

Listener's score for:

Below The Walls of Jericho. 1988-89.

Paul Dolden

pages A to C = introductory comments

pages 1 to 25 = score.

Recording History of Work.

This work was originally produced during the 1980s and/or 90s on the audio gear detailed in the score introduction. The work was first published on the Tronia label disc called: "The Threshold of Deafening Silence." In 1990, or on the double CD: "L'ivresse de la vitesse" published on empreintes DIGITALES in 1994 (IMED 9417-18) and re-released in 1999 (IMED 9917-18). All my works were remixed using the original recordings, processed, and mastered in the period 2000-2002. This work remastered appears on one of the following three CDs, all of which are on empreintes DIGITALES:

- 1) Seuil de silences. (IMED 0369)
- 2) L'ivresse de la vitesse 1. (IMED 0317)
- 3) L'ivresse de la vitesse 2. (IMED 0318)

It is very important to be listening to the remastered version because of their increased clarity and depth of sound. During the 1980s and 90s I had to use gear that was insufficient audio quality for mixing several hundred tracks of audio together. With the new masters I was able to achieve the balance between voices that I had so carefully notated in the original scores. I invite you to discover many new levels of meaning and clarity in the new masters, which are much closer to my original artistic thought.

For the tape part of a mixed work (mixed work works for live instrument(s) and tape), you can obtain a copy of the tape portion, (the 2000-2002) remastered tape parts, from:

- 1) The Canadian Music Center In Toronto. (20 St Joseph St..)
 - 2) From me: you can obtain my email address at the web site for empreintes DIGITALES. I love to hear from people who are playing my music.
 - 3) I have left copies of the tape part with my publisher, empreintes DIGITALES.
- You should only be using a digital copy of the digital master.

Paul Dolden
Born 1956, Ottawa, Canada

Paul Dolden begins his career at age 16 as a professional electric guitarist, violinist and cellist. Excited by the possibilities offered by recording technologies, Paul Dolden turns to contemporary modes of production and dissemination in the creation of his music. At age 29, he wins the first of a string of European awards that establish him as a composer. Now the winner of over twenty international awards, Paul Dolden's music is performed in Europe and North America to wildly enthusiastic audiences.

In a career spanning over twenty five years, Paul Dolden has perfected his unique approach to audio technology, using it as a platform from which to launch or capture otherwise impossible musical performances. In this way, he makes his computer behave like a new, virtual orchestra and manipulates it with as much sensitivity as he would a traditional one. His compositions are characterised by a maximalist aesthetic in which hundreds of digitally recorded instrumental and vocal performances are combined in multiple layers.

Paul Dolden's music has been described as the "missing link" between jazz and rock and the high-brow concert tradition. Critics have called it "music for the information age, enlisting noise, complexity and beauty in its quest for excess," and characterised it as "apocalyptic hyper-modernism."

The early works employ a unified approach to timbral and harmonic variation. Under the influence of post-modernism, Paul Dolden's concerns have shifted to include the juxtaposition and superimposition of disparate musical styles evident throughout the *Resonance Cycle* of works (1992-96). Always working to surpass himself, with the *Twilight Cycle* of recent years Paul Dolden boldly investigates the forbidden fruit of contemporary new music—melody and dance rhythms.

A,

Below the Walls of Jericho-Paul Dolden 1988-89.

Short program notes(for public programs):

The title is only a loose reference to the story in the bible. What interests me about the story is the idea of a large mass of people knocking down a wall through the use of sound. The story gives credence to the notion of music as a catalyst for social change. Beyond the sheer physical impact that a large number of sounds contain, music is a form of language which is capable of creating thoughts. The power of music lies in the simultaneous physical and intellectual seduction of the listener.

In the composition, four hundred tracks of sound are often assembled to create the sense of a large mass. Three hundred and thirty-three tracks are created by dividing each of the seven octaves into forty-eight notes. Brass, string and wind instruments from the Western musical tradition and from other cultures are combined to create these textures. The remaining tracks are made up from the unpitched percussion instrument families. The working method allows each track to have its own identity in terms of frequency and tempo. The relationship between each individual layer and the mass effect can act as a metaphor for the relationship between the individual and society. Beyond the music, the metaphor suggests questions of the nature of the walls we have to tear down in order for our culture to move forward. The composition was realized in the composer's private studio.

Long program notes(for private study purposes):

The composition can be divided into three sections: Section 1 (Section A in the score)=2'13" Section 2 (Section B)=4'25" and Section 3 (Section C,D,E,) =7'50". Between each of these sections are the only pauses that occur in the composition. The growth in length from one section to another is a logarithmic function. In each section the first half is quieter materials and dynamics and the second half of each section is louder materials and dynamics.

The composition begins with breathy wind instruments and this material reappears at approximately the half way mark, at the beginning of Section C. Likewise at the ending of the composition appears unpitched breath sounds. The ending suggests that in terms of materials, the transcendence of pitch into noise maybe the only domain left after the dense pitched material of the composition. Psychologically the ending suggests a relaxing of mood and a letting go into complete exhaustion.

Other sonic gestures are repeated throughout the composition. For example Section 1 and Section 3 both end with a texture in which the treble clef instruments ascend to their highest register and the bass clef instruments descend to their lowest register. This sound and gesture is also used in the loud part of Section B.

The 1/8 tone tunings (48 notes per octave often for 7 octaves) suggest a certain form of musical entropy. With so many frequencies and timbres the music implodes on itself and entire separation of pitch, timbre and rhythm is often broken down. In particular one can think of the loud part of Section A, the loud part of Section B and Section D and E. The mass beating of so many microtones creates their own beating or rhythm pattern-hence tuning and rhythm are collapsed together. The small microtones create an inability to discern clear pitches-hence tuning and timbre are collapsed together. The extreme polyrhythmic textures of particularly Section D and E create a form of infinite downbeats where so many pulses create the perception of almost no pulse-hence rhythm and timbre are collapsed together. The presence of so many instrument families and ranges creates a situation where the timbral identity of any one sound is not possible-hence timbre and orchestration are collapsed together.

These forms of musical entropy are intentional in order to create intellectually and emotionally the sense of collapsing walls, (i.e. the title). However the title deals with being "below" the walls which suggests being overwhelmed and yet a bit removed from what is happening. Hence we arrive at one of the great dialectics that all art exhibits: detachment and involvement. It is up to the listener to place themselves on this continuum.

It is important to notice that complete entropy or white noise is never reached. Throughout the composition one is aware of transformations in sound which are organized so as to prevent the type of perceptual boredom that occurs with noise. The final ending with noise bands alludes to the points beyond these musical states.

In contrast to the dense, loud parts, the softer parts are primarily organized on chords constructed from Perfect fourths. Each section is involved in deconstructing these harmonies into dense 1/8 tone clusters. From 19" to 52" of Section B there is a series of Just Intonation chords which evolve from and go back to 1/8 tone clusters.

The contrasting of extreme consonance and extreme dissonance is done consciously in order to create variety for the ear. It is interesting to note that the use of these different systems of consonance and dissonance seems almost secondary to the timbral-textural work going on in the composition. This suggests that strong morphological structures (i.e. timbral-textural transformations) can perceptually dominate over syntactical structures (i.e. consonance-dissonance and note development.)

Notation of the score.

B,

Most of the instructions needed for reading the score are given inside the score. However a few extra words will help clarify many points.

Overall dynamic marks for a section are marked at the bottom of the page beside or just above the time line. Dynamic markings for individual parts are marked below the part itself.

The tuning is 1/8 tones or 25¢ steps making 48 notes per octave. (the exception to this is groups 1-16 of Section D & E, the timpani work and the vibes and marimba work of Section C). A single frequency never appears by itself. The smallest unit would be four frequencies around a single pitch. For example a written C note would actually consist of C-25¢, C-0¢, C+25¢, C+50¢. The great number of tracks used to create the piece requires a symbolic notation using the letter name and octave number based on the following chart:

WHITES		SHARPS	
CPS	Key# Location#	Key# Location#	CPS
27.500	1 A-0	2 A#-0	29.135
30.868	3 B-0	5 C#-1	34.648
32.703	4 C-1	7 D#-1	38.891
36.708	6 D-1	10 F#-1	46.249
41.203	8 E-1	12 G#-1	51.913
43.654	9 F-1	14 A#-1	58.270
48.999	11 G-1		
55.000	13 A-1		
61.735	15 B-1		
65.406	16 C-2		
73.416	18 D-2		
82.407	20 E-2		
87.307	21 F-2		
97.999	23 G-2		
110.00	25 A-2		
123.47	27 B-2		
130.81	28 C-3		
146.83	30 D-3		
164.81	32 E-3		
174.61	33 F-3		
196.00	35 G-3		
220.00	37 A-3		
246.94	39 B-3		
261.63	40 C-4		
293.67	42 D-4		
329.63	44 E-4		
349.23	45 F-4		
392.00	47 G-4		
440.00	49 A-4		
493.88	51 B-4		
523.25	52 C-5		
587.33	54 D-5		
659.26	56 E-5		
698.46	57 F-5		
783.99	59 G-5		
880.00	61 A-5		
987.77	63 B-5		
1046.5	64 C-6		
1174.7	66 D-6		
1318.5	68 E-6		
1396.9	69 F-6		
1568.0	71 G-6		
1760.0	73 A-6		
1975.5	75 B-6		
2093.0	76 C-7		
2349.3	78 D-7		
2637.0	80 E-7		
2793.8	81 F-7		
3136.0	83 G-7		
3520.0	85 A-7		
3951.1	87 B-7		
	88 C-8		
4186.0			

Most of the time an instrument covers a particular range of frequencies like C-Eb-5. This means all the 16 possible 1/8 tone between C and Eb in the fifth octave. i.e. C-25, C-0, C+25, C+50, Db-25, Db-0, Db+25, Db+50, D-25, D-0, D+25, D+50, Eb-25, Eb-0, Eb+25, Eb+50. In the case where a range of notes end on C note the lower octave number is used. For example A-C-4 means the 1/8 tones between A-440.0Hz and C-523.25 Hz, even though C 523.25 Hz is usually named in the fifth octave. When a range of frequencies expands over two octaves the note name and octave number is given for both the top and bottom frequency. For example A-4-E-5 means all the tones from A 440 Hz to E 659.26 Hz. In section D and E these larger ranges also mean special intervallic content and not 1/8 tone spacings. (see page 14 for these definitions.)

In the case where the frequencies are not a cluster of 1/8 tones then the notation appears as C&E-3. This would mean only the four 1/8 tones around C and E note in the third octave. Likewise A-4&D-5 would mean the four 1/8 tones around A in the fourth octave and D in the fifth octave. This notation when used for the timpani work does not mean four 1/8 tones around a pitch name. The timpanis, vibraphones and marimba work of Section C are in equal temperament with no microtones. On the other hand, the vibes and marimba of Section B have been retuned electronically to achieve the microtones indicated.

Pitched gliss is a name given to a compositional device to create the illusion of glissandos by each microtonal step moving up or down in a particular sequence. For example if A-C-4 were to do a Pitched Gliss up to Eb-Gb-5 all the -25 tracks would move up 100¢. Therefore three tracks would be replacing frequencies that were already present, but the highest -25 1/8 tone-Gb-25 would become A-25 or a new frequency. Next the four 0¢ layers would move up 100¢ and once again three of them would replace already existing frequencies but the fourth one would be a new frequency at A0¢. Then the +25 tracks would move up 100¢ and finally the +50¢ tracks would move up. Then this sequence would be repeated until the final register was reached. A pitched Gliss downwards would work the same way except first the +50 frequencies would move down 100¢, then the +25¢ down by 100¢, 0 down by 100¢, and finally the -25¢ down 100¢. This sequence would be repeated until the new lower register was reached.

Often it was not possible, because of space limitations, to indicate for each instrument family where each member of the family began and ended. For example in a family with several parts called Flute, the parts were divided into ranges and played by Bass flute, alto flute, C flute and piccolo. It is sufficient to say that extreme low or high registers were usually avoided on instruments, except for the lowest and highest member of the family.

Instrumentation

C.

The players for the instruments are given in the following list with the abbreviations used for the instrument given after the full name of the instrument:

Isaac Bull: Bassoon-Bsn and Contrabassoon-CBsn.
Paul Steenhuisen: Soprano Sax-SSx, Alto Sax-ASx, Bass Sax-Basx.
Ian Crutchley: Tenor Sax-TSx.
Lorne Buick: Bass Clarinet-BCl.
Johanna Hauser: Clarinet-C1.
Michelle Cheramy: Piccolo-Pic and Bass Flute-BFl.
Clemens Rettich: C Flute-F1, Soprano Recorder-SRec, Tenor Recorder-TRec, Alto Recorder-ARec, Bass Recorder-BRec.
Glee Devereaux: Oboe-Ob and English Horn-Eng Hrn.
Mark Tynan: Trombone-Trb.
Jamie Croil: Trumpet-Tpt.
Paul Fester: Tuba-Tub.
Gwyneth MacKenzie: French Horn-FHrn.
Gary Sterle: French Horn-FHrn.
Diana Ganske: Soprano-Sop.
Janis Clark: Contralto-Al.
Nick Curalli: Tenor-Ten.
David Pay: Baritone-Bar.
Marc Crompton: Timpani-Timp. Toms-Toms-Tom. Cymbals-Cym. Glockenspiel, Temple Blocks.
Trevor Tureski: Tom-Toms-Tom. Cymbals-Cym. Vibraphone-Vib. Maimba-Mar. bongos, Congas, tablas, gongagen, kempeul, slenthem, sanon, snare and tenor snare.
Paul Dolden: acoustic Guitar-AcGtr. Electric Guitars-ElGtr. Double Bass-DblBs. Cello-Vc. Viola, Violin-vln. Dulcimer, Sitar, Banjo, Mandolin and Piano-Pno.

Production.

The conceptualization, composition and production of the composition took 2139 man hours of work and occurred between July 1988 and April 1990. This figure of 2139 man hours breaks down into the following stages:

450.5 man hours-July-December 1988-Composition of the piece on paper. Begin with the macro structure and work down to the detailed movement of each track. Several 32 stave pages are taped together to allow for individual notation of 400 tracks.

15 man hours-December 1988-Auditioning performers for the work.

253 man hours-December 1988 to Feb. 1989-Creating a click track for each part on the POD system at Simon Fraser University. Each click track has a "click" for a beat and then the tuning tone. Each part is always at one pitch level:-25, +25, 0 or +50. The performers then move up or down in equal tempered distances (i.e. 100¢, 200¢, 300¢, etc). (except for the first minute of Section B). Therefore the performers never had to go from a note that is 25¢ flat to another note 50¢ sharp.

189.5 man hours-December 1988-Feb. 1989-Writing out parts for the performers.

497.5 man hours-Jan-April 1989-Recording each part individually. Stereo miking placement was used with mainly close miking techniques.

531.5 man hours-April-September 1989-Premixing the individual layers together. With five digital taperecorders, (see studio equipment list below), four parts were played together and recorded onto the fifth machine. This was done four times with 16 different parts. Then these four tapes were premixed together and the process was repeated to create four tapes with 16 tracks on each one. These four tapes could then be premixed together to produce a premix tape with 64 tracks. In short most material was only resampled three or four times. Careful equalization was used and the BBE corrected any phase coherency problems because of the Alaising filters in the D-A and A-D converters. Indeed there is very little fidelity quality between the first and fourth generation material with good quality digital recorders.

120 man hours-October-December 1989. Mastering. In the final mixdown five mix tapes were mixed together to create the final digital master.(an extra digital taperecorder was rented)

100 man hours-March-April 1990. Creating this Score from the original score and creating some form of symbolic notation so as to fit the piece into this 11" X 17" space.

The composition was done in the composer's private studio on the following equipment:

3 DAT recorders: 2 Sony DTC 1000 and 1 Panasonic SV 3500.

2 PCM recorders: 1 Sony F1 and 1 Sony 601.

3 Beta Machines: 1 Sony SL 2000 and 2 Sony SLHF 900.

2 AKG C414-ULS condenser microphones.

Soundcraft 200B 16 X 4 mixing board that has been "hotrodded!"

Klark Teknik DN 410 Dual Parametric Equalizer.

Barcus Berry Sonic Maximizer, BEE 822.

For reference: a set of Stax electro-static headphones (Lambda).

To power the headphones: NAD Stereo receiver 7240 PE.

For speeding up tracks in Section D & E and retuning the pitched percussion instruments in Section B, the tracks were transferred to an Otar MTR-12 1/4" tape, stereo recorder.

Paul Dolden. April 1990.

Section A

$\downarrow = 80$. Softly but with forward movement. The crescendo and decrescendo marks indicate levels for an individual family of instruments. During the opening 32" all families playing the same notated parts.

Flutes

Recorders

Brass-tpt & trb

Clarinet

Double Reeds

pp 0"

9"

16.5"

27"

Each note represents a four note chord. Each chord is a microtonal tuning around the notated note. The microtonal tuning used for each instrument family is given at the beginning of the line.

Instrument Family	Top Note Tuning	Bottom Note Tuning
Recorders	0, -25, -50, -75	-50, -25, 0, +25
Flutes	0, +25, +50, +75	-25, 0, +25, +50
Double Reeds	-50, -25, 0, +25	-75, -50, -25, 0
Clarinets	-25, 0, +25, +50	0, +25, +50, +75
Saxophones	-75, -50, -25, 0	0, +25, +50, +75
Brass (Tub, F.H., Flg)	0, +25, +50, +75	0, +25, +50, +75

35.2" cresc poco a poco..... 41.2" 47.2" mp

Cluster notation shows lowest and highest note. Each stave is 16 notes or tracks. Therefore when interval shown is a minor 3rd then notes are 1/8 tones apart. When interval distance is augmented 4th then notes 1/4 tone apart.

Stepped Gliss-every 1/2 beat one of the 1/4 or 1/8 tones moves up or down by 100¢ depending on the direction of the gliss. All parts played in a loud, hard driving manner.

Stepped Gliss-every 1/2 beat one of the 1/4 or 1/8 tones moves up or down by 100¢ depending on the direction of the gliss. All parts played in a loud, hard driving manner.	
Flutes	Piccolos G#-B-6
Clarinet	F-G#-6
Oboe	C#-E-6
Sop Sax	A-B#-5
Trumpet	F-G#-5
Bass Clarinet	Stepped on pitches indicated.
Bass Sax	C-Eb-2
Tuba	G#-B-1
Contra Bsn.	1' 39.7 G-1-D-3 C#-G#-1 A-0-E-1
All Bsn. & Tuba tracks descend by 100¢, then 200¢, and then 200¢ Final pitches indicated.	
1' 21.7"	
1' 27.7"	
1' 33.7"	
$\downarrow = 120$ (all timp. parts) $\downarrow = 80$	
T I M P A N I	6 C&G-3
	6 Bb-2&F-3
	6 A-2&E-3
	6 G-2&D-3
	6 F-2&C-3
	6 E&B-2
	6 D&A-2
	6 C&G-2
	all timp. parts tremolo between two notes.
	gliss

Piccolos						only highest minor 16 tracks continue	3rd or sound.
Flutes							
Clarinets							
Oboes							
Sop. Sax							
Trumpet							
Bass Cl.							
Bass Sax							
Tuba							
Contra Bsn							
Timpani (all parts)	dynamic marks apply only to percussion.	32 cymbals rolled & 4 snares rolled.					
					1'57.7"		2'07"
					1'42.7"		

SECTION B

All parts played lightly and softly as if adrift or floating. Parts played as one long note with pitch bend. Each note a four note microtonal tuned chord around the notated note (-25, 0, +25, +50). By 19" all four tones become tuned on the one note indicated. From here until 52" the music is in Just Intonation and the actual deviation in cents from our equal tempered tone is marked above or below each note (i.e. -12¢, +2¢, etc). After 52" the tuning returns to 1/8 tones around the notated pitch.

Although each instrument held long tones a crossfade was created at the mixing board between each instrument family. The notation indicates for each beat what instrument family was crossfaded in at the board. Sets of instrument families are grouped together and named Group 1, Group 2, etc. Dynamic markings at the bottom of each group refer to the level of that group in relation to the other groups.

Gliss (b)

1'40 accel..... = 80
ppp cresc poco a poco..... mp
0" 8.5"

G R O U P 1

J=40 accel..... = 80
ppp cresc poco a poco..... mp
0" 8.5"

Group 1:

H=French Horn C=Clarinet E=English Horn TS=Tenor Sax.
T=Tuba BC=Bass Clarinet B=Bassoon BS=Bar. Sax.

Group 2:

V=upper 4 staves=female soprano
lower 4 staves=male tenor

T=Tenor Trombone with mute

G=Bowed Double Bass with "wah-wah" pedal.

C=upper 4 staves=female alto
lower 4 staves=male baritone

During the 3rd bar
each of the 4 micro-
tonal pitchs gliss
towards the unison
pitch marked at the
end of the bar. Unis-
ion pitch until 52"

Note: In group 2 each instrumental family plays 3 vowel
formations: "mm"-notated as m; "ah"-notated as a; "ee"-notated as e.
The voices sing these vowels, the trombone approximates these
vowels by moving the mute in and out, and the Double Bass
approximates these vowels by use of the wah-wah. When the vowel
formations are written at the bottom of the group then the entire
group transforms vowels at the same time. When the vowel form-
ations are written in each stave then each part changes
vowels independently.

G R O U P 2

accel(all parts).....

mp 14.5"

The rit. & accel. apply to Group 1, 2, 3, 4.

Rit..... Accel..... Rit..... =30 page 5

G R O U P 1

During bars 2 & 3
gliss so that each
of the 4 notes in
each stave ends up
in 1/8 tones around
the final note.
Both group 1 & 3.

G R O U P 2

G R O U P 3

P U C O R G

In the percussion families, the notation indicates which one of the four sounds was crossfaded in at the board. Each sound or instrument was played as a soft constant tremolo with soft mallets.

percussion sounds only → =40 accel.....

4 Gamelan Tams

4 Gamelan Pots

4 Gamelan Tams

4 Temple Blocks

2 Congas

2 Bongos

4 Tablas

4 Tom-Toms

4 Tom-Toms

BGliss=Starting with a cluster in which the notes are 1/8 tones apart in the following range:
 Gliss for 31" so that each group of four 1/8 tones surround a pitch, with each of these pitches ending a perfect fourth apart. (F-2, B_b-2, E_b-3, A_b-3, D_b-4, G_b-4, B-4, E-5). Then these final notes are held for 12 beats at $\text{J}=80$. BGliss is played as one long note with the articulation changing between "mm-ah" or "ooh-ee". On Brass this articulation is done by changing the mute position and on bowed strings by use of wah-wah pedal. During BGliss the rate of change between the two vowel formations accelerates from $\text{J}=40$ to $\text{J}=160$, (with one beat being the length of each vowel). During the last 12 beats at $\text{J}=80$ the "brightest" vowel formation ("ah" or "ee") is held without change. In each BGliss group the higher pitched instruments (trumpet, soprano, alto) play the top 16 tracks or frequencies, and the lower pitched instruments (trombone, tenor, baritone) play the lower 16 tracks.

BGliss-Soprano & Baritone voices "mm-ah"

BGliss-Brass(trb & tpt) with Harmon mute.

BGliss-Bowed Strings(vln & Vc) with wah-wah pedal.

BGliss-Alto & Tenor voices "ooh-ee".

BGliss-Brass(trb & tpt) with Plunger mute.

Clarinet E-5

Trumpet B-4

Clarinet G_b-4

Trumpet D_b-4

Bar Sax A_b-3

Cello E_b-3

Bar Sax. B_b-2

Cello F-2

Tuba B_b-2

CBsn B_b-2

Tuba F-2

CBsn F-2

These new tracks are performed with a loud, hard-driving sound. The articulation marks that begin in the second last bar of the click line show the articulation of these parts. Each part is 16 tracks tuned on 1/8 tones around the indicated pitch. (4 tracks -25, 4 tracks 0, 4 tracks +25, 4 track +50).

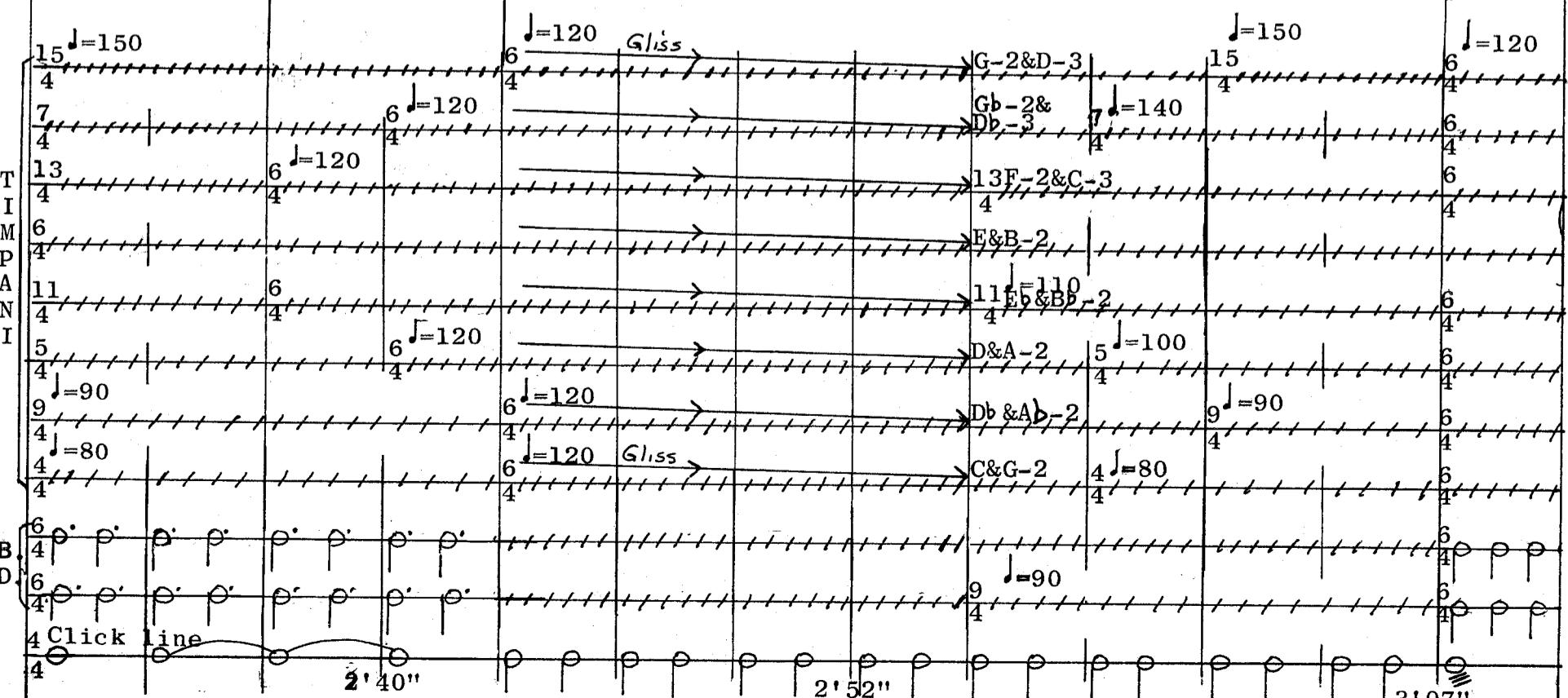
Percussion families from last page of score. For 10 bars they accel. from $\text{J}=40$ to $\text{J}=160$ (same accel as used for BGliss). The sequencing of the four sounds, started on the previous page of the score, continues through this accel. Starting in the 11th bar-1 sound is sustained, 12th bar-2 sounds sustained, 13th bar-3 sounds sustained, 14th bar-all 4 sounds sustained until end of part.

Click line=creates a silent, steady beat to assist in reading the score. In 4/4 at $\text{J}=80$. Starting in 2nd last bar the click line also shows the articulation for the new tracks.

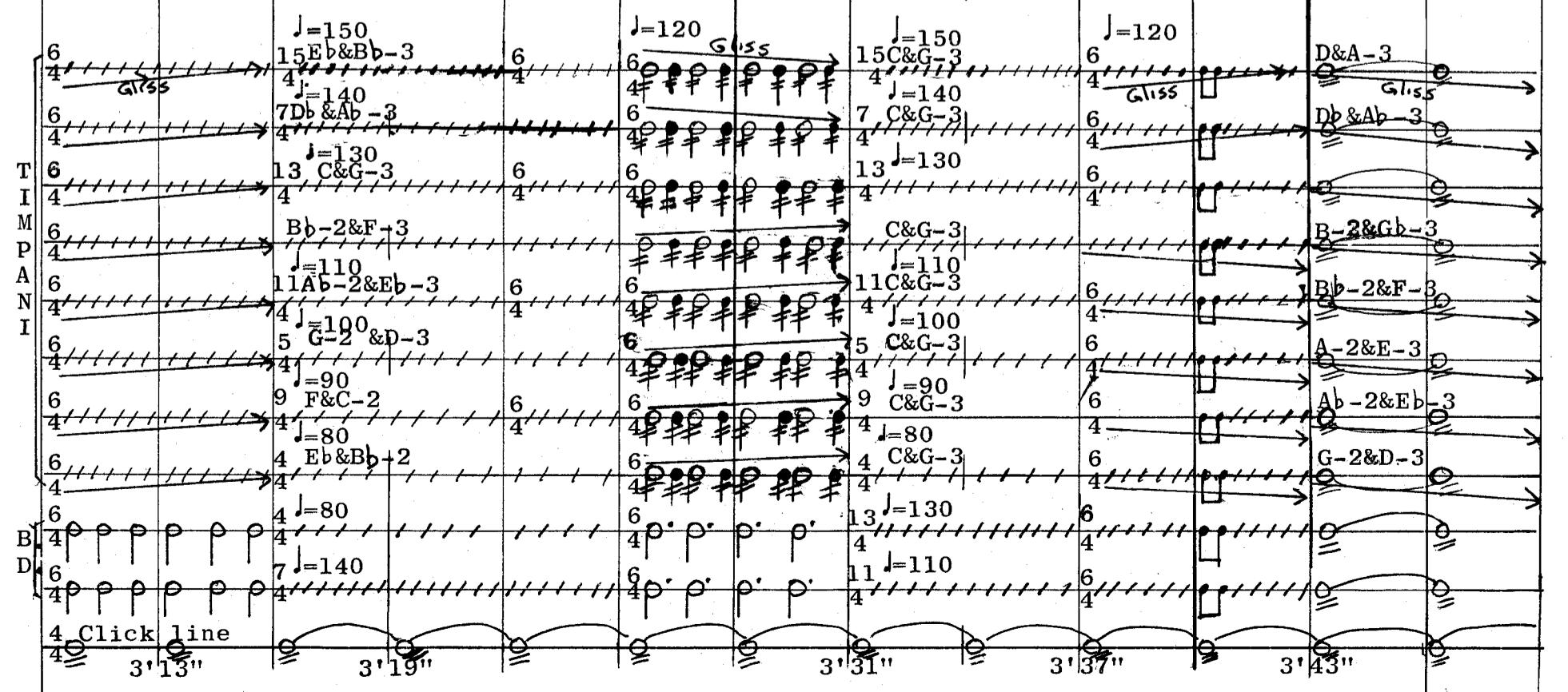
Piccolo	E-5	A-5	A&B-5	A-C-5	A-C-6		Gb-A-6	A-C-5
Pic. Rec.	E-5	Gb-5	Gb&A-5	Gb-A-5	Gb-A-6		A-C-6	Gb-A-5
Pic. E-5		Eb-5	Eb&F-5	Eb-Gb-5	Eb-Gb-6		C-Eb-6	Eb-G-5
Pic. Rec. E-5		C-5	C&D-5	C-Eb-5	C-Eb-6		Eb-Gb-6	C-Eb-5
C1. E-5		A-4	A&B-4	A-C-4	A-C-5		Gb-A-5	Gb-A-6
Tpt. B-4		Gb-4	Gb&Ab-4	Gb-A-4	Gb-A-5		A-C-5	Gb-A-4
C1. Gb-4		Eb-4	Eb&F-4	Eb-Gb-4	Eb-Gb-5		C-Eb-5	C-Eb-6
Tpt. Db-4		C-4	C&D-4	C-Eb-4	C-Eb-5		Eb-Gb-5	C-Eb-4
Oboe	B-4	A-4	A&B-4	A-C-4	A-C-4		Gb-A-4	A-C-4
Vln.	B-4	Gb-4	Gb&A-4	Gb-A-4	Gb-A-4		A-C-4	A-C-6
Ob. Gb-4		Eb-4	Eb&F-4	Eb-Gb-4	Eb-Gb-4		C-Eb-4	Eb-Gb-4
Vln Db-4		C-4	C&D-4	C-Eb-4	C-Eb-4		Eb-Gb-4	Eb-Gb-6
TSx Ab-3		A-4	A&B-4	A-C-4	A-C-3		Gb-A-3	A-C-2
Vc Eb-3		Gb-4	Gb&Ab-4	Gb-A-4	A-C-2		Gb-A-2	Gb-A-2
Br Sx Bb-2		Eb-4	Eb&F-4	Eb-Gb-4	Eb-Gb-3		C-Eb-3	Eb-Gb-2
Vc F-2		C-4	C&D-4	C-Eb-4	Eb-Gb-2		C-Eb-2	C-Eb-2
FHr	Ab-3	A-3	A&B-3	A-C-3	Gb-A-3		A-C-3	Gb-A-3
BC1	Ab-3	Gb-3	Gb&Ab-3	Gb-A-3	Gb-A-2		A-C-2	A-C-3
FHr Eb-3		Eb-3	Eb&F-3	Eb-Gb-3	C-Eb-3		Eb-Gb-3	C-Eb-3
BC1 Eb-3		C-3	C&D-3	C-Eb-3	C-Eb-2		Eb-Gb-2	Eb-Gb-3
Tuba Bb-2		A-2	A&B-2	A-C-2	A-C-1		Gb-A-1	A-C-1
CBsn Bb-2		Gb-2	Gb&Ab-2	Gb-A-2	Gb-A-1		A-C-1	Gb-A-1
Tuba F-2		F-2	Eb&F-2	Eb-Gb-2	Eb-Gb-1		Eb-Gb-1	Eb-Gb-1
CBsn F-2		C-2	C&D-2	C-Eb-2	C-Eb-1		C-Eb-1	C-Eb-1

In the instrument parts above there is 16 tracks for each line. Tuning is in groups of four 1/8 tones for each note or note range indicated. For the next page, see the beginning of the score for more information of Stepped Gliss.

G _b -A-6	A-C-6		Stepped Gliss descending	page 8	E _b -G _b -5
Picc					
A-C-6	E _b -G _b -6		Stepped Gliss descending		A-C-4
Rec Pic		Ob.			
C-E _b -6	G _b -A-6		Stepped Gliss descending		C-E _b -4
Pic.		Electric Guitar with bottleneck.			
E _b -G _b -6	C-E _b -6		Stepped Gliss descending		G _b -A-4
Rec Pic		Clarinet			
G _b -A-4	A-C-5		Stepped Gliss descending		E _b -G _b -4
Clarinet		Trumpet			
A-C-4	E _b -G _b -5		Stepped Gliss ascending		A-C-6
Trumpet		Violin			
C-E _b -4	G _b -A-5		Stepped Gliss descending		C-E _b -4
Clarinet		Soprano—"ah"			
E _b -G _b -4	C-E _b -5		Stepped Gliss ascending		G _b -A-6
Trumpet		Electric guitar - bottleneck			
A-C-5	E _b -G _b -4		Stepped Gliss ascending		A-C-5
Oboe			Soprano—"ee"		
G _b -A-5	A-C-3		Stepped Gliss descending		E _b -G _b -4
Violin		French Horn			
E _b -G _b -5	C-E _b -4		Stepped Gliss ascending	At 3'07" Stepped Gliss ends on pitchs indicated.	G _b -A-5
Oboe		Bowed Sitar			
C-E _b -5	G _b -A-3		Stepped Gliss descending	Over a three bar duration each track individually goes to a discontinuous sound (i.e.-flutter tonguing, rapid repeated notes, timbre trill, etc.)	E _b -G _b -2
Violin		Baritone—"oooh"			
A-C-3	A-C-2		A-C-4 Stepped Gliss ascending		E _b -G _b -6
Tenor Sax		Clarinet			
G _b -A-3	E _b -G _b -3		Stepped Gliss descending		C-E _b -2
Cello					
E _b -G _b -3	G _b -A-2		G _b -A-4 Stepped Gliss ascending		C-E _b -6
Baritone Sax			Soprano Sax		
C-E _b -3			Stepped Gliss descending		A-C-1
Cello		Bass Saxophone			
A-C-2	A-C-4		A-C-2 Stepped Gliss descending		G _b -A-1
French Horn			Tuba		
G _b -A-2	E _b -G _b -2		Stepped Gliss ascending		G _b -A-3
Bass Clarinet					
E _b -G _b -2	G _b -A-4		G _b -A-2 Stepped Gliss ascending		A-C-3
French Horn			Tenor—"ah"		
C-E _b -2			Stepped Gliss ascending		E _b -G _b -3
Bass Clarinet		Trombone			
G _b -A-1	A-C-1		Stepped Gliss ascending		C-E _b -3
Tuba		Double Bass			
A-C-1	E _b -G _b -1		Stepped Gliss descending		C-E _b -1
CBsn					
E _b -G _b -1	G _b -A-1	Double Bass			
Tuba			Stepped Gliss ascending		A-C-2
C-E _b -1		Tuba			
Contra Bassoon			Stepped Gliss ascending		E _b -G _b -1



Piccolo				G _b -A-6	E _b -G _b -5	A-C-5		Stepped
Oboe		Banjo		C-E _b -6	G _b -A-5	A-C-4		Gliss ascending
Electric Guitar		Sitar		E _b -G _b -5	A-C-4	A-C-3		Stepped
Clarinet		Vibraphone		A-C-4	C-E-6	E _b -G _b -5		Gliss ascending
Trumpet		Banjo		C-E _b -5	G _b -A-6	E _b -G _b -6		Stepped
Violin		Mandolin		G _b -A-3	C-E _b -4	C-E _b -5		Gliss ascending
Soprano - "ah"		Vibraphone		A-C-6	E _b -G-6	A-C-6		Stepped
Electric Guitar		Glockenspiel		E _b -G _b -2	A-C-2	G _b -A-5		Gliss ascending
Soprano - "ee"		Acoustic Guitar with bottleneck		G _b -A-4	E _b -G _b -3	E _b -G _b -2		Gliss ascending
French Horn		Electric Guitar		G _b -A-2	E _b -G _b -2	G _b -A-3		Gliss ascending
Bowed Sitar		Sitar		C-E _b -4	G _b -A-4	C-E _b -2		Stepped
Baritone - "ooh"	New instruments	Cello(pizz)		A-C-3	E _b -G _b -4	C-E _b -6		Gliss ascending
Cl.	that come in are played as a constant roll on each note. From 3'13" to 3'25" played with soft	Mandolin		G _b -A-5	C-E _b -5	E _b -G _b -4		Stepped
Cello	each track changes to hard mallets or plectrum. At 3'37" a switch to soft	Dulcimer		A-C-5	A-C-5	G _b -A-6		Gliss ascending
Sax	mallet or fingers From 3'25" to 3'31" each track changes	Glockenspiel		E _b -G _b -6	A-C-6	E _b -G _b -3		Stepped
E Sax		Marimba		A-C-1	G _b -A-1	E _b -G _b -2		Gliss ascending
Tuba	mallets and on plucked strings the right hand is	Electric Bass		A-C-1	G _b -A-1	A-C-1		Gliss descending
Bass Cl.	pressed on the strings to produce a mute effect.	Piano		C-E _b -3	A-C-3	C-E _b -4		Stepped
Tenor - "ah"	Between 3'43" and 3'55" a change from soft to hard	Dulcimer		C-E _b -2	A-C-2	C-E _b -2		Gliss descending
Trombone	mallet and wrist mute to normal.	Electric Guitar		E _b -G _b -4	G _b -A-3	C-E _b -3		Stepped
Double Bass		Marimba		E _b -G _b -1	C-E _b -1	A-C-1		Gliss descending
Double Bass		Double Bass(pizz)		C-E _b -2	G _b -A-2	A-C-2		Gliss descending
Contra Bassoon		Cello(pizz)		C-E _b -1	E _b -G _b -1	C-E _b -1		Stepped
Contra Bassoon		Piano						Gliss descending



Acoustic Guitar

Banjo

Sitar

Vibraphone

Banjo

Mandolin

Vibraphone

Glockenspiel

Acoustic Guitar

Electric Guitar

Sitar

Cello

Mandolin

Dulcimer

Glockenspiel

Marimba

Electric Bass

Piano

Dulcimer

Electric Guitar

Marimba

Double Bass

Cello

Piano

T I M P A N I

4. Click line

3'52"

3'58"

4'10"

4'16"

4'31"

While tremolo picking, various strings on guitar and mandolin are wound tighter and tighter until they break. These sounds are mixed together so that the final sound is 288 strings breaking.

Stepped Gliss continues until 3'58". At this point ascending instruments hold their highest notes and descending instruments sustain their lowest notes. The rhythm pattern notated in the Click Line is played by all parts.

All temp. gliss to lowest sound. $\text{J}=80$

Section C

page 11

Played softly, melodically, flowing, somewhat nostalgic, even romantic. Dynamics= mp throughout. Each stave is four 1/8 tones around the indicated pitchs (-25, 0, +25, +50). During the first five bars, for each set of eight staves, two instrument families are playing the notated parts. Crossfades at the board are made between these two families and this is indicated at the bottom with crescendo and decrescendo markings. For the first five bars two notes written on the same beat indicate that layers -25 and +25 go to the new note first. On the next beat or 1/2 beat the 0 and +50 tracks go to the new note.

Flutes

Recorders

Voice

Strings

Brass-Tuba, Flgs.

Clarinet

Bassoon

0" 11" 17" 23" 29" 39"

In the percussion group a pitched and unpitched instrument occupy the same stave. Pitched percussion always has its stems downwards with the top four staves being marimba and the bottom four staves vibraphone. These instruments always play a 4 note chord whose repetition is marked with: †† or: // . The unpitched percussion is written with stems up and each stave has 3 sounds notated in the D, F, and A space (if reading in treble clef).

Stave 1 or top stave= 3 bongos,
stave 2=3 tablas, stave 3=3 congas,
stave 4=3 Gamelan congas, staves 5-8=

each stave has three Gamelan pots that have nipples on them.

Pots in range from
smallest to largest
as you descend from P
stave 5 through to E
stave 8. Vibes and R
marimba do not use
microtones-in 12
tone equal temper-
ament.

No more crossfades between families and each family has its own four staves, (2 parts or eight 1/8 tones per stave). Starting at 35" the -25 track goes to the quarter note run that lasts four beats. With the second iteration of this run 0 plays the run. Then the 3rd iteration +25 and the 4th iteration +50 plays the run.

page 12

Buu - $\text{d} = 80$

FLUTES
RECORDER
RULERS
VOICE
STRINGS
BRASS
CLARINETS
PERCUSSION

35" 44" 50" 56"
(1'02"-2X)

Notes in the brackets are for the second time through the bar.

FLUTES

RECORDERS

VOICE

STRINGS

BRASS

CLOTHES

CLARINETS

081

In the first bar the -25 layer of the voices changes from "mm" to "ah". In the second bar the 0 changes to "ah", 3rd bar +25 changes to "ah" and the 4th bar +50 changes to "ah". The percussion part comes in on the second repeat of the bar, or starting at 1'26". At 1'35" the -25 track plays the whole note, at 1'38" the 0 plays the whole note, at 1'41" the +25 plays the whole note and the first bar of the next page +50 plays the whole note.

PERCUSSION

1'20"
1'26"-2X

1'32"

1'35"

1'38"

1'41"-2X

Section D

page 14

Section D begins at 2'02" and section E at 4'35". Each group of Section D and E consists of 8 parts, with each part being played by four different instruments or timbres which are identified at the beginning of the group. Normally each part sequences through the four timbres in a particular order identified for example as: $\frac{6}{8} \leftarrow \frac{4}{8} \rightarrow$ Each line or slash represents a quarter note value with the instrument identified below the beat. The arrow at the end means to repeat the sequence for as many beats as needed. $\frac{6}{8} \leftarrow \frac{4}{8} \rightarrow$ would mean the same timbral sequence on eighth notes. $\frac{6}{8} \rightarrow$ would mean three instruments played together on each beat. $\frac{6}{8} p$ means to play the note hard and loud and then hold softly until one beat before the timbre is rearticulated. $\frac{6}{8} z$ and staccato have their traditional meaning. All parts played with rhythmic drive and energy. In Section D the basic bar length is 3" long or 8/4 at $\text{J}=160$. From this velocity each part accelerates or ritards or plays PolyA. Poly A is where each of the 8 parts of a group go into a separate tempo. Starting with the lowest pitched part, the tempos and time signatures are: 5/4 $\text{J}=100$, 6/4 $\text{J}=120$, 7/4 $\text{J}=140$, 8/4 $\text{J}=160$, 9/4 $\text{J}=180$, 10/4 $\text{J}=200$, 11/4 $\text{J}=220$, 12/4 $\text{J}=240$. One sequence of PolyA lasts 3" and the sequence may be repeated several times. In Section E the basic bar length is 1.5" long and is $\text{J}=320$ at 8/4. PolyB is the same idea as PolyA except all the tempos are twice as fast and therefore one cycle last 1.5". Each part of a group is usually 50¢ or 1/4 tone apart. C-E \flat -4 would mean: C-25, C+25, D \flat -25, D \flat +25, D-25, D+25, E \flat -25, E \flat +25. Other note ranges than a minor third mean a particular interval group or chord. Using C as the lowest note of a note range, a minor 7th or C-B \flat =C-25, D \flat +25, E \flat -25, E+25, G \flat -25, G+25, A-25, B \flat +25. A perfect 11th or C-F=C-25, D+25, F-25, G+25, B \flat -25, C+25, E \flat -25, F+25. At 3'20" and 5'14" the -100 -100 or +100 +100 below each group means all the parts of the group moved up or down in synchronization by the indicated amount of cents.

The trills marked: means to trill between the pitchs notated and a new pitch 200¢ higher. In other words a whole tone trill in each part. means to make a continuous tremolo or rolled sound on the one pitch through continuous picking, flutter tonguing, rapid repeated attacks, etc. Groups 1-8 of Section D were played back at twice the speed they were recorded at in order to achieve the notated pitchs and tempos. Likewise Groups 9-16 of Section E were played back at twice the speed they were recorded at, while Groups 1-8 of Section E were played back at four times the speed they were recorded at. (Note: playing back at twice the tape speed increases the pitch one octave, and playing back at four times the tape speed increases the pitch two octaves).

The ending of each instrument family occurs during the last two bars of its notation. First the top and bottom notes end, two beats later the next highest and lowest notes end. Two beats after this the next highest and lowest notes end finally the two inner voices end.

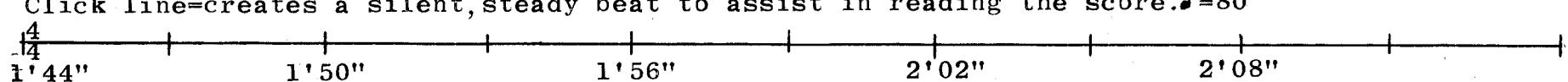
The ending of each instrument family occurs during the last two bars of its notation. First the top and bottom notes end, two beats later the next highest and lowest notes end. Two beats after this the next highest and lowest notes end finally the two inner voices end.

Timpanis 16 Timpanis tuned 100¢ apart from C-2 to D-3 and two

Group 6= B=Bassoon S=Baritone Sax

C=Bass Clarinet I=Irombone.
All eight parts in Group 6 are on either
B-3(-25) or B-3(+25) at the beginning.

Click line-creates a silent steady beat to assist in reading the score. \downarrow =80



Each new group begins with 2 parts. Every 2 beats 2 more parts begin until all 8 parts are playing.

Group 2=O=Oboe S=Soprano Sax
C=Clarinet T=Tpt

J=160
Group 2
GSC →
JP
A-C-5

PolyA

J=160
page 15
scor

Group 4=E=EHrn S=Alto Sax
C=C1. H=FHrn

Group 4 J=160
ESCH →
SP
A-C-4

PolyA

J=160
EEECEHESSESSCSH
H H H H C C C
SP

PolyA

J=160

J=160
PolyA

Group 6 J=160
2 parts 2 parts A-C-3
to Bb-3 to C-4

J=160
BBSBCS →
Staccato

J=160
BBSBCS →
Staccato

PolyA

J=160

J=160
PolyA

The unpitched percussion instruments in each group are different, (i.e. different cymbal size, tom size, etc). The top group tends to be on the left side of the stereo image and lower group on right. The tom-toms in each group are 8 tom-toms with 2 tunings for each note. Time signatures and tempo markings apply to entire group.

Group 8=B=CBsn S=BSx D=Dbl Bass
T=Tuba

PolyA

J=160

J=160
PolyA

4 Cymbals
4 Oriental Cymbals
4 Tom-Toms

4 Cymbals
4 Oriental Cymbals
4 Tom-Toms

J=160

J=160
PolyA

Timpani

Timpani

J=160

J=160
PolyA

Bass Drum

Bass Drum

J=160

J=160
PolyA

4 Cymbals
4 Oriental Cymbals
4 Tom-Toms

4 Cymbals
4 Oriental Cymbals
4 Tom-Toms

J=160

J=160
PolyA

Timpani

Timpani

J=160

J=160
PolyA

Bass Drum

Bass Drum

J=160

J=160
PolyA

2'14" 2'17" 2'26" cresc.... 2'32".... 2'38".... 2'44".... 2'50" ff

Group 5&7-D=Dbl Bass pizz K=Piano keyboard
B=Electric Bass P=inside piano pluck

group 1:3=G=Acoustic Guitar D=Dulcimer B=Banjo S=Sitar.

Grp 1 J=160

PolyA

J=160

accel.....

J=320

GDBS →

GDBS →

Eb-5

S66G →

-Db-6 A-5- -100 -100 -100 -100 -100

SP Eb-Gb-5

SP Eb-Gb-5

G-6 (rit takes 22 beats)

rit.....

J=80

Grp 2 PolyA

PolyA

J=160

TCS →

A-5 +100 +100 +100 +100 +100

SCBT →

SCBT →

G-6

TCS →

-Db-6 (accel takes 42 beats)

SP

SP

A-5

acel.....

J=320

Grp 3 PolyA

PolyA

J=160

Eb-4

A-4 -100 -100 -100 -100 -100

GDBS →

GDBS →

-Db-5

G-5

rit.....

SP Eb-Gb-4

SP Eb-Gb-4

J=160

TCS →

-Db-5

Grp 4 PolyA

PolyA

J=160

A-4

rit.....

SCBT →

SCBT →

G-5

Eb-4

+100 +100 +100 +100 +100

SP

SP

-Db-5

acel.....

J=320

Grp 5 PolyA

PolyA

J=160

Eb-3

A-3 -100 -100 -100 -100 -100

GDBP →

GDBP →

G-4

TCS →

-Db-4

SP Eb-Gb-3

SP Eb-Gb-3

J=160

acel.....

J=320

Grp 6 PolyA

PolyA

J=160

Eb-3

A-3 +100 +100 +100 +100 +100

SCBT →

SCBT →

G-4

TCS →

-Db-4

SP

SP

J=160

rit.....

J=80

Grp 7 PolyA

PolyA

J=160

Eb-2

A-2 -100 -100 -100 -100 -100

GKBP →

GKBP →

G-3

TCS →

-Db-4

SP Eb-Gb-2

SP Eb-Gb-2

J=160

acel.....

J=320

Grp 8 PolyA

PolyA

J=160

Eb-2

A-2 +100 +100 +100 +100 +100

SDBT →

SDBT →

G-3

Dp. 3

J=40

4 Cym

4 Cym

J=40

rit.....

J=80

4 Cym

4 Cym

J=40

rit.....

J=80

Toms

Toms

J=40

rit.....

J=80

Timps.

Timps.

J=40

rit.....

J=80

BDr.

BDr.

J=40

rit.....

J=80

4 Cym

4 Cym

J=40

<p

Over the 1st bar of 6" the accel or rit take 14 beats. Accel J=80 to J=300. Rit J=300 to J=80

PolyAaccel=the 8 tempos of PolyA start at 1/4 their tempo and over 6" speed up to tempo
PolyArit=the 8 tempos of PolyA slow down to 1/4 their starting tempo over 6"

(accel takes 31 beats) page 16

J=80accel..... 18J=360

Grp 1 rit..... A-5-G-6. E-5-A-6

PolyAaccel..... 4J=80 G D B G D B G D B S G D B S → Eb-5-Db-6 Eb-Gb-5

Grp 2 accel..... Eb-5-Db-6 B-4-E-6

PolyArit..... 4J=80 4 OCT OCT OCT OCT → A-5-G-6 A-C-5

rit..... PolyAaccel..... 4J=80 4 J=80accel..... 18J=360

Grp 3 sssss→ SBSB→ B B S B → GDBGD BGD BSG DBS → Eb-4-Db-5 Eb-Gb-4

accel..... Eb-4-Db-5 Db-4-Gb-5

PolyArit..... 4J=80 H S → HSC HSC ESCHESCH → A-4-G-5 A-C-4

rit..... PolyAaccel..... 4J=80 4 J=80accel..... 18J=360

Grp 5 pppp→ BB BB→ B B D B → DB K DB K DK BP DK BP → Eb-3-Db-4 Eb-Gb-3

accel..... Eb-3-Ab-4

PolyArit..... 4J=80 C B → CBS CBS BS CT BS CT → A-3-G-4 A-C-3

rit..... PolyAaccel..... 4J=80 4 J=80accel..... 18J=360

Grp 7 kkkk→ KP KP→ K P → KPD K P DD K BP DK BP → Eb-2-Db-3 Eb-Gb-2

accel..... Eb-2-Db-3 C-2-F-3

PolyArit..... 4J=80 BT → BTS BT BS DT BS DT → A-2-G-3 A-C-2

2J=40 4 J=80 11 4 accel..... 8J=160 15 rit..... 2J=40

4 Cym

4 Cym

Snares

Toms

Timp

BDr.

8J=160 11 4 rit..... 4J=80 8J=160 15 4 rit..... 2J=40

4 Cym

4 Cym

Snares

Toms

Timp

BDr.

In the 2nd to 5th bar the notation for instrument-type indicates that the instrument stops playing the timbral sequence established in the first bar and begins to play the tied whole note value.

Groups 9, 11, 13, 15 start on the next page. The instruments used for these groups are made up

from electric guitars:

- 1) Gibson semi-acoustic jazz guitar (ES 175), clean and deep sound.
 - 2) Gibson solid body (Les Paul) ponticello.
 - 3) ES 175 with wah-wah pedal-from low to high sound or vowel structure with each note.
 - 4) Les Paul with some distortion and wah-wah pedal going from high to low sound on each note.

Groups 9-16 are played back at twice the speed they were recorded at. Each group starts with 8 two parts at a time coming in over

	4	the duration of the first bar.		4	4	4
4 Cym						
4 Cym						
Snares						
Toms						
Timps						
Bdrum	8 4					
4 Cym				3 \downarrow =120	4 \downarrow =160	6 \downarrow =120
4 Cym						
Snares						
Toms						
Timps						
Bdrum						

Starting at 1/2 way through this bar (4'48.5") the tom-toms, timpani, snare and cymbal work of Section D begins at twice the speed . they were played at in Section D (also moved up one octave). No notation given for these tracks because of space limitations and they were mixed in at a lower volume level.

Grp 1	$\text{j}=320$	$\text{GdBS} \rightarrow \text{SPEb-Gb-6}$	PolyB	$\text{j}=320$	$\text{GdBS} \rightarrow \text{GdBS}$	$\text{j}=320$	Eb-6	$\text{S6G} \rightarrow$	page 10	$\text{j}=640$
Grp 2	$\text{j}=320$	S57	PolyB	$\text{j}=320$	F-Ab-6	$\text{j}=320$	Eb-Gb-6	$\text{A-6 -100 -100 -100 -100 -100}$		
Grp 3	$\text{j}=320$	sfz	PolyB	$\text{j}=320$	Cb-D-7	$\text{j}=320$	A-C-6	$\text{G-7 (rit takes 22 beats)}$		
Grp 4	$\text{j}=320$	sfz	PolyB	$\text{j}=320$	$\text{GdBS} \rightarrow \text{GdBS}$	$\text{j}=320$	Eb-Gb-5	$\text{rit.....} \text{j}=160$		
Grp 5	$\text{j}=320$	sfz	PolyB	$\text{j}=320$	F-Ab-5	$\text{j}=320$	Eb-Gb-5	$\text{Bb-6 +100 +100 +100 +100 +100}$		
Grp 6	$\text{j}=320$	sfz	PolyB	$\text{j}=320$	Cb-D-6	$\text{j}=320$	A-C-5	$\text{-G-7 (accel takes 42 beats)}$		
Grp 7	$\text{j}=320$	sfz	PolyB	$\text{j}=320$	$\text{ESCH} \rightarrow \text{Cb-D-6}$	$\text{j}=320$	H	$\text{accel.....} \text{j}=320$		
Grp 8	$\text{j}=320$	sfz	PolyB	$\text{j}=320$	A-C-4	$\text{j}=320$	A-4	$\text{rit.....} \text{j}=160$		
Grp 9	$\text{j}=320$	sfz	PolyB	$\text{j}=320$	G-5	$\text{j}=320$	G-5	$\text{TC5B} \rightarrow$		
Grp 10	$\text{j}=320$	sfz	PolyB	$\text{j}=320$	A-C-3	$\text{j}=320$	A-3	$\text{Eb-4 +100 +100 +100 +100 +100}$		
Grp 11	$\text{j}=320$	sfz	PolyB	$\text{j}=320$	G-4	$\text{j}=320$	G-4	$\text{-Db-5 accel.....} \text{j}=640$		
Grp 12	$\text{j}=320$	sfz	PolyB	$\text{j}=320$	G-3	$\text{j}=320$	C-6-Bb-6	$\text{4321 \rightarrow -100 -100 -100 -100 -100}$		
Grp 13	$\text{j}=320$	sfz	PolyB	$\text{j}=320$	G-2	$\text{j}=320$	G-2	$\text{15 rit.....} \text{j}=80$		
Grp 14	$\text{j}=320$	sfz	PolyB	$\text{j}=320$	G-1	$\text{j}=320$	C-5-Bb-5	$\text{4321 \rightarrow +100 +100 +100 +100 +100}$		
Grp 15	$\text{j}=320$	sfz	PolyB	$\text{j}=320$	G-0	$\text{j}=320$	C-4-Bb-4	$\text{42 accel.....} \text{j}=640$		
Grp 16	$\text{j}=320$	sfz	PolyB	$\text{j}=320$	G-1	$\text{j}=320$	C-3-Bb-3	$\text{4321 \rightarrow -100 -100 -100 -100 -100}$		
4 Cym	$\text{j}=160$			$\text{j}=160$		$\text{j}=160$		$\text{7 rit.....} \text{j}=40$		
4 Cym	$\text{j}=160$			$\text{j}=160$		$\text{j}=160$		$\text{j}=300$		
Snares										
Toms										
Timps										
Bdrum	6:8:	8:	8:160	8:120	8:160	8:160	$\text{7:40accel.....} \text{j}=300$			
4 Cym										
4 Cym										
Snares										
Toms										
Timps										
Bdrum	8:	8:	8:160	8:120	8:160	8:160	$\text{7:40accel.....} \text{j}=300$			

The 1st bar of 3" takes 14 beats.accel $\downarrow=160$ to $\downarrow=600$.rit $\downarrow=600$ to $\downarrow=160$. PolyBaccel=the 8 tempos of PolyB start at 1/4 their tempo and over 3" speed up to tempo.PolyBrit=the 8 tempos of PolyB slow down to 1/4 their starting tempo over 3" $\downarrow=160$ accel..... page 20

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The figure consists of a grid of 8 rows (labeled Grp 1 to Grp 8) and 4 columns. Each cell contains a pair of horizontal bars. The top bar in each cell has a symbol: G, D, B, or S. The bottom bar has the same symbol. In the first column of each row, there is an additional label below the top bar. The labels are as follows:

- Grp 1:** GDBS → GDBS → G
- Grp 2:** OSCT → OSCT → O
- Grp 3:** GDBS → GDBS → G
- Grp 4:** ESCH → ESCH → E
- Grp 5:** DKBP → DKBP → D
- Grp 6:** BSCT → BSCT → B
- Grp 7:** DKBP → DKBP → D
- Grp 8:** BSCT → BSCT → B

In groups 1-8 during the 3rd to 5th bar the notation for instrument-type indicates that the instrument stops playing the timbral sequence established in the 2nd bar and begins to play the tied whole note values.

SGA=Stepped Gliss ascending.
SGD=Stepped Gliss descending

SBD—Stepped Gliss descending.
During the Stepped Gliss in g

During the Stepped Gliss in groups 9-16 each instrument-type plays a new note for one beat. Therefore each new note lasts four beats as it sequences through instrument-type order: 1, 2, 3, 4. Note movement is in steps of 100¢ following the chromatic scale. Stepped Gliss ends on the pitch ranges indicated in the last bar of this page. At this point each instrument lasts four beats as indicated by the notation. (the electric guitars do a picking tremolo to sustain sound). The tempo and time signature markings at the top of Group 9 apply to all of Group 9-16.

Grp 9	$\frac{4}{4} \text{j}=80$	$\frac{4}{4}$ accel.....	$\frac{16}{4} \text{j}=400$	$\frac{8}{4} \text{j}=160$
	1 2 3 4	/.	SGD <i>f p</i>	1 2 F-Ab-5
Grp 10	1 2 3 4	/.	SGD <i>f p</i>	1 2 F-Ab-5
Grp 11	1 2 3 4	/.	SGD <i>f p</i>	1 2 F-Ab-4
Grp 12	1 2 3 4	/.	SGD <i>f p</i>	1 2 F-Ab-4
Grp 13	1 2 3 4	/.	SGD <i>f p</i>	1 2 Db-E-4
Grp 14	1 2 3 4	/.	SGA <i>f p</i>	1 2 Db-E-4
Grp 15	1 2 3 4	/.	SGD <i>f p</i>	1 2 Db-E-3
Grp 16	1 2 3 4	/.	SGA <i>f p</i>	1 2 Db-E-3
4 Cym				
4 Cym				
Snares				
Toms				
Timps				
Bdrum				
4 Cym				
4 Cym				
Snares				
Toms				
Timps				
Bdrum				

In groups 9-16 SGA or SGD end at 6' 39.5". All pitches then move up as indicated.
 Pitches of last bar held until end of part.

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The two percussion groups of the previous pages notated together.

A handwritten musical score for orchestra, page 10, showing measures 11 and 12. The score consists of six staves: 8Cym, 8Cym, Snar, Toms, Timp, and Bdr. The notation includes various rhythmic patterns such as eighth and sixteenth notes, rests, and dynamic markings like forte and piano. The manuscript is written in black ink on white paper.

New tracks holding long tones in 1/8 tones. Played back at speed they were recorded at. Stepped Gliss ends at 6'39.5" and then pitches held until end of part. Stepped Gliss ascending

Percussion 2X=these new percussion tracks were played back at twice the speed they were recorded at. Resulting in each bar being 16/4 at 1=320 and sound shifted up one octave.

Groups 9-16 on one stave

The percussion parts on one stave

The 12 instrument parts (CBSn to piccolos)

All the Percussion 2X parts on one stave

Flutes and voice holding "mm". played softly. Four 1/8 tones around notes indicated.

Breath sounds through instruments. Breath in on first note, exhale on next note. Each stave a family of sounds

6'47" 6'53" 6'59" 7'05" 7'11" 7'17"

Flutes and Voices

From here until end exhale only.

Breath Sounds

7'20" 7'26" 7'32" 7'38" 7'44" 7'47"

THE END.