

(re)cycling I: metals

for percussion quartet (with optional amplification)

commissioned by Philharmonie Luxembourg for Architek

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Commissioned by Philharmonie Luxembourg for Architek Percussion, for premiere at Rainy Days Festival 2023.

Duration: Approx. 15 minutes

Percussion 1

Kitchen/aluminum foil: 1-2 rolls

Pie foils: 1 medium-small pie foil, 1 medium-large pie foil, 2 sets of medium-small pie foil chimes

Pudding foils: 1 small (single serving) pudding foil, 1 large (2l) pudding foil

Tin-and-lid chimes: 1 set of small tin-and-lid chimes

Metal bowls: 1 medium-low with 12-15 seconds resonance, 1 any size/pitch (resonance longer than 8 seconds)

Bolt chimes: 1 set of bolt chimes

Activators: metal kitchen scrubby, kitchen whisk, dried peas, 2 percussion mallets, large bolt suspended from a string, scrap of foil

Percussion 2

Kitchen/aluminum foil: 1-2 rolls

Pie foils: 1 medium pie foil, 2 sets of medium pie foil chimes

Pudding foil: 1 small (single serving) pudding foil, 1 large (2l) pudding foil

Tin-and-lid chimes: 1 set of medium tin-and-lid chimes

Coffee pod chimes: 1 set of coffee pod chimes

Metal bowls: 2 any size/pitch (resonance longer than 8 seconds)

Key chimes: 1 set of key chimes

Activators: metal kitchen scrubby, kitchen, whisk, dried peas, 2 percussion mallets, 2 keys tied together

Percussion 3

Kitchen/aluminum foil: 1-2 rolls

Pie foil: 1 medium-small pie foil, 1 set of mince pie foil chimes

Pudding foil: 2-3 small (single serving) pudding foils (used as activators), 1 medium (1l) pudding foil, 1 large (2l) pudding foil, 1 set of small pudding foil chimes, 1 set of medium pudding foil chimes

Tin-and-lid chimes: 1 set medium tin-and-lid chimes

Metal bowls: 1 any size/pitch (resonance longer than 8 seconds), 1 low pitch (lower than any of the other bowls)

Key chimes: 1 set of key chimes

Activators: metal kitchen scrubby, kitchen, whisk, dried peas, 2 percussion mallets, 2-3 small pudding foils (see above), 2 keys tied together

Percussion 4

Kitchen/aluminum foil: 1-2 rolls

Pie foils: 1 set of medium-large pie foil chimes

Pudding foils: 1 large (2l), 1 set of large pudding foil chimes

Tin-and-lid chimes: 1 set of large tin-and-lid chimes

Coffee pod chimes: 1 set of coffee pod chimes

Metal bowls: 2 any size/pitch (resonance longer than 8 seconds)

Key chimes: 1 set of key chimes

Activators: metal kitchen scrubby, kitchen, whisk, dried peas, 2 percussion mallets, coffee pods, screw suspended from a string

Performance note: *(re)cycling I: metals* is likely to need amplification, unless performed for a very small audience in an intimate venue. It should sound like live *musique concrete*: someone who is listening but not watching should not be entirely sure how all the sounds are made. Any amplification should blend and balance, emphasizing tones, overtones and timbre rather than attack. In most parts of the piece (until K), the overall impression should be of a gradually transforming mass of sound, moreso than of distinct instruments and parts.

Program note: I did not originally set out to write a piece about recycling! When I was asked to write a percussion quartet related to the theme of “memory”, for Architek to perform at the Rainy Days festival in Luxembourg in Autumn 2023, I thought at first that I might explore some endangered sounds—sounds that still occur now, but that are in danger of becoming nothing but a memory in the future. I have always wanted to write a piece based on sounds from the Arctic Ocean—walruses, bearded seals, bowhead whales, ice—and this seemed like the perfect opportunity to do so. I started making mock-ups of the percussion instruments I wanted to use at home: I struck salad bowls for the gonging sound of walruses, I bowed water bowls for the ethereal sound of bearded seals, I made chittering noises with slinkies attached to cups-as-resonators for cracking ice. I discovered that the size, shape, and material of the resonator made a big difference to the sounds I could make with the slinky, and started reaching into the recycling bag for its endlessly varied supply of metal, plastic and paper objects. I became quite fascinated by these recycled materials and their sound making potential, and the various ways these sounds can be activated, including with slinkies, mallets, hands and fingers, bows, whisks, and dried beans. Somewhere along the way, my idea drifted from using traditional percussion instruments to engage with Arctic sounds to using instruments made with recycled materials to engage with Arctic sounds, to simply making sounds with the recycled materials themselves.

The process of writing *(re)cycling I: metals* was very exploratory: I wanted to uncover the stories these recycled and discarded materials have to tell, rather than imposing pre-conceived sounds and structures on them. At first I thought this piece might include sounds made by all the types of items that can be found in the recycling—metal, plastic, paper glass—but I soon realized that even if I stuck to metal items alone, they made many more kinds of sounds than I could use. (Indeed, the slinky sounds which initiated this investigation did not make it into this piece, though I may use them elsewhere.) Although the piece is notated, has a particular order in which sounds and gestures enter, and suggests proportions for each section, the performers have quite a bit of freedom in how they realize it, because different performance venues, audiences, performers, and the specific items used may demand different interpretations.

“Memory” remains a central aspect of the piece, though in altered form. Whereas I had initially been thinking of possible future memories of something that may one day disappear, now I am thinking of memory as the continued existence of objects whose initial use may be long past. There are, of course, environmental implications to creating something from trash, and I don’t want my piece to come across as either heavy-handed or glib. The beauty and playfulness of sounds created from recycling is not meant to underplay the danger that waste poses, nor is it intended to suggest that a bit of crafty upcycling is in any way a solution to the enormous problem of waste. I’ve certainly become more aware of packaging materials and discarded items throughout the course of writing this piece, and one can hope that greater awareness and attention may one day lead to greater care in how we use them. I still like my initial Arctic sound ideas too, but those will have to wait for another piece!

Instrumentation/materials: As many of the materials as possible should be taken from the recycling/trash, borrowed, or bought used. Where this isn't possible please reuse/recycle as many of the materials as you can afterwards. (Perhaps you would like to bake pies for all your friends?) Images are not to scale.

Kitchen/aluminum/aluminium foil: 4 rolls (8 if you are spatializing the performance), light to medium weight (not heavy duty), preferably each a different brand (for variety of sound). These probably need to be bought new so you have large sheets piece of foil which are unwrinkled to start with, but you can reuse them after you have performed the piece. (Perhaps you could cover the pies you bake with the pieces of foil?)

Pie foils: (Disposable) foil pie plates, flan cases, and take-away containers of assorted sizes and shapes. The sides must be ridged with crinkled foil, not smooth or regularly fluted (except for the mini mince pie foils, which can be smooth or crinkly). Med-large is approx. 20-30 cm. in diameter, med is 15-20 cm., med-small is 10-15 cm., mini mince pie is 5-8 cm. Some pie foils are played individually, others made into row chimes (described below). They can be other shapes besides round so long as the foil is thin enough to make an interesting sound. Sound and size may not always correspond as expected: you can move foils around as needed so the chime sets are distinctively very high (mince pies) high, medium, or low.

- 12-16 med-small pie foils (2 played individually; two sets of chimes made of 5-7 each)
- 11-13 med pie foils (1 played individually; two sets of chimes made of 5-6 each)
- 6-7 med-large foils (1 played individually; one set of chimes made of 5-6)
- 5-8 mini mince pie foils (one set of mini mince pie chimes made of 5-8)

Pudding foils: These are what British-style Christmas puddings are made in: they're much deeper than pie foils/flan cases, with curved, steeply rising sides. The sides must be ridged with crinkled foil, not smooth or regularly fluted. Some pudding foils are played individually, others made into row chimes (described below). Small is single serving size, medium is 1 litre, and large is 2 litres.

- 9-12 small pudding foils (4-5 played individually; one set of chimes made of 5-7)
- 6-7 medium pudding foils (1 played individually; one set of chimes made of 5-6)
- 8-9 large pudding foils (4 played individually; one set of chimes made of 4-5)

Coffee pods: A minimum of 24 empty coffee pods (metal, not plastic), to be made into 2 coffee pod chimes. Coffee pod chimes are circular chimes (see below).



Lids: Approx. 8 metal jar/tin lids of assorted sizes, 2 for each of the tin-and-lid chimes. They should be made only of metal, with no coating or lining (often found on coffee jars). Tin-and-lid chimes are row chimes (see below).

Tins/cans: Assorted tin cans, unlined (metallic on the inside, not white-coated), and with rims/seams on both ends (called 3-piece cans, not 2-piece cans). 4-5 smaller size (less than 300g), 10-12 regular size (approx. 300-500 g), and 4-5 large size (greater than 500g). Combine the tins with the lids (described below) to make tin-and-lid chimes (one small set of chimes, two medium, and one large). Tin-and-lid chimes are row chimes (see below).

Metal salad/serving bowls: 8 salad/serving bowls in a variety of (round) shapes and sizes. All bowls should resonate a minimum of 8 seconds when struck on the side with a percussion mallet, with some lasting to 15-20 seconds or more. Bowl A (perc 1) must have a medium-low sound which resonates for at least 12-16 seconds. Bowl F (perc 3) is lowest in pitch. The pitch and resonance of the other bowls is not specified, but you may want to experiment to find the best ordering of bowls. A mallet should be selected for each bowl to maximise resonance, richness of tone, and complexity of overtones, and to minimize attack.

Metal kitchen scrubby: 4 metal kitchen scrubbies.

Whisk: 4 metal kitchen whisks (can all be slightly different sizes and shapes).

Dried peas: About 50 dried peas (carlin peas, black peas, grey peas, black chickpeas, wrinkly peas, or any similar small, hard, round but not entirely regular dried legume), plus extras in case some get lost. (You might enjoy researching heritage legume varieties from your region.)

Percussion mallets: 8 percussion mallets, each selected to produce the most resonant sound possible on the bowl it is used for. Emphasize a full, rich, and complex sound, and minimize the sound of the attack.

Bolt: Approx. 10 large, resonant, partially threaded bolts (not all the same). 1 is suspended on a 15 cm piece of string, the others are to be made into a bolt chime.

Keys: At least 28 discarded metal keys, various shapes/sizes. 2 pairs of keys are tied together, each with a string of approx. 15 cm. The other are made into 3 sets of circular key chimes (see below) with a minimum of 8 keys each.

Screw: 1, suspended on a string of approx. 15 cm. Large enough that it produces a rattly sound against the side of the salad/serving bowl: it should not be resonant like the bolt or keys.



Instrument Examples: You can construct instruments out of whatever materials you have available, but here are some suggestions. Dental floss or thick waxed thread works best for securing the keys and foils (thicker string or yarn dampens the sound too much).

ROW CHIMES

All pie foil, pudding foil, and tin-and-lid chimes are row chimes, hung on a coat hanger or similar straight object. The dental floss/thread must be attached to the outer rim of the foils/tins/lids. Experiment with spacing of foils/tins/lids to maximise resonance and variability of sound and rhythm, and minimize undifferentiated scraping.



SUSPENDED KEYS, BOLT, SCREW

Use a thin string like dental floss or heavy duty thread for these, otherwise the sound will be too dampened. The bolt and keys should make a resonant chiming sound when pulled up the side of a vibrating bowl, while the screw makes a rattly tapping sound.



CIRCULAR CHIMES

Key chime, bolt chime and coffee pod chimes are circular chimes. You can use a bottle, cup, can, or similar to create a structure to hang the keys/bolts/coffee pods on. Experiment with spacing and placement to maximise resonance and variability of sound and rhythm, and minimize undifferentiated scraping.



Performance Instructions

A	Everyone: Hold the side of your pie/pudding foil, and rub the (outside) bottom of the pie/pudding foil with a metal kitchen scrubby in a steady circular motion. Move at a medium speed, pressing hard enough to make an easily heard, continuous sound, but not so hard that the bottom crackles or bends frequently. Because the circumference and weight of each pie/pudding foil will be different, each player will take a different amount of time to circle around the bottom of the pie/pudding foil. Do not try to align with the other players. In fact, you may subtly accentuate the different circling rates.
B	Everyone: Hold a roll of thin to medium weight kitchen foil, with approximately 40 cm hanging down. Shake continuously. Optional spatialisation 1: Each percussionist take a second roll of foil and walk amongst the audience in a symmetrical fashion, shaking the foil continuously.
C	Everyone: Crinkle/crumple foil continuously. Take more foil from roll as needed to maintain a continuous crinkling sound.
D	Everyone: Rub whisk steadily around outside of large pudding foil, making a continuous, loud grating sound.
E	Everyone: Hold pie/pudding foil very loosely in your hands while tapping rapidly on the bottom of the pie/pudding foil with your fingers. Your hands should barely touch the sides of the pie/pudding foil, they are just there to keep it from falling.
F	Everyone: Shake pie/pudding foil chimes gently but continuously, entering in the order specified. Optional spatialisation 2: Once all pie/pudding chimes have entered, walk amongst the audience in a symmetrical fashion, shaking chimes continuously.
G	Everyone: Switch seamlessly to tin-and-lid chimes. Optional spatialisation 3: Once all tin-and-lid chimes have entered, walk amongst the audience in a different pattern than previously (but still symmetrical), shaking chimes continuously. You may wish to make a second tin-and-lid chime of the type you already have.
H	Percussionists 2 and 4: Switch to coffee pod chimes. The sound will naturally be quieter than the tin-and-lid chimes. Percussionist 3: Switch to mince pie foil chime. The sound will naturally be quieter than the tin-and-lid chimes.

I	<p>Everyone: Swirl a dried pea continuously in your specified pudding foil. When everyone has entered, add peas one at a time to your swirling pudding foil, without slowing or stopping. Follow your own pacing, and do not try to coordinate with the other players. Once everyone has reached the maximum number of dried peas (perhaps 8?), continue swirling the peas at a loud volume.</p>
J	<p>Everyone: Allow dried peas to fly gradually (ideally one at a time) out of the swirling pudding foils. Allow the peas to fly in their own time, and do not try to coordinate with the other players. As soon as the peas are all gone, switch immediately to rubbing a scrubby in a circle on the bottom of your pudding foil (this is the same technique as in the opening of the piece, but will not necessarily be the same pie/pudding foil). The transition from swirling the dried peas to circling with the scrubby should be staggered amongst players, so there is a smooth sonic transformation and no silences.</p>
K	<p>Everyone: Strike each bowl so it is maximally resonant, allowing it to sound until it stops sounding/vibrating completely. Re-strike as soon as the sound has stopped, following the resonance of each bowl rather than any externally imposed rhythms or timelines.</p> <p>The only points of coordination are for the initial entrance of each bowl, which is indicated by a dashed line. These should be aligned precisely. Bowl B enters on the fourth strike of bowl A. All other bowls enter on the second strike of the previous bowl. Eg. bowl C enters on the second strike of bowl B, bowl D enters on the second strike of bowl C, etc. Once each bowl has entered, it does not coordinate any further with any of the other bowls: it follows its own length of resonance. (Each player will thus be playing and following the resonances of their two bowls: these resonances are unlikely to be the same duration.) Once all bowls have entered, continue playing in the same manner for as long as you like.</p> <p>The different sizes and colours of the bowl symbols on the scores indicate that each bowl is different, and has its own length of resonance, but they do not indicate which size or resonance length any particular bowl should have. The only two specified bowls are bowl A (first to sound), which should be medium low, and resonate for a minimum of 12-16 seconds, and bowl F (sixth to sound), which should be the lowest.</p> <p>Optional spatialisation 4: 4-8 people could be planted in the audience with metal bowls and mallets. They could enter (following the same pattern) after bowls A-H have entered. They would start to fade out as soon as section L begins (being completely silent by the time the percussionists have stopped playing their bowls).</p>
L	<p>Everyone: Add preparations in the order specified, but taking as much (or as little) time as you like. (Experiment beforehand to figure out which bowl is most suitable for which part, and how to do the preparation most effectively.) Each percussionist has one stationary preparation (kitchen foil, dried peas, coffee pods, small pudding foils) which is left in the bowl once it has been placed, and a second preparation (suspended bolt, suspended keys, suspended screw) for their other bowl which must be performed each time the bowl is struck. Stationary preparations are always placed first. The preparations may affect the duration of resonance for each bowl. Always re-strike each bowl as soon as it has completely stopped resonating, even this is a different length of time than without the preparations.</p>

	<p>Percussionist 1</p> <p>bowl B: Silently place a folded piece of kitchen foil (perhaps 3-6 cm wide and 12-20 cm long) over the edge of the bowl so it buzzes (loudly and persistently) when you play. Leave in place for the rest of the piece.</p> <p>bowl A: Right after you strike the bowl, dangle a large, partially unthreaded bolt on a piece of string on the inside wall of the bowl, lifting gradually so it makes a ringing sound.</p> <p>Percussionist 2</p> <p>bowl C: Silently place several dried peas in the bottom of the so they buzz (loudly and persistently) when you play. Leave in place for the rest of the piece.</p> <p>bowl D: Right after you strike the bowl, dangle a pair of keys on the inside wall of the bowl, lifting gradually so the makes a ringing/tinkling sound.</p> <p>Percussionist</p> <p>bowl F: Silently place several 2-3 small pudding foils in the bottom of the so they buzz (loudly and persistently) when you play. Leave in place for the rest of the piece.</p> <p>bowl E: Right after you strike the bowl, dangle a pair of keys on the inside wall of the bowl, lifting gradually so they make a ringing/tinkling sound.</p> <p>Percussionist 4</p> <p>bowl G: Silently place several coffee pods in the bottom of the so they buzz (loudly and persistently) when you play. Leave in place for the rest of the piece.</p> <p>Bowl H: Right after you strike the bowl, dangle a suspended screw on the inside wall of the bowl, lifting gradually so it makes a rattling/tapping sound.</p>
M	<p>Everyone: These actions can take place in your own time, but the following order is suggested. (Feel free to adjust as needed according to the specific sounds of the bowls you have selected and the acoustic properties of your venue). The transition from bowl sounds to bolt/key chime sounds should be staggered among the players and smooth, with no silences.</p> <p>Percussionist 1: Strike bowl B for the last time. Play bowl A for the last time. When you have struck bowl A and while you are playing the suspended bolt preparation, take bolt chime silently with your other hand. Gradually begin to play bolt chime as you are continuing to play the suspended bolt preparation. Towards the end of bowl A's resonance, bring the suspended bolt to the bolt chimes and play together, making a continuous ringing sound.</p>

	<p>Percussionist 4: Strike bowl G for the last time. Play bowl H for the last time. When you have struck bowl H, and while you are playing the suspended screw preparation, take key chime silently with your other hand. Gradually begin to play key chime as you are continuing to play the suspended screw preparation. When bowl H stops resonating, continue playing key chime.</p> <p>Percussionist 2: Strike bowl C for the last time. Play bowl D for the last time. When you have struck bowl D, and while you are playing the suspended keys preparation, take key chime silently with your other hand. Gradually begin to play key chime as you are continuing to play the suspended keys preparation. Towards the end of bowl D's resonance, bring the suspended keys to the key chimes and play together.</p> <p>Percussionist 3: Strike bowl F for the last time. Play bowl E for the last time. When you have struck bowl E, and while you are playing the suspended keys preparation, take key chime silently with your other hand. Gradually begin to play key chime as you are continuing to play the suspended keys preparation. Towards the end of bowl E's resonance, bring the suspended keys to the key chimes and play together.</p>
N	<p>Everyone: When everyone is playing bolt or key chimes and the bowls have stopped resonating, continue playing key/bolt chimes for as long as you like.</p> <p>Optional (recommended) spatialisation 5: Percussionists leave stage one at a time (about 10 seconds apart), each taking a different route through the audience. (Percussionists can be walking amongst the audience at the same time, but they should enter and leave the audience at different times, and their routes should not be symmetrical). Walk into the distance, either playing until the sound can no longer be heard, or gradually decrescendoing to nothing.</p>

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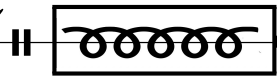
Emily Doolittle

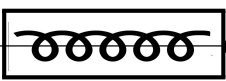
An approximate length is given for each measure (and for each page), but this does not need to be precisely counted. Dynamics describe heard sound (not sound in relation to the possibilities of the instrument), and small-scale dynamic variations within each section are expected. Depending on the acoustic space and audience size, amplification may be needed.

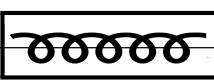
A pie foil: med-large
Rub scrubby in circle on bottom of pie foil.

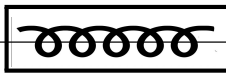
(A-B = approx. 60")

15" 10" 5" 30"

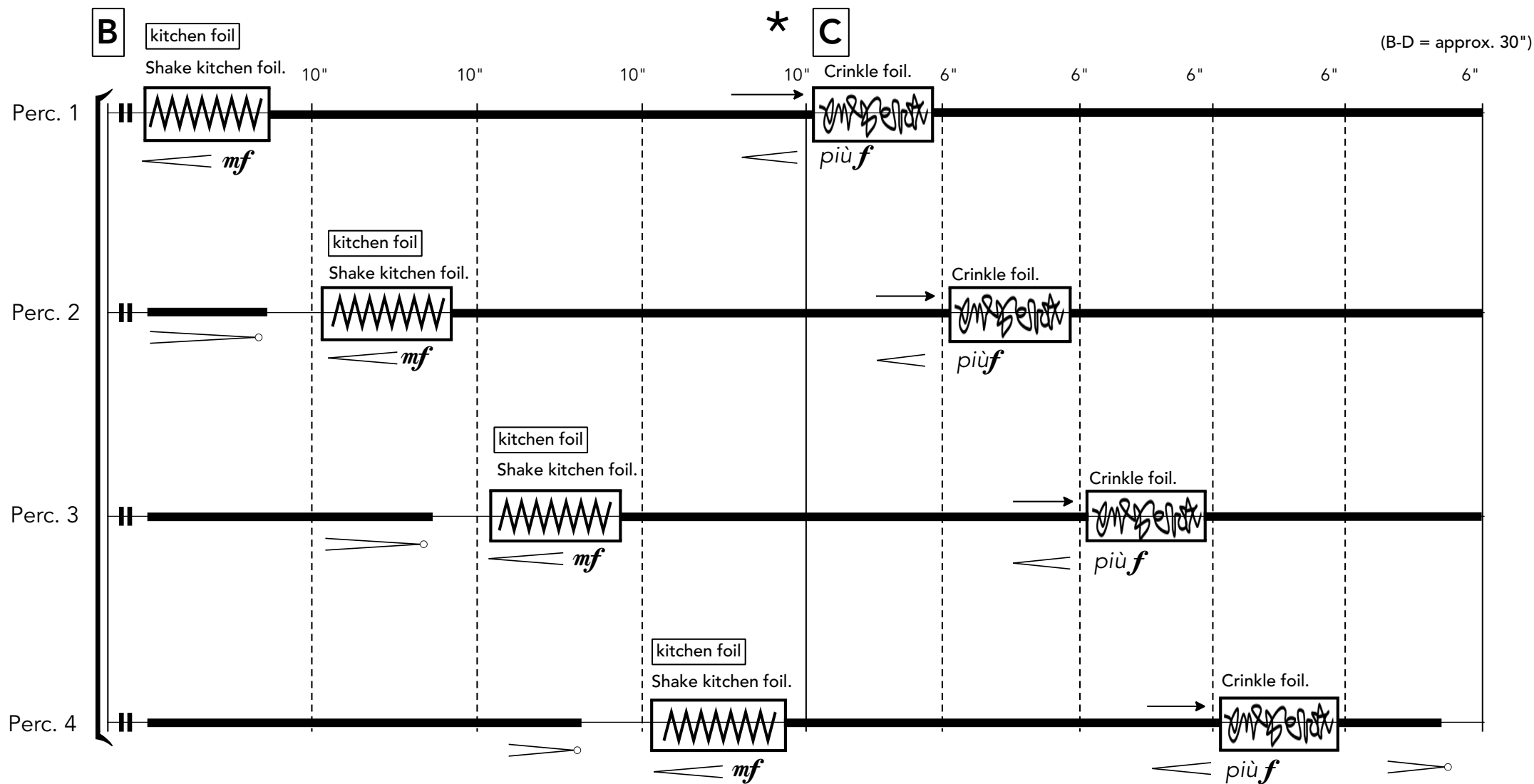
Percussion 1  *p*

Percussion 2  *p*

Percussion 3  *p*

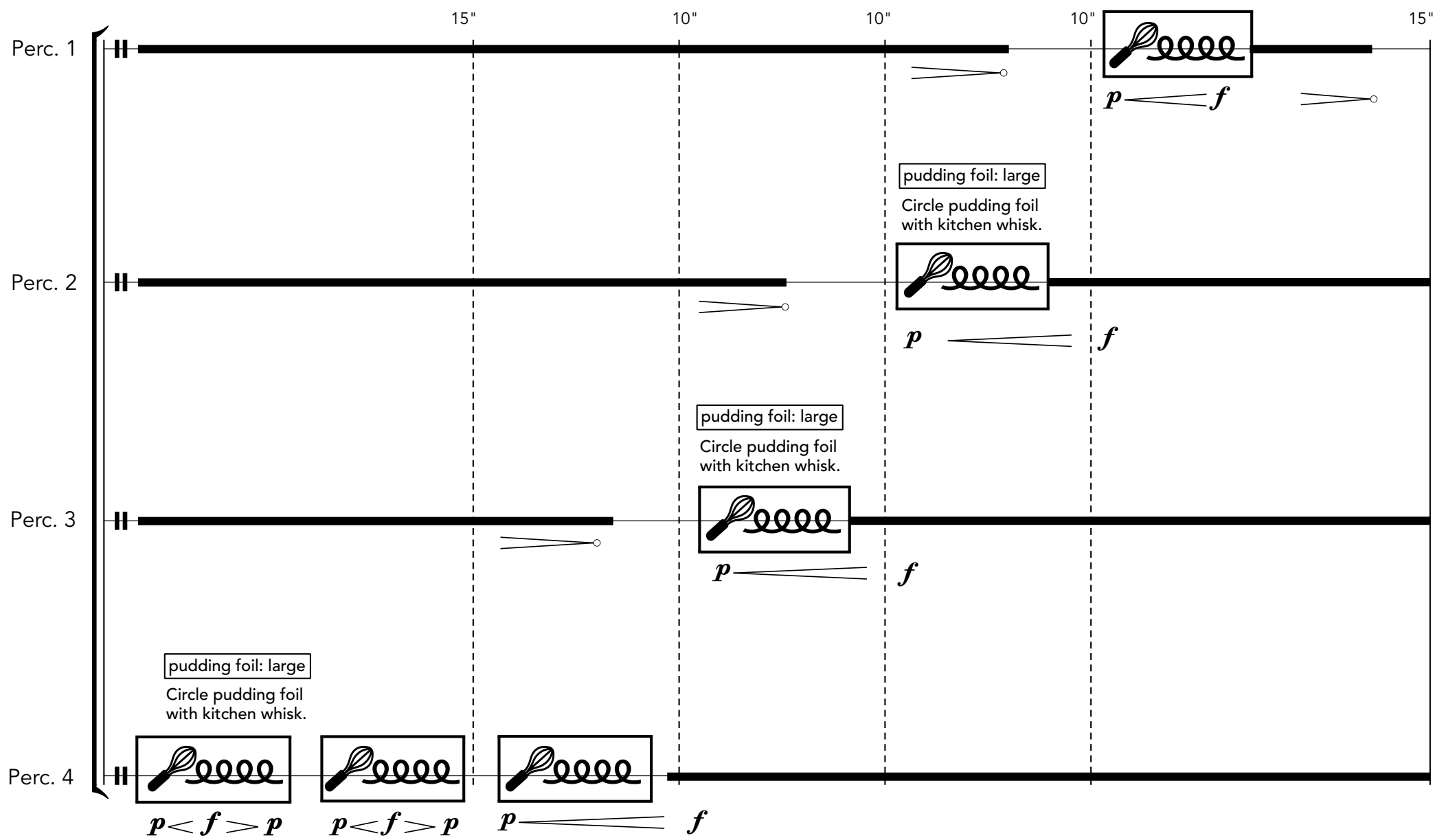
Percussion 4  *p*

pudding foil: large
Rub scrubby in circle on bottom of pudding foil.



* Optional spatialisation 1: all percussionists take a second roll of kitchen foil, and circulate among audience while shaking both.

D



Tap fingers on bottom of pie foil.

Perc. 1

10"

10"

10"

30"

 $\angle f$

Perc. 2

pie foil: med

Tap fingers on bottom of pie foil.

$$f$$

Perc. 3

pie foil: med-small

Tap fingers on bottom of pie foil.

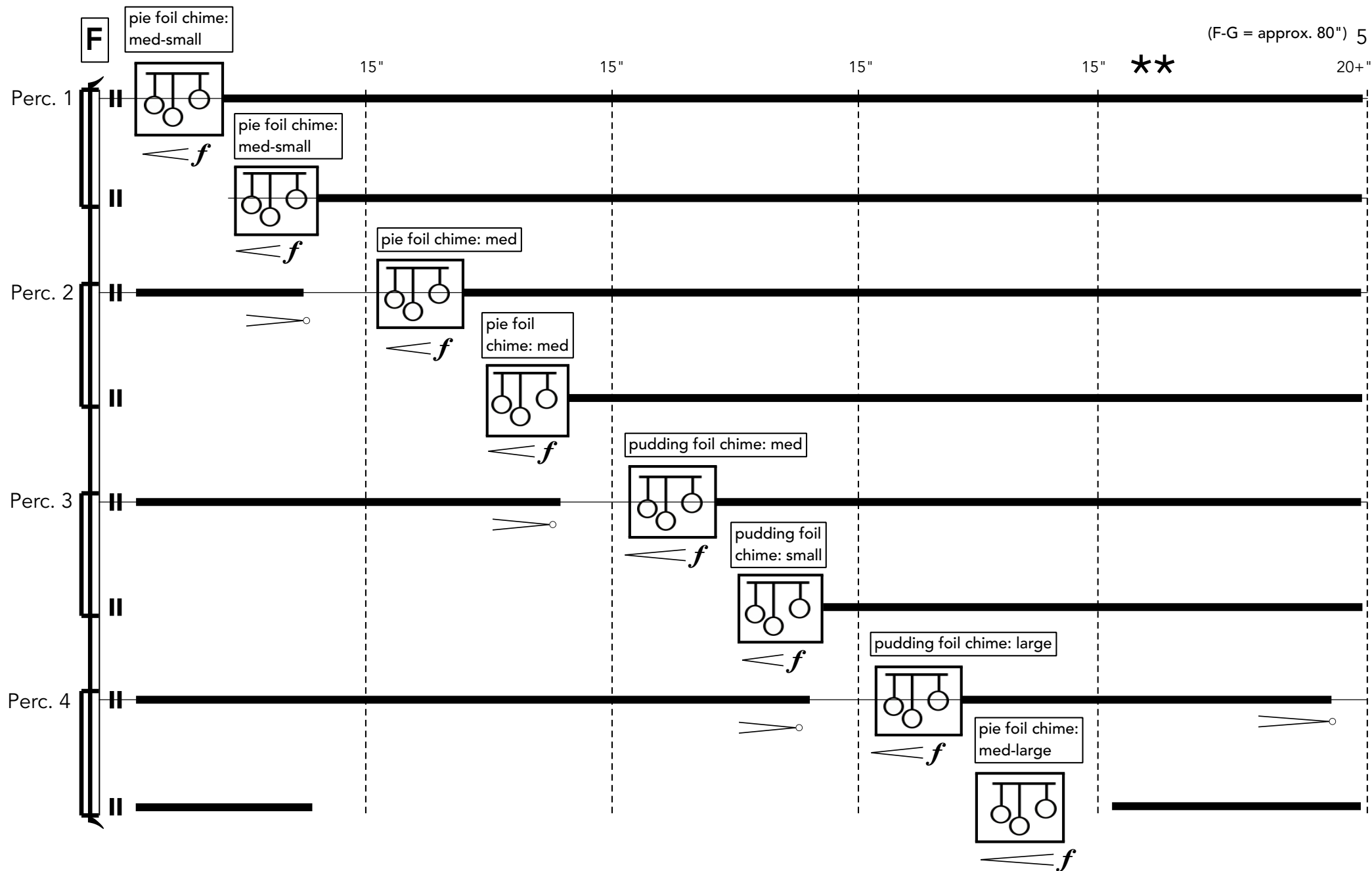
 $\equiv f$

Perc. 4

pudding foil: large

Tap fingers on bottom of pudding foil.

 \mathcal{F}



****** Optional spatialisation 2: all percussionists walk in a symmetrical pattern amongst the audience playing pie/pudding foil chimes.

G ***

15" 10" 5" (G-H = approx. 70") 40"

Perc. 1

Perc. 2

Perc. 3

Perc. 4

tin-and-lid chime: small

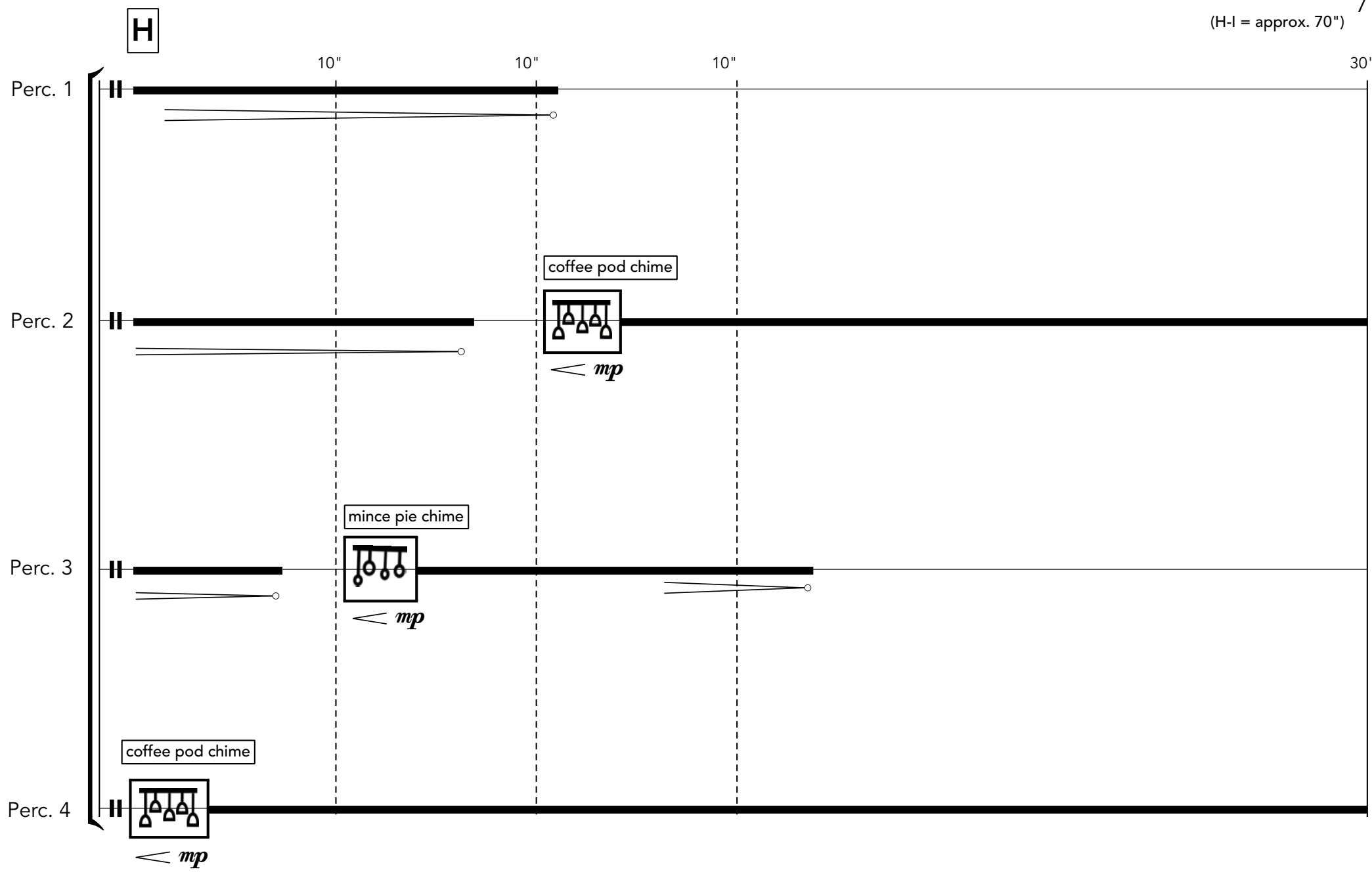
tin-and-lid chime: med

tin-and-lid chime: med

tin-and-lid chime: large

f

*** Optional spatialisation 3: all percussionists walk in a (different) symmetrical pattern amongst the audience playing tin-and-lid chimes.



I

pudding foil: small
Swirl dried pea in pudding foil.

15" 10" 10" 5" 40"

Perc. 1

p

Add dried peas to the pudding foil one at a time, continue to swirl.

f

etc.

Perc. 2

pudding foil: small
Swirl dried pea in pudding foil.

p

Add dried peas to the pudding foil one at a time, continue to swirl.

f

etc.

Perc. 3

pudding foil: med
Swirl dried pea in pudding foil.

p

Add dried peas to the pudding foil one at a time, continue to swirl.

f

etc.

Perc. 4

pudding foil: large
Swirl dried pea in pudding foil.

p

Add dried peas to the pudding foil one at a time, continue to swirl.

f

etc.

(J-K = approx. 60")

J

Allow peas to fly out of pudding foil one by one until none are left.

Rub scrubby in circle on bottom of pudding foil.

Perc. 1

(natural decrescendo as peas fly out)

p

Allow peas to fly out of pudding foil one by one until none are left.

Rub scrubby in circle on bottom of pudding foil.

Perc. 2

(natural decrescendo as peas fly out)

p

Allow peas to fly out of pudding foil one by one until none are left.

Rub scrubby in circle on bottom of pudding foil.

Perc. 3

(natural decrescendo as peas fly out)

p

Allow peas to fly out of pudding foil one by one until none are left.

Rub scrubby in circle on bottom of pudding foil.

Perc. 4

(natural decrescendo as peas fly out)

p

10

K bowl A: med-low (12"-16" + of resonance)
Let bowl resonate until it stops, then strike again.

Perc. 1 *p* *mp* *mf* *f* *simile*

bowl B Let bowl resonate until it stops, then strike again. *simile*

bowl C Let bowl resonate until it stops, then strike again. *simile*

Perc. 2 *f* *simile*

bowl D Let bowl resonate until it stops, then strike again. *simile*

bowl E Let bowl resonate until it stops, then strike again. *simile*

Perc. 3 *f* *simile*

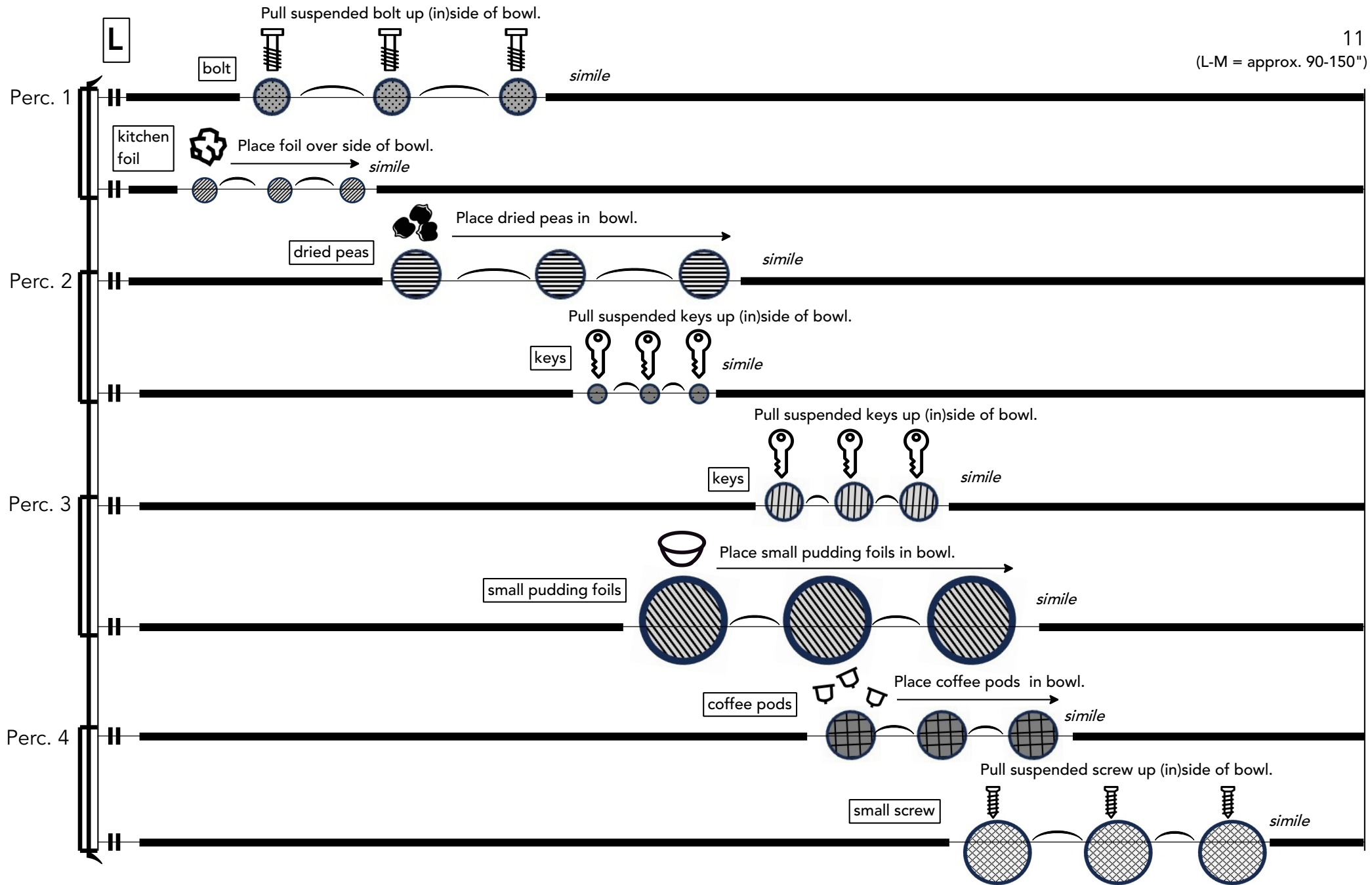
bowl F: lowest *f* *simile*

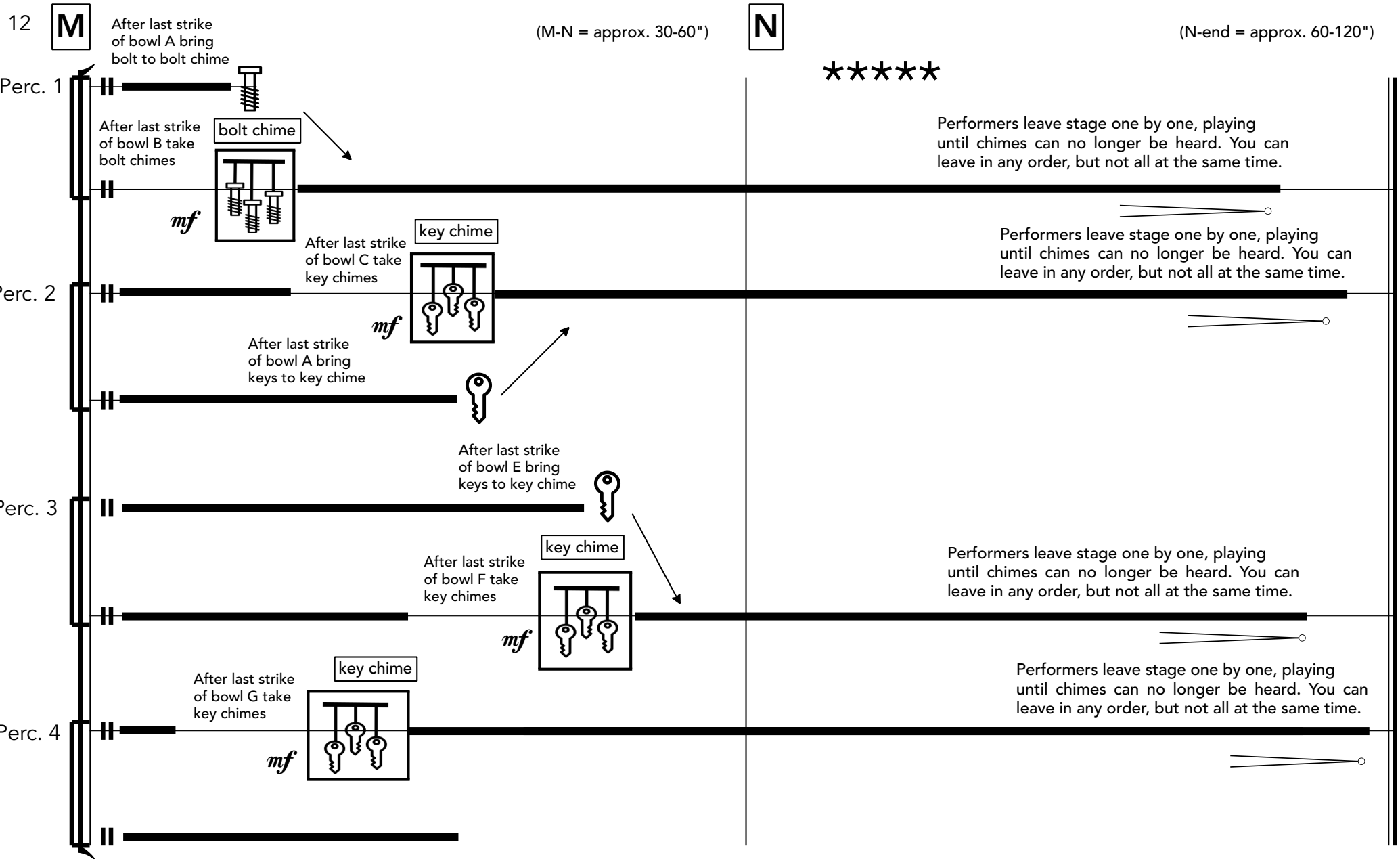
bowl G Let bowl resonate until it stops, then strike again. *simile*

Perc. 4 *f* *simile*

bowl H Let bowl resonate until it stops, then strike again. *simile*

***** Optional spatialisation 4: 4-8 people with metal salad/serving bowls could be planted in the audience, and join in following the same pattern of entrance once all of the percussionists are in.





***** Optional (recommended) spatialisation 5: performers walk (asymmetrically) through the audience before leaving the performance area.