Assignment Two - “Then”
Matthew Halpenny
CART 360 - Tangible Media
November 3, 2017

Research Questions

1) *Think of a context and an environment where you would like to intervene. Where will you present your project? Who is it made for?*

My project, the conductive glove, is an attempt to liberate modern performance artists, specifically targeted at those doing digital performance pieces. Those performing digitally often show up to their performances with their laptops and some auxiliary gear. Because of the laptops demand for tactile keypresses and unintuitive gestures on a trackpad the artist is often left unable to be expressive. Usually those who do still perform while using digital equipment have to loop their project on their laptop and then perform separately from that loop. Because of this using digital gear for performances is slightly frowned upon as it seems cheap or uncreative. I personally feel that digital innovations should not be held back by the status quo of tangible input that we have become accustomed to, and I want to change the way performers use their equipment. My conductive glove is capable of sending input just as a keyboard or trackpad would, but it allows the user to disconnect from the original digital interface and use their equipment in a novel “hands-free” manner. The accelerometer and gyroscope on the glove offers the most novel way to communicate with these devices. The XYZ data can easily be transformed and mapped to a wide range of equipment allowing the user to control numerical shifts usually dedicated to knobs, sliders, buttons, keys, etc. Because of this I will be presenting my project in a large room that can be used for mobile performance.

2) *Think about the kind of relationship you wish to foster between your users and the artifact or installation. How can you use your project to destabilize the users and make them reflect on themselves, their environment and society?*

The conductive glove disrupts the traditional relationship and artist has with their digital equipment, primarily their computer. Often artists who want to move beyond the screen search for expensive analog equipment to add a performative element to their craft. My glove further disrupts this paradigm by telling the user they can stay digital but instead change the way they interact with their machines rather than switching machines all together. This brings back the performative element to creative acts. Users will now need to ask themselves “how will *I* perform this part”. The user is brought back into the equation which means they need to prepare themselves and their space for the performance rather then their tools. As mentioned in the example projects section a great reference to this is Curtis Bahn / Tomie Hahn’s Streams, where the performer moves their body through space triggering sonic geological artefacts

spread through the room. The performance is dependent on body motion but also codependent on these sonic spaces, the cannot be performed without the other.

3) *Think about the notion of empowerment. Is your artifact really helping or challenging its users in any way or is it just another psychological prosthesis?*

I cannot argue that my glove is not in a sense a prosthesis but I fully believe it challenges the user through how they interact with technology. They must move their body to input commands, they are not coding natural language through key strokes, nor clicking, pointing or dragging but instead using natural gesturing to communicate. Having a wearable interface using natural gestures allows a symbiosis between the performer and their tools giving them a new sense of control and bringing them closer to their practice. The glove has the ability to adapt over time and over devices allowing it to mimic natural motion for a variety of tasks. Each performer then has the capability to choose which gestures and movements will impact what on stage and are challenged to create novel ways of creating sound. Traditionally this has been left to groups or collectives to divide performance and sound to different members but now each member is challenge to think about their body as a tool rather then a single agent.

4) *Think about something meaningful. What are you trying to tell us with your project?*

With this project, I am trying to say that our current status quo for interacting and performing with technology can be flexible and must be adaptive. A keyboard and mouse is great for certain tasks but we should not solely rely on them for input, we must grow with our technology to ensure we are creating new technology with us, and not just for technology's sake. Electronic compositions have rarely deviated from their mechanical performances over the past 30 years. The ones that do often crop up in groups and duos who have a specific person dedicated to performing. I really feel musicians/artists could benefit from a shift from this status quo and allow a range of people, whether solo or groups, to have more engaging performances. With each person that adopts gesturing in their performance we also have the potential to gain personal style. No person has to perform their modulations in the same manner which leads to unique character as seen in classical instrumentalists who often have a personality to the way they perform. For example, a violinist might move their body with their bow in a very characteristic manner, or might apply tremolo, rests, swing, etc. The difference between their styles and modern electronically style is in electronics styles are usually heard not seen as they're performed inside instruments. With classical performers all of these characteristics are accompanied by body motion as the body is closely involved in the process.

Example Projects

1) *Pamela Z*

Pamela Z makes extensive use of her hands and sensors during her performances. She frequently uses a box with ultrasonic sensors and an Arduino to manipulate sound live on stage. She later on moved her sensors to a wearable brace that detects motions using an accelerometer. Her idea of using the body in her work is very similar to my idea with the wearable glove. The difference in our two projects is she still relies on a laptop often in her sets. It seems her wearable is deigned to manipulate a single aspect of sound throughout her performances. Although her work sounds great I still find theres a limited capacity to her technology. Mounted on her wrist the interaction isn't as intuitive as it could be. It tracks motions, yes, but humans by nature want to use their hands, not just move their arms. In fact psychological studies prove the hands take up the largest percentage of cortex space (in relation to their size) than any other part of the body - meaning we like to use our hands. Pamela has been creating experimental music/body art since the 90s and has a greatly refined experimental side to her art, a great project that encapsulates this is "sensorCHIP", an electroacoustic performance trio where Pamela Z uses electrodes on her body to create MIDI signals. Another main difference between the two projects is Pamela Z often manipulates a single aspect of her performance with sensors. In the ROOM series she mainly manipulates her voice live by moving her hands around the sensors perimeter. She also uses her sensors to play back audio samples but in a very linear way, such as typing in the air to trigger typewrite samples. My project will aim to encapsulate more gestural options triggering and manipulating a wide variety of sounds.

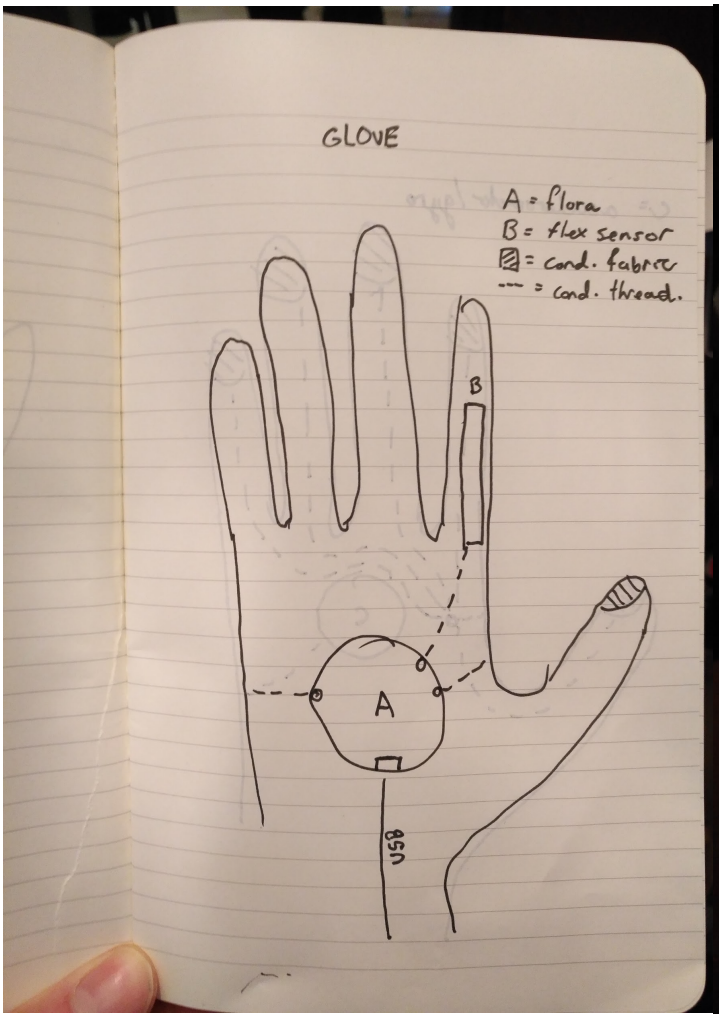
2) *Miya Masaoka*

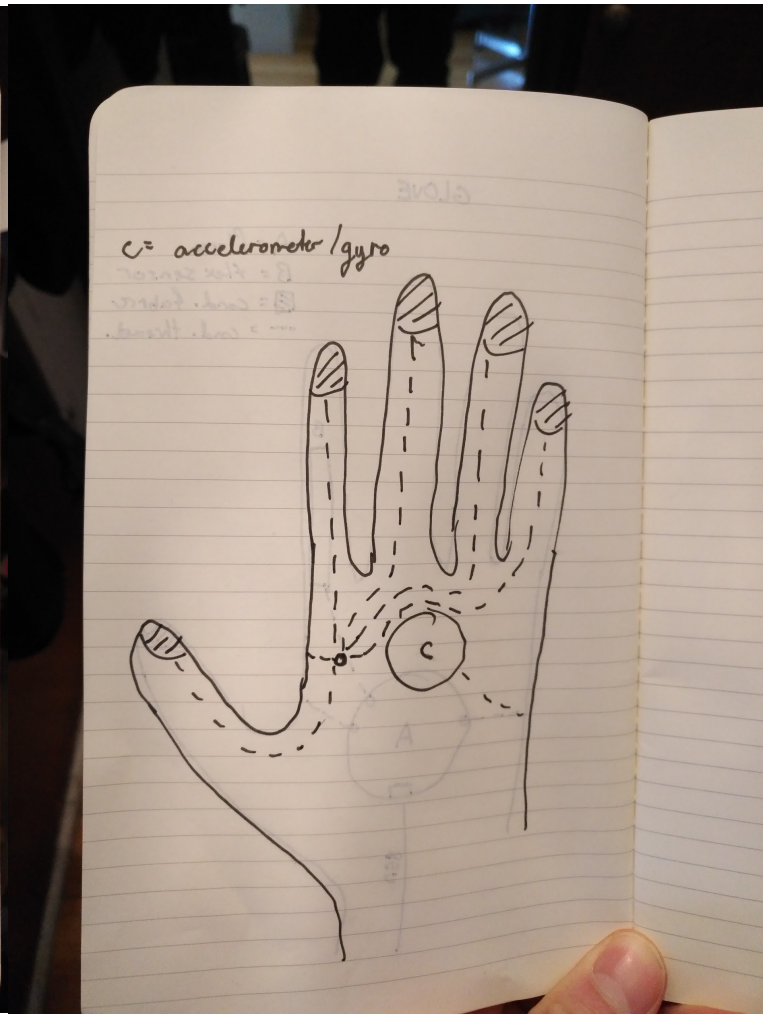
I discovered Miya through researching Pamela Z as they worked together on “sensorCHIP”. During that project she made an extremely interesting piece called the “Koto-Monster”. A Koto is a Chinese instrument used for over one thousand years, and in her words is played by “plucking a particular string, the right hand and arm gracefully rise, and with great ritualistic care, hold a hand position in the air for several seconds—fingers are curved towards the inner wrist requiring a "limp wrist" articulation that resembles bird’s beak and neck—reminiscent of a hand position in Tai Chi”. Also concerned with the loss of ritual and performance in music, she created an electronic Koto that brings back the graceful body motions meant to accompany this sonic instrument. “Aural gesturalism” is the act of accompanying a sound with no intention of making a sound in itself and has frequently been used by musicians as a signal for acoustic control. Her final prototype used four ultrasound sensors controlled by rings worn by the performer. These rings triggered koto samples depending on their gestures in the X and Y axis over the instrument. In relation to my Conductive Glove, I also seek to bring back gesturalism as a control technique between computer and performer. The user in this case does intend to create accompanying sound (as in Koto-Monster) but they have access to what they control through raw code. So the difference between our projects is each musician is still allowed to have flexibility in their stylistic control, one may increase the impact of the X axis to spike acoustics like a burgeoning orchestra, or one may lower the impact to create graceful movements that translate into melodies. Koto-Monster was simply designed for Miya and her control method.

3) *Curtis Bahn*

Curtis Bahn is a composer and electronic artist that uses real sonic instruments alongside sensors that manipulate each other when fed into Max MSP. He frequently plays bass on stage and has external sensors that capture his gestures, distance, and posture, in addition to sensors on the bass itself that capture touch. The piece of his that most intrigued me when thinking about my project was one called “Streams”. Streams is a performative piece in collaboration with Tomie Hahn. Bahn designed a wearable sensing device that allowed Hahn to move about her environment triggering sounds. “With each gesture "Streams" recalls bodies of water and land, technology, a flow of information, transmission, and liquid states. Through technology, the performance toys with the ephemeral quality of sound and the physical memory of time, sonic space, and sensory experience”. The unique aspect of this performance was it was not a dance/music collaboration but a piece that created sonic entities with the body as an instrument, not an accompaniment. Streams really made me think about “sonic geography”, instead of using my glove as a map to a virtual instrument maybe it could be used as a map in real space. Although I do not yet have the sensors to do this I would like to pursue this in the gloves future. My glove will instead be more tangibly accessible with multiple sensors immediately accessible to the user to customary map as they desire. But this customization potential does allow for the exploration of “sonic geography” in other projects.

Concept Sketches





Research

Miya Masaoka:: http://www.miyamasaoka.com/music/interfaced_koto/index.html

Pamela Z: http://www.pamelaz.com/sensorchip.html
https://vimeo.com/107012504
https://vimeo.com/93931033

Curtis Bahn: http://retiary.org/idea/idea7/idea_7/curtisb/curtis_b.html
http://www.arts.rpi.edu/~bahnc2/Streams/streams.html