2nd Art, Science, City International Conference ASC2015
Valencia, Universitat Politècnica de València, 22-23 octubre 2015
DOI: http://dx.doi.org/10.4995/ASC/ASC15.2015.1985

HEARTWOOD: INTEGRATING THE ORGANIC AND THE INORGANIC TO CREATE IMMERSIVE SENSORIAL EXPERIENCE

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Resumen

Heartwood integra la madera con la luz para crear una experiencia sensorial aumentada. Se utilizan métodos sencillos e íntimos de interacción para comunicar una narrativa que generalmente queda oculta en estos medios alternativos. Una cuidadosa mezcla de técnicas tradicionales para trabajar la madera y metodologías básicas de computación física se combinaron para completar su fabricación. *Heartwood* es el producto de una práctica híbrida cada vez más común en el arte que pretende injertar lo orgánico con materiales inorgánicos y tecnologías interactivas para crear entornos inmersivos.

Heartwood recompensa a los curiosos. En el sencillo acto de participar y mirar de cerca dentro de *Heartwood*, uno puede sentir la fragilidad de la corteza, discernir la solidez y peso del corte, y oler el fresco tejido vascular de su albura. Dentro, un pulso suave de luz cálida da vida de nuevo al *Heartwood* muerto. La iluminación rítmica sutil es vital para este diálogo sensorial, creando una atmósfera contemplativa de intimidad y reflexión. Sin esta luz cálida, *Heartwood* no se puede ver.

Palabras-clave: MADERA, LA LUZ, INMERSIVO, SENSORIAL, AUMENTADA INTERACTIVE, HYBRID, ORGÁNICO, LED, ARDUINO ©, MADERA,

Abstract

Heartwood integrates wood with light to create an augmented sensorial experience. Simple and intimate methods of interaction are utilized to communicate a narrative usually hidden within these alternative mediums. A careful blend of traditional woodworking techniques and basic physical computing methodologies were combined to complete fabrication. *Heartwood* is the product of a growing hybrid art practice which aims to graft organic with inorganic materials and interactive technologies to create immersive environments.

Heartwood rewards the curious. In the simple act of holding and peering into Heartwood, one can feel the fragility of weathered bark, discern the solidity and weight of the cut, and smell the freshly oiled vascular tissue of its sapwood. Within, a gen tle pulse of warm light breathes life back into the dead *Heartwood*. The subtle rhythmic illumination is vital to this sensorial dialogue, creating a contemplative atmosphere of intimacy and reflection. Without this warm light, *Heartwood* cannot be seen.

Keywords: WOOD, LIGHT, IMMERSIVE, SENSORIAL, AUGMENTED, INTEREACTIVE, HYBRID, ORGANIC, LED, ARDUINO©, WOODWORKING

1. INTRODUCTION

Societies across the globe seem intent on moving technologically forward wh ile increasingly synthesizing urban life. However, we are not predetermined to continue down this path. As artists and researchers, we can reimagine and recreate our world (Wilson 1993). We are free to develop a future which maintains the human ability to explore nature through the body and where nature itself can be interwoven with emerging technologies. *Heartwood* embodies this notion.

As an artist, I appreciate the small things that keep me connected to what I enjoyed most as a child; namely, conducting amateur science experiments and exploring the natural world. Therefore, I created *Heartwood* to rekindle childlike curiosity and to relight a sense of wonder. I believe there is much to be gained in the sensorial experiences one can obtain through close contact with natural materials. Such experiences can often feel out of reach and lost among those anchored within the city. By integrating into a raw, organic medium, *Heartwood* strives to bridge this disconnect.

2. IMPLEMENTATION

2.1. WOODWORKING

Fig. 1. Cutting honey mesquite on bandsaw by local woodworker Geoffrey Campell

Heartwood was constructed out of a length of honey mesquite harvested by my father from my family's small acreage in rural deep South Texas. While the timber of proposis glandulosa is prized by many artisans for its unusual grain patterns, workability, and resistance to decay, this hardwood can be highly variable in quality and workable sample size (Ramos 2006). Prior to initial fabrication, there was no way to assess the structural integrity of the cut until the wood was worked.

Given such limitations, a local woodworker was enlisted to assist in the fabrication of Heartwood. Using a bandsaw and custom cutting jig fashioned from scraps of MDF, the length of honey mesquite was cut into three sections. Each section had to be cut in succession using a thin blade so that when assembled, *Heartwood* would appear nearly seamless. Using the outermost rings of the honey mesquite as a guide, the woodworker fashioned another jig to guide the router along the face of the first 1 inch thick section to form a recessed compartment for the circuit board and battery. The second section, about 6 inches thick, was hollowed out on the bandsaw and rabbeted along one edge to hold a custom cut mirrored backing. Recesses were drilled along its body and lined with bark.

LEDs were later wired into each recess. The third section was cut as the first to about 1 inch thick, and rabbeted to hold a custom cut piece of mirrored glass. The centermost rings were routed out to form a rustic eyepiece.

2.1. TECHNICAL EXPLORATION & IMPLEMENTATION

Fig. 2. The inner cavity of *Heartwood* is lined with micro leds recessed behind bark.

Heartwood required digital components and power sources that were relatively self contained, interchangeable, and portable. Therefore, Adafruit's Arduino© products were chosen for their versatility (Arduino LLC 2015). Experimentation with several of their sensors culminated in the implementation of programmable dynamic led illumination. Leds fashioned to emit warm light were chosen to augment and compliment the warm coloration of the honey mesquite.

Initially, using a sensor to control illumination according to the proximity of the user seemed reasonable. However, after running a series of tests, this method proved problematic. Mapping the sensor directly to the LED string via the Arduino© board rendered inconsistent value reads and resulted in disruptive illumin ation patterns. The sudden flares of light left no time for eyes to adjust to light and dark.

In the end, the LED intensity values were hard coded to pulse rhythmically, transitioning from dim to full brightness, as if slowly inhaling and exhaling. While coding, I found myself deep breathing in time to the animated illumination; I was lulled into a state of quiet reflection, though I was sitting in my studio space just off the downtown strip of a busy college town. I realized *Heartwood* had the potential to provide an intimate and meditative domain amid stark urban settings.

3. CONCLUSION

With a little rough Arduino© DIY experimentation and the unorthodox application of traditional woodworking techniques, *Heartwood* became more than just a simple material exploration of wood and light. After just a few months of research and fabrication, the journey led me to develop an object capable of evoking an immersive sensorial experience bridging body, nature, and technology.

Fig. 3. *Heartwood* appears as a solid cut of Wood.

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