

Shattered Streams is the first soundscape composition that I've made in five years since my first encounter with the works of Hildegard Westerkamp and Annea Lockwood when studying at Oberlin Conservatory. It was important for myself to simplify my motives before making any sound because I wanted to avoid making another one of my pieces. Barry Truax defines a hallmark of soundscape composition as the reversal of the dynamic of control between the composer and their source material (Truax 1996, 60). In the aforementioned five years of time after I last intentionally composed with field recordings, the majority of my music making and compositional practices have been fairly iconoclastic towards sound sources. Typically, my usage of aggressive volume envelopes and cascading chains of ring modulation drowns out most of the identifiable character of the sounds I use when I'm not making synthetic music. My aim with *Shattered Streams* was to use the proposed method of the WSP founders: actually listening.

In terms of subject material, I decided to base my first draft on field recordings going all the way down the Hudson River. I've spent enough time in eastern New York state to have seen the Hudson at its many extremes, and so the subject felt perfect for this piece. The notions of hi-fi and lo-fi soundscapes proposed by R. Murray Schafer were especially influential to this process because it inspired me to categorize sounds by fidelity and perspective. I was falling into the obvious programmatic music tropes that soundscape compositions often lend themselves to. These compositional frustrations were shattered when my friend Claire O'Brocta, a fellow Oberlin graduate, informed me that I was conflating my distant memory of Annea Lockwood's *Sound Map of the Hudson River* with my current thinking. I believe it was my subsequent release of trying to take an intellectual stab at the soundscape composition form that helped me hone in

on the experiential dynamics of what I envisioned. Claire's donation of a 10 minute recording of a creek in the Adirondacks set the stage.

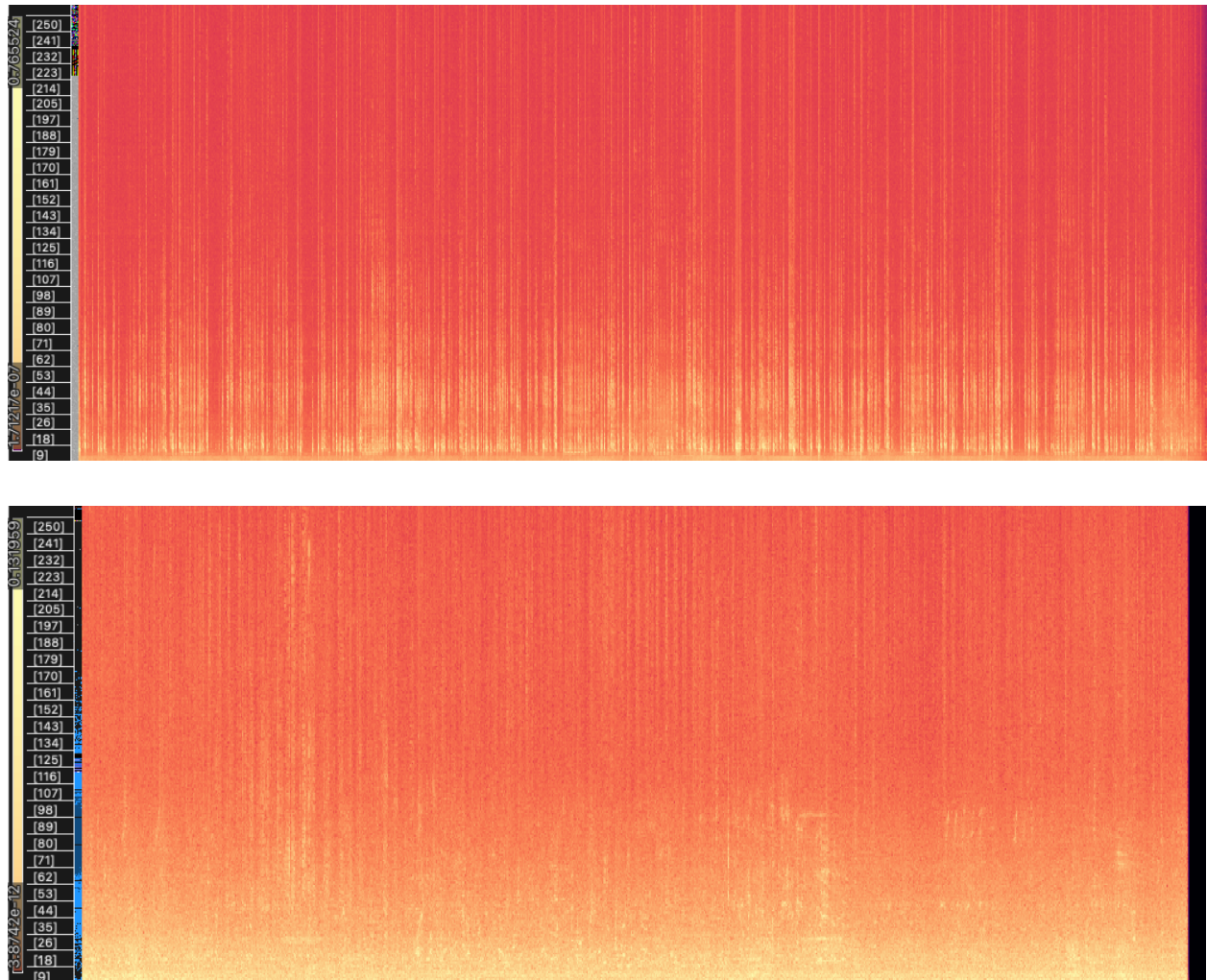
My first impression on soundscape compositions was Westerkamp's *Kits Beach Soundwalk*. In the classroom where I first heard it, there was no given preface for Westerkamp's career or ideologies. There was an appealing psychedelic element of that experience in my mind regarding how she blended between scenes and narration. Her calm narration added to the surreal aura of the piece. In my experience, her voice guided the transitions along because of the nature of how speech processing leads our minds to focus on that timbre. I wanted to evoke the spaciness and elegance of *Kits Beach Soundwalk* with my own methods. As she posits,

How then does soundscape composition fit inside this sonic labyrinth? Does it not contribute to an even deeper disorientation in this growing sound maze? Or can it, in fact, create a meaningful place for listener and composer despite the fact that it is experienced schizophonically? (Westerkamp 1999, 1).

While Westerkamp's work was more impactful by experience, I am closer aligned with Truax because of our shared usage of granular synthesis techniques. Being in proximity to a lot of the people involved, I've been using tools and techniques based around the FluCoMa project for granular and concatenative sound synthesis. In particular, I used Rodrigo Constanzo's SP-Tools as my main toolkit for generating and analyzing sounds because it elegantly simplifies the basic functions of the FluCoMa toolkit.

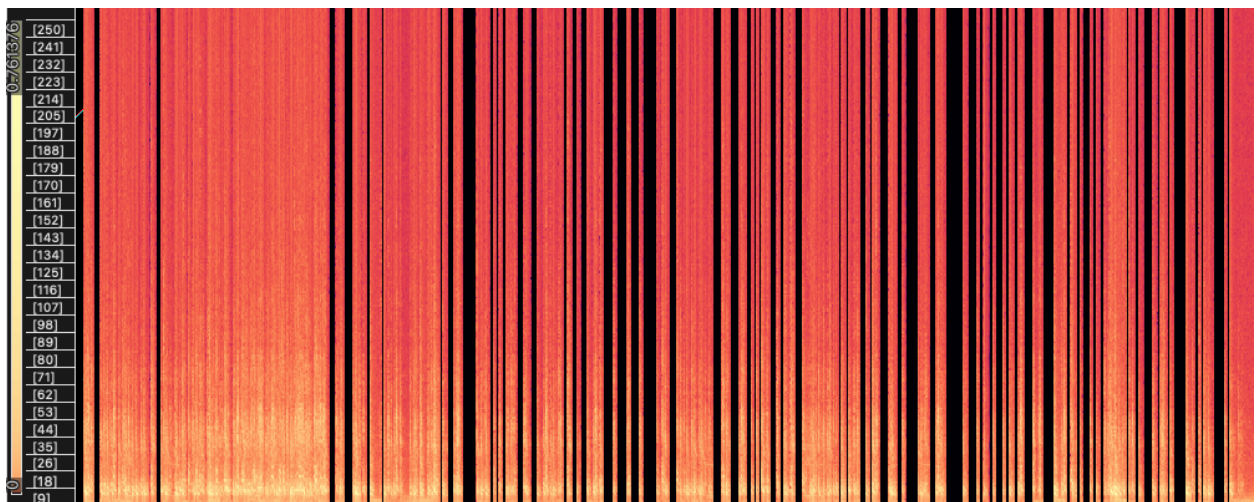
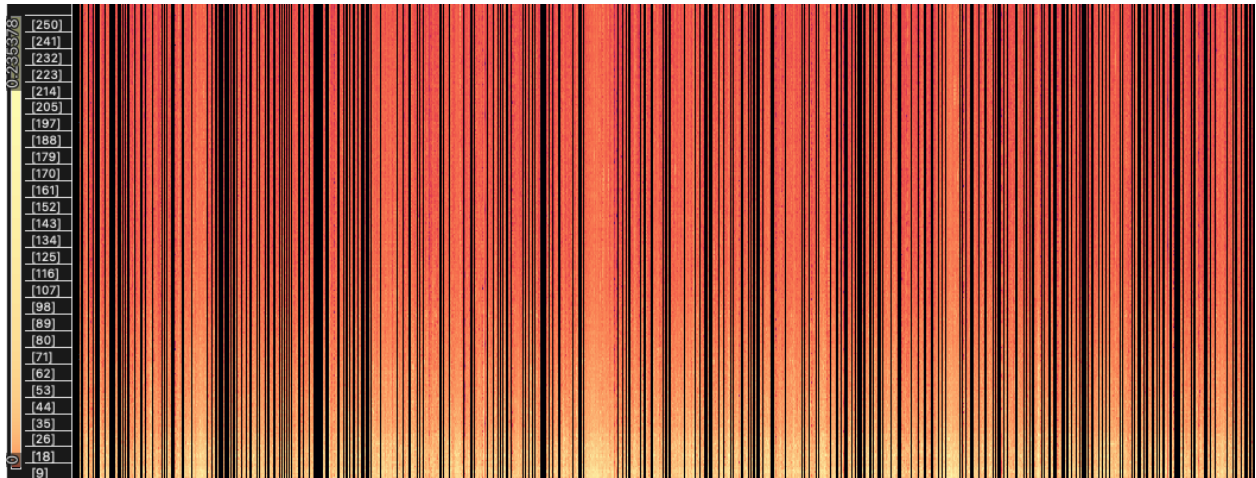
After mapping out a sufficiently diverse folder of samples across Google Earth, I picked out particular lo-fi and hi-fi soundscapes that had good transients. The clearest hi-fi example is

displayed below as a spectrogram, a recording of green frog and bullfrog calls from the west border of Vermont. Below that is the clearest lo-fi example, a recording outside of a restaurant in New York City.



For all of these transient-heavy soundscapes, I used REAPER's dynamic split option to create hundreds of separate granules. Then, in Max MSP, I ran an analyzer that automatically measured audio descriptors such as MFCCs or spectral centroid in a JSON file. After selecting pairs of sounds to mix with these analysed corpuses, I used Constanzo's live analysis objects to replace each input frame of un-chopped audio with the closest match in one corpus.

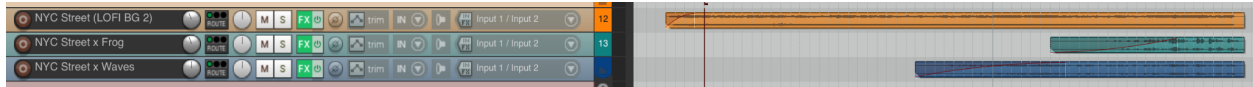
Below is the recording of the frogs processed with the sounds from New York City alongside the recording of New York City processed by the frogs.



At this point, it's important to note that what the FluCoMa tools do best is handling and reducing the amount of dimensions in each frame of audio data. Our ears should ultimately hear the distinctions between sound grains better than our eyes could with a spectrogram. Our brains are not great at comprehending more than a few dimensions in the first place, and the ultimate effect is supposed to be aural.

The process of composing the rest of *Shattered Streams* was fairly streamlined once I had a set of each soundscape with variations. It was shockingly elegant when putting it all on the

timeline, the form primarily dictated the crossfades and variations of each sound. Recalling the lo-fi and hi-fi dichotomy of Schafer, I found that the rhythmic coherence between the hi-fi sounds concatenated against the lo-fi sounds worked in the favor of transitioning between soundscapes. Some hi-fi sounds have crisp noise that interferes with the already-noisy lo-fi sounds, and some give formal direction



Some further basic modifications were given to each resynthesized audio track. Pitch, for example, was extremely helpful for melding the guttural green frog sounds in different regions. Around 3:00, the frogs are pitched down by two octaves to fill in the low frequencies as the piece transitions into city recordings with much richer low frequencies. Those same frogs are used again at their original pitch to give a sense of return to the listener. Lastly, because the frog calls are inherently transient, whether something is resynthesized using them or not adds an element of rhythmic coherence between soundscapes. Sometimes the frogs can call at a natural rate, and sometimes they'll match the rate of chatter on the streets.

I think incorporating the lower levels and finer details of data control should be done progressively and should not distract from the artistic goal of any piece using analysis. Using my ears and not being technical were the biggest benefits for my confidence in making *Shattered Streams*.

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