

Hongwei Cai

Collapsing Shells

for solo double bass and live electronics
(2021)

Program Note

Collapsing Shells was inspired by astrophysical conjectures related to the “frozen star” paradox, a phenomenon predicted by general relativity. During the gravitational collapsing of a star, the clock inside the shell slows down as the dust shells collapse toward the existing black hole. In real astrophysical settings, matter can pass through the event horizon of the black hole according to the clock of the external observer and will not accumulate around the black hole. In this case, when matter falls towards a black hole, it will not form a “frozen star” to the external observer. Through this work, I attempt to depict the phenomenon by creating several combinations of gestures for the soloist with guided improvisations and a series of max patches.

Several multiphonics used in this piece credits to cellomap.com

Duration: ca. 11-13 min

Performance Notes

(m.)s.p. = (molto) sul ponticello
 s.t. = sul tasto
 ord. = ordinary bow position
 ric. = ricochet
 nVib. = non vibrato
 mVib. = molto vibrato



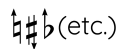
Change gradually from one sound or one way of playing (etc.) to another.



Play around the area of the 4th - 9th harmonic and seek double layers of overtones, with distortion.



1/4-tone sharp
 3/4-tone sharp
 1/4-tone flat



Non-tempered secondary accidentals, slightly modifying indicated pitch in direction of appended arrow.

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Phase I

Constant medium tempo

Double Bass

Live Electronics

ppp

Phase II

III

gradually in random order

Phase III

alla punta

IV III

mp

repeat in random order

III

mp

alla punta

IV III

mp

0

Phase IV

Phase IV musical notation. The staff shows a sequence of notes with fingerings IV, III, II, I, II, III, IV. The notes are grouped with slurs. The first group is marked *mp* and the second group is marked *pp-mf*. The sequence ends with a double bar line and the instruction "repeat in random order".

Phase V

Phase V musical notation. The staff shows a sequence of notes with a slur. The notes are marked *ppp*.

Phase VI

Phase VI musical notation. The staff shows a sequence of notes with a slur. The notes are marked [s.p.] - [s.t.] and slow glissandi.

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The first system of the musical score for 'The Great Wall of China' is written in bass clef. It begins with a key signature of one flat (B-flat) and a 4/4 time signature. The notation includes a first ending bracket labeled '[s.p.] - [s.t.]' and a second ending bracket labeled 'gliss.'. The piece concludes with a double bar line and the instruction 'behind the bridge'.

Phase VII

l.h. pizz. sul G/D/A

mf

[s.p.] - [s.t.]

pppp cresc. poco a poco

Phase VIII

[illegible]

Phase IX

Phase IX musical notation. The first staff shows a sequence of notes with dynamics *p* and *f*. Above the staff, there are markings for "s.t." (sustained tone) and "s.p." (sustained pulse) with arrows indicating a transition. The second staff continues the sequence with similar dynamics and markings. A box contains the instruction: "Play as many times as desired. The sustained notes/interval should be reduced in duration and increased the dynamics each time when repeated."

Phase X

Phase X musical notation. The staff shows a sequence of notes starting with a forte dynamic *fff*. A box above the staff indicates "Plays a little longer".

Phase XI

(a tempo)

Phase XI musical notation. The staff shows a sequence of notes starting with a piano dynamic *p* and ending with a pianissimo dynamic *ppp*. A box below the staff indicates "Repeat as many times as possible".

Phase XII musical notation. The first staff shows a sequence of notes with dynamics *mp* and *pp*. Above the staff, there are markings for "rit." (ritardando), "accel." (accelerando), and "gliss." (glissando). The second staff continues the sequence with dynamics *mf* and *pp*, also marked with "rit.", "accel.", and "gliss.". The notation includes "SP" (sustained pulse) and "ord." (ordered) markings.

Phase XII

Phase XII musical notation. The staff shows a sequence of notes starting with a pianissimo dynamic *pp* and ending with a pianissimo dynamic *ppp*. Above the staff, there are markings for "accel." (accelerando) and "rit." (ritardando). A box below the staff indicates "Repeat as many times as possible".

accel. rit.

s.t. III

pp *p* *ppp*

Phase XIII

soundings

M [7+13+6] M [6+11+5] M [5+9+13+4] M [4+11+7+3] M [7+10+13+3] M [3+11+8] M [3+8+13+5] M [5+12+7]

mf

multiphonics

(s.p.)

m.s.p. nVib.

mVib.

s.t.

mf *mf* *mp*

occasionally bring high partials

FINE