

Island in Natural Colours:
environmental sound situation
(2017)

3.10.1 Conceptual Motivation

Island in Natural Colours is a fixed media sound environment composed for a three-ring array of twenty-four loudspeakers. The total audio running time is four hours and twenty minutes, although it is presumed that in most cases visitors will only experience a portion of the available material.

A drawing based on a modified view of Marcel Duchamp's *Oculist Witnesses* (1920) serves as a model for the overall composition of broadcast-trajectories throughout the piece. In *Oculist Witnesses*, Duchamp appropriates figures from an optician's chart and presents them in a skewed view, as if they had a particular perspective in which they were situated. A pun in the French title (*Temoins Oculists*) serves in English translation as 'eye witnesses', and, with Duchamp's *The Bride Stripped Bare by Her Bachelors, Even* (1915-23) as its object, implies voyeurism (Schwarz, 1997). These witnesses are peeping at the bride, who is not entirely visible. However, in Duchamp's work, "the Bride" is the piece itself, and since it is translucent, it too is stripped, leaving us, as audience members, the voyeurs.

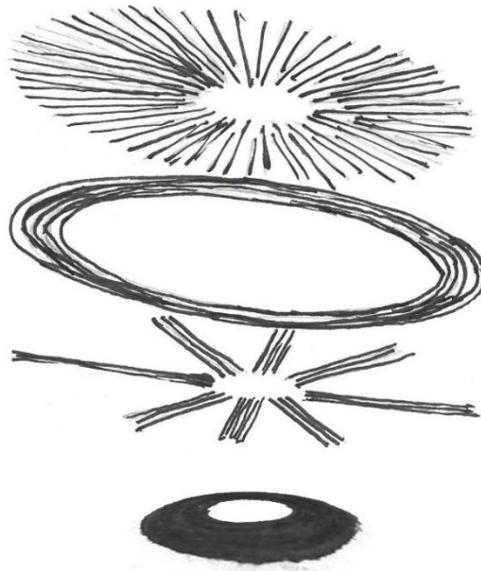


Figure 48: In the diagram, the position of the listener (the dark oblong ellipse at the bottom of the drawing) is shown in relation to the three rings of eight speakers each. In the drawing, the rings become less directional and more diffuse as our eyes follow them upwards. This mirrors the spatialization in *Island* in which ambisonic materials are presented from the top of the speaker array downwards, while more point-sourced directional sound is initiated from the bottom ring of eight, and secondarily, the bottom two rings of speakers.

In *Island*, listeners are not explicitly eavesdroppers (sonic voyeurs), however, upon entering into my sound environment already in progress, it is my hope that they become eavesdroppers upon their own ear-mind pattern formation system. To reflect the activity of active listeners back to themselves, listeners must be first conceptualized as active participants in the phenomena they apprehend. Surrounding listeners with sound that presents ambiguous figure/ground relationships and never settles into a fixed spatial orientation leads towards a perceptual completion of this situation.

The island metaphor is suggestive of a manner of visitation. As visitor to an island moves about, exploring its contour. However, in the case of *Island*, it is the piece that swings, surges, flutters, and washes around visitors. While visitors are free to move about the

installation space, the area defined by the speakers is fairly constrained. For most of the piece, several mostly independent layers of sound activity exist simultaneously. By their presence and attention, visitors add further layers to the activity within the environment of *Island*. Who or what, then, is the *Island* referred to in the title?

3.10.2 Sound Design: Synthesis

The sound materials in *Island in Natural Colours* consist of synthesized and sampled sounds. The synthesized sounds were created using my own approach to additive synthesis, along with an implementation of the BOIDS algorithm for spatialization of sounds. This creates swarming, pulsating textures, along with the glacially-paced undulation of sound masses that are heard throughout the piece. The images below detail first the internal workings of the synthesis system, and then step through the BOIDS mapping onto the 24-speaker array for which the piece was composed.

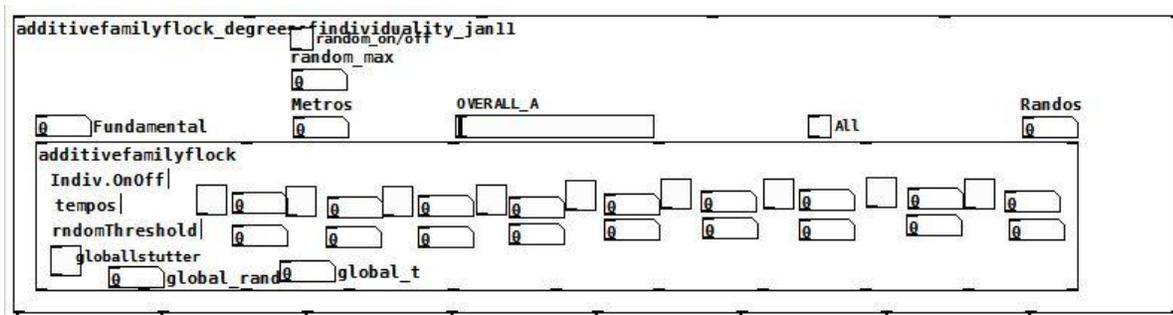


Figure 49: The “Additive Family” synthesizer creates tones made from nine component harmonic partials (the line of nine square toggles turns each of these on and off individually). The frequency of each of these, and the rate at which they are played can be individually controlled

(the number boxes next to each square toggle) or set globally (with the “fundamental” number box).

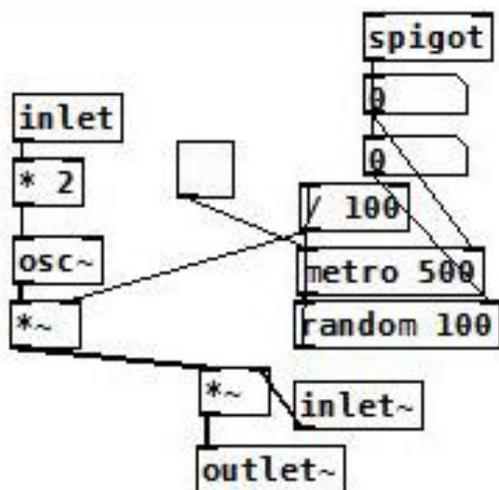


Figure 50: Inside the Additive Family synthesizer, nine modules like the one above create sounds. A single partial (the first overtone in this case, as designated by the *2 multiplier) is synthesized on the left side, while the right determines when and how often it is articulated.

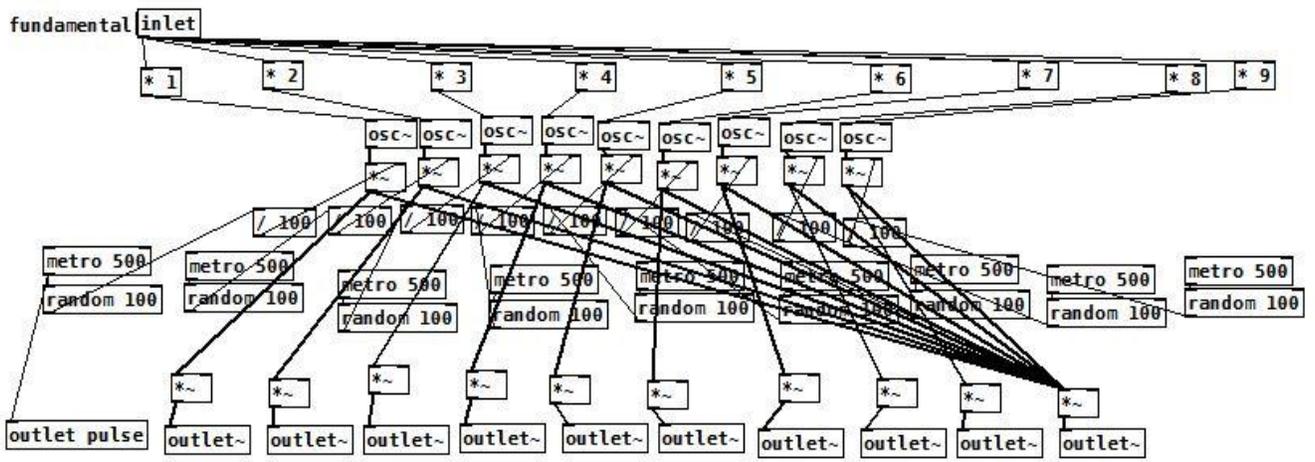


Figure 51: All nine partials can be seen to be multiples of the module shown in the previous figure.

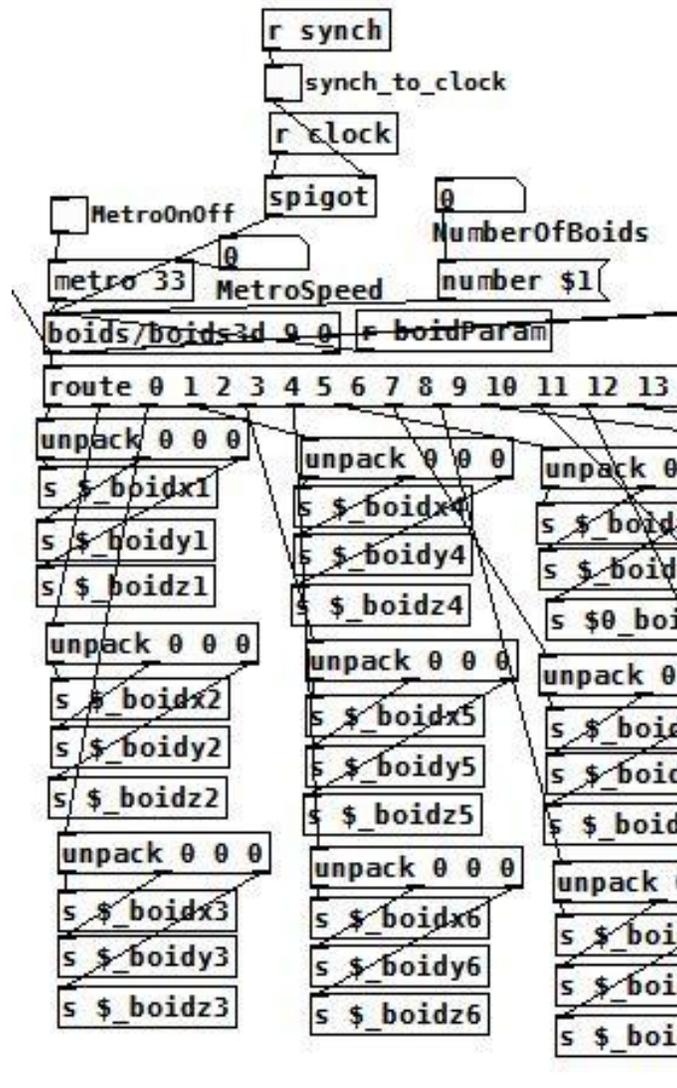


Figure 52: A swarm of BOIDS that defines a virtual three-dimensional space composed for the piece are polled for their x, y, and z positions with each tick of a clock.

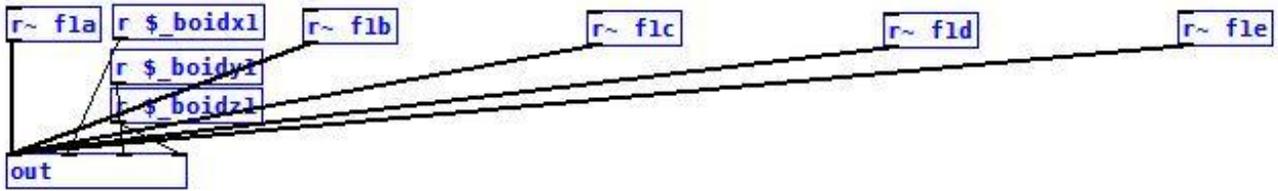


Figure 53: These values are combined with the sound data from the Additive Family synthesizers shown above and sent to speakers for output.

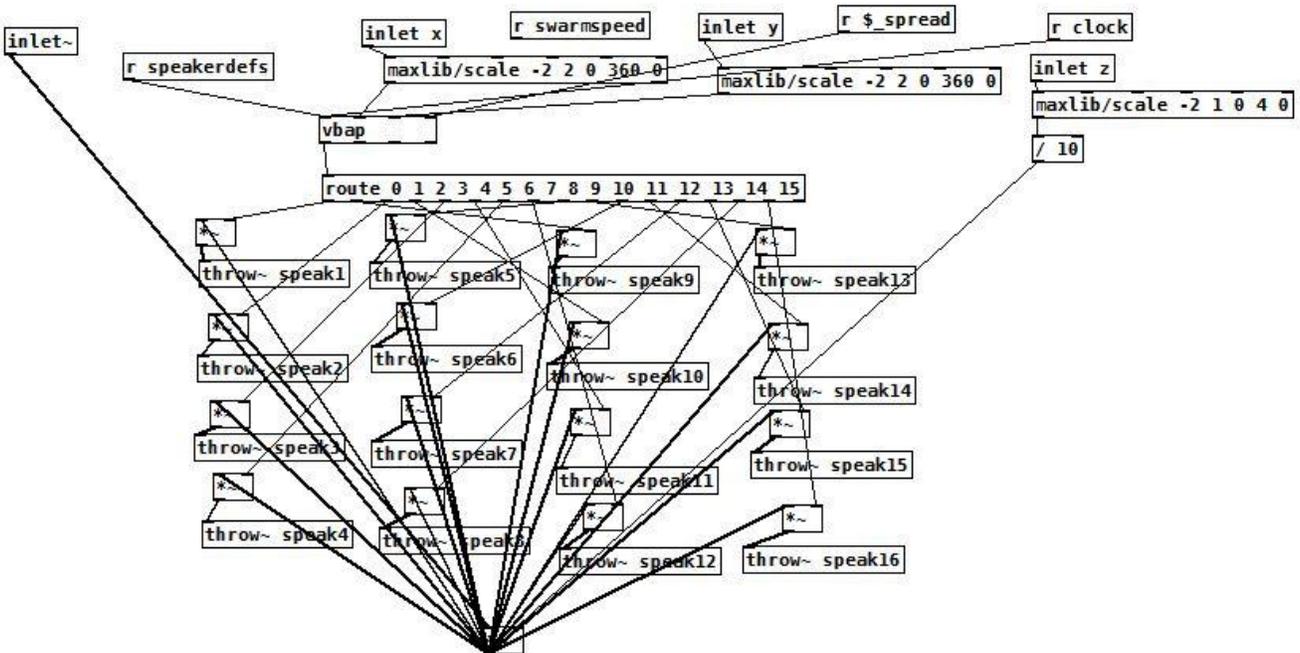


Figure 54: The spatialization is handled by first scaling the values to the appropriate range needed for the speaker array. Then, a Vector Based Amplitude Panning (VBAP) module is used to design a more or less diffuse or point-sourced image of the sound over some part of the speaker array, by sending values to each speaker, as shown. Moving sound is created by interpolating between a present and subsequent state of the sound's trajectory (as represented by x, y, and z coordinates).

3.10.3 Sound Design: Sampling

The piece makes use of sampled material collaged from readings from the 1898 edition of the journal *Birds and All Nature in Natural Colours* (1898). At times, these recordings are vocoded with synthesized bird song of my own design,¹ or convolved with recordings of water environments from around the world. The results represent environments from coasts crossing both oceans as well as arctic, rainforest, and river environments. These are at times presented without processing, and at other times used to modulate the readings from *Birds and All Nature*.

The work follows in the footsteps of composers exploring sound in space and how it is perceived, from Charles Ives to Maryanne Amacher. The piece takes its title from contrasting popular conceptions of nature from 1898. On the one hand, the 1898 edition of the journal discussed above presents an idyllic view of nature as a harmonious and balanced paradise over which humans rule as kind stewards. On the other hand, the highly publicized ordeal of Alfred Dreyfus on Devil's Island, where he was imprisoned in 1898 after being falsely accused of treason against the French state, provides a contrasting view of nature.

Imagining the hut in which Dreyfus was confined, often in restraints, the sounds of birds and the distant surf provide respite from the constraints imposed on the innocent. In the manner of Luc Ferrari's *Presque Rien* pieces, the environment is laid open before the listener, and yet, as in Ferrari's pieces, it is not continuous but obviously constructed. At times the environment presents itself as an uncanny virtual landscape of synthesized and recorded sounds rich in associations. This is coupled with the use of three-dimensional ambisonic techniques for mixing and moving sound which create lush pools of harmonic pressure within the soundscape, leaving behind odd out-of-phase artefacts in their wake. In some moments, texts enter in the manner of unexpected thoughts. Voices are vocoded and convolved with those of birds, other human voices, or environmental sounds, as they do naturally, in our memories.

¹ See the appendicized *Cartesian Birds* for a focused example of this bird song synthesis.

As in all of my recent work, a plurality of interpretive approaches on the part of the audience is encouraged. The themes that I have put forth are images and ideas I worked from in creating this island: part paradise, part hell, with an environmental sound dynamic suggestive of geomorphological process. However, I have deliberately withheld any strongly suggestive visual material in the piece itself. In approaching the installation in this way, I intend to create the conditions for creative aural engagement of the sort that can result in apprehension of processes of perception of time, space, and sound, as well as reflection on how narratives are constituted.