

a metastable harmony

(for quatuor bozzini)

Scott Mc Laughlin

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Duration 12 mins.

String Quartet

- uses scordatura, and spatialisation of players.

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Premiss:

Players use only the right hand with a combination of *flautando* and *sul ponticello* bowing, to bring out harmonics within the spectrum of the open strings, preferably to the point where the fundamental pitch is eclipsed by the harmonic. The notation defines harmonics in order of immediacy: in most cases, a string will have one or two harmonics that immediately reveal themselves, other harmonics will take more work to elicit, the upper boundary is reached when the harmonic are completely unstable and cannot be sustained for even a portion of a bow-length.

Scordatura:

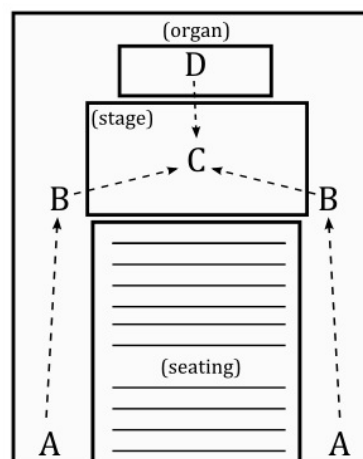
Starting with the cello, experiment with lowering and raising string tension/tuning of one string (string ii and iii are usually the most practical) to find a tension with the widest range of stable harmonics (using the above r.h. technique). The most immediate harmonic of this string is the basis for the tuning of the other strings, which should be tuned so that their most immediate harmonics are related to that of the first string by a near-octave or near-fifth¹. The other instruments should tune so that their most immediate harmonics are similarly related.

NB: It may not be practical to tune all strings of all instruments in this manner, in this case the guiding principle should be to have “some” harmonic of the string in a near-octave or near-fifth relationship to the main pitch, even if it is one that is not very immediate.

Spatialisation:

The spatialisation described below was for the premiere in St Paul's Hall (Huddersfield, UK), a medium-sized church space with moderately dense reverberation (3 second), and raised seating (the violins were invisible at point A). Where possible, this type of spatialisation should used, and may be varied to suit the given space. The important principle is that the four players begin widely spread around the hall, and slowly converge.

See diagram below. Cello stays centre-stage (point C) throughout, viola begins on the organ riser (point D), and violins begin at the ground-floor doors, left and right respectively (points A). Players alternate movement and playing, movement cues are given in the score.



¹ A “near-[interval]” is 10-30 cents higher or lower than the purely tuned interval, producing audible beating.

Method:

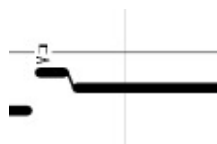
- Violin I & II have the same part but play independently, no synchronisation is required.
- All players use open strings only, playing *flautando* and *sul pont* to bring out harmonics.
- The score defines the relative immediacy of the harmonics:
 - The lowest level is the most immediate harmonic, one which is immediately audible.
 - Higher levels bringing out increasingly unstable harmonics (or multiphonics).
 - The highest level are harmonics/multiphonics that may only be sustained briefly, they may flicker but should still have a presence and be repeatable. Avoid harmonics that are completely unstable, unrepeatable, or cannot be sustained for even part of a bow-length.
 - The notation is non-specific as it is difficult to predict what harmonics will be available on each string/instrument, and a certain amount of indeterminacy is a part of the sound and important to the piece.
- Aim for a continuous sound with generally quiet dynamics, almost whispering, and allow strong harmonics to “sing out” gently. However, the technique may require some grinding with the heel of the bow to initialise higher harmonics, and there may be times when harmonics “slip” or change quickly, this is expected.
 - The playing should not be busy or hurried, even if the resultant sound occasionally is.
- Strings are notated as roman numerals, (i), (iv), etc., (ii/iii) means that either may be used and alternated.
- The horizontal space is time-space notation where each “bar-line” is 20 seconds. This is very flexible and only designed to keep the players approximately together, the parts are independent except where there are cues (dashed-lines pointing to other parts).



- “R” means “responsive”, see example below. Players respond by playing a harmonic/pitch as close as they can to the strongest pitch they can hear: the matching pitch does not have to be in the same register. Continue in this mode until the next cue.
 - In responsive mode, players do not have to follow the target pitch precisely, simply use it as a starting point. Listen, attempt to match the pitch, and once you have a similar pitch sustain it for a while, then listen again; if you cannot find a satisfactory match, listen again.



- Accents should be strong enough to be audible as a clear cue, standing out from the other sounds, but not aggressive. Accents should be *molto sul pont* and have a “glass-like” sound.



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