

Program Notes

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

Design of the Score

The main... score also... world of electronic... was blocked by... use... tape techniques... of electronic... and the score now... It is in fact a... material had been... of monophonic... The master tape... labeled tracks A, B, C, A, B, C. 1981... in the factor, and each component track is shown separately in the score and labeled A, B, C.

Reynold Weidenaar

1981

Electronic Sounds

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

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

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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.

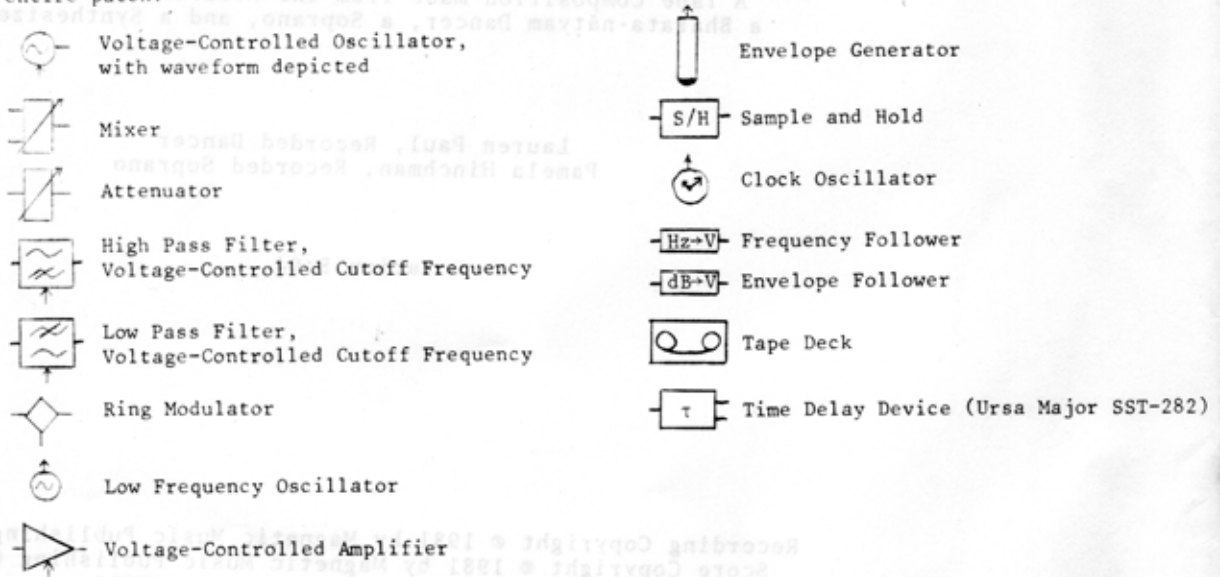
The original dance recordings were made in a large loft on 14th Street in New York with a pair of Wahrenbrock pressure-zone microphones. These capture a beautifully clear, realistic transient response and stereo perspective. Preserving and expanding this sound quality was a core consideration throughout 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 |
| 7 | L 150 | R 188 | R 231 | R 28 | R 53 | R 82 | R 251 | L 253 |
| 8 | none | L 208 | L 255 | L 31 | L 60 | L 92 | L 255 | R 255 |
| Resulting Sound 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

$\text{♩} = 168$

DD7

F/I Echo 240ms

Echo Ring

A (1) (2) (3)

B

C

ALL *f* *ff* *f* *mp*

HIGH Q

DD7, Echo 240ms

DD8

DD6, Reverb

DD5, Echo 180ms

DD4

DD6, Echo 120ms

167Hz Comb

DD6, Reverb

A (4) (5) Footstomps

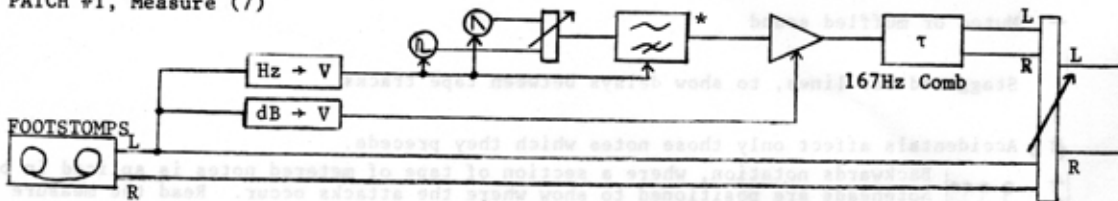
B

C

TIMELINE

0 Seconds 1 2 3 4 5 6

PATCH #1, Measure (7)



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

Reverb Ring

A

B

C

(6) > (7) F/I Elec. Sound, Patch #1, in sync with Footstomps, Echo 120ms (8) + + (9) >

f p mf

6 7 8 9 10 11 11.9

A(4)

A

B

C

f

$\text{♩} = 100$
Footstomps

F/I Electronic Sound, Patch #1,
in sync with Footstomps, Echo 200ms

(10) > (11) > (12) > (13) > (14) + > (15) > (16) > (17) >

mf f

(.../.)

A

B

C

f

+ + (19) > > (20) (21) > (22) + >

p mf f

(18) >

(.../.)

$\text{♩} = 100$

(25) Footstomps (26)

A *f*

B (23) > + (24) >
 % B(11)f.
 † 21ms Delay

C † 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

7. ABC(1)f. +167ms Delay

(34) (35) (36) (37)

A

A' B

C

7. ABC(1)f. +83ms Delay

A

B' B

C

7. ABC(1)f.

A

C' B

C

ALL *fff* *mf*

7. A(1)f., orig. DD7 & 240ms Echo, plus DD3 & 120ms Echo Echo Rings

A $\text{♩} = 168$
 (38) $\text{♩} = 100$
 (40) (42) (44)

B 7. B(11)f.
 (39) (41) (43)

mf *f* *ff* *mf*

A (46) (48) $\text{♩} = 100$

B (45) (47) $\text{♩} = 100$

C (48) $\text{♩} = 100$

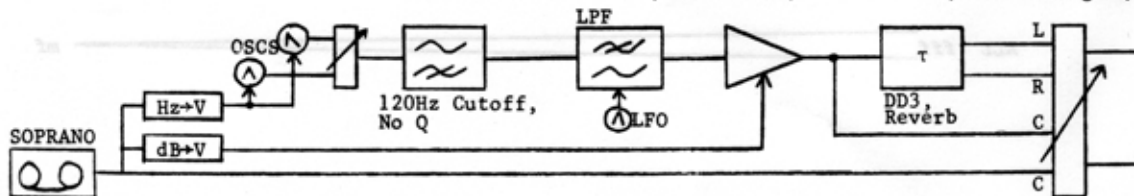
ff *f* *ALL f*

21ms Delay
 88ms Delay

B (49) Backwards (50) Forwards (51) (52) (53)

pp *f*

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



(54) % A(4) $\frac{1}{2}$ step down / 6% slower

A' TIME LINE

B TIME LINE

% B(4) $\frac{1}{2}$ step down / 6% slower

Soprano & Electronic Sounds, Patch #2

A TIME LINE

Soprano & Electronic Sounds, Patch #2

B' TIME LINE

400ms Delay

Soprano & Electronic Sounds, Patch #2

C TIME LINE

800ms Delay

Elec. Sounds, Patch #3 (55) (56) (57)

Footstomps, Patch #3 Scrapes

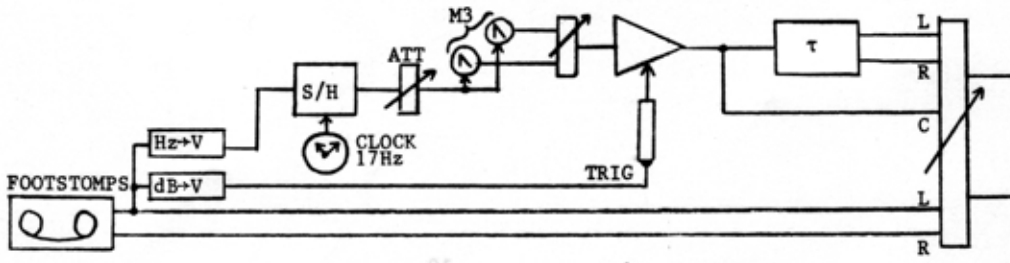
♩ = 113

TIMELINE

0 Seconds 1 2 3 4 5

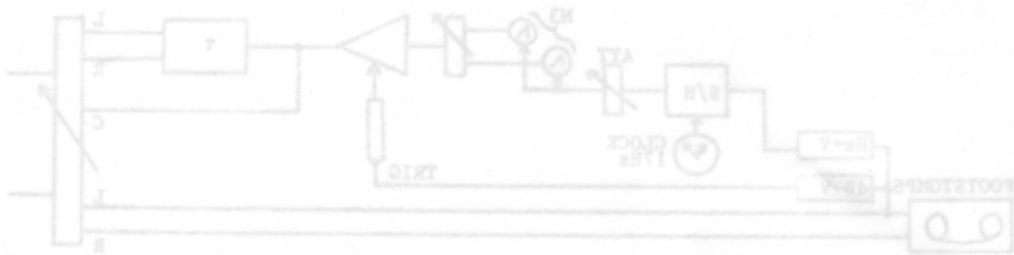
ALL f

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



Musical score for tracks A, A', B, B', C, and C'. The score is written on six staves. Tracks A and A' are in the upper register, while B, B', and C are in the middle register. Track C' is in the lower register. The score includes various musical notations such as notes, rests, and dynamic markings. Measure numbers (58), (59), (60), and (61) are indicated. The score is written in a style that suggests it is a technical or experimental piece, possibly for a synthesizer or electronic music instrument.

5 6 7 8 9 10 10.4



A

 B'

 C

 C

A

 B'

 C

 C

♩ = 100

(68) % A(25)f. (69) (70) Backwards (71) + +

A

% B(11)f.

B'

79ms Delay, gradually decreasing

% C(5)f.

C

167ms Delay, gradually lengthening

f ff mf ff

(72) Forwards (73) (74)

A

B'

C

mf ff

No Elec. (75) Sound

13 Splices, Alternate Segments Backwards

Backwards (76) Forwards (77) (78) + +

A

B'

C

f ff

$\% A(4)$ 1 octave + $\frac{2}{3}$ step down / halfspeed minus 8%
 (80) *f*

$\% B(4)$ 1 octave + $\frac{2}{3}$ step down / halfspeed minus 8%
f

(79) *> + >*
decreasing to \downarrow 58ms Delay
lengthening to \downarrow 171ms Delay

$\% C(5)f$. 1 octave down / halfspeed
 (81) *f* *ff* (82)

(83) *mf* (84) *ff* 13

\downarrow 113 (85) *f* (86) (87) (88)

A
 A'
 B
 B
 C

$\text{♩} = 100$ % C(5) f.

(90) > (91) > (93) > (94) + + (95) >
mf *f* *ff* *mf* *ff*

(89) > (92) (96)

A
 B'
 C
 B
 C

% (77) (98) > % (79) (103) >

58ms Delay
 167ms Delay
 58ms Delay
 171ms Delay

(97) (99) (100) > (101) + > (104) + (105)
 (102)

ALL *ff* *f* *ff*

7. (1)f.

$\text{♩} = 168$

A (106) *mf* (107) (108) (109) *f* *f* 3 (110)

B *f* *mf* *f* *mf* 3 *f* 3

C *f* *f* *mf* *f* 3 *f* 3

ALL *ff*

(111) (112) (.../.)

A TIME LINE *ff*

B TIME LINE *ff*

C TIME LINE *ff*

mp TIMELINE 0 Seconds 1 2 3 4

A

B $\text{♩} = 133$ Footstomps (117) *mp*

C $\text{♩} = 133$ (113)Footstomps (114) (115) *mf* (116) *f*

F/I Elec. Sound, Patch #1, in sync with Footstomps, Echo 120ms

4 5 6 7 8 9 10

Footstomps & Elec. Sounds, Patch #1,
 ♩=133 Echo 255ms

(125) (127) (130)

A *n*

B F/I Elec. Sounds, as in C, Echo 200ms
 (118) (121) (123) (126) (129)
mf *f*

C (119) (120) (122) (124) (128)
ff

3 Delay *f*

A (132) (134) (136) (138)
ff *p* *ff* *fff*

B (131) (133) (135) (137)
ff *pp*

C *pp*

TIN
 LINE
 % A(4)
 (139)

TIMELINE
 0 Seconds 1 2 3 3.35

♩=133

Footstomps, 15 ips Tape Delay Echo with Cross Channel Return

(140) (141) > (142) > (143) > (144) > (145) >

A

B

Pre Echoes Footstomps, Backwards 15 ips Tape Delay Echo with Cross Channel Return

pp

A

B

C'

C

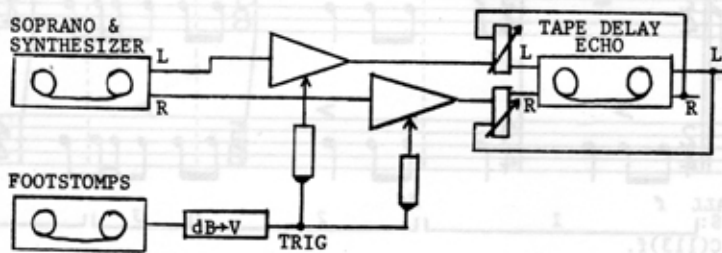
ENVEL
-OPES

3.35 3.95

ALL mf f ff

7. B'(54), Synthesizer Envelopes triggered by Footstomps, Patch #4

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



ENVEL-OPES

ALL *f* 1 *ff* 2 3 2

SOURCES: 1 - % C(113)*f*.
 2 - % 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.

Handwritten musical score for three staves (A, B, C) with measures (156) through (161). The score includes various musical notations such as notes, rests, and dynamic markings.

Staff A: (156) 5/8, (157) 2/4, (158) 5/8, (159) 2/4, (160) 5/8, (161) 2/4. Includes scissor-like symbols above measures 157, 158, 160, and 161.

Staff B: (156) 5/8, (157) 2/4, (158) 5/8, (159) 2/4, (160) 5/8, (161) 2/4.

Staff C: (156) 5/8, (157) 2/4, (158) 5/8, (159) 2/4, (160) 5/8, (161) 2/4.

Below the staves, there are five bracketed sections labeled 1, 2, 1, 2, 3.

Flanging

♩ = 168 % ABC(1) f.

Resulting Pitch Sweep Contour (from Flanging)

PITCH
CON-
TOUR

ALL *mf* *f* *ff* *mp*

Backwards, 1/3 Preceding 7 2/3 Beats

Forwards, 1/3 A(1)f., orig. DD7 & 240 ms Echo, plus DD3 & 255 ms Echo (170)

(165) (166) (167) (168) (170)

A

A' B

C

A

B' B

C

A

C' B

C

PITCH CONTOUR

mf *ff*

ff *fff*

$\text{♩} = 133$

1/3 A(125)f., but from beginning of phrase (169)

1/3 B(117)f.

4ms Delay, gradually lengthening

1/3 C(113)f.

17ms Delay, gradually lengthening

f *ff* lengthening

Handwritten musical score for three staves (A, B, C) in treble clef. The score is divided into measures (171) through (177). Above the top staff (A), there are handwritten annotations: (173), (175), and (178), each with a pair of scissors indicating a cut. The music consists of eighth and sixteenth notes with accents (>). Vertical dashed lines separate the measures.

Handwritten musical score for three staves (A, B, C) in treble clef. The score is divided into measures (179) through (184). Above the top staff (A), there are handwritten annotations: (179), (180), (181), Backwards (182), Forwards (183), and (184), each with a pair of scissors indicating a cut. The music consists of eighth and sixteenth notes with accents (>). Vertical dashed lines separate the measures. Below the bottom staff (C), there are handwritten annotations: "lengthening to" with a downward arrow and "21ms Delay" with a leftward arrow, and "lengthening to" with an upward arrow and "42ms Delay" with a rightward arrow.

(185) Soprano, 7½ ips Tape Delay Echo with Cross Channel Return

(185)

(186) Soprano, 7½ ips Tape Delay Echo with Cross Channel Return

Elec. Sounds, Patch#3 (186)

(187)

(188)

100

%. c(5)f.

ALL ff

A

B

(189)

(190)

(191)

A

B

C

(192) (193) (194)

7. C (185) f.

(195) (196) (197)

Soprano

mf

(198) (199)

ff mf ff mf 24 ff mf

(200) (201) (202) (203)

ff *f* *ff*

$\text{♩} = 133$

f. A(125)*f*., but from beginning of phrase

(204) > (205) > (206) >

Flanging

f. B(117)*f*.

Resulting Pitch Sweep Contour (from Flanging), High Pitch Range

PITCH CONTOUR

Backwards (207) < (208) > (209) >

Forwards

f. A(125)*f*., but from beginning of phrase

Flanging

f. B(117)*f*.

83 ms Delay

Resulting Pitch Sweep Contour (from Flanging), Medium Pitch Range

PITCH CONTOUR

f. A(125)*f*., but from beginning of phrase

142ms Delay

f. B(117)*f*.

159ms Delay, gradually lengthening

ff

25

No Elec. Sound

12 Splices, Alternate Segments Backwards

Backwards (212)

Forwards (213)

(214)

(215)

PITCH CONTOUR

pp

mp

lengthening to \uparrow 280ms Delay

fff

The musical score is organized into three systems, labeled A, A'B, and C. Each system consists of two staves of music (A and B) and a corresponding PITCH CONTOUR graph. The music is written in 2/4 time and features a sequence of notes with various articulations and dynamics. The score is divided into segments by vertical dashed lines, with 12 splices indicated by scissors. The segments are labeled (210) through (215). The first segment (210) is marked 'No Elec. Sound'. The second segment (211) is marked '12 Splices, Alternate Segments Backwards'. The third segment (212) is marked 'Backwards', and the fourth (213) is marked 'Forwards'. The fifth segment (214) and sixth (215) are also marked 'Backwards'. The pitch contour graphs show the pitch of the notes over time, with a noticeable change in slope at the splice points. Dynamics include *pp* (pianissimo) and *mp* (mezzo-piano). A note at the end of the score is marked with a long horizontal line and the text 'lengthening to 280ms Delay', followed by the dynamic *fff* (fortissimo).

(216) (217) (218) (219) (220) $\% A(4)$ 1 octave down / halfspeed
mf $\% B(4)$ 1 octave down / halfspeed
mf

$\text{♩} = 66\frac{1}{2}$
 $\% C(113)f.$ 1 octave down / halfspeed
 (221) *mf*

(224)

p

p

$\downarrow = 100$
%. C(196) f. (225)

mp

mf

mf

(222) (223)

A
 A'
 B
 B
 C

(228)
 mf
 mf
 =133 % B(117)f
 (227)
 (229) (230)
 mf
 (226)
 f

A
 A'
 B
 B
 C

(231) (232) (233) (234) (235) (236) (237) (238)
 ff
 f
 ff
 ALL ff

A $\frac{7}{4}$ A(130)f. (241) > (242) > (243) > (244) >
 B (239) > (240) > $\frac{7}{4}$ B(129)f. Flanging $\frac{7}{4}$ B(129)f. > > > >
 PITCH CONTOUR
 C > > > > *fff*

A (245) > (246) > 15 ips Tape Delay Echo with Cross Channel Return (247) > (248) > (249) >
 B (245) > (246) > (247) > (248) > (249) > (250) (251)
 PITCH CONTOUR
 C (249) > (250) > (251) > ($\text{♩} = 66\frac{1}{2}$)