Connecting With Users Though Interactive Prototyping: Understanding User Behavior Through Building The Black Box And Its Electronic Innards

Andre Murnieks
University of Notre Dame
Notre Dame, Indiana USA
andre.murnieks@nd.edu

1. INTRODUCING ORACLE IN A BOX V2.0

Introducing the state-of-the-art in freestanding, prognosticatory devices. With version 2.0 of Oracle In A Box, the future is literally at your fingertips. The Oracle utilizes the latest in electro-biometric sensory to deduce (actually induce) your probable outlook with a light touch of the fingers on the advanced, ergonomic control interface. Within just a few seconds, the Oracle will respond with its prophecy in the form of a custom tailored sound and light pattern. Will your fortune be dark and foreboding? Or will it be bright and cheery? Only your touch will tell.

Figure 1: Oracle In A Box illuminated in red

Oracle in a Box uses all the latest technologies and manufacturing techniques to achieve this marvel of prescience. Originally conceived as graduate project in 2004 with industrial designer Jayoung Sung, MFA (Ohio State, 2005), the Oracle pioneered the product segment of futurism hardware. Fast-forward to 2013; version 2.0 is reborn from the ground up brand new autonomy circuitry. It utilizes the Arduino open-source platform based on the Atmel micro controller. Both the Arduino UNO and MEGA act in concert to peek into the future. In the present, the Oracle addresses the needs of energy consumption and efficiency as well. The Oracle’s awareness and feedback mechanisms are made up of low power components, low voltage LED illumination, and the MOZZI sound synthesis library openly distributed by Tim Barrass.

Figure 2: Circuitry for light, motion and touch

The form-factor of the Oracle in a Box v2.0 is all-new and cutting edge. Developed with the tenets human-centered design, Notre Dame industrial designer Mike Elwell evolved a SketchUp concept into an object perfect for any decor using 3D software SolidWorks to prefabricate the form and a computer-controlled CNC router to fabricate the entire precision assembly out of acrylic, MDF and particle board. Notre Dame master craftsman George Tisten offered his expert advice concerning implementation of the critical feedback surface. While beautiful on the outside, the interior houses and hides the wizardry including a 12” woofer, 2 cubic feet sound chamber, amplifier, power supply, and the mysterious circuitry made possible by the input and electronics integration advice from Andy Murnieks, University of Cincinnati senior studying Information

2. MANUFACTURED EXPERIENCE

Interaction design creates new challenges for the researcher, educator and student. Certainly, the “look” of an interaction system falls within the purview of visual communication design, however, the correlating area of “feel” is fairly new territory for designers. The term “feel” acknowledges that information being relayed extends beyond the realm of vision; the most interactive experiences depend on multiple senses and feedback processes: gaze, aural, gesture, touch, haptic, biometrics (heart rate, pulse…). In turn, the senses and feedback are processed through perceptual and cognitive systems of the nervous system and brain. The behavioral responses to an interactive system are dependent on both physiological and psychological dimensions—that is how humans interact. However, interaction design, as a discipline, is a manufactured experience between human and machine or human-to-human(s) through machine.

3. THE ESSENCE OF INTERACTION

Clicking through on-screen prototypes helps designers anticipate the user’s behavior and response. Yet, we are often surprised with the results when we test with our intended user group. The desktop computer provides an interaction paradigm that is narrow in scope (point and click), and the user experience is limited to what is prescribed by the operating system. This restraint also disconnects the designer from the form factor, the underlying circuitry and the programming necessary to make a desired computing environment possible. Without a flexible, platform, creating accurate and multi-sensory simulations is difficult. However, it is possible to explore the essence of pure interaction design with a prototyping platform like Arduino. Using an off-the-shelf programmable microprocessor, the student researcher can build, program, and test a simple interactive widget.

4. FOUNDATIONS FOR INTERACTION DESIGN

Just as design educators feel it is imperative to understand the processes behind print and production, this is a foundational exercise for interaction design allowing for a deep understanding of human interaction with respect to the programmable logic in electronic devices. The purity of this exercise can lead to an unexpected result: a sculptural and engaging object of mystery and delight. Rather than a demonstration of Arduino, the making of the fortune telling device, Oracle In A Box, reveals the synergy of visual communication, industrial design, advanced 3D fabrication and programming logic to create perceived awareness in an obelisk of acrylic, sound and light.

4. REFERENCES
