

Musical instruments have varying degrees of action affordances, or ways in which someone decides the possibilities of interacting with the instrument. Theorist J.J. Gibson assumes our decision making process is based on perception of physical inter-actions and not visual perception (Ware 22). Musical instruments usually present a complex set of affordances; the interface is normally difficult to “master” an instrument without time spent on practice and instruction. Stringed instruments have a conventional set of affordances that correlate to the physics behind the instrument. Sound is created by vibrating a string, which becomes amplified using a resonating chamber and/or a magnetic pickup. The player manipulates the sound by changing the string’s pitch. This is when the action affordances are presented to the user. Does the user press down on the string on a fingerboard to control the pitch? Does the user simply pluck the string using their fingers? In an effort to understand new action affordances in the world of stringed instruments, the Bass Whamola Stick project, which this article documents, was started in December of 2002.

Bass virtuoso Les Claypool was returning to his hotel room one late and cold evening on February 12, 2001. Having performed a concert earlier that evening in Burlington, Vermont, two fans approached the musician before he turned in for the night. The two fans gave him a peculiar instrument - an aluminum square pole with a lever at the top controlling the torque of just one string. He started playing with the instrument and began hitting the string with the drumstick. We can assume Claypool, in an effort to create a unique and compelling sound from the otherwise simple instrument, made an equally unique gesture on the affordances of the instrument.

Two days later during a concert performance in Boston, Massachusetts, Claypool brought the instrument on stage that he introduced as “Steve Whamola”. He played the instrument in a very improvisational fashion, using the lever and fingerboard to control the

pitch of the string while hitting the string with a drumstick. It was this first “Whamola” performance that would soon become a staple in Les Claypool’s stage performance. This led to, not only a recorded track on his latest album *Les Claypool’s Frog Brigade presents Purple Onion*, but the inspiration for this project.

At the beginning of the project, I made some sketches based on Claypool’s “Steve Whamola” which would serve as a rough blueprint for the instrument. Because Claypool’s instrument is certainly one-of-a-kind, I only had photographs and my own experience of watching him play it for reference. I wanted to build my instrument as much of a replication of Steve Whamola as I could. Soon, I realized I had neither the time, budget and access tools that I would need to accomplish an exact replica of Claypool’s instrument.

I had to make several compromising decisions on the build of my Whamola stick. First, I quickly realized I would not have access to tools or machinery to craft the aluminum body of the instrument. While looking for any pre-cut or pre-built material I could use as the body for the Whamola, I settled on a solid oak handrail. I selected this piece based on its pre-formed shape to accommodate being held with my hand. I realized at this point, that the construction of the Whamola would offer important lessons in affordances. It’s important to note that my decision making process at this step was directly influenced on my perception of interacting with the raw material, i.e. holding on to a handrail.

I also wanted to use a very sturdy piece of wood that would be hard to damage (I was fearful of my inexperience with power tools) during the build process. I would later discover that using oak might have been too conservative a choice as the hardness of the wood led to some counter-productivity issues.

The next compromise I made concerned the presence of a fingerboard. Typically, stringed instruments feature a fingerboard or fret board, which is mounted on to the body of the instrument. However, due to the shape of the handrail, I felt this would not be

necessary. Once again, the affordances offered by the handrail effected my decision that I would not need an additional piece of wood to serve as a fingerboard. My thoughts were that the flat side of the handrail would work equally as well for a fingerboard. This would later prove to be correct.

The critical and most complicated phase of the Whamola build was the construction of the lever and pulley. Because I did not have access to power tools other than a handheld drill and jigsaw, I would have to compromise on the quality of the cuts I made into the wood. Ideally, a drill press and a table saw were needed to make straight cuts into the wood and bore out the spaces for the pulley and lever. However, I made the best use of my resources, making cuts into the handrail using handheld power tools. The finish was not perfect, but would be sufficient enough to work with.

However, that was not the hard part. The difficulty was with mounting the pulley and lever into the bored-out spaces in the handrail. I had to drill through the sides of the handrail (this is when I *really* needed a drill press) and line up a collection of washers, nuts and bolts to fashion the pulley and lever onto the handrail. Once completed, it was not the look I had at the beginning of the project, but at this point was more than satisfied with the outcome.

The problem with the finished instrument is the lever handle. In yet another example of affordances, I chose a pre-fabricated handle used for hammers. The shape and strength of the piece already suggested that it would be an ideal handle to use. However, one aspect (a very important aspect) that I did not put a lot of forethought into would be the method of how I would mount the string onto the handle. Claypool's Whamola, at close examination, includes a tuning gear on the handle, which very well could be of professional grade. What I did not consider is that a tuning gear would be necessary for the string to

really maintain its playability. Without it, the string requires constant attention to its mount on the handle and gives too much slack when the lever is not depressed.

Once the lever and pulley construction was finished, I worked on the bridge and magnetic pickup mount. I selected a pre-cut piece of wood, which I believe is used for interior trims on walls, etc. I used a circular file to file down a channel for the string to rest upon. I then mounted the bridge onto the handrail at the typical space you might see a bridge on an upright bass. A bolt was mounted below the bridge to serve as the anchor for the string.

I purchased an acoustic guitar magnetic pickup, specifically for its ease of use and low cost. I realized that the magnetic pickup would need to be precisely placed at a fingertip's width from the string to be able to pick up on the string's vibration.

Unfortunately, my bass amplification gear and the workspace I was using to build the Whamola were at two different locations. I purchased some adhesive Velcro to use when mounting the pickup since 1. I didn't know at the time where the ideal spot would be for the pickup mount and 2. Adhesive Velcro is not exactly "permanent". Thankfully I made a wise decision and was able to mount the pickup with very little difficulty.

For the string, I knew I would have to use an upright bass string instead of traditional bass guitar strings because of the length of the instrument. I purchased two different strings: a 3/4 bass D string and a concert bass E string. The D string sounded the best when compared to the E string, and was much easier to mount to the lever due to the smaller gauge and length. However, the placement of the pulley on the handrail caused the string to rub against the corner of the bored space. After a few hours of playing, the D string inevitably broke at this point. Currently, the E string is being used in its place and does not seem as vulnerable as the D string to break. However the playability and sound of

the instrument remains compromised. Unfortunately, upright bass strings are harder to come by and cost substantially more than their bass guitar counterparts.

Amplified and running through my various collections of effect pedals, compression units, etc., the Whamola sounds like I had imagined but I am not satisfied with the sound quality. I believe the placement of the pulley and the fact that I am not using a tuning pin/gear compromises the potential of the instrument. The string does not remain taught and snaps at the top of the instrument. Further revisions will be necessary to remedy this issue.

The Whamola stick offers a unique approach to how someone might interact with a stringed instrument. Most stringed instruments have the ability to change the torque of the string, however it is difficult to do so during performance. The Whamola is designed specifically for this. Because easy and quick access is needed for this action, a lever provides the most obvious efficient affordance. Simple pulley and lever systems are extremely common and not difficult to operate. When compared to finger placement on a fingerboard, the Whamola interface seems simplified and easier to use.

Because a drumstick is used to vibrate the string on the Whamola, that action affordance of the instrument has taken on a simplified, percussive form. Instead of finger plucking, pick plucking or even an *Arco* (bowed) approach to vibrate the string, beating on it with a drumstick is yet another feature of the simplified interface. Precision used with *Arco* and plucking is not necessary when using the drumstick. The only skill needed to play the instrument with any commanding presence is a heightened sense of rhythm – which is needed to play any musical instrument.

In conclusion, I believe the Whamola project was a success in the context of the project purpose. Though the instrument itself failed to deliver on my expectations, the process and instrument still serve as an important lesson in action affordances. In addition

to the gained experience and knowledge, I have an even deeper appreciation for industrial designers, specifically those who design musical instruments.

Bibliography:

Chester, Jack. "Les Claypool in 3-D" Relix December 2002: 49+

Claypool, Les. Home page. 21 Dec. 2002

<[www.lesclaypool.com](http://www.lesclaypool.com)>

Coryat, Karl. "Les Claypool" Bass Player Magazine October 2002: 32+

Ware, Colin. Information Visualization: Perception For Design.

San Diego: Academic Press, 2000.