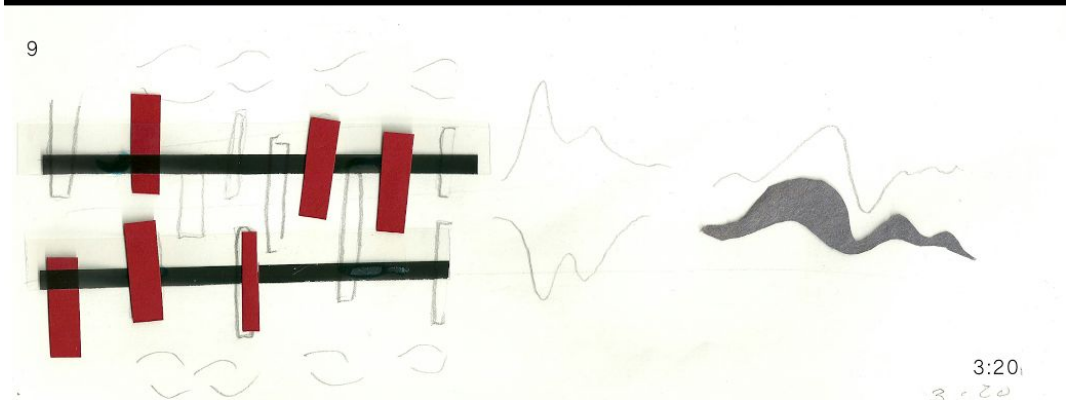
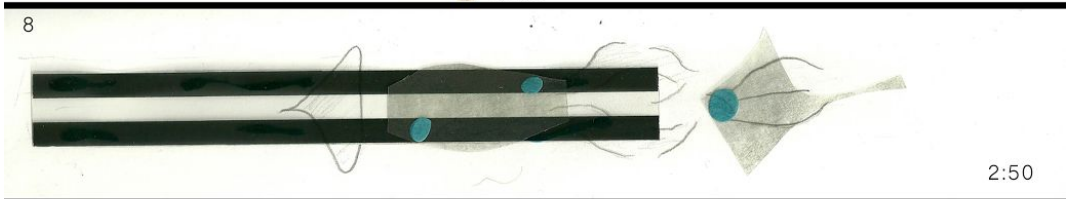
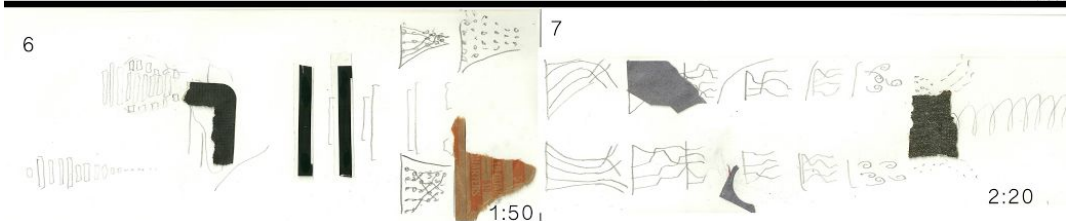
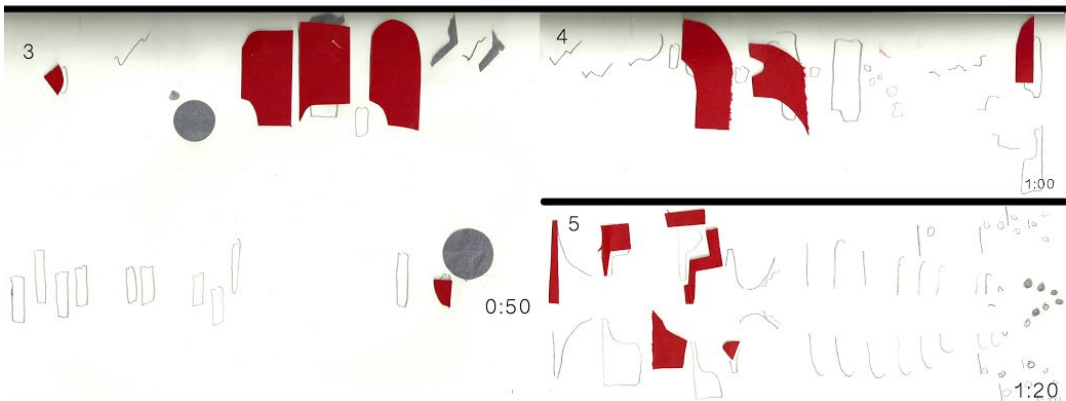
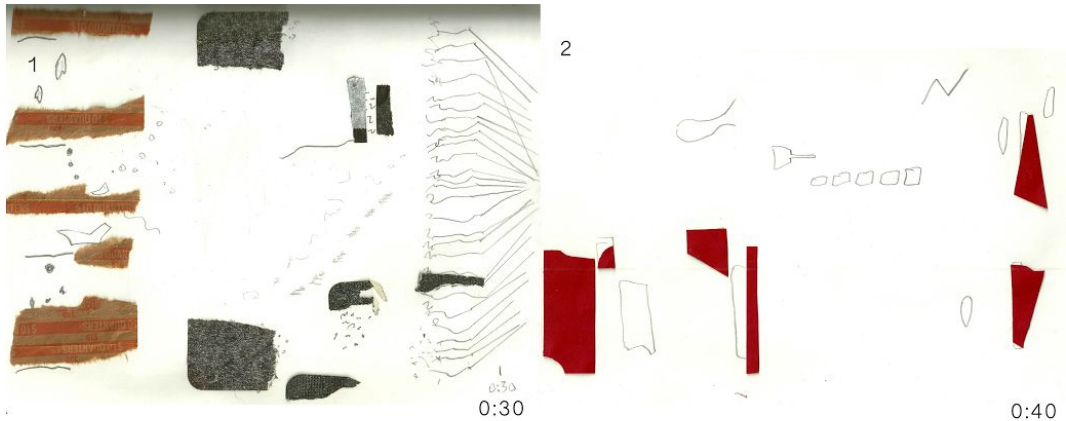


Elastic Pressure System



The racquetball court is one of the most modern athletic spaces I have encountered. Its primary color palette with colorful scribbles and scuffs on the walls and floor is reminiscent of a Cy Twombly piece. The sterile environment facilitates concentration, isolation of minor details, and allows the player to distinguish the rapidly arriving serve. The space also forces the player to think compositionally about the reactive and strategic placement of the ball, its elasticity, and the differences in trajectory with varying force.

Elastic Pressure System investigates the microstructures of sonic reverberation generated from a physical object bouncing within an acoustic system. The rhythmic elements that emerge from spatiotextural structures in the piece are dictated by the acoustic elements of racquetball play. I approached composition visually, as if slowing down the acoustic phenomenon using a high speed camera shooting at the speed of sound. Envelopes controlling spatial orientation fade into the spectral and amplitude domains, confounding pitch, instrumentation, and localization.

During recording, I noticed the acoustic phenomenon was much more complex than just a long reverb tail. An elastic glissando would occur when the ball bounced off the floor depending on its speed. This was especially easy to hear when located in a "sweet-spot" (maybe a room mode). After analyzing recordings of play made with a cheap pair of binaural in-ear microphones, I attempted to mimic the physical rhythms created by the trajectories of the ball with each serve.

Physical recordings informed the electronic interpretation. Rhythms were generated using an envelope follower technique from cutup recordings of the ball bouncing around the court from serve through play. These recordings were run through an analog modular synth to trigger a simple subtractive monophonic patch. The difference between excitation and trajectory could represent the separation of the elastic object itself from its reverberant acoustic imprint. I approximated these rhythms electronically using cyclic pulse to trigger a series of clock dividers, fed back to attenuate its own cycle, creating an organic sense of meter (between 0:30 and 1:05). The actual sample of racquetball play occurs between 1:15 and 1:45.

At 1:40 through 2:20, a new haptic electronic instrument solos. This one is an electronic touch-based system used to mimic excitation, bounce and reverberation. I routed an FSR into two oscillators and a granular processor such that the pressure modulated FM amount and the granular pitch effect. The existing rhythmic approximation in parts 2-5 was mapped to modulate filter and timbral effects.

Just before 2:20, the grain is frozen, time slowed down to investigate the reverb tail. A recording of the physical ball enters again at 2:50 until it's energy dissolves and an electronic representation accentuates the loss of energy, attenuating the bounce into a rolling silence.