

Juraj Kojs

# At and Across

for Slovak sheep bells and cyberbells

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*At and Across* is a composition written for a set of physical Sheep bells from Slovakia and virtual bells programmed in the GENESIS software at the ACROE-ICA center in Grenoble, France. The composition situates the ancient folk instrument in the domain of cutting edge technology.

The sheep bells arrived in Slovakia during the shepherd colonization in the 13th century by the Wallachians of Romania. In the northern region Liptov, where I grew up, the sheep bell production has flourished since the 16th century. From my early childhood I remember the sounds of the clinging bells at my grand father's farm. All the bells were tuned to one common tone. This way the shepherds, who pastured and guarded the animals in the spring and summer, could identify their own sheep in case of they mingled with other herds. Consequently, it was important for the farmers to get a set of well-tuned bells. A resonant bell was often more valuable than the sheep itself.

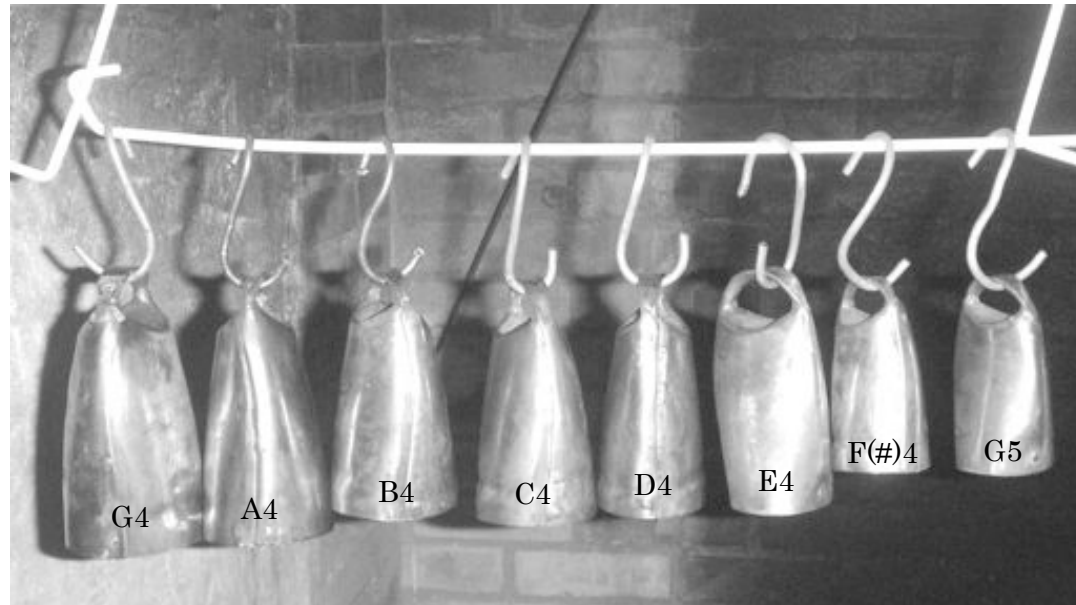
Following the 20th century industrialization and disappearance of small farmers, the sheep culture and its sounds have been vanishing from the Slovak countryside. This project developed from the idea of digital excavation and preservation of the Slovak sheep bells. I used the GENESIS environment to create digital replicas of the sheep bells and, further, extend the properties of these replicas beyond the limitations of the physical reality. I also created cyberbell structures such as bells made of thin materials and cyberbell networks which do not exist in physical reality. The physical and cyberbells meet in MAX/MSP program, where their timbres blend.

Melodics of *At and Across* is derived from the Slovak folk song *Sadla muska na konarik* (*A little fly set on a branch*). Harmonic and dynamic structures mirror and accentuate the spectral relationships between the eleven partials of J.C. Risset's additive synthesis bells. *At and Across* is composed for a single performer, a set of tuned physical bells and cyberbell structures.

Duration: 12'

Performance requires:

1 percussionist performing on 8 bells with a wooden mallet, wooden stick, violin bow, and two plastic sticks.



**Technical requirements:**

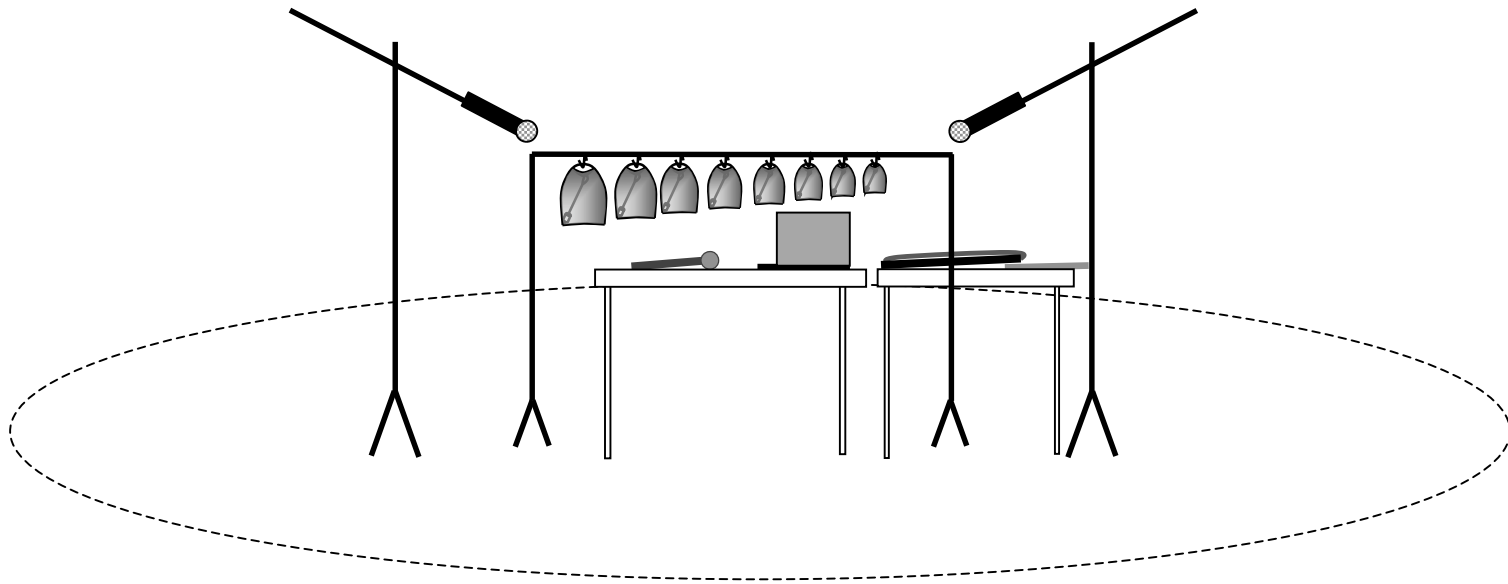
4-channel audio set up

2 microphones

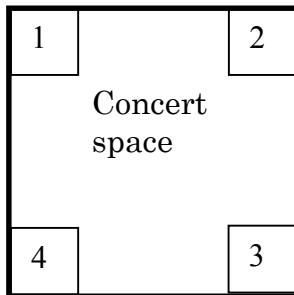
1 apple computer running MAX/MSP

1 firewire interface such as MOTU 828 or Metric Halo

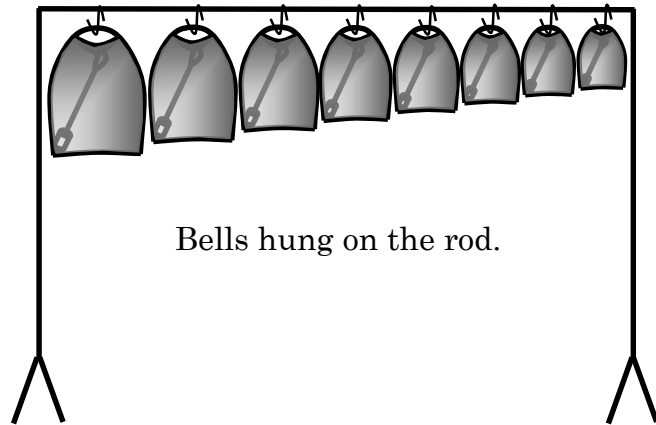
Performance  
space



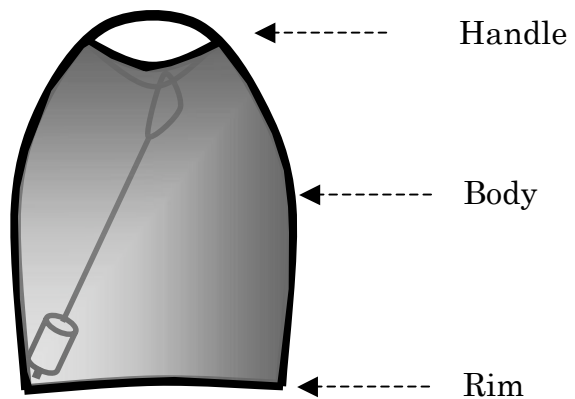
Quadrophonic  
speaker set up



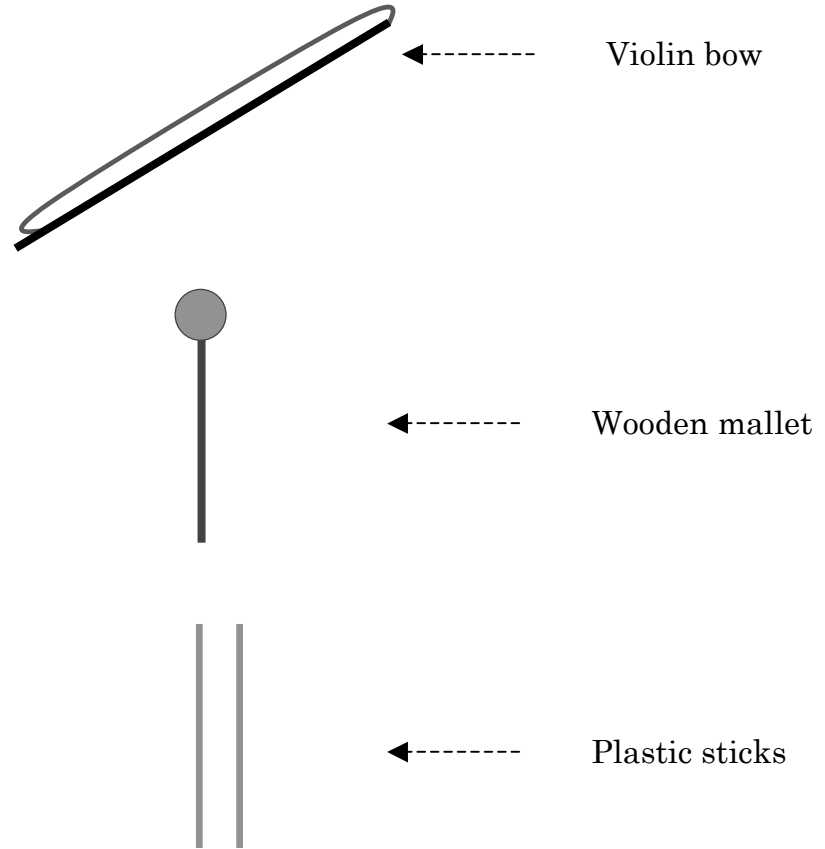
# Legend



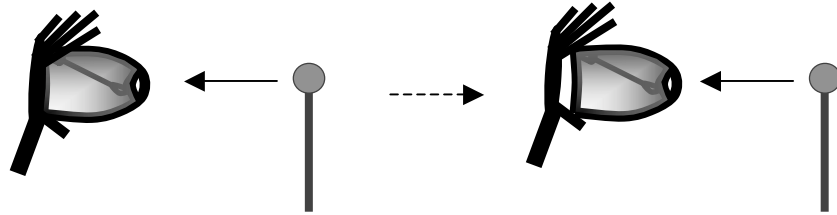
## Bell parts



## Exciters

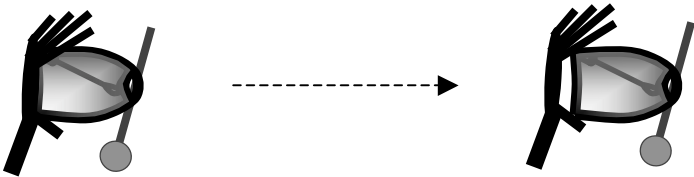


## Performance modes



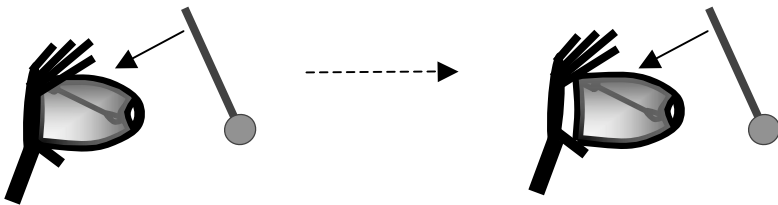
Right Hand: Hit the handle with a wooden mallet.

Left Hand: Hold the bell. Keep changing the palm muting.



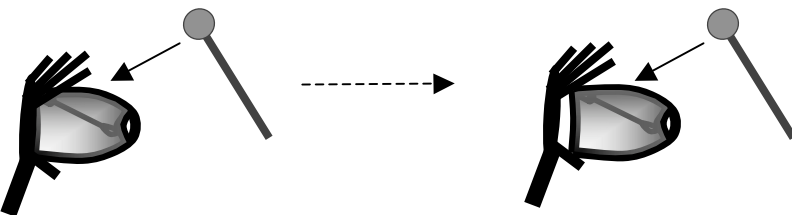
Right Hand: Rattle with the wooden stick in the bell's handle.

Left Hand: Hold the bell. Keep changing the palm muting.



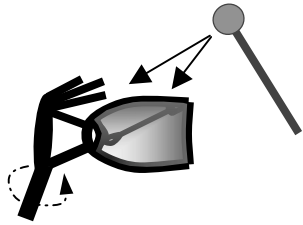
Right Hand: Hit the bell's body with the wooden stick.

Left Hand: Hold the bell. Keep changing the palm muting.



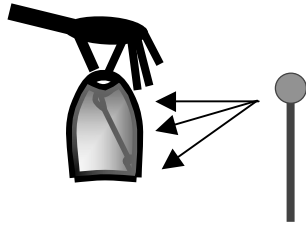
Right Hand: Hit the bell's body with the wooden mallet.

Left Hand: Hold the bell. Keep changing the palm muting.



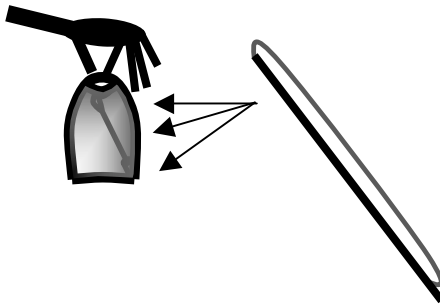
Right Hand: Hit the bell's body with the wooden mallet at a variety of places.

Left Hand: Hold the bell by its holder with fingers. Rotate your wrist to enable hitting at a various places.



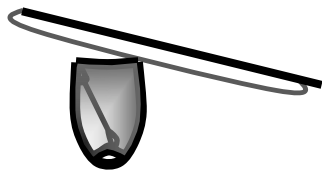
Right Hand: Hit the bell's body on a side with the wooden mallet at a variety of places. Move up and down along the bells height.

Left Hand: Hold the bell by its holder with fingers in vertical position.



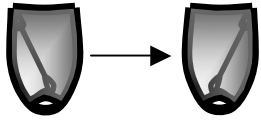
Right Hand: Hit the bell's body on a side with the violin bow at a variety of places. Move up and down along the bells height.

Left Hand: Hold the bell by its holder with fingers in vertical position.

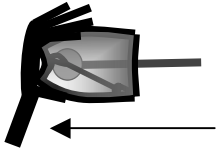


Right Hand: Bow the bell on the rim with the violin bow.

Left Hand: Hold the bell with the rim up by its holder with fingers in vertical position.

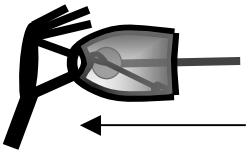


Left Hand: Shake one time to change the position of the inner bell beater.



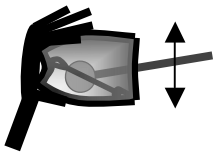
Right Hand: Hit the back of the bell's inside with a wooden mallet.

Left Hand: Hold the bell by its holder with fingers in vertical position. Mute the bell.



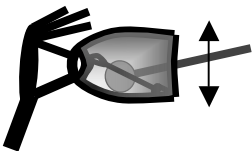
Right Hand: Hit the back of the bell's inside with a wooden mallet.

Left Hand: Hold the bell by its holder with fingers in vertical position. Unmute the bell.



Right Hand: Hit the sides of the bell's inside with a wooden mallet.

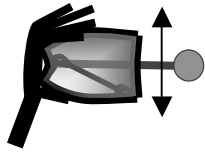
Left Hand: Hold the bell by its holder with fingers in vertical position. Mute the bell.



Right Hand: Hit the sides of the bell's inside with a wooden mallet.

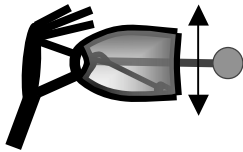
Left Hand: Hold the bell by its holder with fingers in vertical position. Unmute the bell.





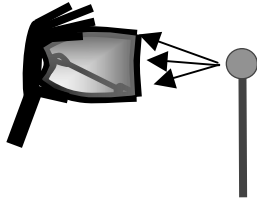
Right Hand: Hit the back of the bell's inside with a wooden stick.

Left Hand: Hold the bell by its holder with fingers in vertical position. Mute the bell.



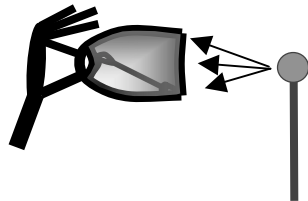
Right Hand: Hit the back of the bell's inside with a wooden stick.

Left Hand: Hold the bell by its holder with fingers in vertical position. Unmute the bell.



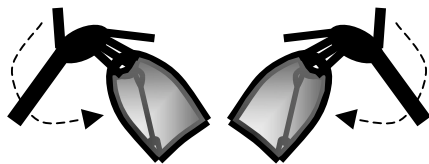
Right Hand: Hit around the bell's rim with a wooden mallet.

Left Hand: Hold the bell by its holder with fingers in vertical position. Mute the bell.



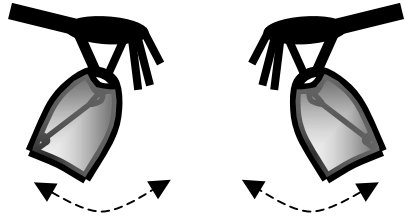
Right Hand: Hit around the bell's rim with a wooden mallet.

Left Hand: Hold the bell by its holder with fingers in vertical position. Unmute the bell.



Right Hand/Left Hand: Hold the bell by its holder with fingers.

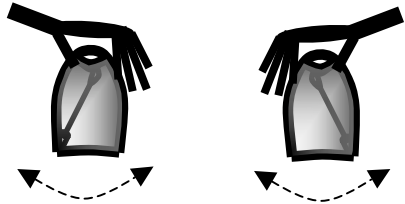
Hit it with your thumb.



Right Hand/Left Hand: Hold the bell by its holder with fingers.  
Shake it.



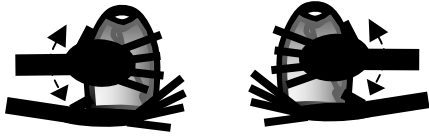
Right Hand: Bow the bell on the rim with the violin bow.  
Left Hand: Hold the bell with fingers in vertical position.



Right Hand/Left Hand: Hold the bell with fingers at the top of its body, thus  
half-muting it.  
Shake it.

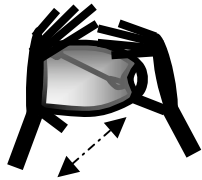


Right Hand/Left Hand: Hold the bell with fingers in the middle of its body, thus  
full-muting it.  
Rotate your wrist to shake it.



Right Hand/Left Hand: Hold the bell with fingers in the middle of its body, thus full-muting it.

Rotate your wrist and rub the bell lightly against the palm of the other hand.



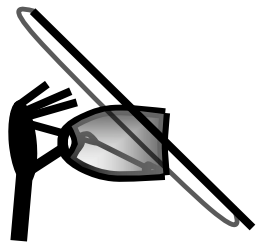
Hold the bell in both hands completely muted.  
Shake front and back as a cup of darts.



Left hand: Hold the bell. Alternate muting.

Right Hand: Create a shaft.

Blow air inside the bell through the shaft. Open and close the right hand slightly to produce a variety of colored noises and whistle tones.

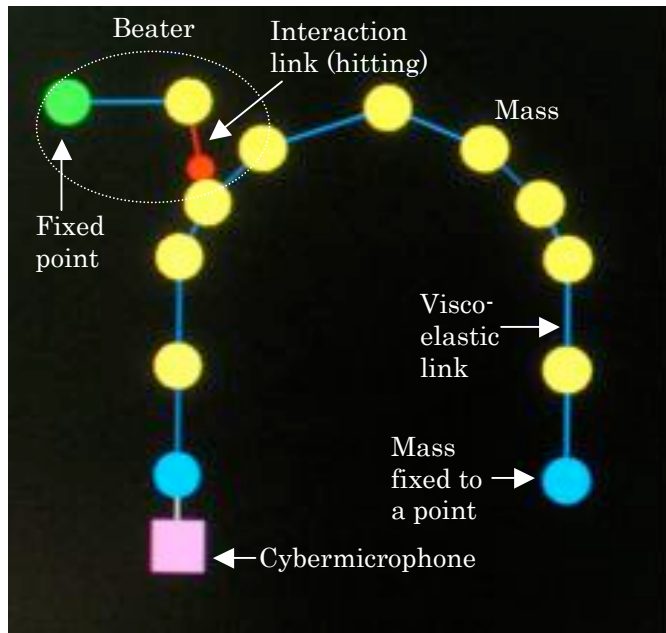


Right Hand: Bow the bell's body with the violin bow.

Left Hand: Hold the bell by its holder with fingers in vertical position.

## Legend for Electronics

The 4-channel electronics present cyberbell structures created via physical modeling synthesis in GENESIS. The bells are identified by their structure indicated on the picture and action which excites them (color and line-type). The beginning of the gesture is marked with ●— and the end with —▶.

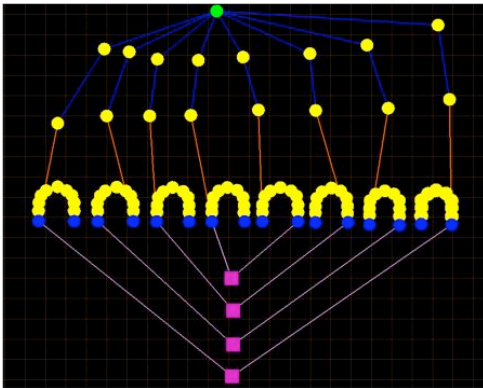


Basic cyberbell constructed of 11 masses (yellow dots) which are connected with the damping-stiffness links (blue lines). Blue dots are masses grounded to a fixed point.

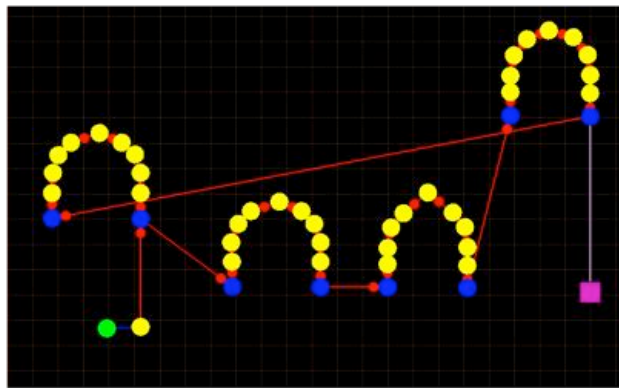
Pink square is a cybermicrophone module which enables us to hear the instrument.

The beater consists of a fixed point (the green dot) connected to a mass. The nature of cyberaction between the beater and instrument such as blowing, bowing, hitting and plucking is defined by the connecting link. In this case, the red link and its parameters signify hitting.

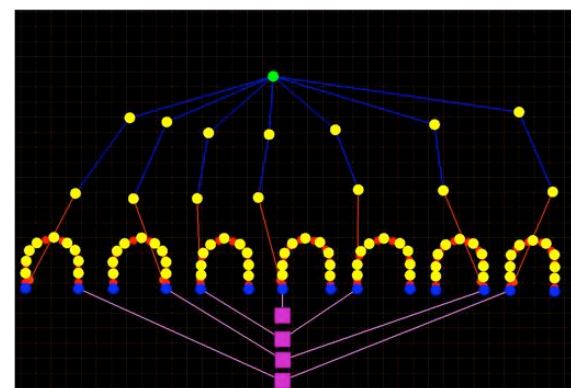
Pluck a cyberbell series



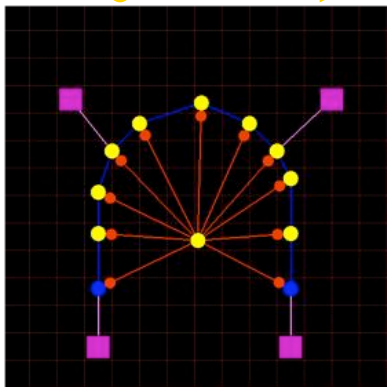
Blow a cyberbell network.



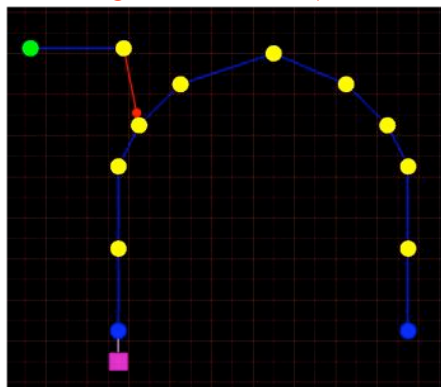
Pluck and blow 7 cyberbells.



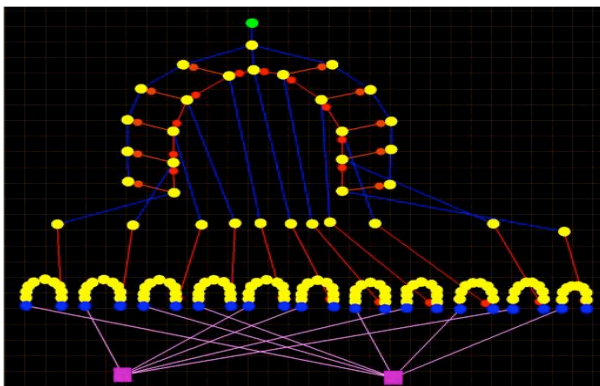
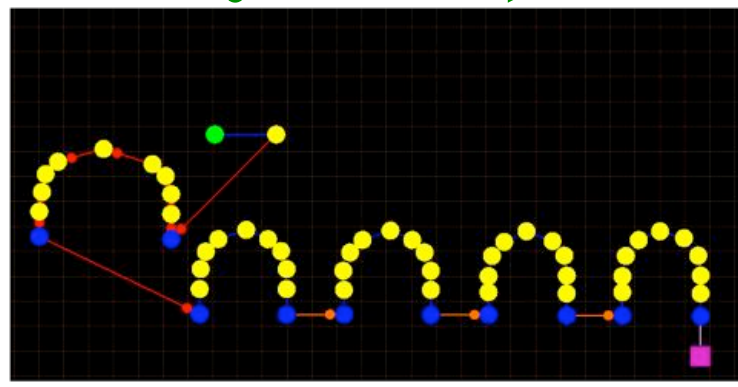
Bow a cyberbell at 11 points.



Hit a cyberbell.



Blow and bow a cyberbell series.

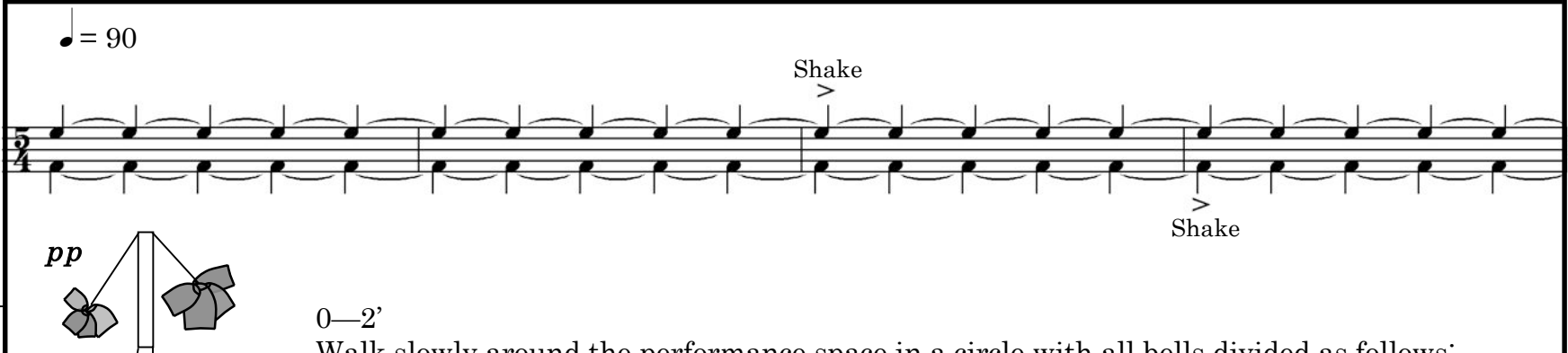
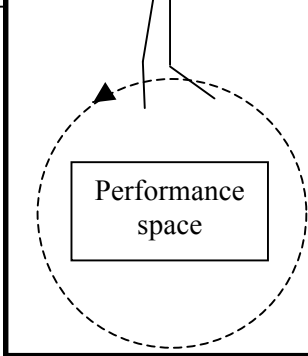


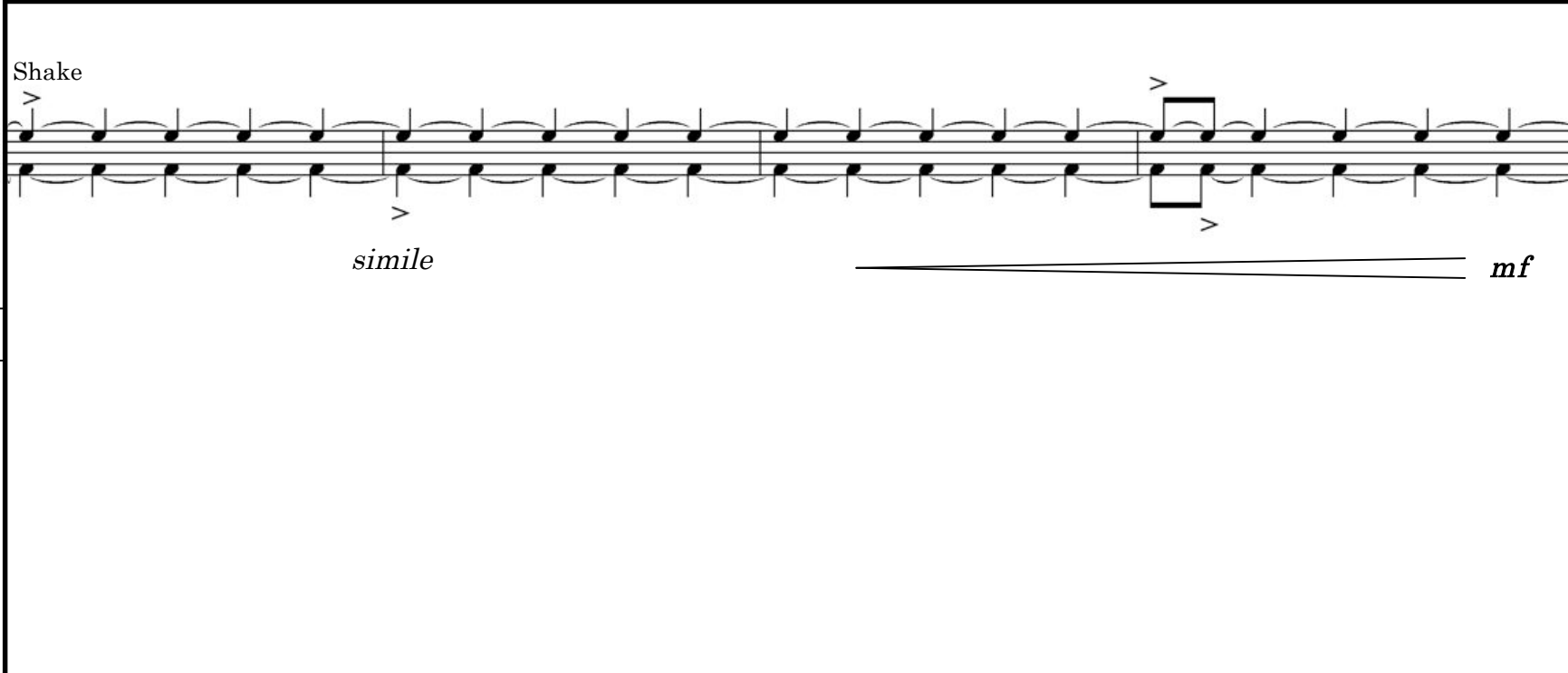
Nested cyberbell mechanism  
'bells' 11 cyberbells

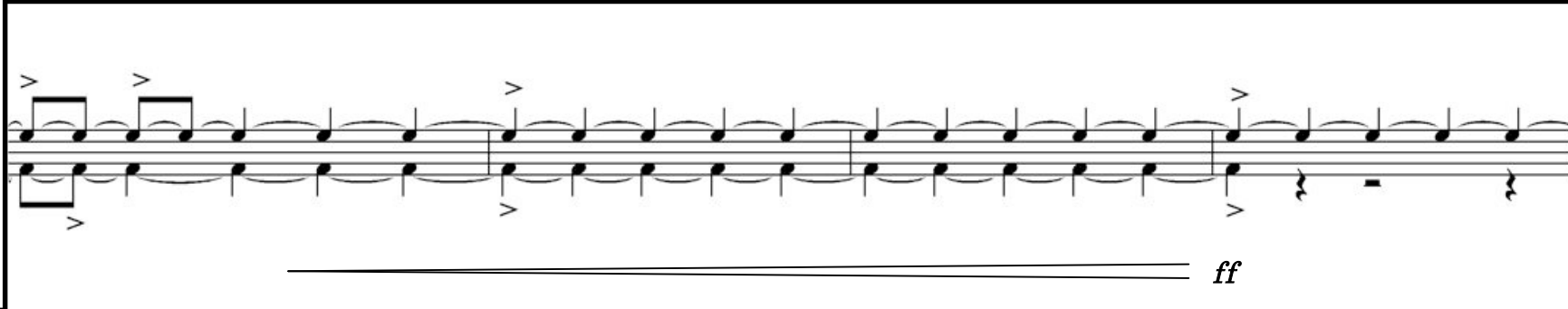


New cyberbell  
introduced:  
Hit a cyberbell.



Time	15"	
Electronics		
Right Hand Left Hand	<p>♩ = 90</p> 	
Performer		<p>0—2'</p> <p>Walk slowly around the performance space in a circle with all bells divided as follows:          Left hand: G4, A4, B4, C5          Right Hand: D5, E5, F(#)5, G6</p> <p>Let the bells loosely resonate.          Shake more strongly on accents.          It is recommended to memorize this portion of the composition.</p>

Time	15" <span style="float: right;">30"</span>
Electronics	
Performer	<p>Shake</p>  <p>The musical score for the Performer consists of two staves. The upper staff features a sequence of eighth notes with slurs, starting with an accent (&gt;) and the instruction "Shake". The lower staff features a sequence of eighth notes with slurs, starting with an accent (&gt;) and the instruction "simile". A dynamic marking "mf" is placed at the end of the piece, with a hairpin indicating a crescendo leading to it. There are also two accents (&gt;) on the lower staff: one above a pair of eighth notes and one below a pair of eighth notes.</p>

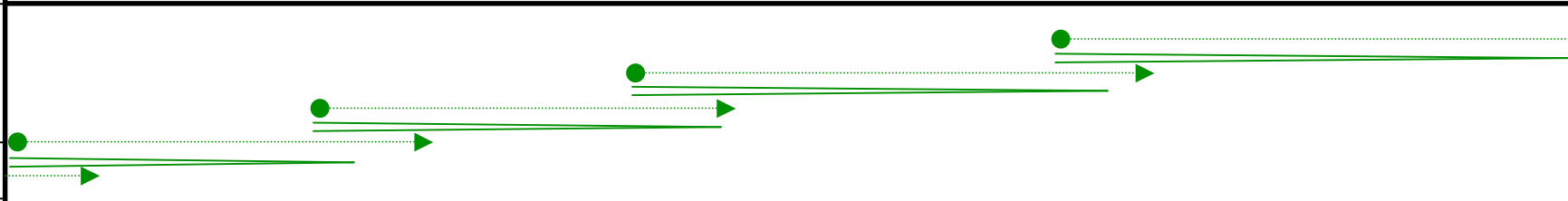


Time	30" <span style="float: right;">45"</span>
Electronics	
	 <p>The musical score for the Performer consists of two staves. The upper staff features a sequence of eighth notes with slurs and accents (&gt;) above them. The lower staff features a sequence of eighth notes with slurs and accents (&gt;) below them. A double bar line is present in both staves. At the end of the piece, there are two fermatas in the lower staff, followed by a rest. A dynamic marking of <i>ff</i> (fortissimo) is placed at the end of the piece, underlined.</p>
Performer	

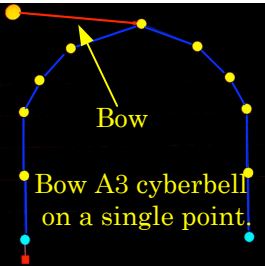
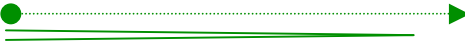






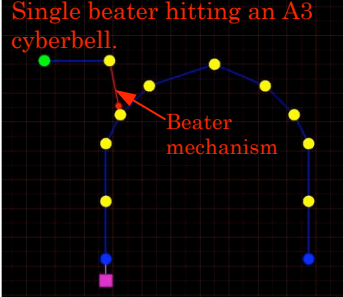

Time	45" <span style="float: right;">1'</span>
Electronics	
Performer	<p>Right hand: <i>sempre ff</i></p>

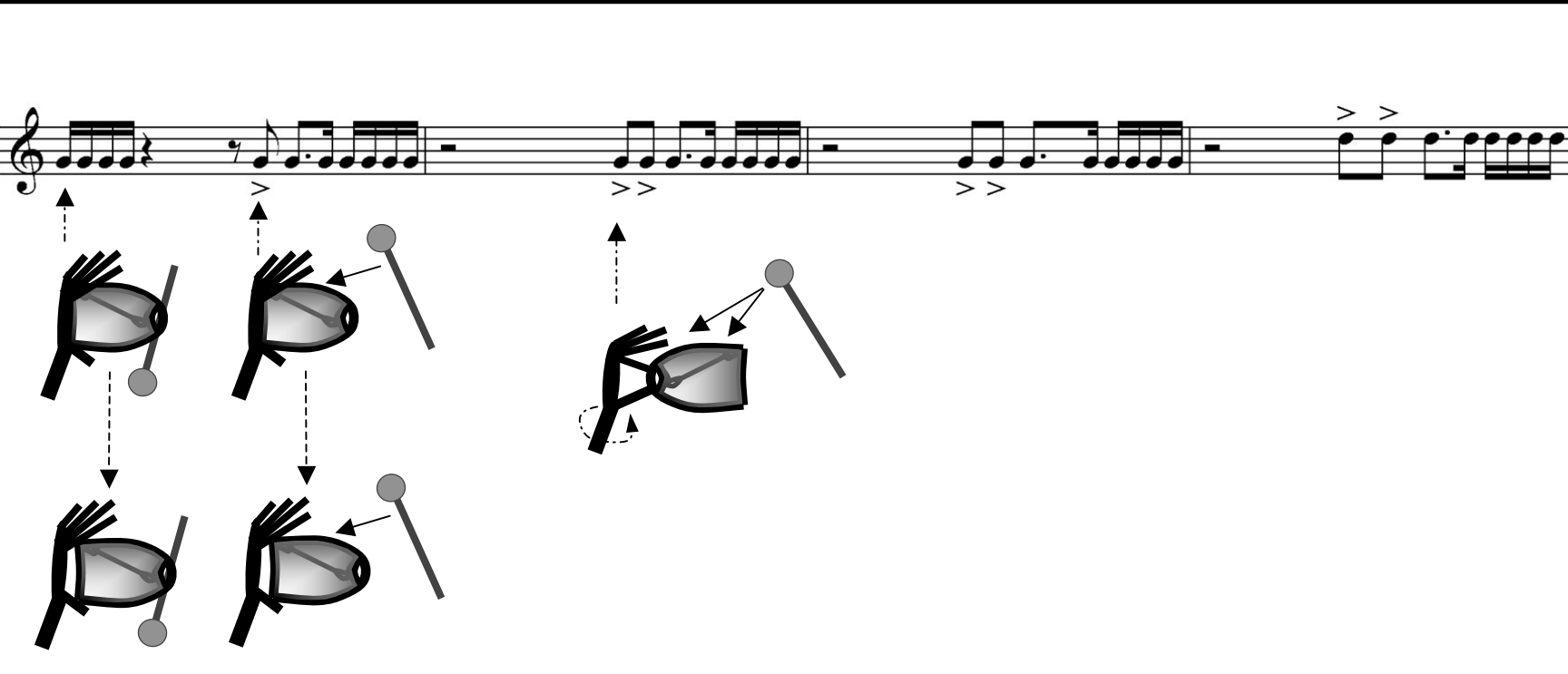
Time	1' <span style="margin-left: 300px;">1'08"</span> <span style="float: right;">1'15"</span>
Electronics	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p style="color: green; font-size: small;">Blow and bow a cyberbell series: A3, A3+, F#4 &amp; F#4+.</p> </div> <div style="text-align: right; margin-top: 10px;"> </div>
Performer	<p><i>fff</i></p> <p>Bring both hands up and down in front of you.</p>

Time	1'15"	1'19"	1'23"	1'26"	1'30"
Electronics	<p>General dynamics: <i>sempre cresc.</i> until 2'</p>				
Performer	<p>Bring both hands up and down in front of you.</p> <p><i>simile</i></p>				

Time	1'30"	1'33"	1'37"	1'41"	1'45"
Electronics					
					
Performer					

Time	1'45"	1'48"	1'53"	1'55"	1'56"	2'
Electronics	 <p>Bow A3 cyberbell on a single point.</p>	 <p>Bowing and crackling sound</p>			 <p>Hit a bell with a hard mallet.</p>	
Performer	<p><i>ritardando</i>.....</p>  <p><i>niente</i></p>					

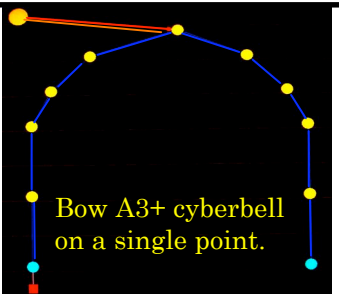

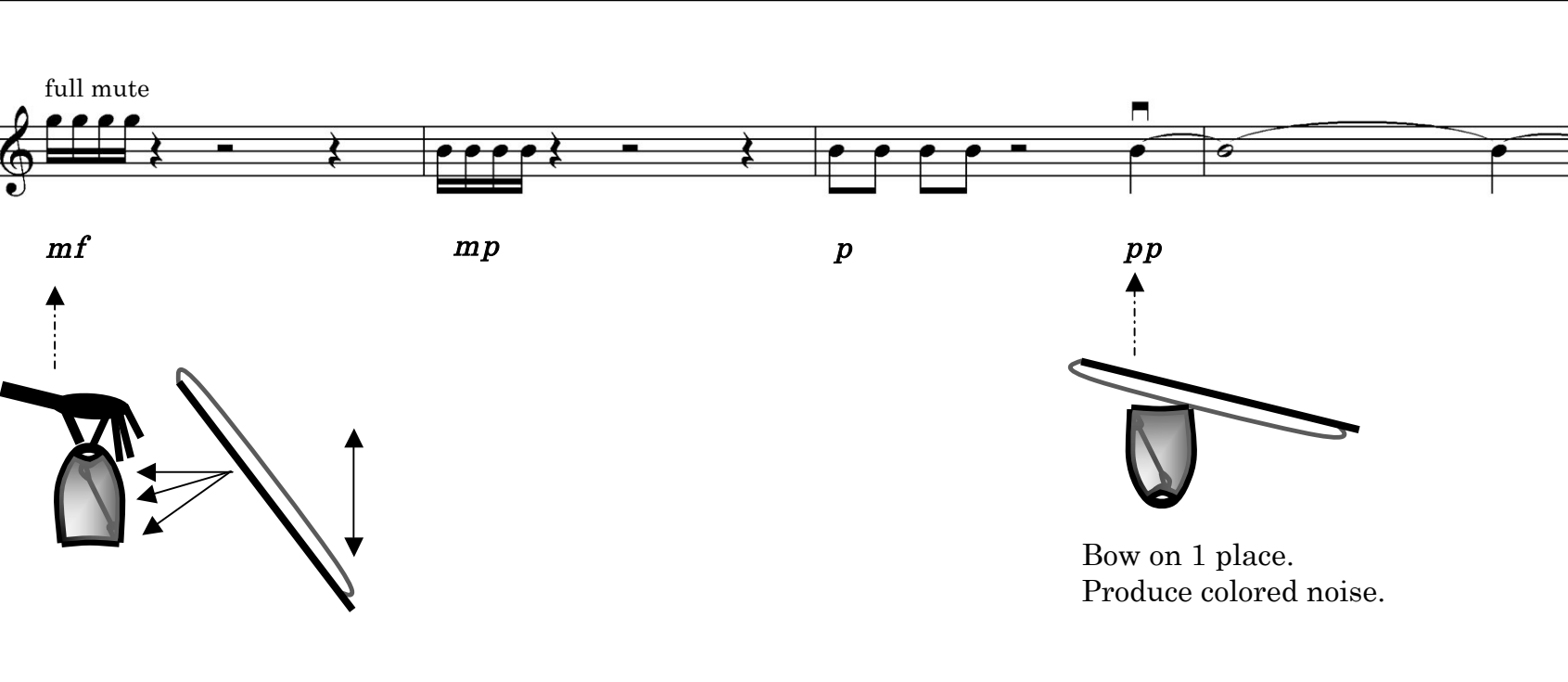
Time	2' <span style="float: right;">2'15"</span>	
Electronics	 <p>Single beater hitting an A3 cyberbell.</p> <p>Beater mechanism</p>	
	<p>Rhythmic patterns. Multiple beaters hit multiple A2 bells of various materials.</p> <p><i>&gt; sempre ff</i></p>	
Performer	 <p>quasi rattle</p> <p>quasi rattle</p> <p><i>ff</i></p>	

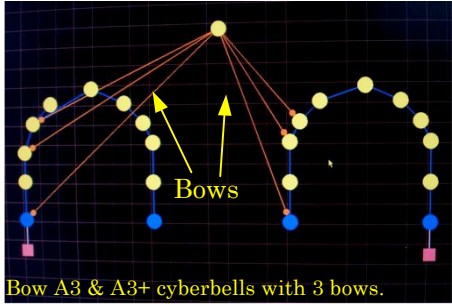
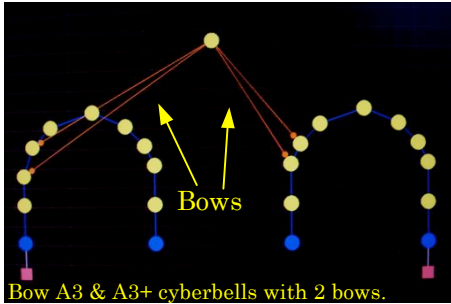
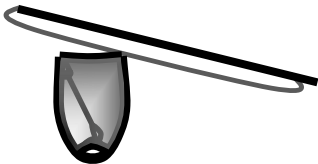
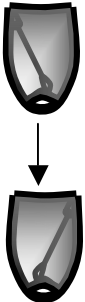
Time	2'15"	2'30"
Electronics	<p>Rhythmic patterns. Multiple beaters hit multiple A2 bells of various materials.</p>	
Performer	 <p>The diagram shows a musical score on a treble clef staff with various rhythmic notations, including eighth notes, sixteenth notes, and accents (&gt;). Below the staff are three sets of performance diagrams. Each diagram shows a hand holding a bell and a beater. The first two diagrams show two hands, each with a bell and a beater. The third diagram shows a single hand holding a bell and a beater. Dashed arrows indicate the movement of the beaters and the resulting sound waves.</p>	

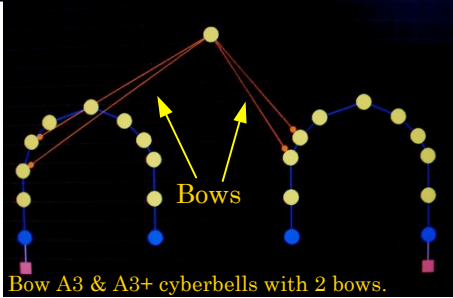
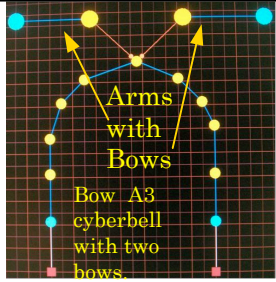



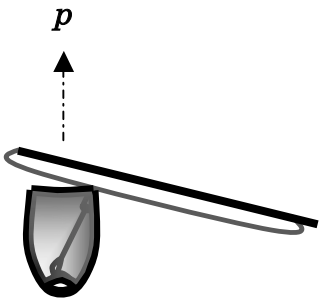
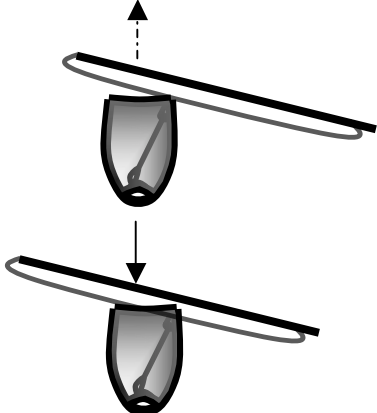
Time	2'30"	2'33"	2'42"	2'45"
Electronics	<p>Rhythmic patterns. Multiple beaters hit multiple A2 bells of various materials.</p>			
Performer				





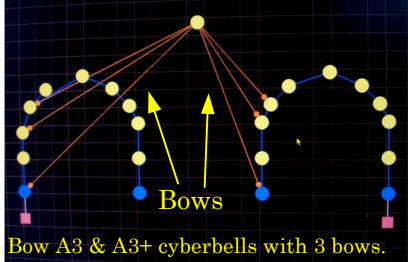
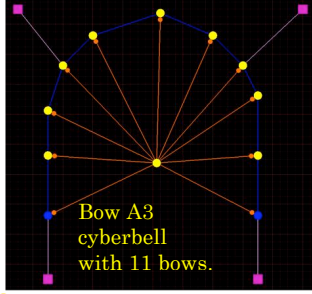
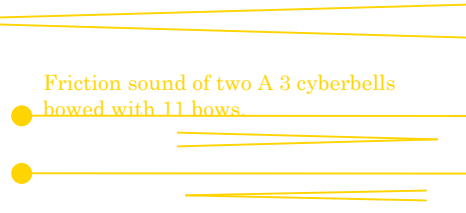
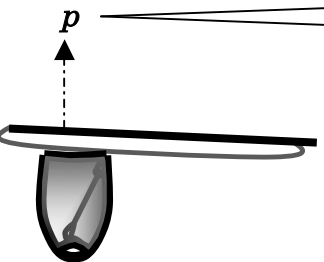

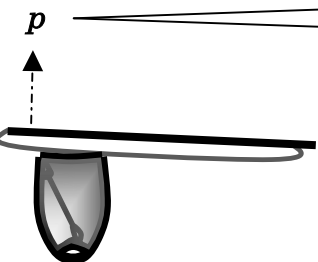

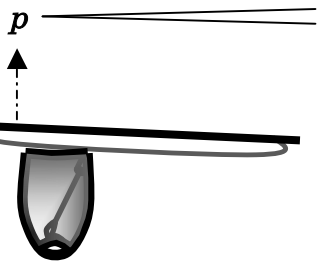

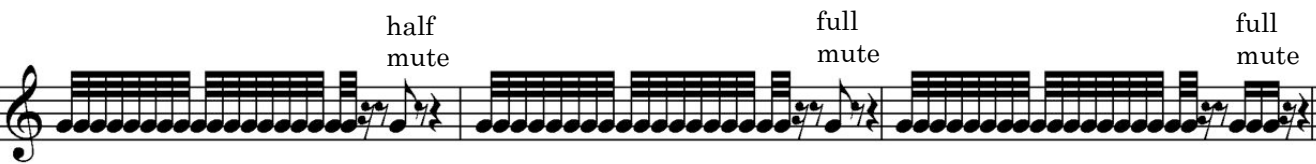

Time	3' <span style="float: right;">3'15"</span>	
Electronics	 <p>Bow A3+ cyberbell on a single point.</p>	
	 <p>Rhythmic patterns created by multiple bells hit individually by single beaters. <span style="float: right;">Density increase.</span></p>	
Performer	 <p>full mute</p> <p><i>mf</i>                      <i>mp</i>                      <i>p</i>                      <i>pp</i></p> <p>Bow on 1 place. Produce colored noise.</p>	

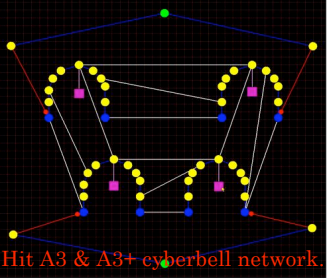


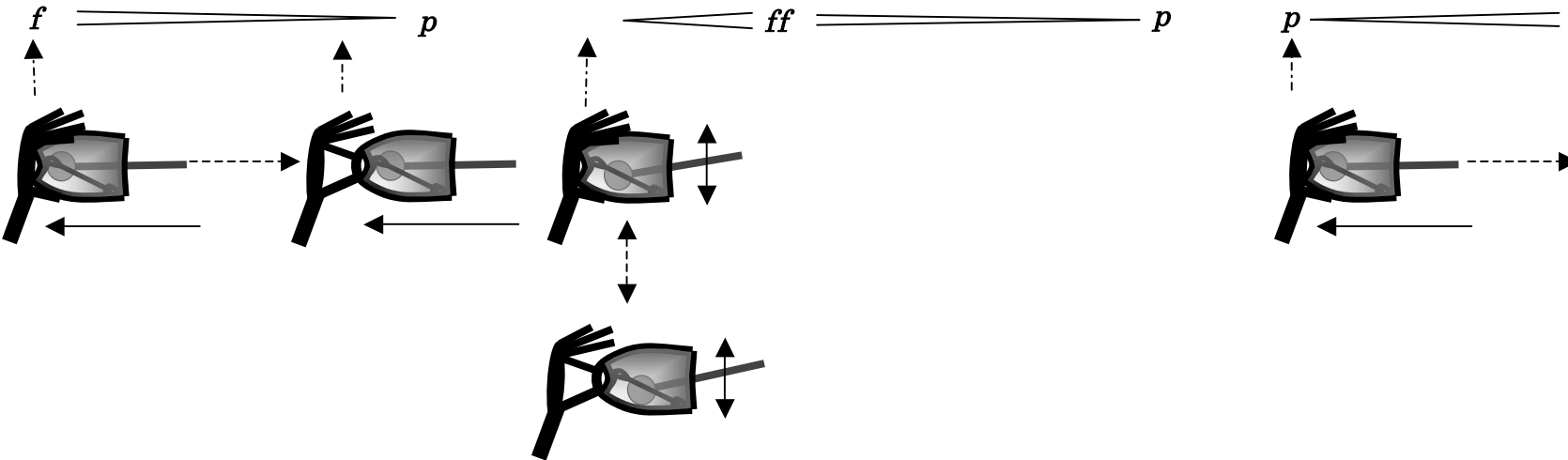
Time	3'15"	3'17"				3'28"	3'30"
Electronics	 <p>Bow A3 &amp; A3+ cyberbells with 3 bows.</p>			 <p>Bow A3 &amp; A3+ cyberbells with 2 bows.</p>			
Performer	<p><i>p</i></p>  <p>Bow on 1 place. Produce colored noise.</p>			<p>half mute</p> <p><i>mf</i></p>  <p>Shake once.</p>			

Time	3'30"		3'41"	3'45"
Electronics				<p>Rocking /cracking friction sound.</p>
				
Performer	 <p><i>p</i></p> <p>Accentuate slightly the bow changes.</p>  <p>Bow on 1 place. Produce colored noise.</p>  <p>Bow on different places around the rim. "Detune" the colored noise.</p>			

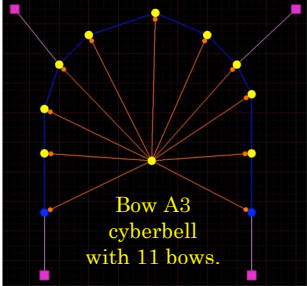
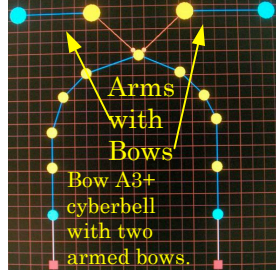



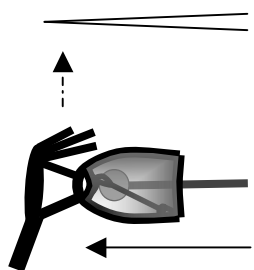
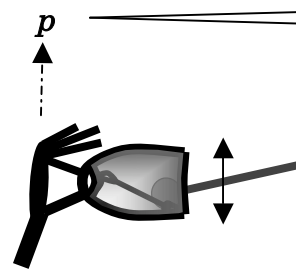
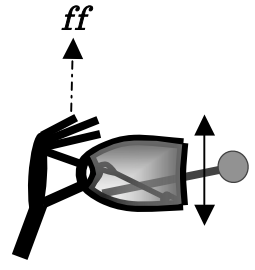
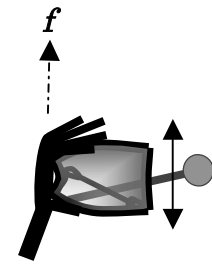




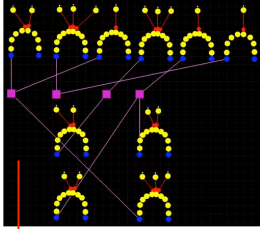
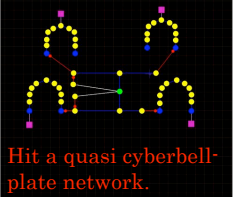

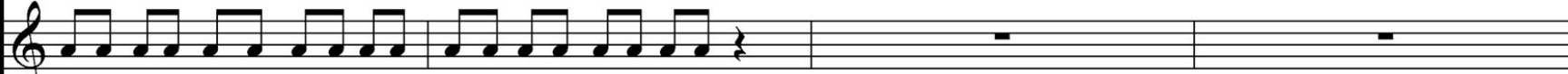
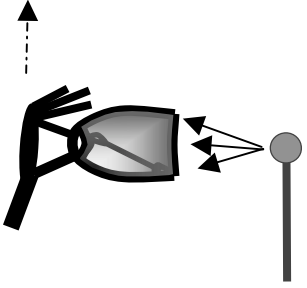
Time	4'15"	4'19"	4'22"	4'26"	4'30"	
Electronics	 <p>Bow A3 &amp; A3+ cyberbells with 3 bows.</p>	<p>Overall dynamics: <i>sempre cresc. to 4'30"</i></p>	 <p>Bow A3 cyberbell with 11 bows.</p>	 <p>Friction sound of two A3 cyberbells bowed with 11 bows.</p>		
Performer	 <p><i>p</i></p> <p>Bow violently.</p>	 <p><i>f</i></p> <p>Shake once.</p>	 <p><i>p</i></p> <p>Bow violently.</p>	 <p><i>ff</i></p> <p>Shake once.</p>	 <p><i>p</i></p> <p>Bow violently.</p>	 <p><i>fff</i></p> <p>Shake 3x.</p>
						
	 <p>Rocking /cracking friction sound.</p>					

Time	4'30" <span style="float: right;">4'41" <span style="float: right;">4'45"</span></span>
Electronics	 <p>Hit A3 &amp; A3+ cyberbell network.</p>  <p><i>sempre f</i></p>
	
Performer	 <p><i>f</i></p> <p><i>p</i></p> <p><i>ff</i></p> <p><i>p</i></p> <p><i>p</i></p>



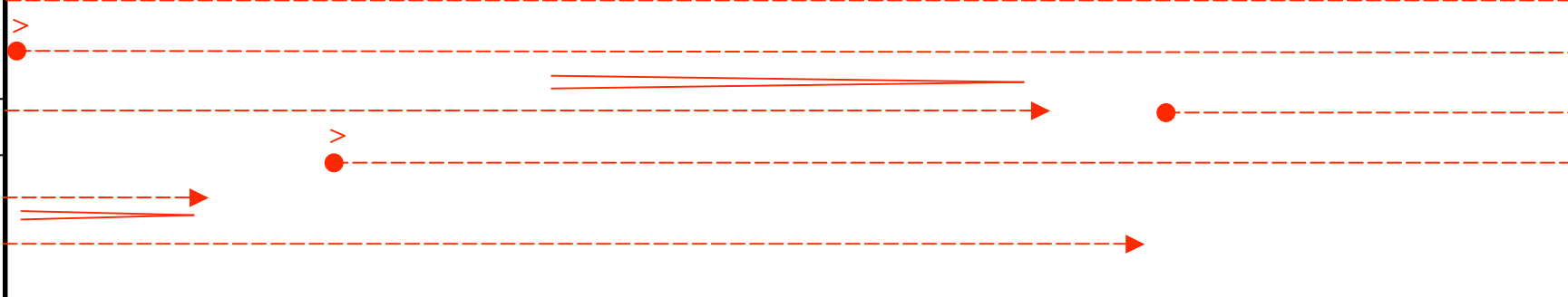


Time	4'45" <span style="margin-left: 150px;">4'48"</span> <span style="margin-left: 150px;">4'52.5"</span> <span style="float: right;">5'</span>
Electronics	  <p style="margin-left: 300px;">Bow A3 cyberbell with 11 bows.</p> <p style="margin-left: 500px;">Arms with Bows Bow A3+ cyberbell with two armed bows.</p> <p style="margin-left: 620px;">Rocking /cracking friction sound.</p>  
	<p style="text-align: center;">Hit more inner or outer points inside the bell:  OUT-----IN-----OUT      OUT-----IN-----OUT      IN---OUT----IN</p> 
Performer	   

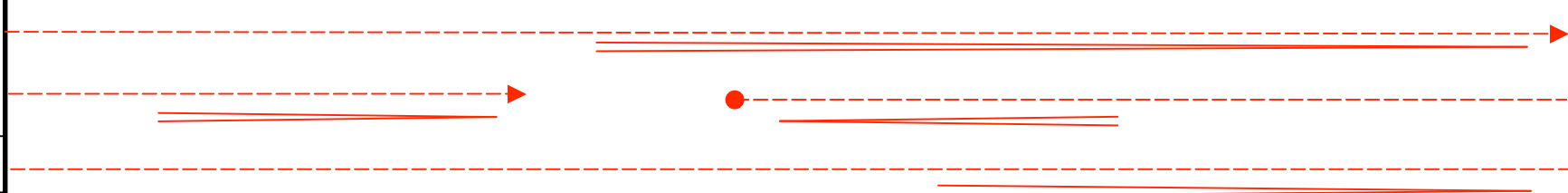
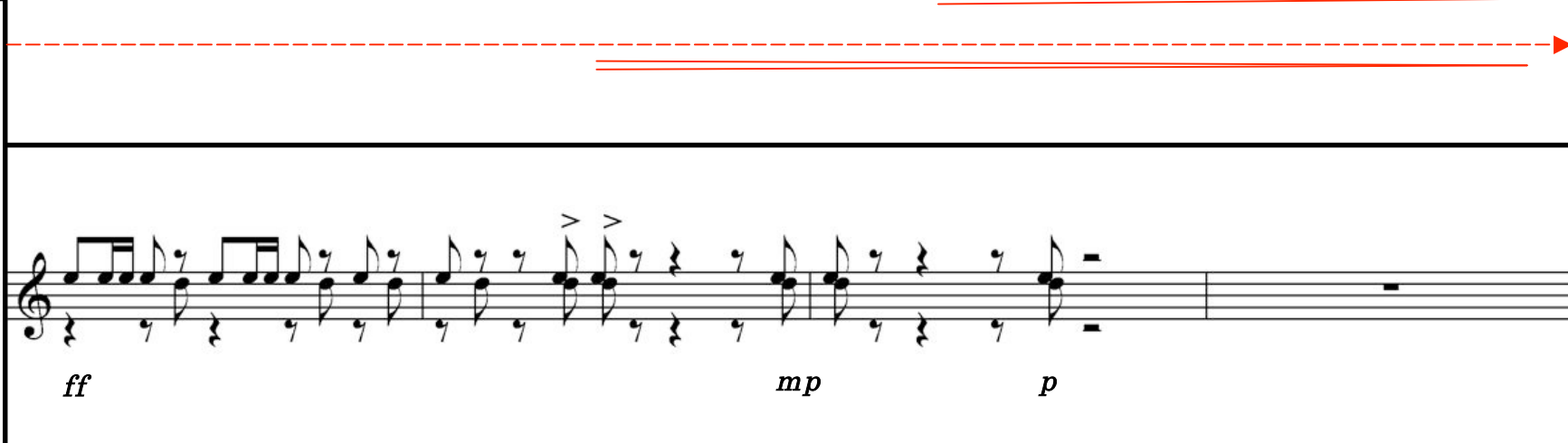

Time	5'	5'02.25"	5'11"	5'15"
Electronics				
	<p>Hit more inner or outer points inside the bell:  OUT-----IN      OUT</p>			
Performer				

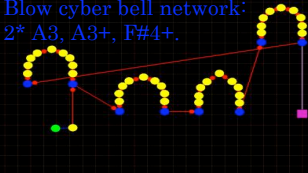
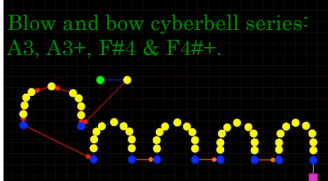
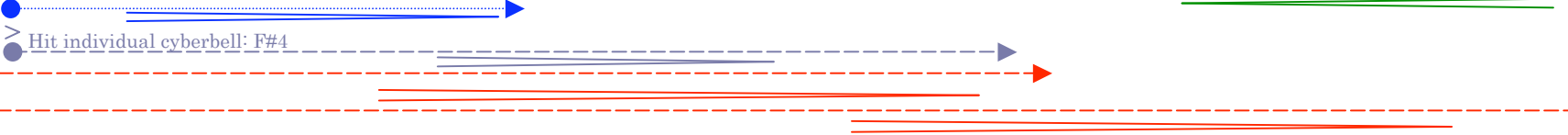

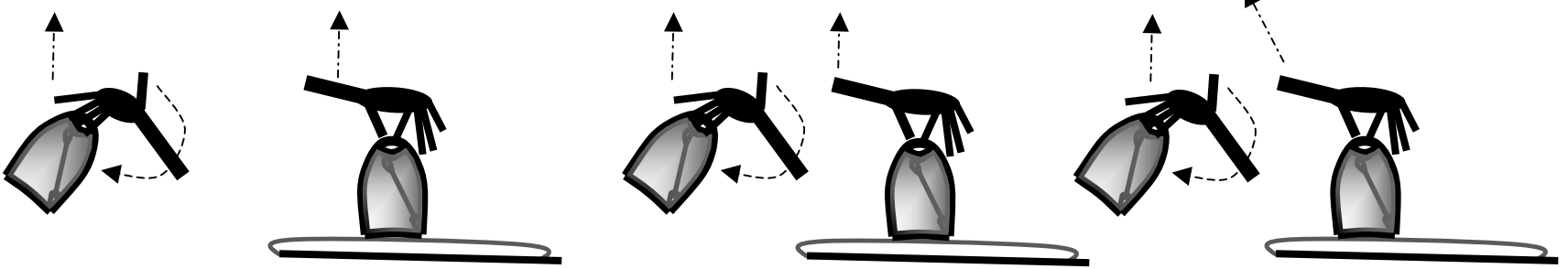
Time	5'15"	5'22.5"	5'30"
Electronics	  <p>Hit a quasi cyberbell-plate network.</p>		
	<p>The melody played on metal-like cyberbells with metal-like beaters.</p> 		
	 <p><i>p</i></p>		
Performer			

Time	5'30"	5'36"	5'37.5"	5'39.5"	5'41"	5'45"
Electronics	Hit and roll individual cyberbell: F#4+				Hit a cyberplate-like network: A3, A3+, F#4.	
	Metal-like bells hit with wood-like mallet.					
Performer						

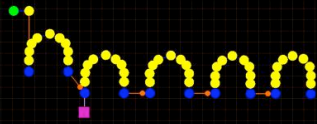
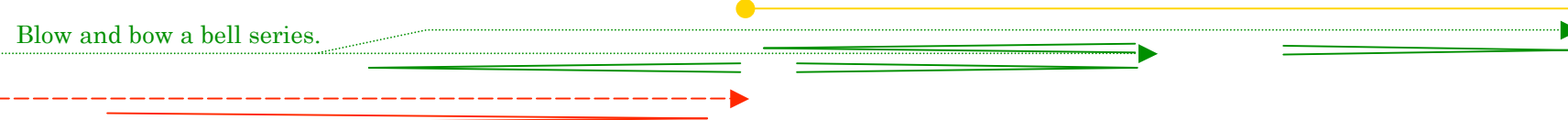

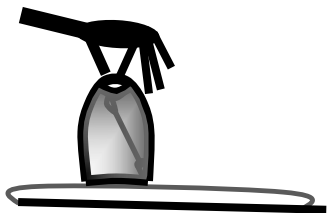
Time	5'45" <span style="float: right;">6'</span>
Electronics	
Performer	<p style="text-align: right;">Turn into rattle.</p>

Time	6' 6'03" 6'11.25" 6'15"
Electronics	<p>Hit a cyberplate-like network.</p> 
Performer	 <p><i>p</i></p> <p><i>f</i> &gt; <i>p</i></p> <p><i>ff</i> &gt; <i>p</i></p> <p><i>p</i></p> 


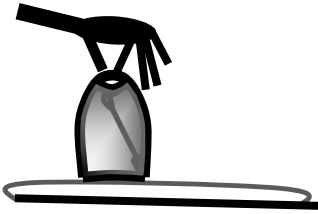
Time	6'15" <span style="float: right;">6'30"</span>
Electronics	
	 <p><i>ff</i> <span style="margin-left: 150px;"><i>mp</i></span> <span style="margin-left: 100px;"><i>p</i></span></p>
Performer	




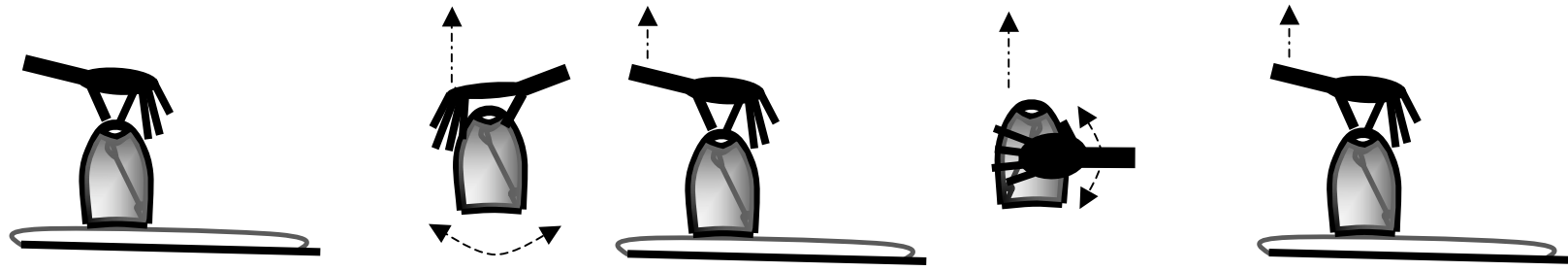
Time	6'30" <span style="float: right;">6'45"</span>
Electronics	<div style="display: flex; justify-content: space-between;"> <div> <p>Blow cyber bell network: 2* A3, A3+, F#4+.</p>  </div> <div> <p>Blow and bow cyberbell series: A3, A3+, F#4 &amp; F4#+.</p>  </div> </div>
	 <p>Hit individual cyberbell: F#4</p>
Performer	<p>Suggested bow direction.</p>  <p><i>mp</i>      <i>p</i>      <i>p</i>      <i>p</i>      <i>pp</i>      <i>p</i></p>  <p>Produce colored noise.      Produce colored noise.      Produce colored noise.</p>



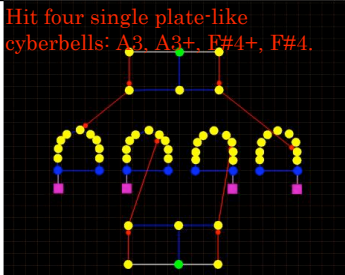
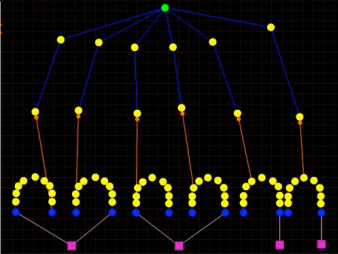








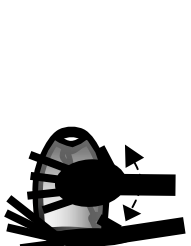

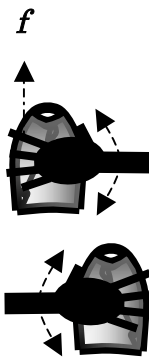

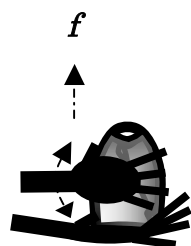

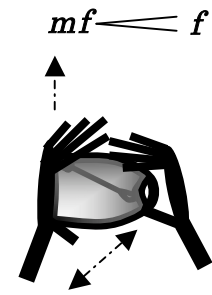
Time	6'45"	6'52.5"	7'
Electronics	<div style="border: 1px solid black; padding: 5px; background-color: black; color: yellow;">             Bow cyberbell series:              A3 bowing A3, A3+, F#4+, F#4.           </div>  <p>Blow and bow a bell series.</p> 		
	 <p><i>mf</i></p> <p><i>p</i></p> <p><i>simile</i></p>		
Performer	 <p>Apply medium pressure. Produce low partial.</p> <p>Produce colored noise. Let accidental partials resonate.</p>		

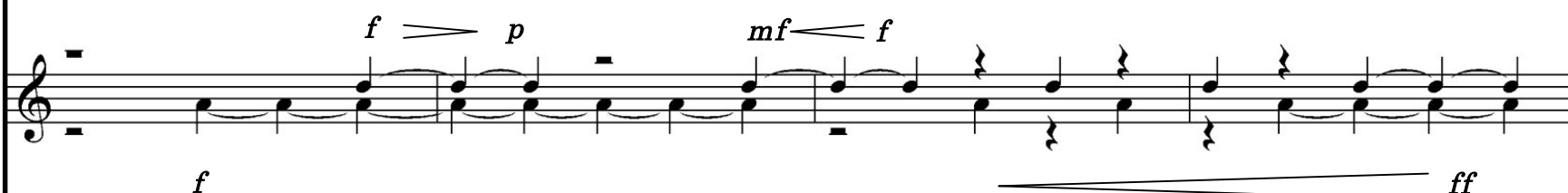
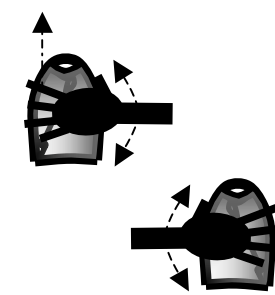





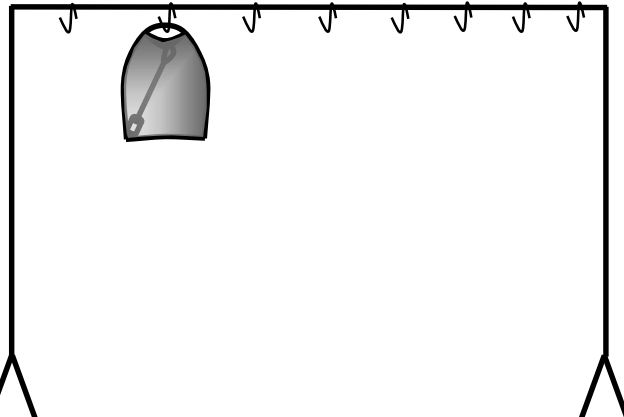
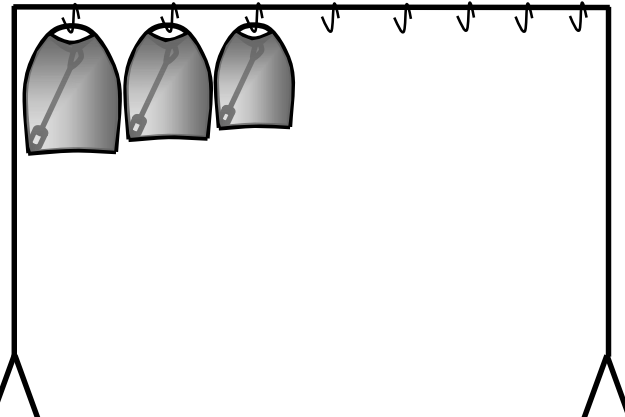
Time	7'15"	7'22"	7'30"
	<p>Bow cyberbell series: A3 bowing A3, A3+, F#4+, F#4. →</p> <p><i>simile</i></p> <p>Blow and bow cyberbell series. →</p>		
Electronics	<p>Blow cyberbell network: A3, A3+, F#4+ &amp; F#4.</p>		
	 <p><i>p</i> &lt; <i>mf</i>                      <i>p</i> &lt; <i>f</i></p>		
Performer	 <p>Apply medium pressure. Produce low partial.</p> <p>Apply high pressure. Produce high partial.</p>		

Time	7'30"	7'36"	7'45"
Electronics	<p>Bow cyberbell series. </p> <p>Blow cyberbell network: A3, A3+, F#4+ &amp; F#4. </p> <p><i>sempre f</i> <span style="margin-left: 150px;"><i>sempre f</i></span></p>		
Performer	 <p><i>p</i> &lt; <i>f</i>      <i>p</i> &lt; <i>f</i>      <i>p</i> &lt; <i>mf</i> &gt; <i>p</i>      <i>p</i> &lt; <i>mf</i></p>  <p>Apply high pressure. Produce high partial.      Left Hand: Half mute. Shake.      Apply medium pressure. Produce low partial.      Left Hand: Full mute. Rotate wrist.      Apply high pressure. Produce high partial.</p>		

Time	7'45"	7'49"	8'
Electronics	<p>Blow cyberbell network: A3, A3+, F#4+ &amp; F#4.</p> <p style="text-align: center;"><i>sempre f</i></p>		
Performer	<p><i>p &lt; mf &gt; p</i></p> <p><i>p &lt; mf &gt; p</i></p> <p><i>f</i></p> <p>Left Hand: Full mute. Rotate wrist.</p> <p>Both hands: Full mute. Rotate wrist.</p> <p>Left Hand: Full mute. Rotate wrist. Rub the bell lightly against the right hand.</p>		

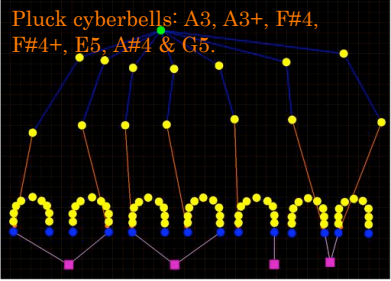



Time	8'	8'06"	8'08"	8'11.25"	8'15"
Electronics	<p>Hit four single plate-like cyberbells: A3, A3+, F#4+, F#4.</p> 	<p>Pluck six single cyberbells: A3, A3+, F#4, F#4+, E5, A#4.</p> 			
	 <p>Blow cyberbell network.</p> 	 <p>Blow cyberbell network.</p> 	 <p>Blow cyberbell network.</p> 		
Performer	  <p>Both hands: Full mute. Rotate wrist.</p>	  <p>Right Hand: Full mute. Rotate wrist. Rub the bell lightly against the left hand.</p>	 	  <p>Hold the bell in both hands completely muted. Shake front and back as a cup of darts.</p>	

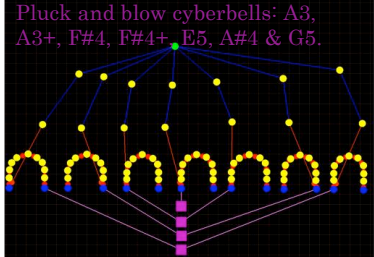
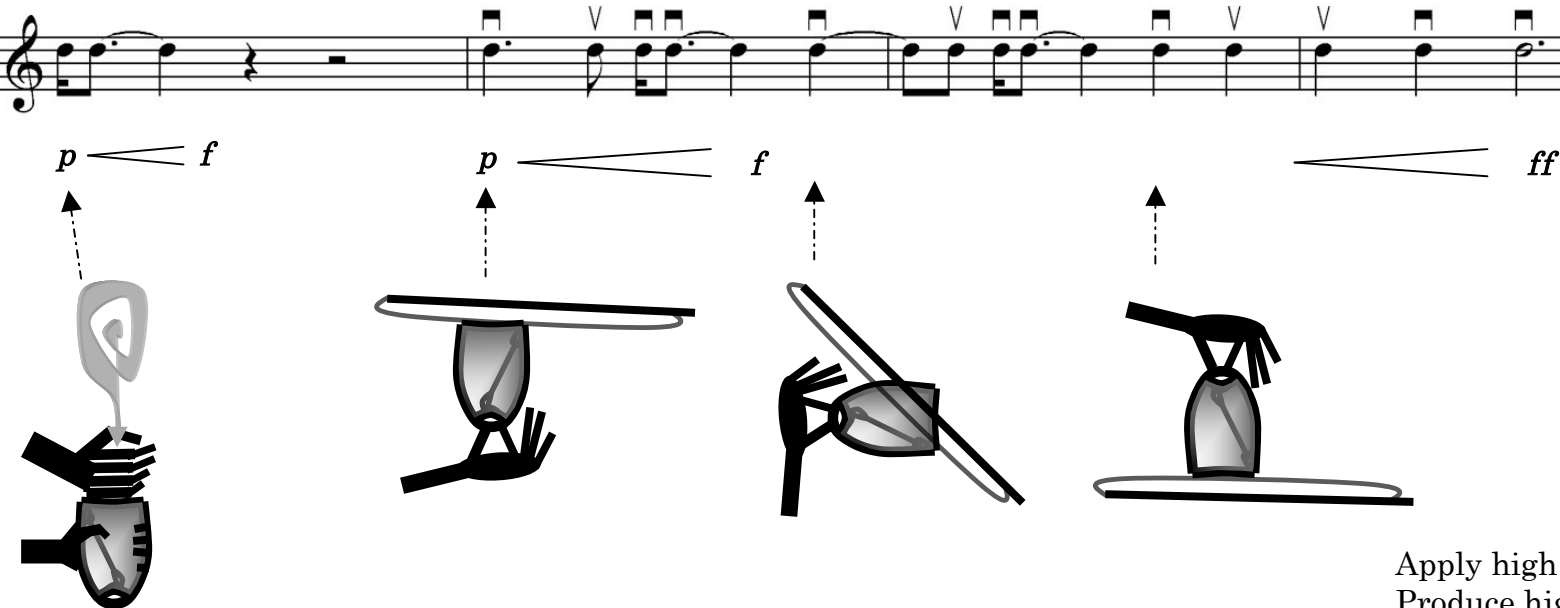
Time	8'15"	8'25"	8'30"
Electronics	<p>Pluck six single cyberbells: A3, A3+, F#4, F#4+, E5 &amp; A#4.</p> <hr style="border-top: 1px dashed orange;"/> <hr style="border-top: 1px solid orange;"/>		
	<p>Hit four single plate-like cyberbells: A3, A3+, F#4+ &amp; F#4.</p> <hr style="border-top: 1px dashed red;"/> <div style="text-align: right; margin-right: 50px;"> <p>● <u>Various metal-like cyberbells hit with wooden mallet.</u></p> </div>		
			
Performer	 <p>Both hands: Full mute. Rotate wrist.</p>		





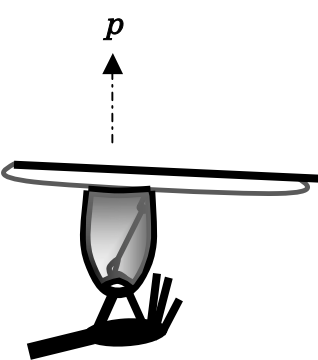
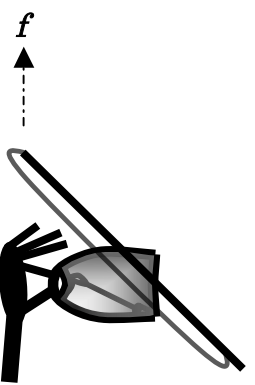
Time	8'30" <span style="float: right;">8'45"</span>	
Electronics	<p>High metal-like cyberbells hit with plastic stick.</p>  <p>Hit individual cyberbell: E5.</p>  <p>Various metal-like cyberbells hit with wooden mallet.</p> <p>Hit a number of single plate-like bells.</p> 	
Performer	<div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p>Hang bell A4. Allow the accidental sounds.</p>  </div> <div style="text-align: center;"> <p>Hang bell G4, B4. Allow the accidental sounds.</p>  </div> </div>	



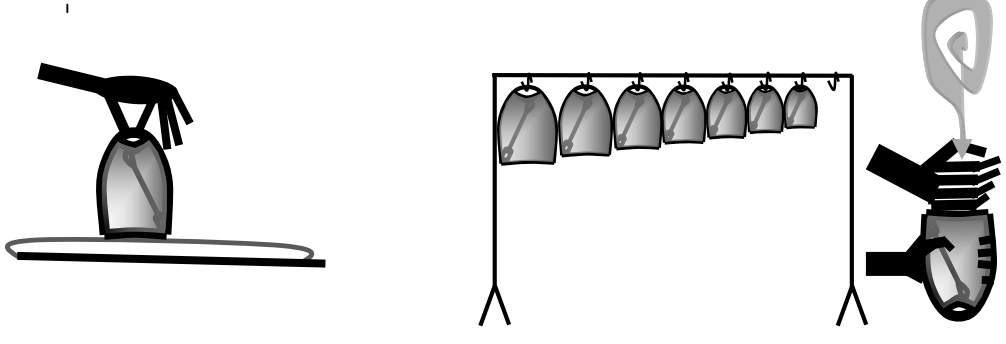



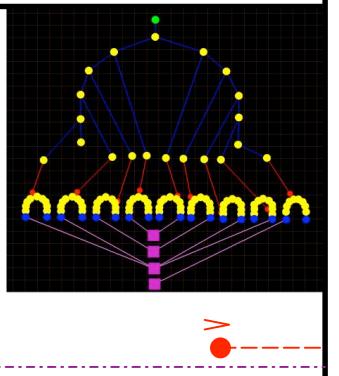
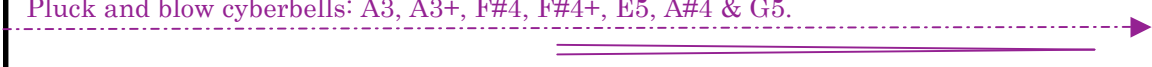
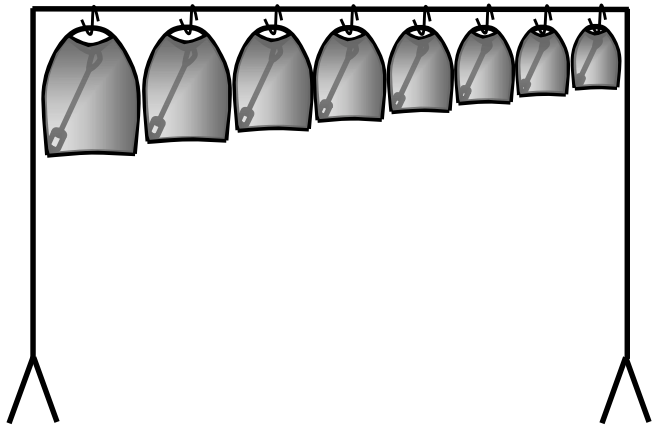





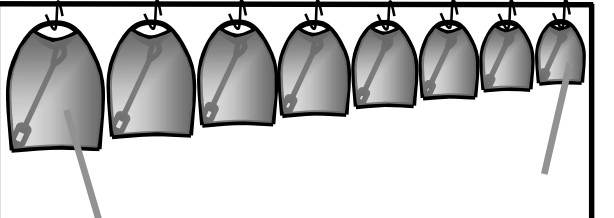
Time	9' <span style="float: right;">9'15"</span>
Electronics	<p>Pluck cyberbells: A3, A3+, F#4, F#4+, E5, A#4 &amp; G5.</p>  
Performer	 <p style="text-align: center;"><i>p</i>      <i>mf</i>                      <i>mf</i>      <i>p</i></p> <p style="text-align: center;"><i>simile</i></p>  <p>Blow air in the bell. Produce colored noise and whistle tones.</p>



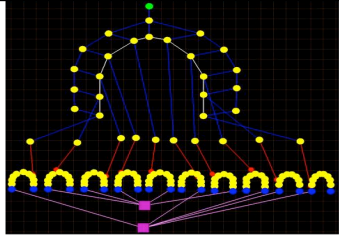


Time	9'15"	9'24"	9'30"
Electronics	 <p>Pluck and blow cyberbells: A3, A3+, F#4, F#4+, E5, A#4 &amp; G5.</p>		
Performer	 <p>Apply high pressure. Produce high partial.</p>		

Time	9'30"	9'34"	9'45"
Electronics	<p>Individual bell struck: G5</p>  <p>Pluck and blow cyberbells: A3, A3+, F#4, F#4+, E5, A#4 &amp; G5.</p> 		
Performer	 <p>Hang the D4 bell.</p>  <p><i>f</i>      <i>p</i>      <i>f</i></p>  <p><i>p</i></p>  <p><i>f</i></p>		

Time	9'45" <span style="float: right;">10'</span>
Electronics	<p>Pluck and blow cyberbells: A3, A3+, F#4, F#4+, E5, A#4 &amp; G5.</p> 
Performer	 <p><i>p</i> <span style="margin-left: 150px;"><i>f</i> &gt; <i>p</i></span> <span style="margin-left: 50px;"><i>mf</i> &gt; <i>p</i></span> <span style="margin-left: 50px;"><i>mp</i> &gt; <i>p</i></span> <span style="margin-left: 50px;"><i>p</i> &gt; <i>pp</i></span></p> <p>Hang the E4 bell.</p> 


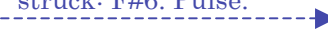


Time	10' <span style="float: right;">10'14.25" 10'15"</span>	
Electronics	<p>Individual cyberbell struck: C6. Pulse.</p> 	<p>Single cyberbell strikes nine cyberbells: A3, A3+, F#4, F#4+, E5, A#4, G5, C6 &amp; D6.</p> 
	<p>Pluck and blow cyberbells: A3, A3+, F#4, F#4+, E5, A#4 &amp; G5.</p> 	
Performer	<p>Hang the G5 bell.</p> 	


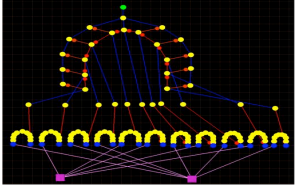

Time	10'15"	10'26"	10'30"
	<p>Individual cyberbell struck: D6.</p> <p>Pulse.</p> 		
Electronics			
	<p>&gt; Single cyberbell strikes nine cyberbells: A3, A3+, F#4, F#4+, E5, A#4, G5, C6 &amp; D6.</p> <p>Roaring sound.</p>		
	 <p><i>sempre ff</i></p>		
Performer	 <p>Hit with the plastic sticks.</p>		


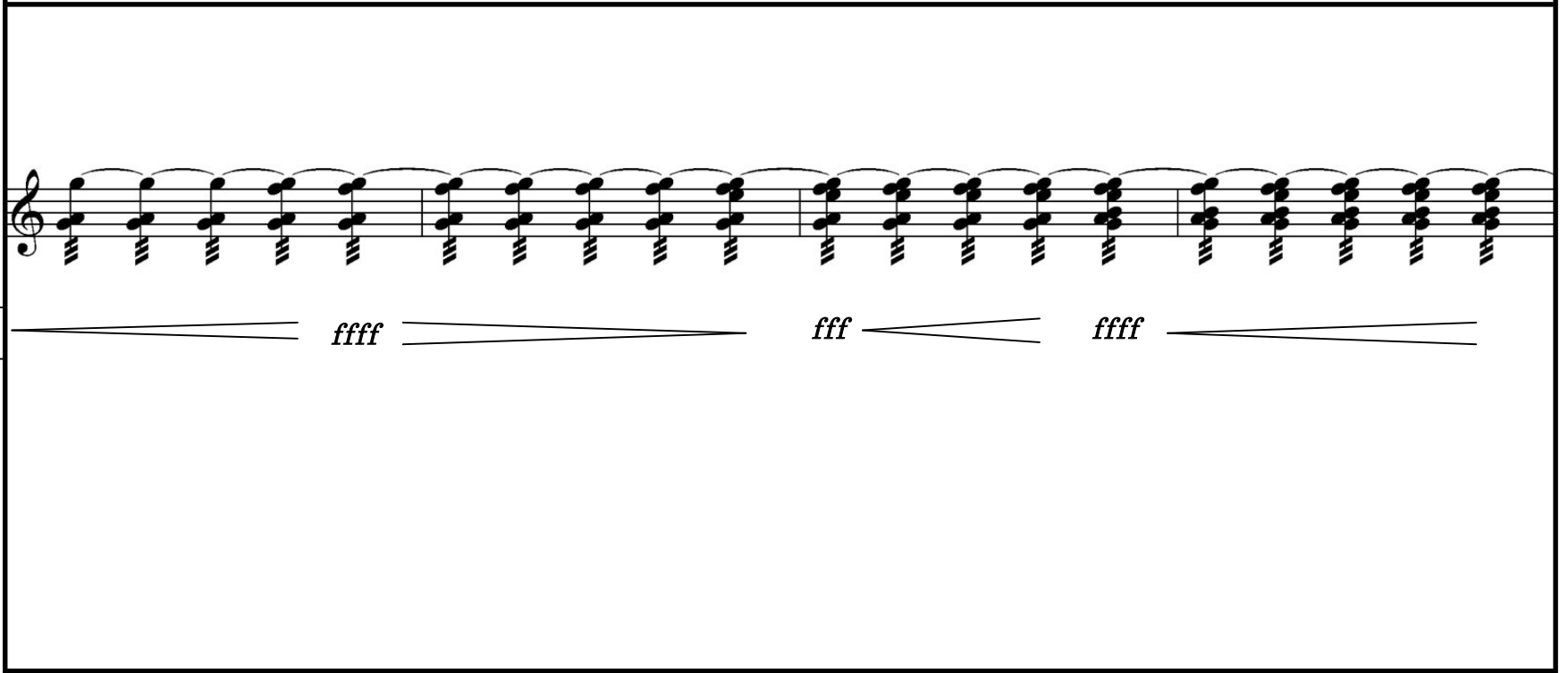
Time	<div style="display: flex; justify-content: space-between;"> <span>10'30"</span> <span>10'41"</span> <span>10'45"</span> </div>
Electronics	<p>Individual cyberbell struck: D6. Pulse. </p> <p>Single bell strikes nine cyberbells. </p> <p>Nested cyberbells 'bell' ten cyberbells:  A3, A3+, F#4, F#4+, E5,  A#4, G5, C6, D6 &amp; F#6.</p> 
	
	
Performer	





Time	11' <span style="margin-left: 350px;">11'08"</span> <span style="float: right;">11'15"</span>
	<p>A thin cyberbell hit with a wooden-like beater.</p> 
Electronics	<p>Individual cyberbell struck: F#6. Pulse.</p>  <p>Nested cyberbell mechanism 'bells' ten cyberbells: A3, A3+, F#4, F#4+, E5, A#4, G5, C6, D6 &amp; F#6.</p> 
Performer	 <p style="text-align: center;"><i>p</i> <span style="display: inline-block; width: 70%; border-bottom: 1px solid black;"></span> <i>fff</i></p>

Time	<p>11'15" <span style="margin-left: 150px;">11'19"</span> <span style="float: right;">11'30"</span></p>
Electronics	 <p>Individual cyberbell struck: G6.</p>  <p>..... Nested cyberbell mechanism 'bells' eleven cyberbells: A3, A3+, F#4, F#4+, E5, A#4, G5, C6, D6 &amp; F#6 &amp; G6.....</p> <p><i>cresc. al fine</i></p>
Performer	 <p><i>sempre fff</i></p>

Time	11'30"	11'41"	11'45"
	A thin cyberbell hit with a metal beater.		
Electronics			
Performer			

Time

11'45"



12'





Electronics



Performer

*fffff*  *ffff*  *tuta sforza*

Time	12" <span style="float: right;">12'07"</span>
Electronics	 <p>Single strike on eleven cyberbells: A3, A3+, F#4+ F#4, A#4, E5, G5, C6, D6, F#6 &amp; G6.</p> 
Performer	