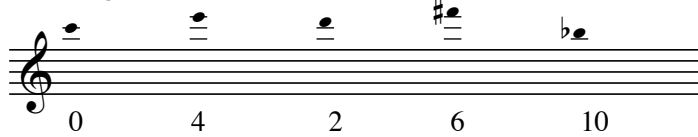
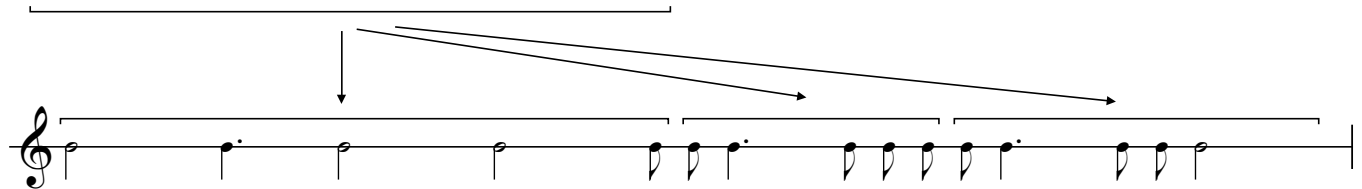


Cello melodic/harmonic pedal (color) - sounding pitches

\* length of 5 notes



A subset of WT(0,2)  
[mode 1]



Rhythmic pedal (talea)

\*15 values appears 7 times (with the beginning of an 8th time)

\* The color above appears 3 times for each repetition of the talea (3C=1T) or nearly 22 times in the movement.

**ISORYTHMIC DESIGN OF CELLO/PIANO PARTS IN "LITURGIE DE CRYSTAL"**

rhythmic pedal (talea) Of 17 values:

\* (deçi-tâlas from the Sangitaratnakara)

\* Occurs nearly 10 times throughout the mvmnt.

First 6 values -- retrograde of râgavardhana

Next 7 values -- candrakalâ

Final four values -- laksmiça



Melodic/Harmonic pedal (color) of 29 harmonies

\* Occurs nearly 6 times throughout the movement.

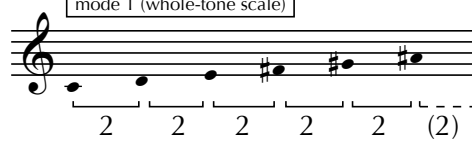
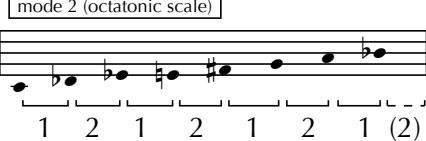

non-modal. The 2nd chord is a chord on the dominant that uses all of the pitches of the Bb major scale. Messiaen retains an F (the dominant) in the bass as a pedal tone, coloring the chord with different harmonies to create what he called a "stained glass window" effect.

\*\*\* notes are natural unless preceded by a sharp or flat

\*\*\*\* Note the use of prime numbers in the construction of the rhythmic pedals (talea) and the melodic/harmonic pedals (color) -- 17, 29, 5...

It would take over 230 minutes for these to sync up again once initiated.

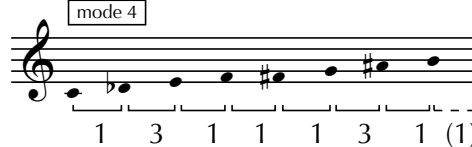

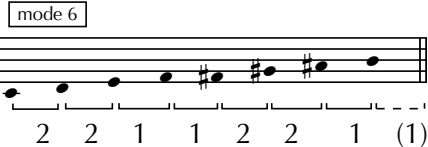
### 7 modes of limited transposition

mode 1 (whole-tone scale)	mode 2 (octatonic scale)	mode 3
		

2 possible transpositions:  
 $WT_{(0,2)}$  and  $WT_{(1,3)}$

3 possible transpositions:  
 $OCT_{(0,1)}$  --  $OCT_{(1,2)}$  --  $OCT_{(0,2)}$

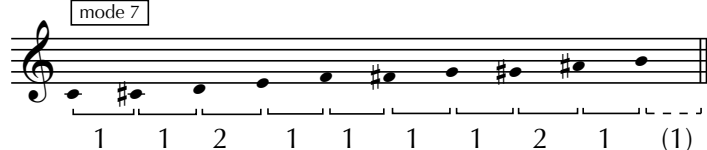
4 possible transpositions  
 $3^1, 3^2, 3^3, 3^4$

mode 4	mode 5	mode 6
		

6 possible transpositions  
 $4^1, 4^2, 4^3, 4^5, 4^5, 4^6$

6 possible transpositions  
 $5^1, 5^2, 5^3, 5^5, 5^5, 5^6$

6 possible transpositions  
 $6^1, 6^2, 6^3, 6^5, 6^5, 6^6$

mode 7


6 possible transpositions  
 $7^1, 7^2, 7^3, 7^5, 7^5, 7^6$

to figure out the number of possible transpositions:

\* subtract pitch class value of first pitch of the second repetition of the recurring figure from the first pitch of the first occurrence of the recurring figure.

\* The difference is equal to the number of possible transpositions.

## Special Chords in Messiaen's Music

Chord on the dominant with appoggiatura  
(as in 1st 2 chords of the piano in QFTEOT)

Chord of resonance

- \* Messiaen believed this chord to be a colorful representative of the harmonic series.
- \* Contains all of the pitches of the 3rd mode.
- \* Opening gesture of piano in the second movement of QFTEOF is a version of this chord.

Chord in Fourths

- \* This is the "triad" in Messiaen's music.

Chords with added 6ths

- \* Stole these from Debussy and Ravel
- \* Boulez called these: "warehouse chords"
- \* This chord from #1 of the *Vingt Régards*.

Chords with added raised fourths

- \* This chord taken from # 11 of *Vingt Régards*.
- \* Messiaen believed that the tritone above the root of a chord had a strong "leading-tone" like function.
- \* This chord is derived from the 2nd mode.