

3 Cello Tunes

**solo cello (or solo string instrument)
for anton lukoszevieve**

- I. "Hop Up and Jump Up"**
- II. Twickenham Stomp**
- III. יתגדל (Yitgadal) (for Jim Horton)**

**Larry Polansky
1998**

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Although these pieces are specifically written for cello, they may be played by viola or even violin if transposed to appropriate keys. "Hop Up and Jump Up" is playable on any string instrument, since it uses no actual harmonics (but tunes to them). *Twickenham Stomp*, because of its use of high harmonics (up to 13) might be played on bass, and possibly viola, but not violin.

All three of the pieces may be amplified.

I. "Hop Up and Jump Up"

Play the tune 4 times, retuning the melody each time. The intonations are indicated below the melody in terms of the degrees of the harmonic series on G, B, and D. In the fourth time through the melody is again in G.

For each repeat, a different drone string is used in conjunction with the melody, as indicated in the score (string I for repeats 1 and 4; II for 2; III for 3). The drone should be used as in a fiddle-tune drone — a double-stop played freely, rhythmically, and with various bowings and expressions.

Based on a pentatonic Shaker song, "Hop Up and Jump Up" continues a compositional idea I first used in the piece *Daughter of Piker* (part of a five movement work called *Piker*, for solo piccolo, 1997). The tune is "revoiced" three times, with each new melody translated to intonations from a new harmonic series. The three harmonic series are related as 1:5:3 (a just major triad). The tunings for each pitch are those closest to a note in the current harmonic series.

Tuning

The tuning for the four strings is as follows:

- I tuned to G
- II tuned to the 5th harmonic (B) on the I (G) string (several octaves down)
- III tuned to the 3rd harmonic (D) on the I (G) string (several octaves down)

The intonations are as follows, in terms of their deviations from tempered tuning:

melody note:G	A	B	D	E	
on G:	0	+4	-14	+2	-53
on B:	+39	-43	-14	+72	+37

on D: +53 +4 -45 +2 +6

The harmonic series equivalents are (1 is the tonic, or first harmonic/partial):

melody note:G	A	B	D	E	
on G:	1	9	5	3	13
on B (5/4):	13	7	1	5	11 (*5)
on D (3/2):	11	3	13	1	9 (*3)

The cellist should learn the intonations for the three versions of the melody from the strings themselves. In other words, to learn the intonation for the “G” in the second repeat (harmonic series on B), listen the tuning of the 13th harmonic on the newly tuned B string (which will be almost a semitone high of where it would be in 12-tone-ET). To play the “A” in that melody, listen to the 7th harmonic on the B string (about a semitone flat). To practice the piece, the performer should learn to play in tune with the three harmonic series (available for pedagogical purposes on the strings themselves).

II. *Twickenham Stomp*

The tuning for *Twickenham Stomp* is also based on the harmonic series on G (as in “*Hop Up...*”). The cello is retuned to an “open” G tuning: the IV string is tuned down to a B (5th harmonic on the I or III string, G); the III string is tuned to G; the II string to D (3rd harmonic on G); and the I string to G.

The piece gradually retunes through the three harmonic series (like “*Hop Up...*”). Natural harmonics are used to sound the new intonations as they occur, and once introduced, those (stopped) pitches are tuned to those harmonics. Measures are numbered according to the harmonic introduced in them.

The piece is divided into 4 parts and a coda. Each part fills in a harmonic series with a new fundamental (on G, B, D, then back to G) up to the 13th harmonic. In the first part, harmonics enter from low to high (in the series, not necessarily in pitch), whereas in parts 2-4, harmonics enter in the following order: 13, 11, 7, 5, 9, 3, 1 (in a “prime order” similar to the one I’ve used in my *Psaltery* set of pieces).

New pitches are introduced by the actual natural harmonic, and subsequently, all cognate pitches are tuned to that. In this way, the player “learns” to hear the fingered pitches by listening to the actual harmonics. For example, once the “D” is introduced as a natural harmonic in the measure labelled “3” (which is actually the 3rd harmonic of the G series), it should be played in that intonation until it is changed (in a later part).

Note that 11th and 13th harmonics are about a quarter-tone different from their tempered neighbors (up and down arrows as a reminder), and that 7th harmonics are about a 6th-tone flat of their tempered neighbors.

In each part, the new harmonics must be played on strings which are fundamentals of the new harmonic series. In other words, in Part 2, all harmonics come from the IV string (B), in Part 3, from the II string (D), and in Parts 1 and 4, from the III or I string (depending on octave, often there is a performer choice). Stopped notes may be played on any string (left up to the performer).

At most times in the piece, there are two harmonic series present: an old one leaving, and a new one entering. The performer must keep close track of the *current* intonation of each pitch. Once a pitch has been "retuned," it stays retuned (and emphasizes the "target" harmonic series rather than the "source").

As in the first piece, the cellist should learn to play the pitches by actually playing the natural harmonics, and matching their intonations with stopped notes.

(Thanks to Mike Frengel for assistance in copying this score.)

III. יתגדל (Yitgadal) (for Jim Horton)

All pitches are natural harmonics, from 1-13, on the retuned strings (see the accompanying chart). Accidentals carry through the measure. The II string is retuned from F# (-49 ¢, 11th harmonic on C) up to G (3rd harmonic on C) between parts 2 and 3. This should be done quickly and quietly.

Part 1 is played on strings I and II, part 2 on III and II, part 3 on III and II (III retuned to G), part 4 on III and IV, and part 5 on I thru IV.

Rhythmically, the piece is a free transcription of my own (and Sarah Meyers') reading of the Hebrew mourner's kaddish. Tempo is somewhat free, but should sound like a spoken, intoned, text. For playing purposes, the performer might listen to someone speaking this text, keeping in mind that each reader would have their own distinct rhythms and tempi.

Crayon or chalk marks may be used to mark the high harmonics on the strings.

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Larry Polansky
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