Spatial Drone II

mediation for solo tuba

for James Seabrook

Personnel and Equipment
This piece requires a tuba player who is adept in the playing techniques described in this score and who is able to listen to deeply and to be sensitive to the ways in which the space responds to the sounds that are made. All that is required for the performance of this piece is a tuba player and their instrument.

Space
The space should be small to medium in size and as resonant as possible. Surfaces are made of concrete, brick, stone or similar. The floors are tiled or bare, and not carpeted. The space is empty and there is room for audience members. Ideal spaces might include, but are not limited to, white cube gallery spaces, empty basements or cellars, empty public toilets, small chapels, or public baths.

Preparation 1
During the preparation phase of the piece, it is important that the tuba player is alone. In a handful of locations in the space they complete the following process:

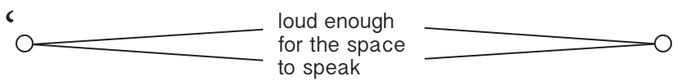
Play slowly, quietly and steadily upwards from the bottom of your playing range to the top of your playing range. During this process, listen very carefully to the response from the space. When the space 'speaks' in response to a particular pitch, that is, if the sound seems louder and / or of a different quality to other notes, then focus on this note for a while, lipping in and out of it to find the strongest response from the space.

Settle on the location that has the highest number of these resonant responses across the playing range. Write down the pitch of each note which provokes a resonant response at that location, along with any tuning comments, on the staves overleaf. These pitches are the basis for the following phases.

Alex De Little, 2018

Preparation 2
In the second preparation phase, the player works on each of the notated resonant pitches in turn, exploring them in relation to the three performance techniques in the right hand column.

During this phase, every entry fades in from nothing, and fades to nothing. The middle dynamic needs to be loud enough only to make the space speak: the player should always strive for the intensity of tuba playing to be as low as possible and for the response of the space to be as strong as possible:



Every entry lasts for the length of a breath. The goal of each entry is purely the invocation of resonant sensation. In-between breaths, pause and digest the resonant session that has just passed before considering the approach that you will take in the next breath. For each pitch, explore all three performance techniques in order. When you are satisfied with your exploration of a performance technique, move on to the next. Within each breath, only try one approach to creating a resonant sensation: try one aspect of one performance technique. If one approach is not effective, then begin to change your approach with each breath until a notable or interesting resonant sensation emerges. When something notable does arise, slow down the rate of exploration and examine this particular sensation in more detail.

Always be led by listening.

1 Establishing Resonance
Bring the pitch in and out or resonance by manipulating its tuning, either using lipping or valving. Start on the pitch neighbouring the resonant one and gradually bend into it and back out, or start on the resonant pitch itself and gradually bend out of it and back in. For each notated pitch find the most resonant point. Find the edges of resonance. Find the points above and below each pitch where resonance seems to disappear. For each pitch, listen deeply to the quality of its resonance, its strength, and its spatiality.

2 Modifying timbre
Keeping the tuning of the pitch at its strongest resonant point, change the aperture or shape of the embouchure methodically within each breath: begin with an embouchure with a relatively closed aperture and with each breath, gradually begin to open it up, introducing higher partials. Following this, experiment with a range of vowel mouth-shapes inside the mouthpiece. Towards the end of an exploration of each pitch, hone in on the embouchure shape which evokes the resonance most strongly.

3 Harmonics
Keeping the tuning of the pitch to its strongest resonant point, and only where possible, sing other pitches over or under the note in order to create harmonics. In the first few breaths for each pitch, try to find harmonics which affect the resonant sensation in notable ways: harmonics which create beating patterns, or harmonics which reinforce resonant sensation. With the next breaths, begin to explore these harmonics in more detail.

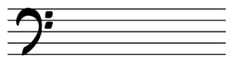
Performance
The performance is an exposition of Preparation 2. Start on the highest pitch, systematically moving down through the notated pitches to the lowest and back to the highest. Spend most time on the lowest pitches. The minimum length for the performance is 30 minutes.

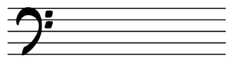
Audience
The audience should be stationary, sitting on chairs or the floor or lying on yoga mats.

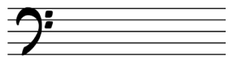
Ensemble Realisation
This piece may be realised with multiple tubas. Individual players should each settle within a different point in a given space or series of spaces and should conduct preparation phases 1 and 2 in the space alone. In the performance phase, each player sounds in turn.

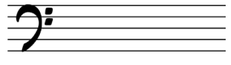
Staves

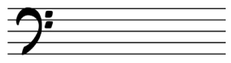
Write up to 24 resonant pitches here, in order of lowest to highest, noting any tuning particulaities

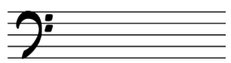
1 

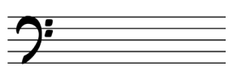
2 

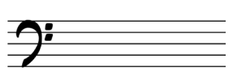
3 

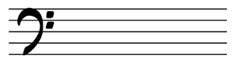
4 

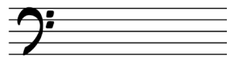
5 

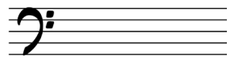
6 

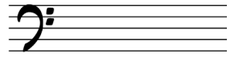
7 

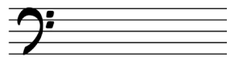
8 

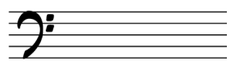
9 

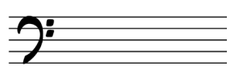
10 

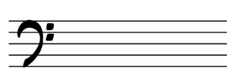
11 

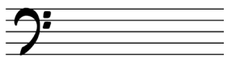
12 

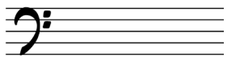
13 

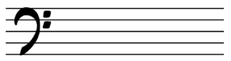
14 

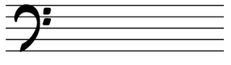
15 

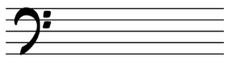
16 

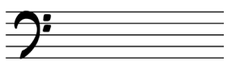
17 

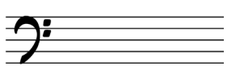
18 

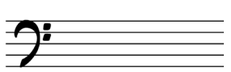
19 

20 

21 

22 

23 

24 

general notes and observations

Spatial Drone

mediation for subtractive synthesiser

Personnel
The performer may be anyone who is able to listen deeply and is sensitive to the ways in which sounds are produced and how the space responds. The performer should be comfortable to perform to a listening audience.

Equipment

Single loudspeaker, or loudspeaker paired with subwoofer (should be capable of exciting the fundamental frequencies of the chosen space)

Subtractive synthesiser (must have two oscillators and the following parameters: master detune, oscillator detune, low-pass and high-pass filters, a choice of waveforms for each oscillator, peak or resonance control, low frequency oscillator with cut-off and peak / resonance modulation)

Object for weighting the synthesiser key down

Cabling

Table

Blankets, mats and cushions for audience (optional)

Space
The space will ideally be empty and its surfaces, will be reflective: made of concrete, brick, or stone. Ideal spaces might include, but are not limited to, white cube gallery spaces, empty basements or cellars, empty public toilets, small chapels, or public baths.

Setup
The performer begins by finding a suitable space and setting up the equipment, ensuring that the loudspeaker(s) face(s) away from wherever they choose to be seated. They then complete the following process:

Select one oscillator, set the oscillator in use to the lowest octave setting. Set the resonance/peak value to zero, high-pass cutoff value to zero, low-pass cutoff value to roughly one quarter, and make sure that the low frequency oscillator is not active for any parameter. Play upwards stepwise from the bottom of the register. As you play, notice pitches where you perceive a change in the quality or spatiality of the sound, and the loudness of the sound.

When you reach these pitches hold them and use the master tune setting to carefully change the pitch. Try to find the point where the sound appears to be the loudest. Practice tuning in and out of this loud point. Repeat this process for each pitch that seems to stand out. Of all of these pitches, choose the two or three which seem to stand out the most.

For each of these pitches, complete the following process: weight the key and use the master detune to tune to the loudest point, set the low pass cut-off value to zero and the resonance / peak value to c.75%. Slowly begin to open up the low pass filter, pausing on each new pitch that you hear. Test each one for resonance by using the master tune to tune in and out, listening to the quality of the spatiality of the sound as well as the loudness of the sound as you do so.

After completing this process for each of the two or three strongest pitches, decide which seems most resonant and has the largest number of resonant upper partials. Weight the key on this pitch.

The synthesiser will now stay tuned to this pitch for the duration of both the preparation and performance phases of the piece.

If you cannot find a strong resonant frequency using this process, change your location in the room and try again. If you still can't, then select a different space.

Preparation
A constant drone on the pitch selected in the previous phase is maintained through the duration of the preparation phase. To prepare for the piece, the performer spends time acquainting themselves with the ways in which the synthesiser parameters manipulate the resonant state of the space. Preparation takes as long as required for the performer to feel able to perform the score:

1. Familiarise yourself with the quality and effect on the body of the held note. Practise using the master detune setting to bring the room in and out of resonance. Find the edges of resonance. Find tunings when the standing wave is experienced most strongly and where it is not at all resonant.

2. Experiment with the following parameters one by one, listening to the way in which they manipulate the resonant state of the room: waveform, gain, single vs multiple oscillators, high-pass and low-pass filters, resonance, low-frequency oscillator. Begin by exploring parameters individually before combining them.

3. The processes overleaf specify manipulations of parameters that will bring the space into a series of contrasting resonant states. Practice these individually, sticking very strictly to what is described in the text. Control of parameters should be consistent and extremely gradual. When you sense a notable acoustic phenomenon, slow down the process to explore it in more detail.

4. Practice the score as a whole, performing the processes in order.

Performance
Minimum duration 30 minutes.
Perform the processes in order.
Regularly bring the room in and out of resonance using the master detune during the performance.

Key Principles
In every moment of setup, preparation and performance, always be led by listening. Listen with the body as much as the ear. Allow the sounds that you percieve in one moment to define how you manipulate the synthesiser's parameters in the next. Changes of parameters should always be extremely gradual, almost imperceptible. When an interesting phenomenon occurs within a process, slow down the rate of change in order to explore it more deeply.

Alex De Little, 2018

Processes

1

With the synthesiser set to what is specified for the beginning of the performance (below), and having faded the gain up, gradually open and close the low-pass filter, listening intently to the response from the space.

From time to time, when the low-pass filter is closed or near-closed, crossfade the active oscillator with the other oscillator, making sure that this new oscillator is set to a different waveform to that which was just used.

With the new oscillator active, gradually open and close the low-pass filter, listening intently to the response from the space.

From time to time, when the low-pass filter is closed or near-closed, crossfade the active oscillator with the other oscillator, making sure that this new oscillator is set to a different waveform to that which was just used.

↓

Transition from section 1 into section 2

In order to end this process, rather than crossfading the oscillators, very gradually bring one in against the other until they are both fully faded in. Make sure that you have two different waveforms.

2

(with both oscillators in)

Gradually open and close the low-pass filter, listening intently to the response from the space.

From time to time, when the low-pass filter is closed or near-closed, change the waveform of one or both oscillators.

Gradually open and close the low-pass filter, listening intently to the response from the space.

From time to time, when the low-pass filter is closed or near-closed, change the waveform of one or both oscillators.

During this process, on different waveforms, and for different cutoff values, very slightly detune one oscillator against the other in order to create beating patterns for short moments at a time, before bringing the oscillators back in tune with each other and resuming the process.

↓

Transition from section 2 into section 3

Very slightly detune one oscillator against the other in order to create an extremely slow phasing effect.

3

Gradually open and close the low-pass filter, listening intently to the response from the space.

From time to time, when the low-pass filter is closed or near-closed, change the waveform on one or both oscillators.

Gradually open and close the low-pass filter, listening intently to the response from the space.

From time to time, when the low-pass filter is closed or near-closed, change the waveform on one or both oscillators.

During this process, on different waveforms, and for different cutoff values, pause the filter manipulation at regular intervals and sweep the resonance / peak setting from zero to as far as you feel and back to zero. After each instance of this, continue with the process above.

↓

Transition from section 3 into section 4

When you feel that this process has run its course, bring the low pass cutoff value to near zero, and resonance / peak value to max or near max, making sure that the level is not clipping. You will need to reduce the master volume before beginning the next process.

4

Gradually open and close both the low-pass and high-pass filters, listening intently to the response from the space.

Begin by manipulating one filter before conducting simultaneous independent sweeps with both. These filter sweeps can be non-linear and meandering.

After around 5 minutes, leaving the filters tuned to a particularly resonant partial begin the following process:

Very gradually detune one oscillator against the other, paying close attention to the beating patterns that occur and how they affect the resonant state of the room.

Bring the oscillators back in tune and resume filter sweeps until you find another particularly resonant partial or combination of partials upon which you want to begin another detuning process.

-

This process is finished when all resonant partials have been subjected to the detuning process or when you determine it to have run its course.

5

With both oscillators active, open up the low frequency oscillator cut-off modulation for the low-pass filter. Keep the modulation frequency at its lowest setting.

Very gradually, experiment with the frequency modulation, resonance / peak and filter settings, listening carefully to the ways in which the room responds.

↓

To end the performance, complete the following steps in order:

Reduce cutoff frequency modulation to nil

Bring oscillators back in tune

Reduce resonance / peak value to nil

Fade one oscillator out

Reduce cutoff value of low-pass filter to c.10%

Fade master gain to nil

Installation Version
Place multiple loudspeakers in a space or through a series of spaces.
Record performances of any or all of the processes for each loudspeaker. from different locations. Play each of these back through its respective loudspeaker on a loop, perhaps adding durations of silence.

Before the Performance
Make sure both oscillators are perfectly in tune. The synthesiser should have only one oscillator active and should be tuned to the most resonant point of the held pitch. High-pass cutoff value and resonance / peak value should be at nil. Low-pass cutoff value should be at c.10%.
Begin the performance by fading the gain up to a comfortable level (this level may be noted in the preparation phase).
The audience is settled comfortably and the lights are faded out.