HEXA

by Lois V Vierk and Anita Feldman

3 tap dancers dancing on Tap Dance Instrument (patented) 1 percussionist

Electronic processing of both tap and percussion with Lexicon PCM 42 digital delay unit

Hexa was commissioned by AT&T Foundation and the American Dance Festival, and premiered in 1988 at the American Dance Festival in Durham, NC. The Tap Dance Instrument (patented) was designed and built with funds from the National Endowment for the Arts.

Hexa is a tap dance/music work and also stands alone as a music piece. The audio track of Hexa by Vierk and Feldman was released on CD by Innova Records in 2010 (Innova 233 "25 Years of New York New Music: The NYFA Collection").

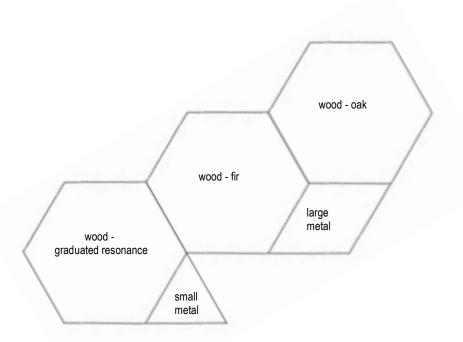
The original dance concert version of *Hexa* has 316 measures and the CD version has 260 measures. Small cuts were made in the original version throughout the piece, to produce the CD version. Scores of both versions are included here. The CD version appears first and the original dance concert version follows.

Hexa Stage Diagram

(upstage)



Percussionist (or could be off-stage)





Tap Marimba

(downstage)

(audience)

Hexa Stage Diagram Explanation

All tap sounds are danced on the Tap Dance Instrument (patented), which is set out on the stage on top of a rug and whose modules are configured for this piece as shown on the *Hexa* Stage Diagram. (For information about the invention of Tap Dance Instrument by Anita Feldman and Daniel Schmidt and its construction by Schmidt, see Anita Feldman's article for the February 1989 issue of the International Tap Association Newsletter, "The Tap Dance Instrument", which is included in this score.) Tap Dance Instrument is a multi-timbre modular tap dance floor consisting of six platforms, each about 9 inches off the ground. Three of the modules are shaped as hexagons of approximately 5 feet across. They are made of different woods and constructed ingeniously in varying ways, so that they have individual resonances and timbres. The other hexagonal module has 7 pitched keys to dance on and is called the "Tap Marimba". Two of the modules are smaller and are topped with metal. The modules can be arranged on the stage in any configuration as required for different pieces.

The "wood - graduated resonance" module was built so that the tapping surface is completely physically supported on one end but not on the opposing end. (Early on, dancers were calling it the "diving board".) The musical result is a graduated resonance across the surface. This means that when a dancer taps continuously with the same force from the totally supported end across to the other end, there is built-in crescendo. Decrescendo occurs naturally when the dancer taps the same but moves in the opposite direction across the platform.

The "wood - fir" module emphasizes low-pitched frequencies in the tapping sound. The "wood - oak" module brings out all frequencies in the tap sounds, including the highs. This produces a clean, clear tapping sound, such as what is expected from a traditional quality tap dance floor.

The "Tap Marimba" has 7 pitched keys. There are a few alternate keys as well, so that various tunings are possible. The *Hexa* tuning is given in this score, and the dancers play tunes and melodic patterns with their feet. In addition, in the middle section of *Hexa*, the percussionist plays one of the larger alternate keys with a wooden beater.

The remaining two platforms, labeled "small metal" (which is triangular) and "large metal" (diamond-shaped), are smaller in size than the other floor modules. They are topped with thick brass slabs and ring like bells, one higher pitched and the other lower.

Each of the Tap Dance Instrument platforms has an enclosed chamber underneath the dancing surface. These chambers are ideal places for insertion of microphones, which can be used for amplification and/or electronic sound processing. *Hexa* makes full use of these capabilities. Tap sounds and percussionist's sounds are carefully miked and mixed in performance, and in some parts of the piece they are electronically processed using a Lexicon PCM 42 digital delay unit.

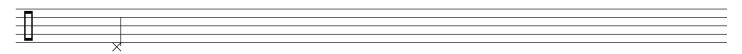
Tap Dance

All tap sounds are danced on the Tap Dance Instrument. Please see *Hexa* Stage Diagram and *Hexa* Stage Diagram Explanation.

Tap Marimba pitches, from Audience left to Audience right:



Notes in treble clef are danced on the Tap Marimba.

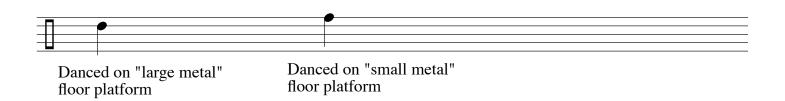


X-noteheads appear in score in various measures, up through m. 53.

These X-noteheads are danced on a "wood" floor platform (not on Tap Marimba).



From m.54 to end of piece, notes for dancers on wood floor platforms use a regular notehead on the space below the staff (replacing the X-notehead notation).

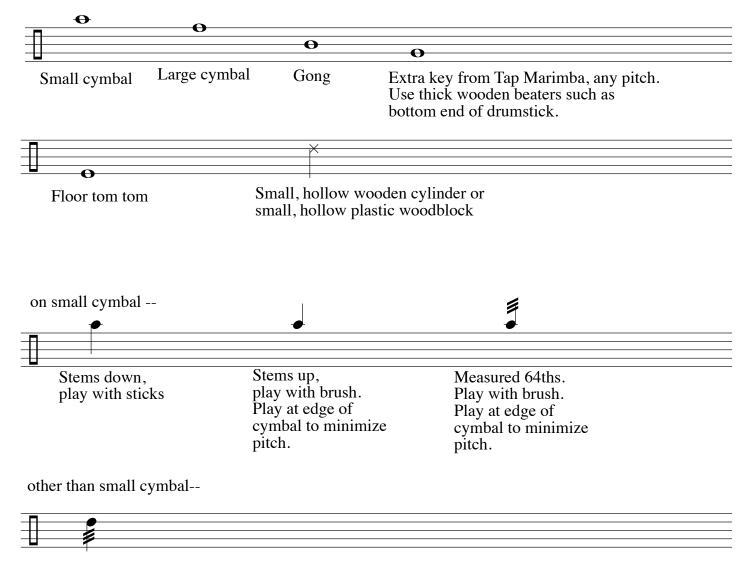


Sound dynamics are very important to the structure and expression of this piece. Perform dynamcis with feet, strongly and clearly, and exactly where written.

Percussion

Dynamics are very important to the structure and expression of this piece. Play dynamics strongly and clearly, and exactly where written.

Let all sounds on all instruments ring, except where marked to damp.



When the tremolo marking appears on notes for other percussion instruments, play measured 32nds.

For questions about the score, contact Lois V Vierk P.O. Box 2652 Times Square Station New York, NY 10108

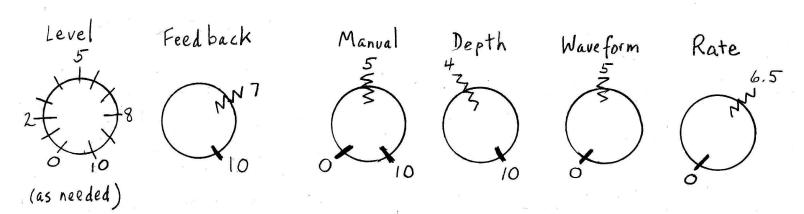
LVVVV@aol.com www.loisvvierk.com

HEXA - Lexicon PCM 42 performer

Instructions to be followed in conjunction with mix from sound engineer (who is controlling levels of percussion and/or Tap Dance Instrument signal being sent to Lexicon PCM 42. See Mixing Cue Sheet.)

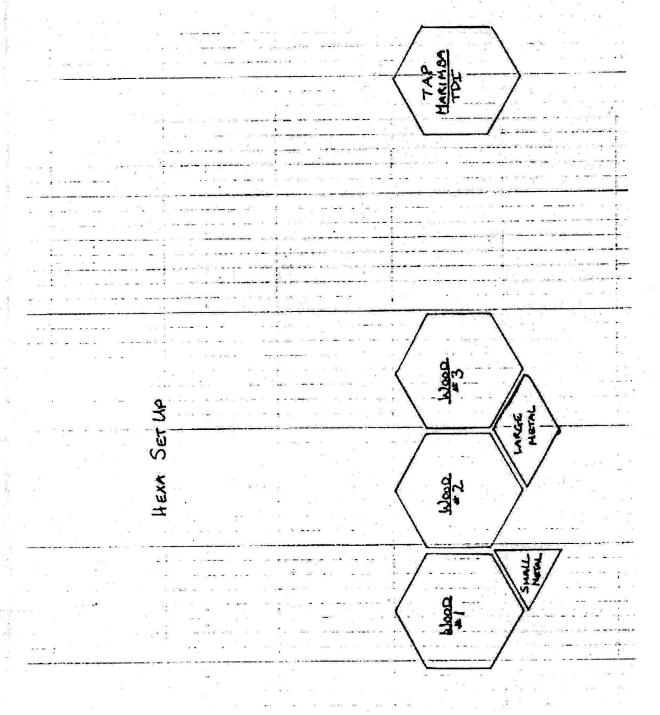
PCM 42 setup

- 1. Buttons, etc.
 - -- "Delay X2" button in up position, set to X1
 - -- "Filter" "Hi Cut" button in up position, set to off
 - --"Filter" "FB Inv" button pushed in, set to on
 - --"Delay-ms" set to 8
- 2. Potentiometers. Begin at settings marked by jagged lines. Think of the Lexicon PCM 42 as an instrument to be played to shape the sound of the performance, moving through the piece eventually to the solid line settings, as described in the instructions for performance.



<u>Performance</u>

- -- Beginning, no processing of anything
- -- As dancers move from tap marimba to wood floor segments, sound engineer gradually fades in processing on percussion. PCM 42 performer, use the jagged lines as starting points. Continuously play "Manual" for changes in pitch and timbre.
- --As dancers get into triplets section, sound engineer fades in processing on the 3 wood flood floor segments and fades out processing on percussion. After this is accomplished, proceed--
- -- Very gradually change settings in this way:
 - 1) Alternate moving "Depth" and "Rate" to solid line settings, always very gradually, and move "Manual" to 0.
 - 2) Change "Waveform" very gradually to solid line setting of 0.
 - 3) Soon before the last section of the piece (dancers on the metal floor segments), "Delay-ms" UP arrow button is pressed a total of 3 times, at the indicated point in the audible pitch wave of the processed sound (wave should be very slow right now) Press 1 time at the arrow, then again at 2 other subsequent waves:
- -- Play the "Manual" and "Rate" potentiometers to the end of the piece, gradually getting faster and larger in order to build up the energy of the effects.
- -- At very end of the piece, do not move any potentiometer, making sure that you have ending settings of "Manual" = 0, "Rate" = 0 (for a long, slow glissando to end).



Tom Tom *

Tom Tom *

Wood Slab *

LARGECYMIN | *

Small Cymbal *

Gong

HEXA Mixing Cue Sheet

HEXA requires adjustments of microphone, equalization and signal processing levels throughout the piece. Here are some cues to help:

TIME*	CUE	ADVICE	
0:00	Marimba TDI and cymbals	 EQ for Small cymbal: Boost highs, attenuate lows Cymbals start off softly, gradually become louder, so ride gain throughout piece. No signal processing. 	
3:30	Wood block, cymbals, marimba (comes in shortly after damped cymbal section)	• Lower cymbal level, make sure wood slab mic is up.	
4:20	Dancers start using Wood #3 TDI (R)	 Gradually add signal processing on percussion only. 	
5:30	Soft gong	• Make sure gong mic is open	
5:50	Dancers are now using three wood TDI's and are finished with Marimba TDI.	Kill Marimba TDI mics	
6:50	Loud gong (wood beaters), wood slab	 Watch gong level Begin adding signal processing to floor; subtracting signal processing from percussion. 	
7:30	Triplet section	 Floor signal processing effect is in, gong signal processing effects are out, lower the sends to the signal processor for the cymbals. Lower cymbal sends to the percussionist. 	
8:50	Cymbals come back, then tom; later "metal hits" on metal TDI's	 Make sure metal floor levels are up. At metal hits, bring out percussion processing. Start taking out processing on wood floors shortly before tempo pick-up. 	
11:20	Tempo pick-up	 Processing on metal TDI's only; be ready to boost metal TDI level/effects Watch overall balance. 	
14:00	Final gong	 Fade all acoustic instruments and floor mics to black, then fade signal processing to black 	

NOTE: Use pre-fader aux send to send signal to the Lexicon PCM-42

* Times refer to original HEXA (1988), not the shortened rersion.

Anita Feldman Tap Suggestions For Setting Up Hexa by Karen Pearlman

1. Tap Dance Instrument (TDI) mic placement:

Marimba TDI: Use two microphones, preferably AKG 460's or 451's with cardioid capsules. Place each in a mic mouse (or wrap in foam) on the floor of the TDI so that the head of each mic is near the inner edge of the second note from the outer edge of each side. Point mics diagonally if they are too long and stick out the sides of the marimba.

Small and Large metal TDI's: Use one mic for each. Place a microphone in a mic mouse (or wrap in foam) on bottom and in the center of each metal TDI.

Wood #1: Place PZM on the stage floor under the center of the TDI.

Wood #2: Place PZM in on the center platform underneath the TDI.

Wood #3: Place PZM on the stage floor under the center of the TDI.

2. Monitor Feeds: Two monitor feeds are needed: one for the dancers, one for the percussionist.

Dancers: The dancers mix should have some cymbals and a lot of wood block. They don't need to hear much of the sounds coming from the TDI's.

Percussionist (Gary Schall): The percussionist prefers to monitor on headphones. His mix should have mostly the TDI sounds with a small amount of percussion sounds. You'll need to ride the cymbal levels during the piece--as he gets louder, you'll need to send him less cymbals.

3. Setting up the signal processor: The composer (Lois V Vierk) will control the signal processor and signal processing levels during the mix. Send a separate mix to the jack marked "Input" (balanced 1/4" tip/ring/sleeve but will work with unbalanced tip/sleeve plug); take the return from the jack marked "Delay Out" (unbalanced 1/4" tip/sleeve). To set up the signal processor, have the percussionist begin by hitting the small cymbal. Adjust the mic position to achieve the desired effect (the mics should be set up so they are pointing over the cymbals, very near the outer edge, and very close to the surface.) Next, check the signal processing for the large cymbal, then the gong. Then move metal and wood to the TDI's.

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HEXA tech - 3

Anita Feldman Tap/Mixer Set-up: "HEXA" [Shows mics used for DTW concert 6/92]

				•
1	\rightarrow	Gong	SM-57	
2	X	Small Cymbal	AKG-460	
3	1	Large Cymbal	AKG-460	
4	\rightarrow	Wood Slab	SM-57	
5	\rightarrow	Tom	Sennheiser 421	a fa a
6	1	TDI: Wood #1 (L)	PZM	
7	→	TDI: Wood #2 (C)	PZM	
8	A	TDI: Wood #3 (R)	PZM	
9	1	TDI: Small Metal (L)	RE-15	
10	V	TDI: Large Metal (R)	RE-15	
11	1	TDI: Marimba (L)	AKG-460	
12	7	TDI: Marimba (R)	AKG-460	
13	→	Lexicon PCM-42 Return	line level	
14				
15	*			
16				
17	1			
18				
19				
20				
21			8	
22				
23				4*
24				
1				Aux 1PCM-42
2				Aux 2
3				Aux 3Dancers
4	<u> </u>			Aux 4Percussionst
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Hexatech - 6

The Tap Dance Instrument TM by Anita Feldman

Since I started making tap dances in 1983, my major focus has been to compose the tap along with the music, in collaboration with new music composers, so the music and tap are equal partners. I found, however, as we performed around the country that even the most expert sound technician could not amplify the taps as well as they could amplify other instrumentation. This problem was exacerbated by the varying qualities of the floors: amplification of dead, monotonous sound *still* sounded dead and monotonous.

Soon after I began choreographing tap, I had the idea that a floor made of various woods, and perhaps metals, would be extremely interesting. I particularly wanted to produce a sound that would ring, to contrast it to the percussive tap sound. Three National Endowment for the Arts applications later, I got funding to proceed on this rough idea.

During the first six months I spoke with numerous sound experts about the project including: Arthur Stidfole, director of Good Sound Foundation; Larry Polansky, Dean Drummond, and Stuart Smith, composers; and Bart Hopkin, editor of Experimental Musical Instruments. After studying electronic and acoustic sound production, I decided I wanted to design an acoustic musical instrument that would not only expand the kind of timbres I could play with my feet, but would also be beautifully resonant. After a thorough search I chose (and was chosen by) an adventuresome and brilliant instrument-maker from Berkeley, California, named Daniel Schmidt. In one phone conversation with him my vague ideas started to take shape.

He decided the instrument would be visually beautiful if the parts were hexagonally shaped. Having never made a hexagonal instrument before meant he would have to do a lot of creative experimentation to discover how best to produce sound from a hexagonal surface. The freer a surface is to vibrate, the more resonant the sound. To lift a surface off the floor and support it without limiting the vibration, it must be supported at specific points that do not vibrate when the surface is struck. One of the many problems we had to solve was to determine where those points would be on a hexagon.

Before I got to California, Daniel built numerous hexagons out of different woods and in different thicknesses. I tapped on each of them with varying supports underneath. We quickly discovered that the way the surface was supported greatly influenced the sound quality, perhaps even more than the type of material. Moving the support an inch one way or the other completely changed the sound.

We chose the supports to magnify the natural qualities of the woods. For instance, oak tended to give a good variation between the highs of the toe and the lows of the heel. It had somewhat of a tight, non-pitched sound. To accentuate the qualities, we decided to put support all around the edge of the instrument, lessening its vibration. Fir is a softer wood, and therefore more resonant. To enhance that, we supported the fir so it could freely vibrate.

Through experimentation, we designed three contrasting wood hexagons: one made out of oak, and two made out of fir. We then started to experiment with metal. I wanted to keep the floor as

light-weight as possible. So we began with the lightest metal, aluminum. Unfortunately it made a dull, uninteresting sound. Daniel had some samples of brass and I, without much enthusiasm (a one foot square piece of brass weighs about seventy pounds), started to tap on it. It was beautiful! It had a rich, tonal, ringing quality with numerous overtones when I was not standing on it, and a contrasting metallic percussive sound when I was. We decided to make two brass modules, one a triangle, one a parallelogram. We had one more module to design and neither of us knew what we wanted.

Daniel brought out some small rectangles of spruce for me to try. Dancing on them created specific pitches and had a wonderful quality of sound, similar to slit drums. I fell in love with dancing on them. A more percussive, less tonal effect came from standing on the same key as I was playing, and a resonant pitch resulted from playing a key I wasn't standing on. There was a full range of possible subtle control with this instrument, and it became the last module of The Tap Dance Instrument (TDI)TM.

The design work was complete, but the nitry-gritty work began. During experimentation, the surfaces were loosely resting on the supports. Daniel had to attach the supports to the surfaces without changing the sound qualities. Even more vital, each module needed to withstand up to four hundred pounds of weight (three dancers) and years of abrasive tapping without cracking or tipping over. He also chose the tuning for the marimba and the wood finish. His final job was to design and build the packing crates.

Daniel did an amazing job solving these problems. I, in collaboration with composer Lois V. Vierk, choreographed and composed the first dance for the TDI™ in the spring of 1988. "Hexa," a quartet for myself, David Parker, Rhonda Price, and percussionist Gary Schall, premiered at the American Dance Festival in June 1988. After months of rehearsal, six air freights, and four performances, the instrument is a little worse for wear, but sounding as wonderful as ever.

The instrument can be used acoustically since it is designed to project the sound. It can also be very easily amplified with PZM microphones placed in each module. Because the sounds are varied and tonal, and because the instrument can be so well amplified, the TDITM will open up new realms for the use of electronics and midi-processing with tap dancing.

Although TDI™ solved my original sound dilemmas, it created new practical difficulties: many performance spaces don't have the sophisticated sound systems we require; transporting the instrument is an expensive project; and now I have storage requirements, as well as rehearsal requirements.

However, TDI™ is extraordinarily rich with a broad range of creative possibilities. And far outweighing my worries about these new practical problems, is my excitement about where The Tap Dance Instrument™ will take us.



Rhonda Price, Anita Feldman, and David Parker in *Hexa* by Anita Feldman and Lois V. Vierk. Tap Dance Instrument by A. Feldman and Daniel Schmidt

Program Notes and Miscellaneous Information

HEXA (1988) by Lois V Vierk and Anita Feldman

HEXA exists in two versions: the original 1988 dance concert version, and a slightly shorter version which was used in a video produced by Jan Roberts-Breslin in 1990 and subsequently released on CD (audio track only) by Innova Records in 2010 (Innova 233 "25 Years of New York New Music: The NYFA Collection"). The audio recording of this slightly shorter version is notable because tap dance, percussion and electronic processing were recorded and mixed in a sound studio. The sound quality of the CD is excellent unlike, of course, that of video recordings made in concert. *Hexa* is a tap dance/music work and also stands alone as a music piece.

The original dance concert version has 316 measures and the CD version has 260 measures. Small cuts were made in the original version throughout the piece, to produce the CD version. Scores of both versions are included here. The CD version appears first and the original dance concert version follows.

Hexa is one of six music/tap dance works co-created by tap dance choreographer Anita Feldman and composer Lois V Vierk during the 1980s and 90s. This piece was the inaugural work for Feldman's Tap Dance Instrument (patented). It had long been Feldman's belief that music made by the feet was equal to music made by musical instruments. Desiring to dance on an instrument that would allow the dancers' feet to make resonant and varied music in any performance situation, she joined forces with San Francisco instrument builder Daniel Schmidt to design the modular and portable Tap Dance Instrument, which was then constructed by Schmidt in 1987. The Tap Dance Instrument consists of six platforms, each about 9 inches off the ground. They can be arranged in any desired configuration. Three of the modules are hexagons of approximately 5 feet across, made of different woods and constructed in varying ways, so that they have individual resonances and timbres. A fourth platform is the "Tap Marimba" with 7 pitched keys. These large wooden keys can be replaced with alternates, so a number of tunings are possible. The remaining two platforms are smaller and are topped with thick brass slabs. They ring like bells, one higher pitched and the other lower.

Hexa was named for all the sixes in the piece (hexagonal floor shapes, six feet on the Tap Dance Instrument, six percussion instruments played by the musician) and for the magical connotations of "hex" and "hex signs".

Opening the work, tap dancers' feet play a tune on the tap marimba, accompanied by the percussionist's muted cymbals. Dancers' arms, legs and bodies create visual designs as the tune moves the three performers back and forth across the tap marimba. Gradually the dancers move to non-pitched wood platforms and then to the brass floor modules.

Feldman and Vierk worked together on all major aspects of the work. They experimented with different tapping techniques on each of the Tap Dance Instrument floor modules. They developed sound materials and phrases together, and these later turned into larger sections and then into the entire piece. The percussion part was composed to intertwine with the tap dance part. The object of the live electronics -- sometimes processing the percussion, sometimes the tap, and sometimes both -- was to support the sound and the dancers' movement, to add its own character and momentum, and to help the sounds and movement coalesce into one whole.

Hexa was commissioned by AT&T Foundation and the American Dance Festival, and premiered at the American Dance Festival in Durham, North Carolina, 1988. The Tap Dance Instrument (patented) was designed and built with funds from the National Endowment for the Arts.

Anita Feldman Tap (Anita Feldman's dance company) performed *Hexa* regularly after the premiere in 1988 at the American Dance Festival. Highlights include Whitney Museum at Equitable, NYC; Central Park Summerstage; Colorado Dance Festival, Boulder; Dance Theater Workshop, NYC; The Kitchen, NYC; Lincoln Center Out-of Doors, NYC. In 2012, talented students of Anita Feldman performed the piece at Hofstra University. The CD recording has been broadcast on US and European radio stations, including Radio Sweden. Over the years there have been multiple tap dance performers in *Hexa*, including Anita Feldman, Rhonda Price, David Parker, Tim Grandia, and others. Percussionists have included Gary Schall, Jim Pugliese and Kerry Meads. The live electronics on the Lexicon PCM 42 digital delay have been performed by Lois V Vierk and others. *Hexa* costume design is by Denise Mitchell and the original lighting design is by Robert Seder. Sound engineers have included Karen Pearlman, Scott Lehrer and Arthur Solari.



Photo by Daniel Breslin (c) 1988

Dancers, left to right, Rhonda Price, Anita Feldman, David Parker (partial), on Tap Dance Instrument (patented) modules. *Hexa* costumes designed by Denise Mitchell. This is not the *Hexa* floor module configuration.



Photo by Beatriz Schiller (c) 1996

Anita Feldman dancing on Tap Dance Instrument (patented). She is on one of the "wood" floor modules. The "Tap Marimba" module is in the center and the "small metal" module is in front.

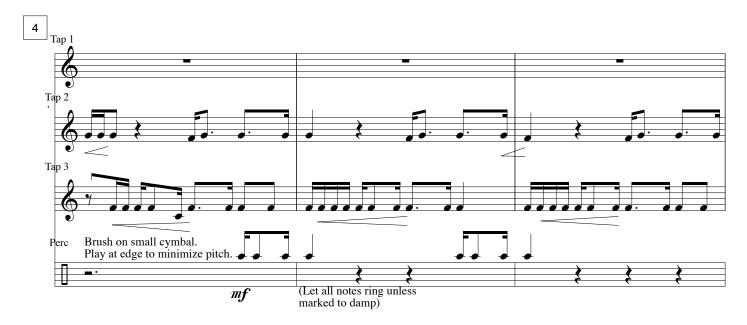


Photo by Tom Caravaglia (c) 1994

Anita Feldman and Lois V Vierk with Tap Dance Instrument (patented)

HEXA CD Version



















-5- CD version

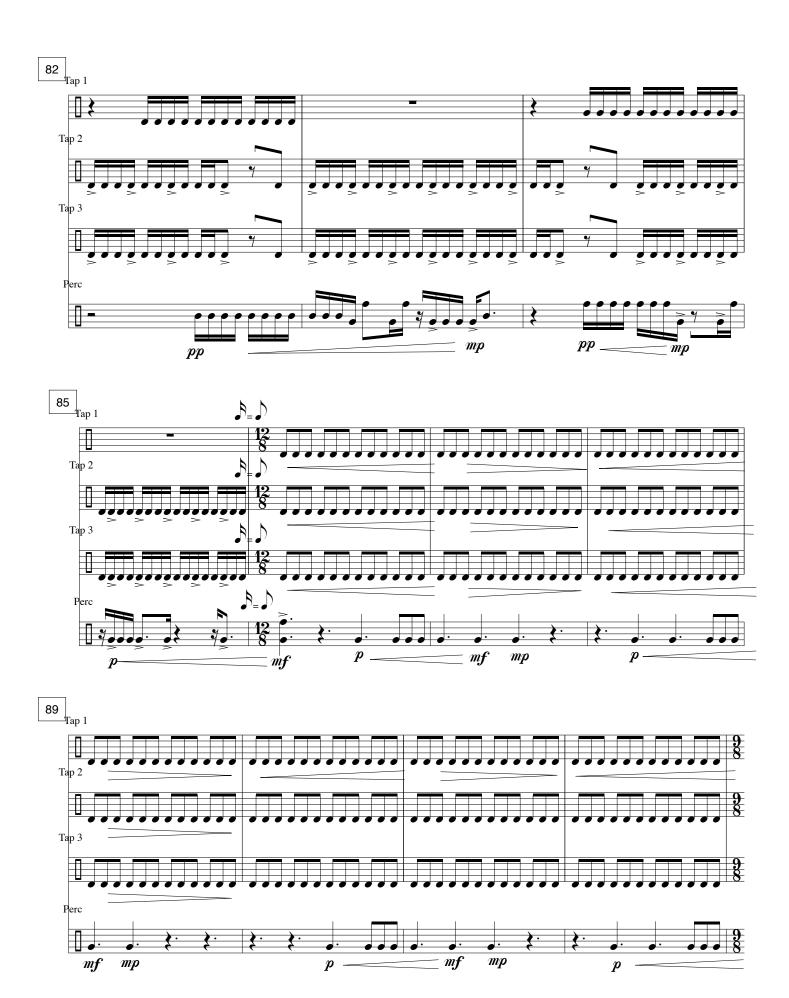


*From m. 54 to the end of the piece, notes for dancers on wood platforms use the space below the staff (replacing "x" notation).



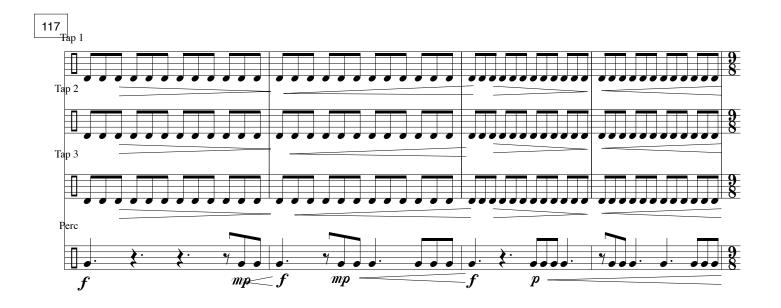


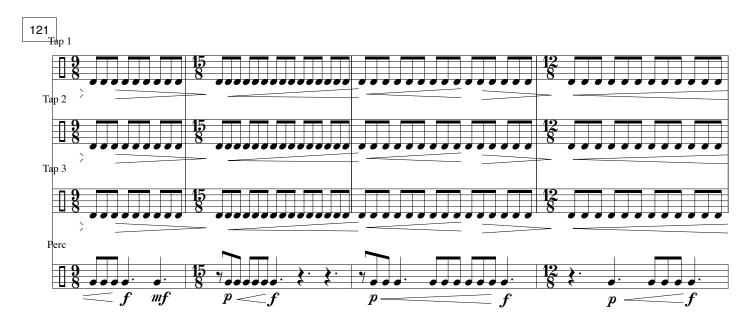


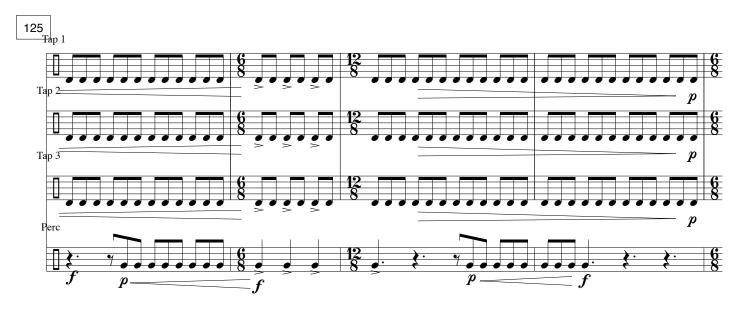








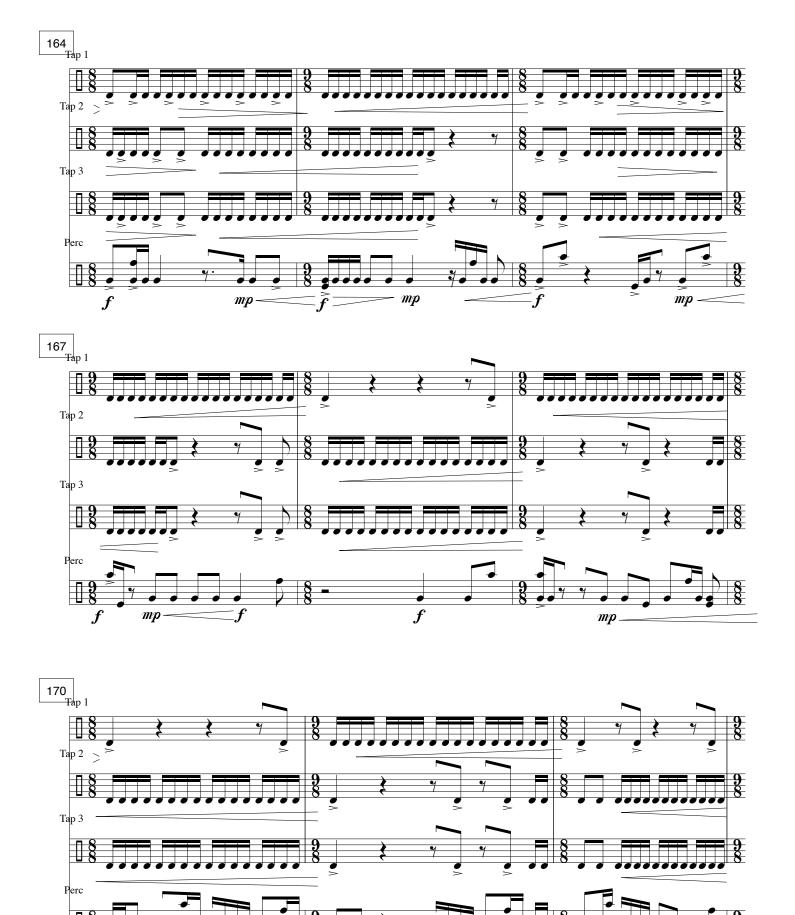
















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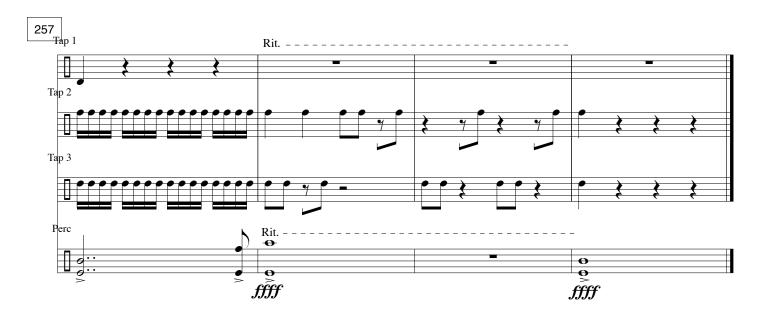




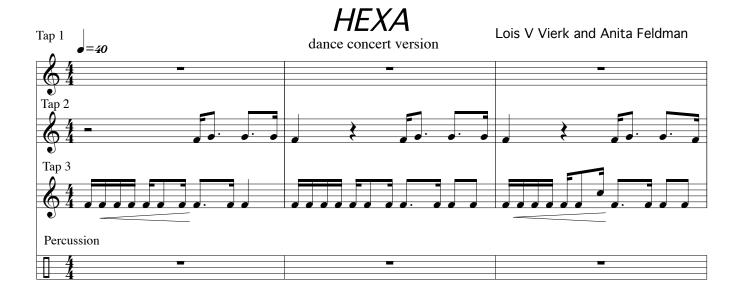


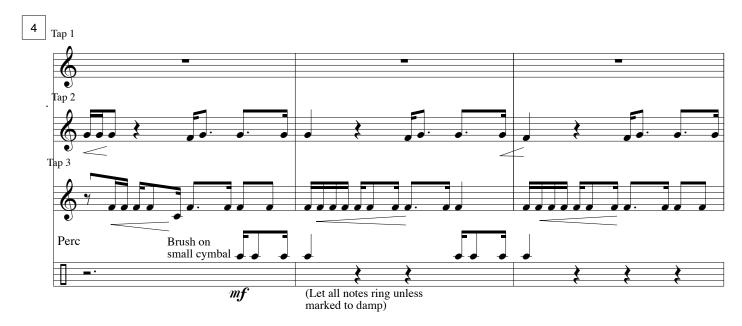






HEXADance Concert Version











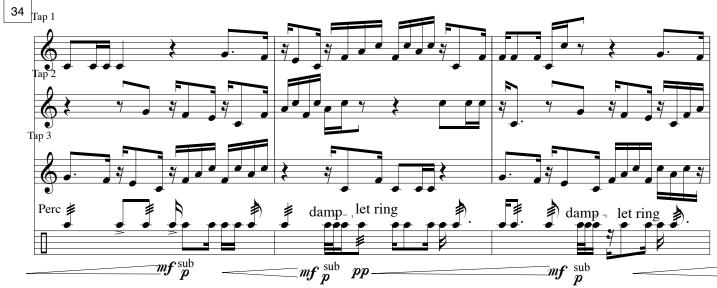


-2- dance concert version

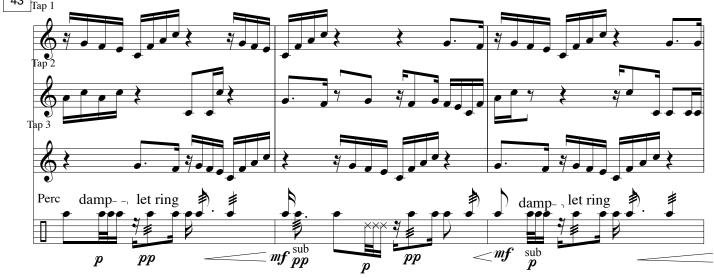


-3- dance concert version









-5- dance concert version





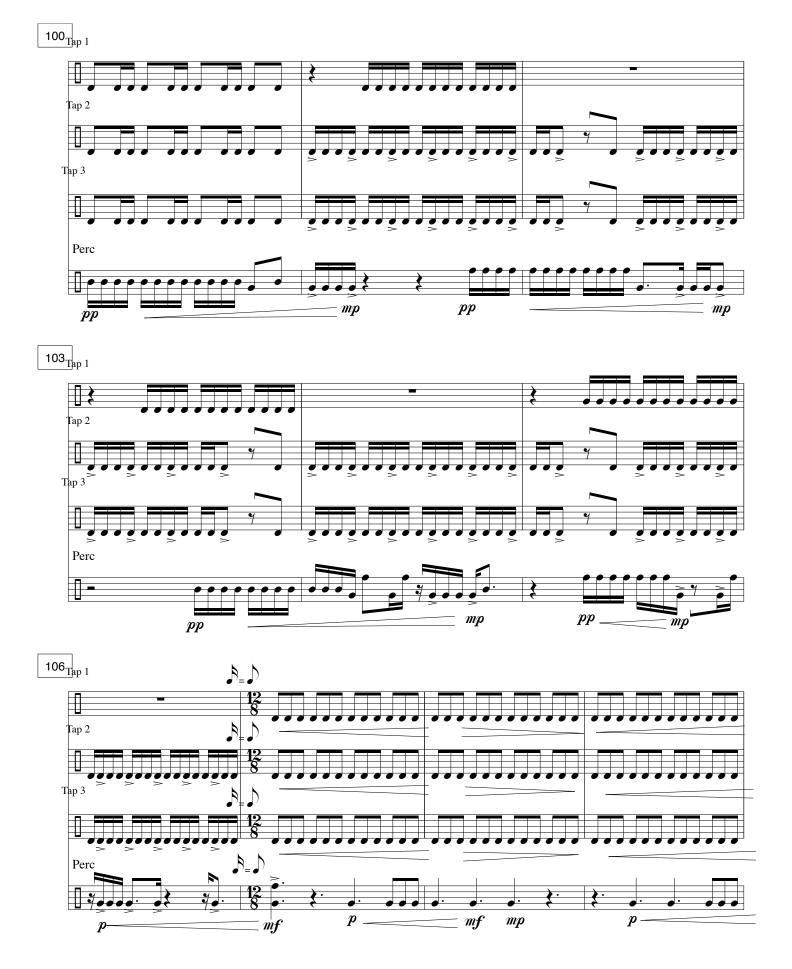
*From here on, to the end of the piece, notes for dancers on wood platforms use the space below the staff (replacing "x" notation).



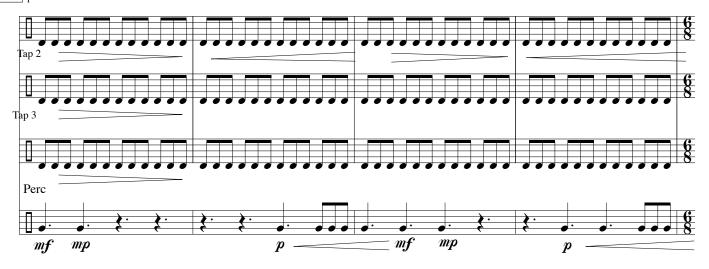


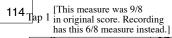


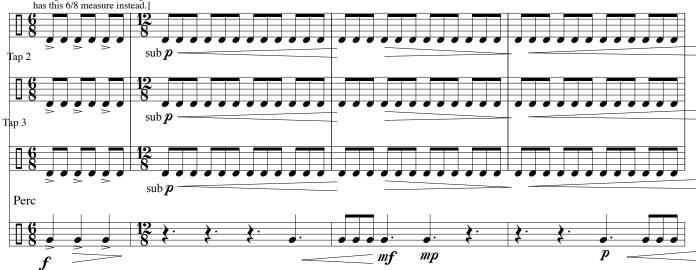




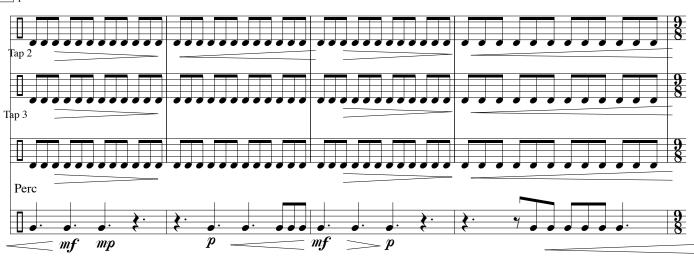




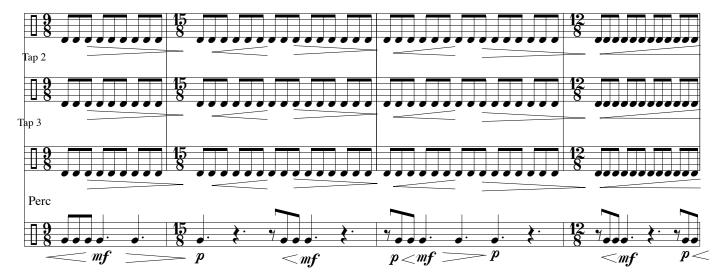




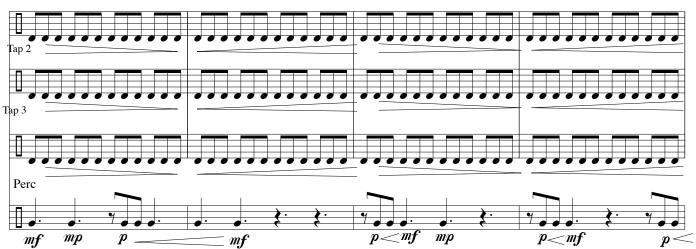




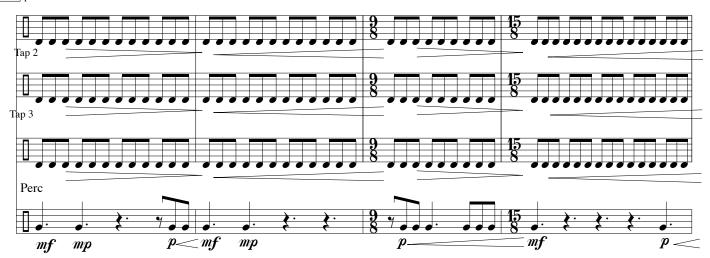




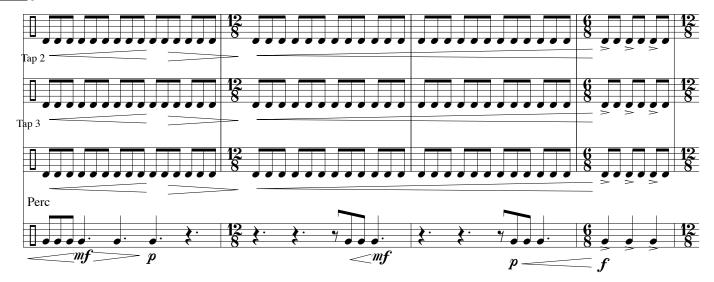




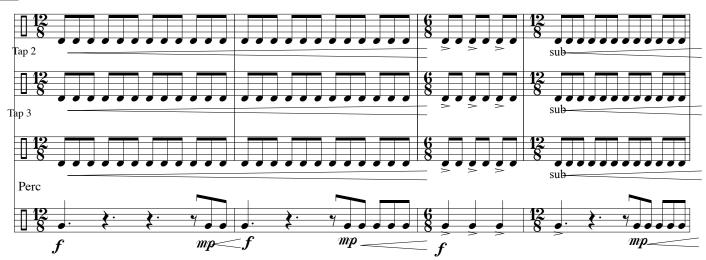




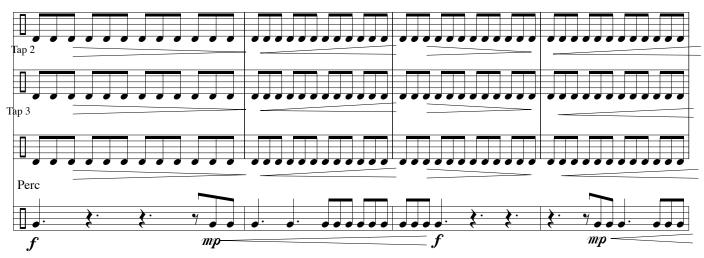












-15- dance concert version



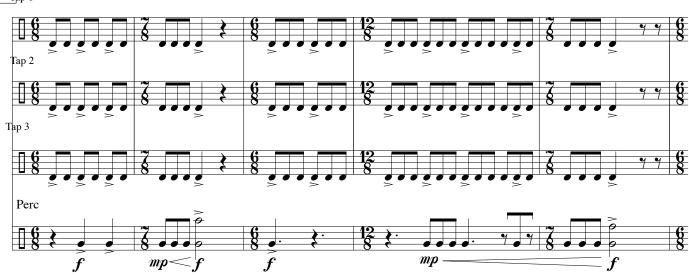


-16- dance concert version







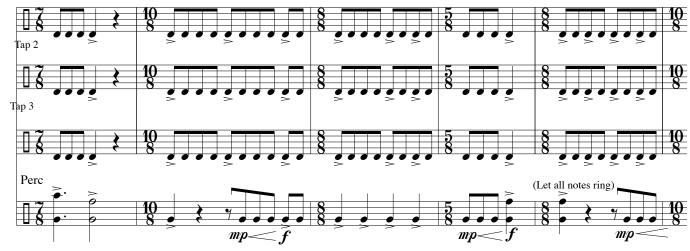




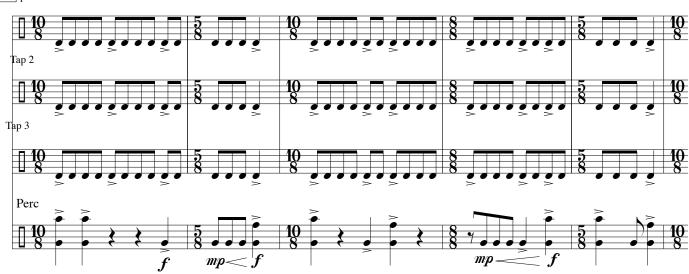


-17- dance concert version

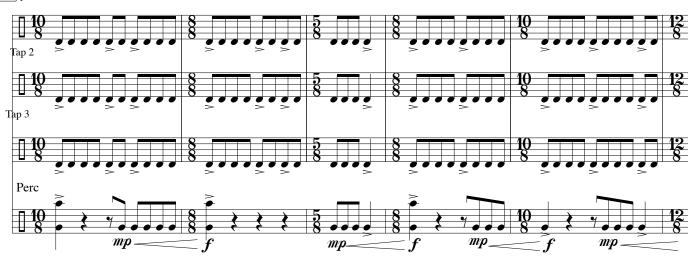




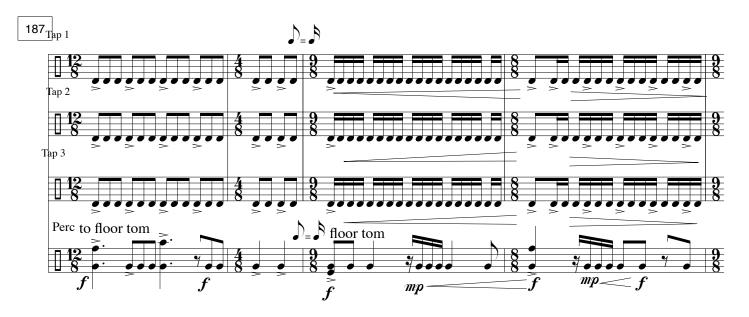




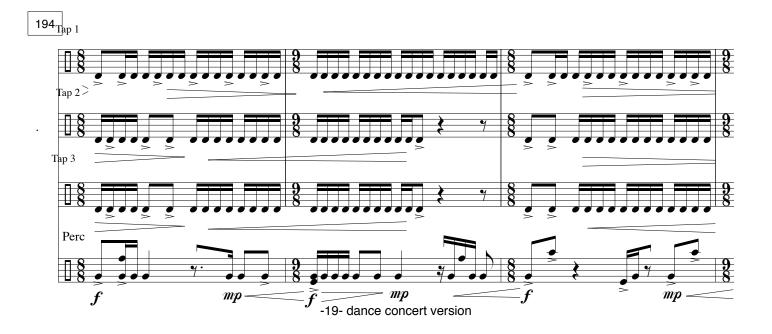




-18- dance concert version













-20- dance concert version



-21- dance concert version

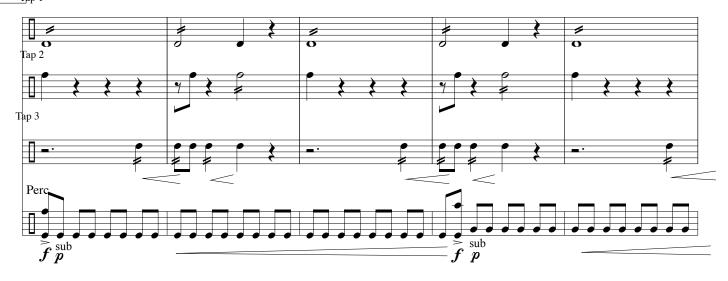


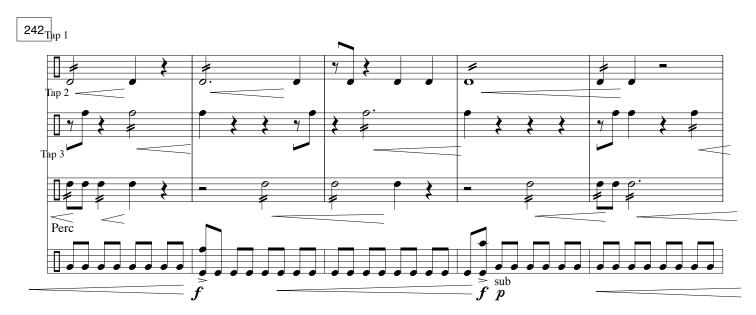
-22- dance concert version



-23- dance concert version









-24- dance concert version



-25- dance concert version



-26- dance concert version





-28- dance concert version

