

CART360 Concordia

AUDIRE

Final Artifact Report

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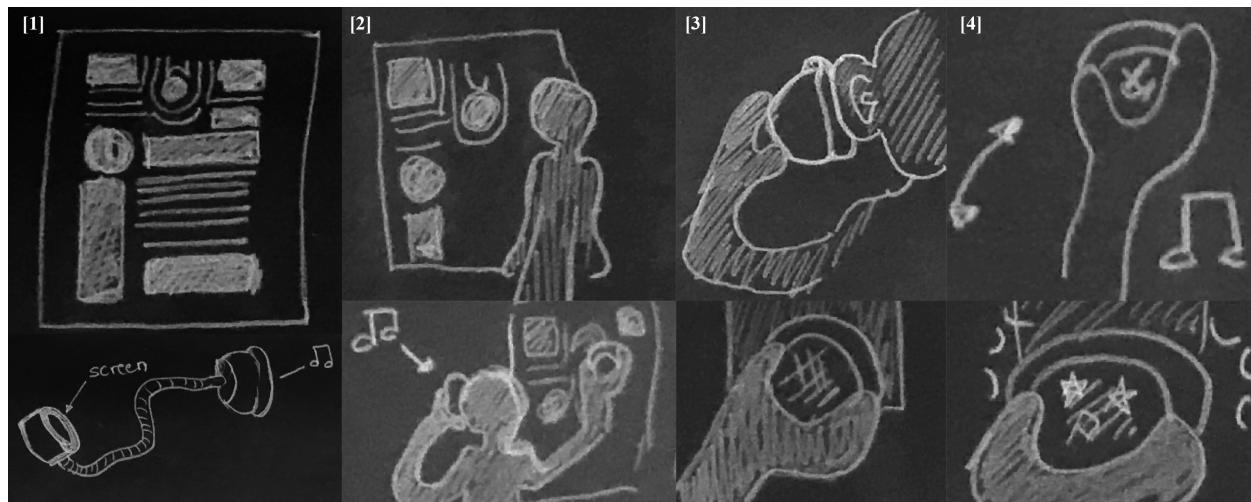
<https://github.com/melanieabbet/CART360>

THIS

Experience

I decided for this project to think with what can be transmitted through our senses and in which way an individual perceives his environment. After reflection and for practical reasons I rejected both senses: smell and taste in favor of focusing on one or more of the other three. I finally choose to create a wearable object that allow people to discover their environment with a new perspective. The world is made up of a multitude of different facets. What can be perceived from these facets is ultimately only a very small part of it. That it is necessary to open up to new experiences, reflect on oneself and leave one's zone of trust to get a different insight into things than the usual way of perceiving them. I question the human senses and their reliability, what is perceived from reality and what is reality as well as what is considered as evidence. What personality in addition to our physical capacity or personal feelings has to do with our perception. So ideally with this project I will question the perception we have of the world. The user will be challenged to perceive and interpret something unknown in a completely unusual way. In this way I think that the appearance of a certain questioning of the idea of oneself, the way in which the perception of things is influenced by an individual is possible.

Storyboard



- [1] The user has an object and see just a black and white image
- [2] The user takes the object in order to discover the poster
- [3] One extremity is place on the ear the other on the poster
- [4] By moving the object will emit sound and give an visual and colored feedback through the little screen. The user can no wear color and play to create sounds.

My first scenario was complex and not totally meaningful, it was a sort of mixed idea concept. after some brainstorming with the teacher I decided to redirected my experience a bit to have it more focused. I also decided which part would be the more important to be implemented for the final artifact. Finally, my object would not have a screen with visual and colored feedback but perhaps just the coloring code. There is no real need for a poster as it would take place in the open space. I kept the idea of making sound with the colors and decide to make it wearable easy to take out for discovering.

Inspiration

Neil Harbisson: Mr. Harbisson suffers from severe color blindness, achromatopsia. In short, he only sees in black and white. In 2004, however, he had a device implemented that allowed him to interpret colours in a different way. Its antenna is actually a camera containing a device capable of capturing the frequencies of colours and converting them from which it can transmit them as sound waves to its brain. The process he followed made Neil Harbisson the first cyborg on earth.

https://www.maxisciences.com/couleur/neil-harbisson-l-homme-cyborg-qui-entend-les-couleurs_art32187.html

The sound of taste: A poster on the theme of taste with different color representing the 16 different spices on the board. Each colour representing each spice was then linked to a different musical tonality. All this is printed in conductive ink, which makes the poster tactile.

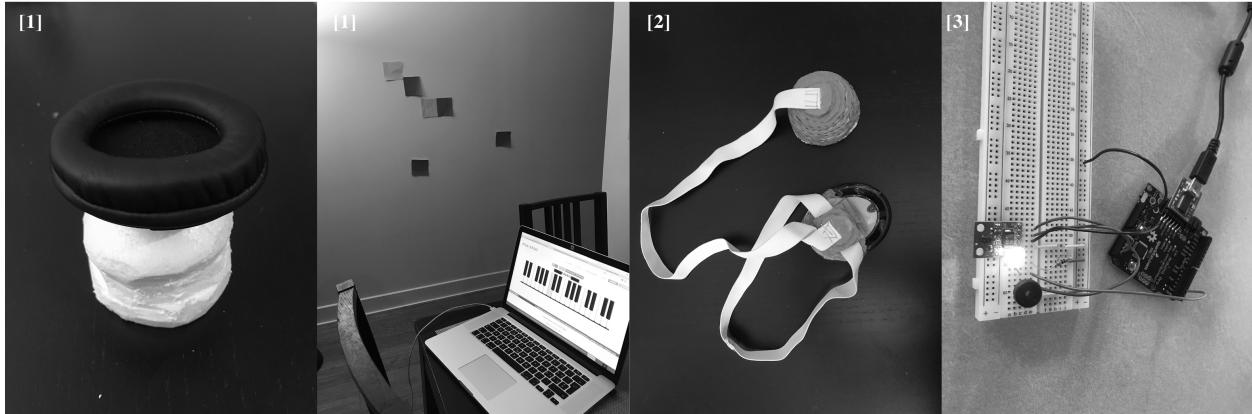
<http://www.novalia.co.uk/portfolio/schwartz/>

Patricia Bérubé: Her master project focused on tactile perception, has the goal to transmit colors by the touch with the help of patterns in order to make Art approachable for people suffering from vision impairments.

<https://nouvelles.umontreal.ca/article/2018/05/11/une-etudiante-permet-a-des-non-voyants-de-voir-des-tableaux/>

THEN

Prototype



For my project I imagine different Prototype. I actually had in mind an idea of how people could interact with my final object, however I realise that my initial design, the embodied interaction I imagined could not be the only way of interaction to listen to colors. So in order to be sure that the design I imagine wasn't unnatural for the user I made A first wizard of oz. prototype [1]. Which should allow me to decide early if I needed to "advocate" direction. I explain the basics function of the objet to the user tester (one side is earing and the other a detector) and ask them to perfume an action (listening to the different colors of the wall). In background I manually did the feedback. This prototype allowed me to respond to those different questions:

- Does the person would let the two object together or separate them?
- Does the person would come close to the wall, touching it with the object?
- Does the person would look at the color they tested or going through it "blindly"?
- Does the grip afford to be hold the way I imagine and the speaker to be put on the ear?

My second prototype [2] was a bit closer to the final form and had the possibility to be stick on the head, this one gave me a more defined inside about the body involvement I wanted to have for the experience. The last Prototype [3] is an electronics one, it is a test and an analyse of the sensor I wanted to use in my final object. It gave me more information about the environment and the way I needed to build my object to make it work full fully.

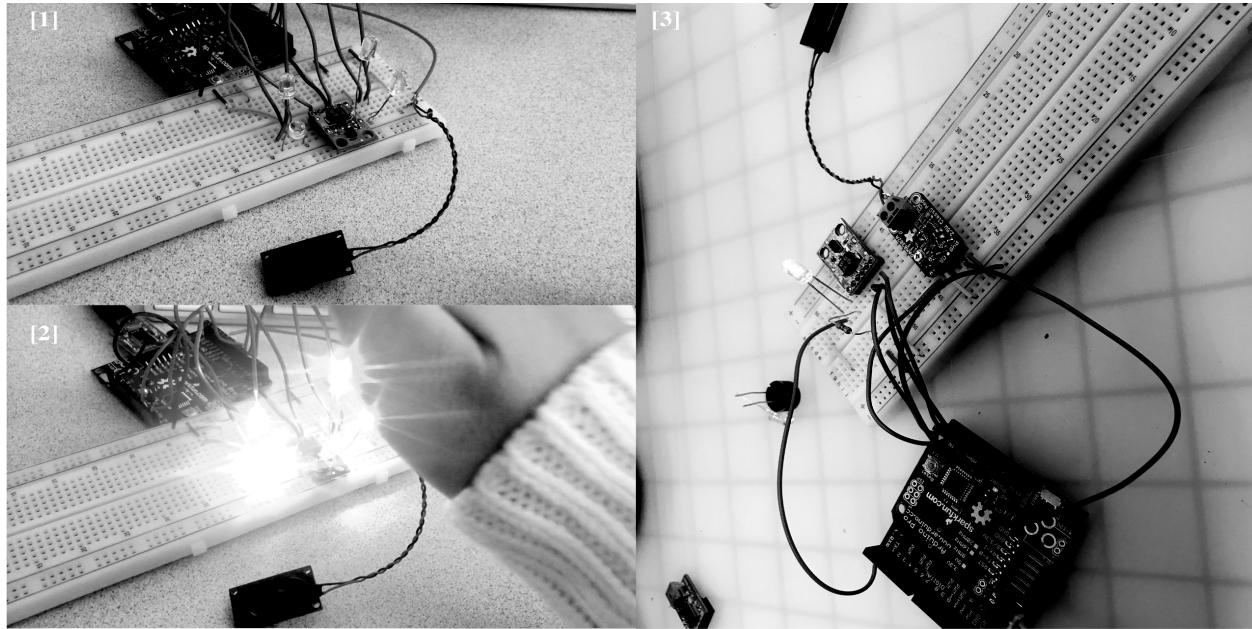
Evaluation and evolution

The Prototype phases gave the following thought, keeping the two part of the object close together involved a more intense movement of the body. The possibility to stick it on the head in order to have a hand free is negative to the experience has the user is less involving and concentrate on his action. The object should have a certain weight and the link between them a certain presence to afford to be put on the shoulder and finally the sensor need to have a certain distance with surface and need a well-lighted surface. To resume I take distance with some side functionality like having it fixed on the head or make something so that people cannot see the colors they hear. I decide about the investment from the body user I wanted which is determined by the distance of the sensor part and the speakers

Part (about an arm length) so that the user can reach more easily different area and still is free of exploring easily. The part with the speaker afford quick easily the fact to be put on the ear but for the other part I need to define a good grip, which I tested a bit already with my prototype. The light use for the sensor also a plus, by turning on and off near a surface it afford the idea to light something and the user would instinctively understand that something happens with the contact to a surface. As said before I believe my object should have a certain weight, so that the affordance to be put on the shoulder to be carried is more efficient. For that I would probably use woods as material to build my object. Wood is also warm in the hand which is a good point. I have to figure out to a way to have a certain thickness to the able between the two part and use something that is comfortable for skin contact to wrap it up.

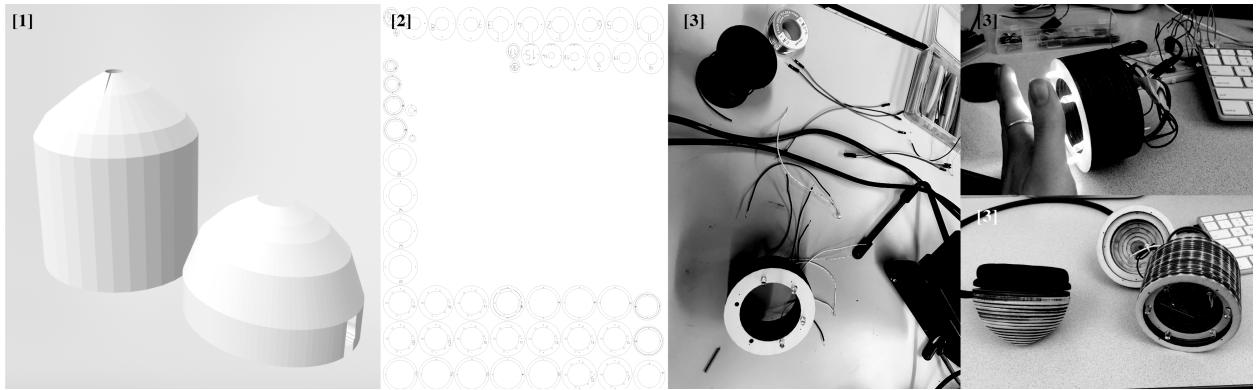
THAT

Realisation



For the electronics part I decided to include a circle of white LED to have a good lighted surface for the sensor [1]. I changed of speakers, I initially wanted to use the headphone previously use for the prototype but for practical reason decided to move for a little one. However, I kept some of the materials to the original speakers and implemented it in the final object. As the sound should not me to loud I did not implement the amplifier to my final object [3]. I programme the LED to light on detecting something approaching to a certain distance [2] and later I combine the on/off of the sound too to this distance. My first prototype was just using the range of one color to produce some sound. Then using the Mozzi library (<https://sensorium.github.io/Mozzi/>) and the APDS-9960 sensor library from Sparkfun (https://github.com/sparkfun/APDS-9960_RGB_and_Gesture_Sensor) I try different way to get a better sound to the ear. Using three different example of mozzi library I modified it to implement my colors variable. The first version is made out of the AMsynth example, I manage to create a little melody out of the three colors, I kept an random value done by the example to have a little tremendo. This example is satisfying to ear, however even if the different colors clearly impact the sounds it is difficult for the user to fully understand the manipulation and have control about the sound/colors. The second version is made out of the Echo example, however I barely could have some satisfying sound output. The last version is made out of the FMsynth example, this example tale in account just two variables therefore I used only two color, the impact of the color is also clear and the user understand fully the process however it could

become boring and the sound is not really pleasant. Therefore, I decide to go on for the presentation with the first version that is a bit more mysterious.



For the building part, the electronics components (see schematic) had a big impact on the final object form, the size of the battery the board and the component play a big role. I decided in order to have an object as small as possible to put the component vertical inside the object. I take measurement and made two 3D form [1], with Slicer I prepare those two form for the laser cutter [2]. I glue then the part together sands them down to get a comfortable grip and implanted the element [3]. I decided to wrap the cable with a cord and to let the material raw without paint. I first thought about making an high-tech perfect object but realise that making it looking like a super connected object would mismatch with the concept of rediscovering the environment, take time to be disconnected and take care about where we are instead of be stoke to a phone for example.

Final Object



My final Artifact: “Audire”, coming the word listening in Latin. I choose this name because of his meaning and the world “dire” (to say) that it contain, like if the object himself were asking to listen because our environment has something to say.

Insights & Future Development

I learn a lot during the development of my object, I learn a bit more about how Concordia work, and I meet new people. I was happy too to be able to find some materials in this new town. I am quite satisfying of the final product, the look and the experience, I get my main goal having something functional and that is playful to the user. However there still be some element that I liked to be implemented. Ideally the object should be a bit smaller and there is probably component that could fit better inside a smaller object. I also get some pain with programming as the board were not recognize by my computer, the library Mozzi is too really complex and it took me time to understand the possibilities it offers and the way it work, I am still not sure that I fully explored this library and therefore with more time I think that could be cool to play and test more around the sound and have perhaps the possibilities to have different mode implemented in my object. The sound I choose, that is implemented for now is a bit experimental and difficult to fully understand and control for the user, but I believe it make it interesting and challenging. Ideally I would have to make some test with the version I have to know which one is the best receive from the people and to adapt them in a second iteration regarding the feedback receive. What I did not integrate and would be absolutely necessary to be fully functional is a way to turn the battery on and to recharge it for now it need to be open and disconnected each time. The fact that my object is meant to be use in open air means too that It would need to have a certain resistant to water, for now the woods is raw and the electronics would not be save under the rain so this point could be adapted in the future.

An additional function that I like and that I put aside due to the time is to keep a trace of the different session of color discovery, I still think that in a second version of this prototype there could be a connection to a website, where people could keep trace, retrieve the sounds of their journey. They could share and heard all the melody they created during their discovery time. People could have access to the sound of other people and feel the needs to go there where the sound was recorder to explore the environment by their own. I also still have the possibility to add a screen that would give the color code so that user have more controlled about the sound they create and get another direct feedback which could give more clarity of how the colors and the sound are determined.