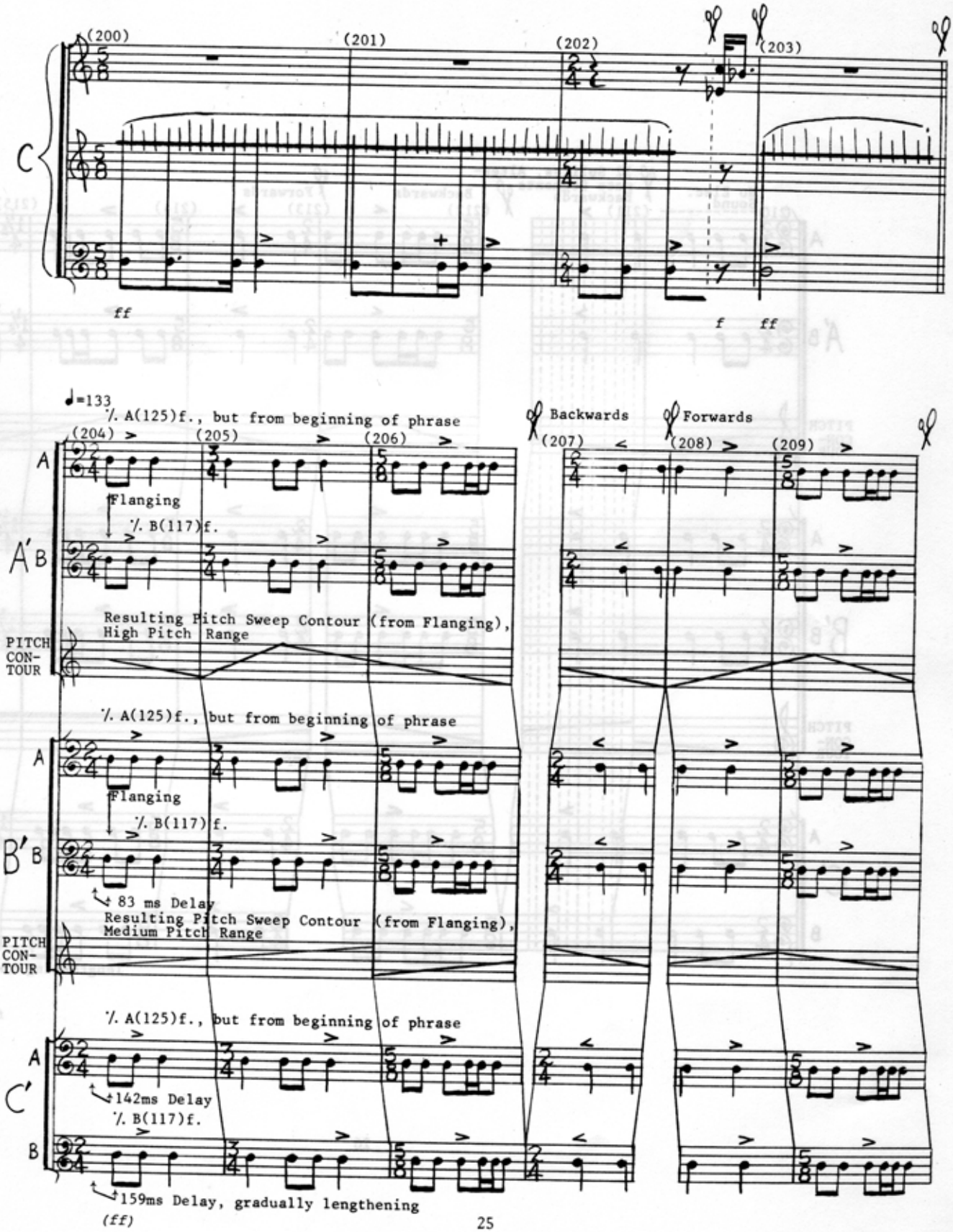

Backwards, ⁄. Preceding 7 2/3 Beats
Forwards, ⁄. A(1)f., orig. DD7 & 240 ms Echo, plus DD3 & 255 ms Echo
(165)
(166)
(167)
(168)
(170)
♩=168
A
A'B
C
A
B'B
C
♩=133
⁄. A(125)f., but from beginning of phrase
(169)
A
⁄. B(117)f.
C'B
4ms Delay, gradually lengthening
⁄. C(113)f.
C
17ms Delay, gradually lengthening
PITCH CON-TOUR
mf
ff
f
ff
fff

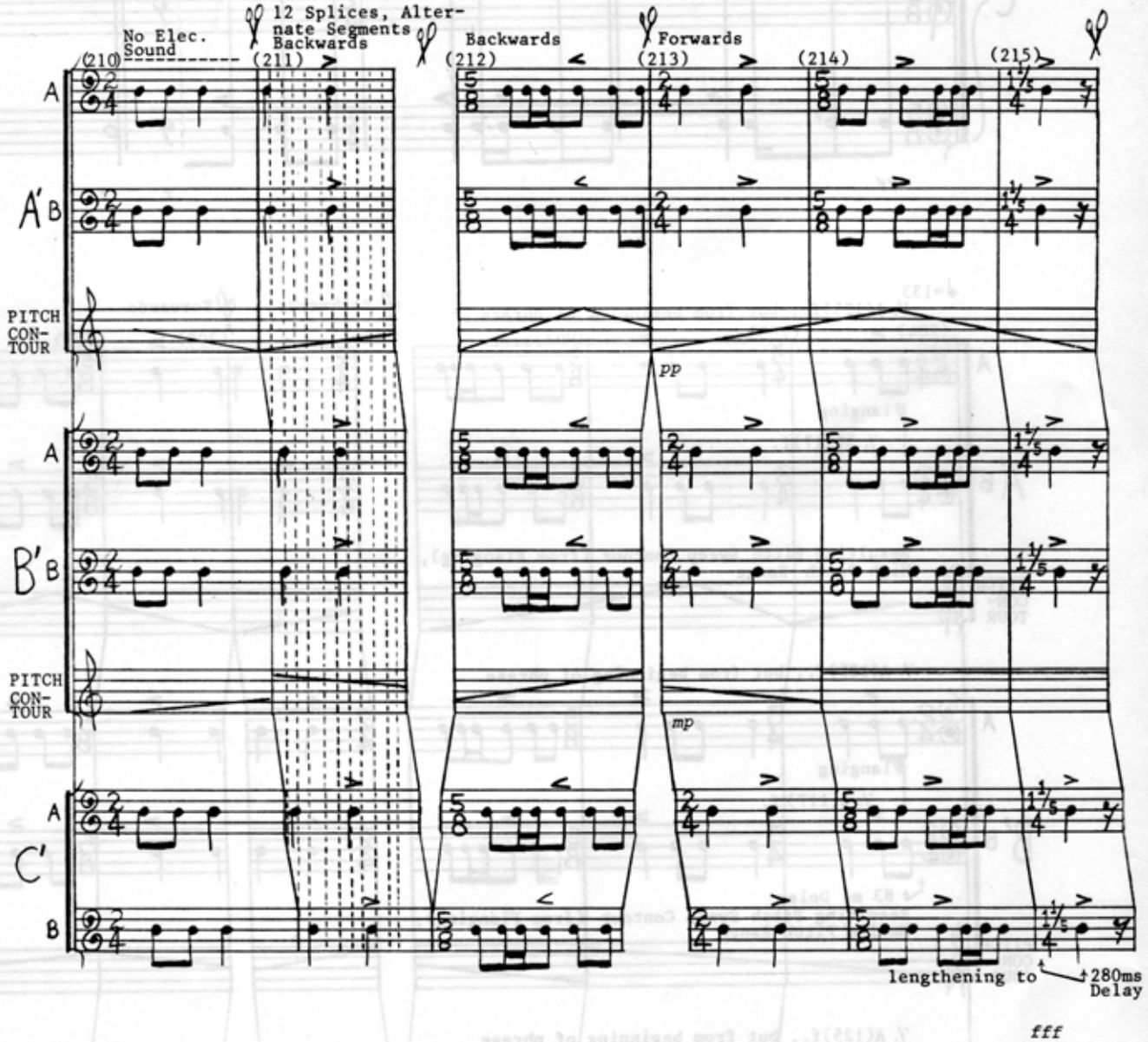

(173)
(175)
(178)
A
(171)
(172)
(174)
(176)
(177)
A
C'B
C
A
n
(179)
(180)
(181)
Backwards
(182)
Forwards
(183)
(184)
A
C'B
C
lengthening to
21ms Delay
lengthening to
42ms Delay

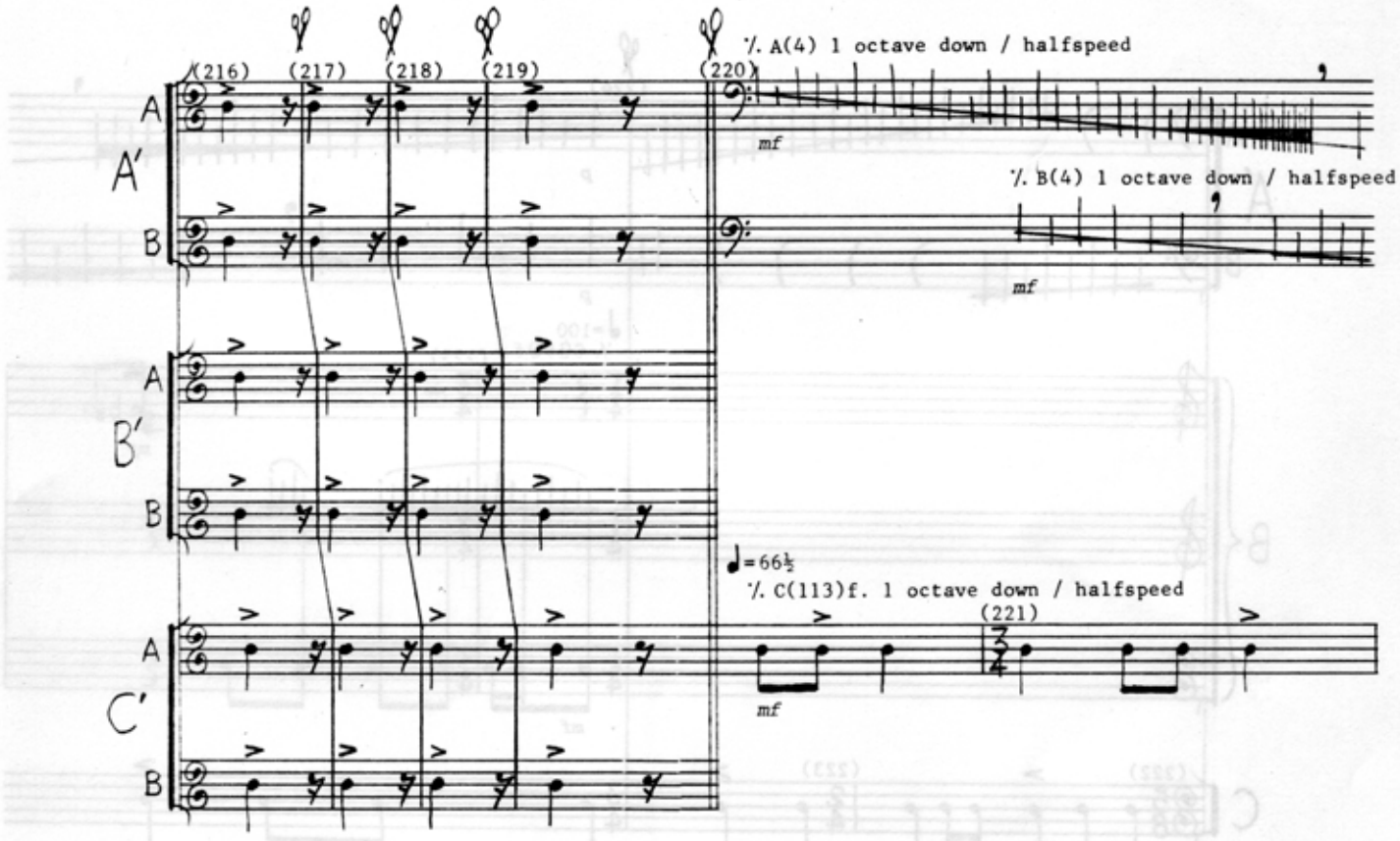

Soprano, 7½ ips Tape Delay Echo with Cross Channel Return
(185)
A
Soprano, 7½ ips Tape Delay Echo with Cross Channel Return
B
100
Elec. Sounds
Patch#3 (186)
(187)
(188)
C
% C(5)f.
ALL ff

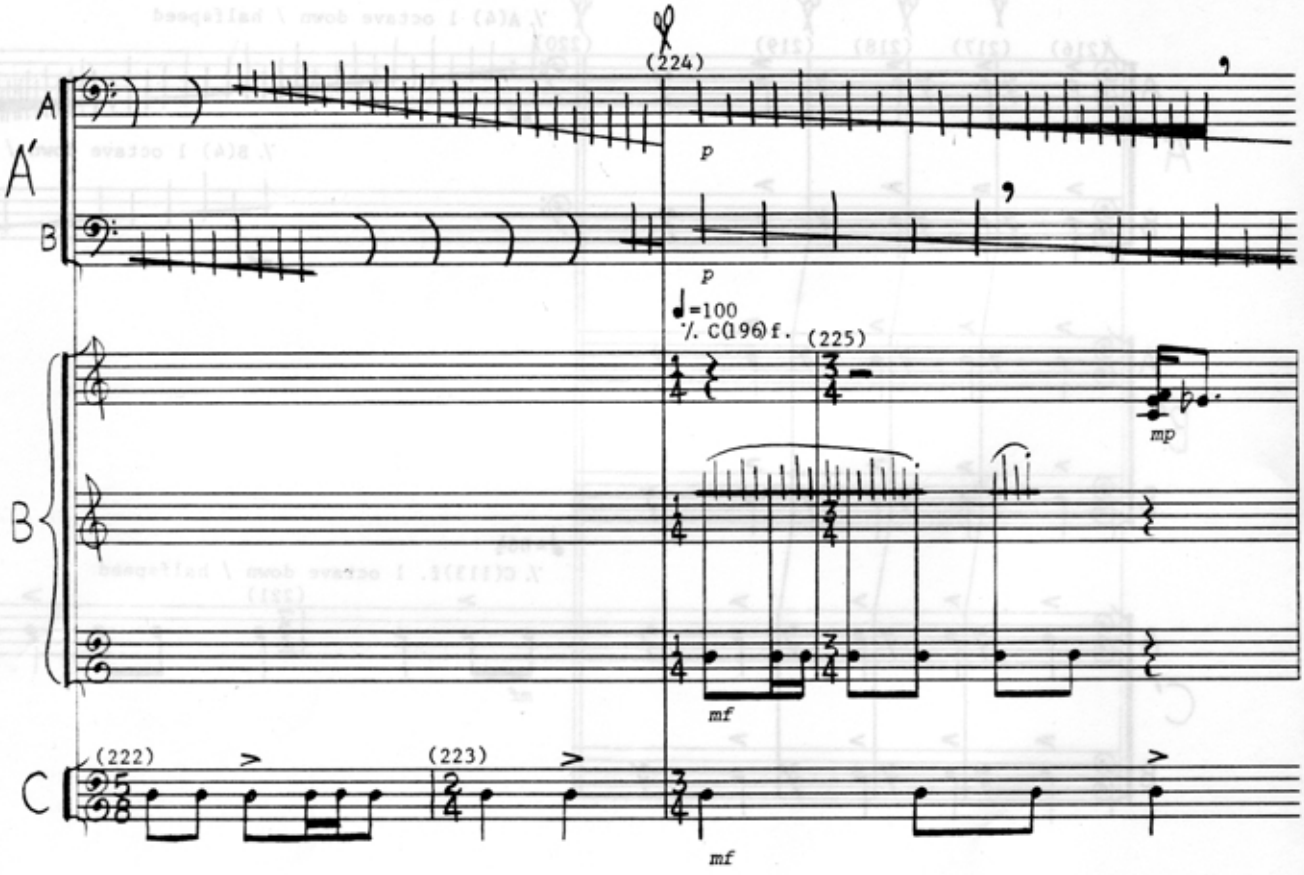

A
B
(189)
(190)
C

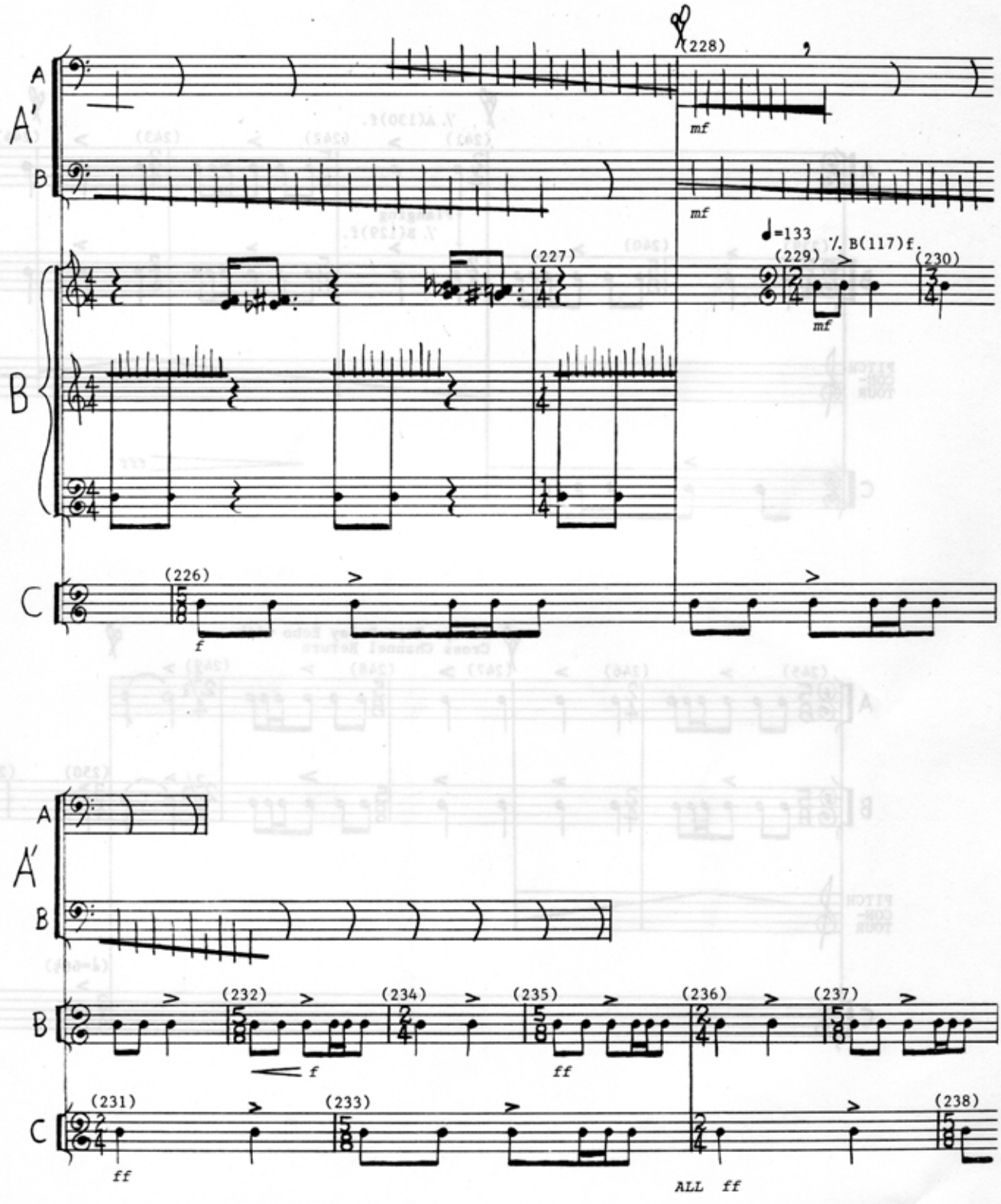

(191)
A
B
(192)
(193)
(194)
C
5/8
2/4
7. C
(185) f.
(195)
(196)
(197)
Soprano
3/4
mf
(198)
(199)
4/4
ff
mf
ff
mf
ff
mf

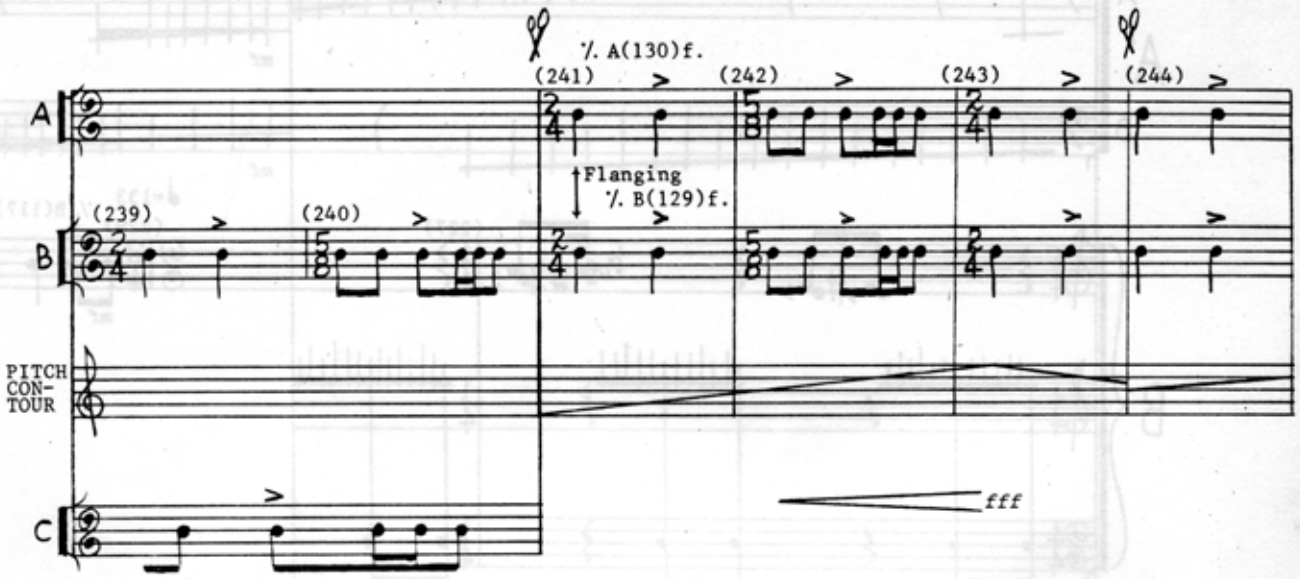

(200)
(201)
(202)
(203)
C
ff
f
ff
♩=133
% A(125)f., but from beginning of phrase
(204)
(205)
(206)
Backwards
Forwards
(207)
(208)
(209)
A
Flanging
% B(117)f.
A'B
Resulting Pitch Sweep Contour (from Flanging), High Pitch Range
PITCH CON-TOUR
% A(125)f., but from beginning of phrase
A
Flanging
% B(117)f.
B'B
83 ms Delay
Resulting Pitch Sweep Contour (from Flanging), Medium Pitch Range
PITCH CON-TOUR
% A(125)f., but from beginning of phrase
A
142ms Delay
% B(117)f.
C'
B
159ms Delay, gradually lengthening
(ff)

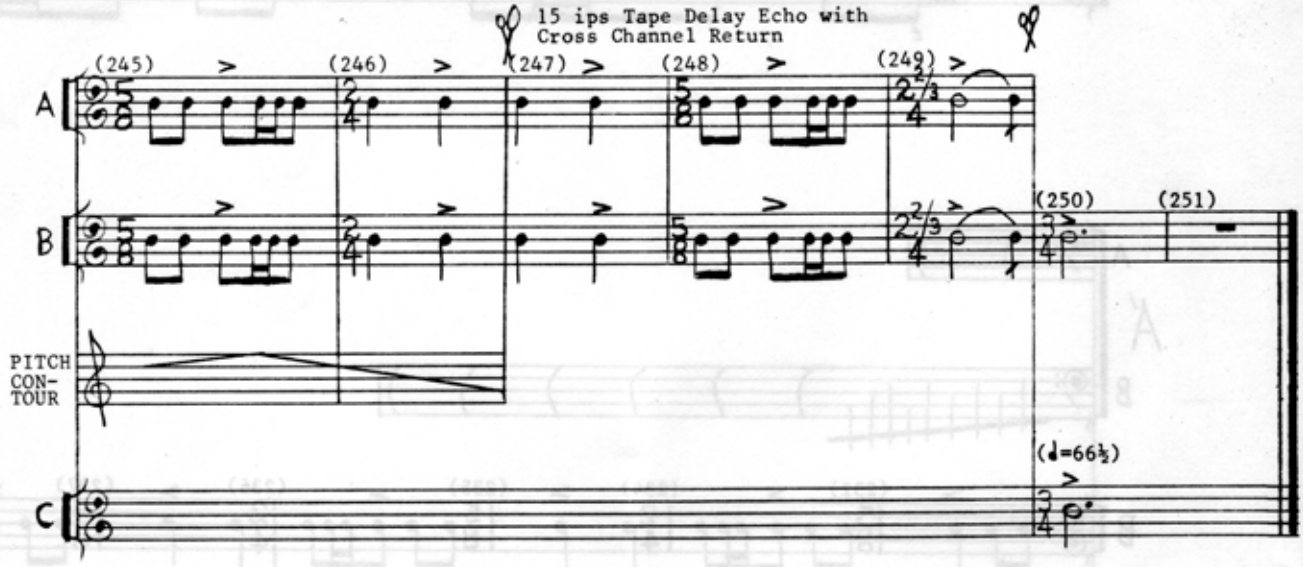

No Elec. Sound
12 Splices, Alternate Segments Backwards
Backwards
Forwards
(210)
(211)
(212)
(213)
(214)
(215)
A
A'B
PITCH CONTOUR
pp
A
B'B
PITCH CONTOUR
mp
A
C'
B
lengthening to
280ms Delay
fff


(216)
(217)
(218)
(219)
(220)
A
A'
B
%. A(4) 1 octave down / halfspeed
mf
%. B(4) 1 octave down / halfspeed
mf
A
B'
B
♩=66½
%. C(113)f. 1 octave down / halfspeed
(221)
A
C'
B
mf


(224)
A
A'
B
p
p
♩=100
'/. C(196)f.
(225)
mp
B
mf
(222)
(223)
C
mf


A
A'
B
(228)
mf
mf
♩=133
'/. B(117)f.
(227)
(229)
(230)
mf
B
C
(226)
f
A
A'
B
(232)
(234)
(235)
(236)
(237)
f
ff
B
(231)
(233)
(238)
C
ff
ALL ff


⅞ A(130)f.
(241)
(242)
(243)
(244)
A
Flanging
⅞ B(129)f.
(239)
(240)
B
PITCH CON- TOUR
C
fff


15 ips Tape Delay Echo with Cross Channel Return
(245)
(246)
(247)
(248)
(249)
(250)
(251)
A
B
PITCH CON- TOUR
(♩=66½)
C