Swayway - Midi Chimes

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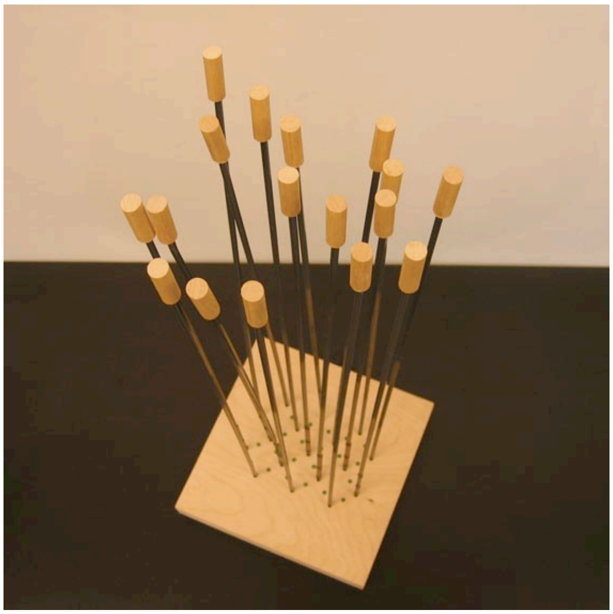

Figure 1. Swayway

ABSTRACT
The Swayway is an audio/MIDI device inspired by the simple concept of the wind chime.

This interactive sculpture translates its swaying motion, triggered by the user, into sound and light. Additionally, the motion of the reeds contributes to the visual aspect of the piece, converting the whole into a sensory and engaging experience.

Keywords
Interactive sound sculpture, flex sensors, midi chimes, LEDs, sound installation.

1. INTRODUCTION
This project is inspired by the simple concept of the wind chimes. For centuries bells have been generally associated to the most varied meanings according to cultures, traditions and rites. The idea was to represent this very simple wind chimes concept trying to keep the simplicity of the object, while adding interaction. The swaying motion of the reeds, also recall the typical swinging movement of the wind chimes but inverted; that is from the base up, as opposed to the hanging motion of the bells.

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2. HOW IT WORKS
A microphone captures the ambient sound around the piece. Using MaxMSP, the audio is decomposed into basic harmonics. These frequencies are converted into MIDI signals, and outputted as MIDI sounds. Flexible sensors attached to the plastic reeds and connected to microcontrollers sense the bending movement, translating it into a signal that modifies the pitch of the previously processed audio signals. At the same time, these signals activate a set of LEDs that also reflect the reed's movements – the greater the movement, the brighter the LEDs.

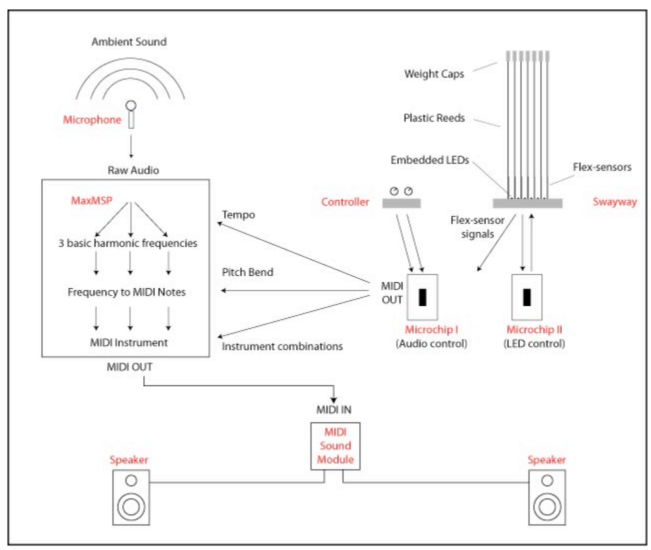

Figure 2. Signal Flow Diagram

A separate smaller control device allows the user to modify the tempo and select predefined sound combinations through two potentiometers. The flex-sensors are wired to two PIC microcontrollers. One processes the movement information and sends out one MIDI continuous control message to

MaxMSP, while the other PIC takes care of the 24 LEDs mounted on the wooden base.

The two potentiometers mounted on a separate controller, also send values to one of the PIC microcontroller which sends out two MIDI continuous control messages to MaxMSP allowing sound sets and tempo to be modified by the user.

3. INTERACTION

User stands in front of the device. With one or both hands starts to touch, bend and play with the reeds. This causes pitch of the outcoming sounds to change according to movements. LEDs also reflect the reeds movements -the greater the movement, the brighter the LEDs

Figure 3. User interaction

4. INTERFACE

This audio MIDI device is built of a square wooden bed from where 17 plastic reeds emerge to tips capped in similarly light wood. Flex-sensors at the base of 7 reeds detect the bending motion, modifying the audio output. Simultaneously, 24 Green LEDs nested at the foot of the reeds respond to the bending action. A separate control device that allows the user to modify parameters is also built of wood with two potentiometers.

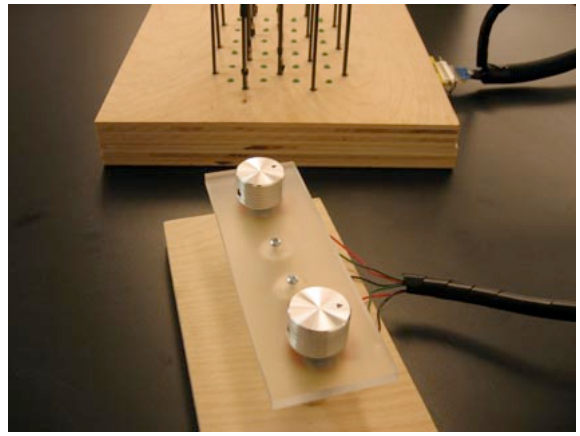

Figure 4. Controller with two Potentiometers

5. CONCLUSION

As a result of this experience, we have now an interesting device for future testing. It's clear that this is not, and does not pretend to be a musical instrument. It's a tool with which to explore the sensory aspect of sound. Flex-sensors used for this piece are still pretty temperamental and uneven y their readings. Probably with more precise sensors better results could be achieved. Also MIDI sounds could be improved or perhaps recorded and processed in real time as audio signals.

6. ACKNOWLEDGMENTS

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7. REFERENCES

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