

# BOOMBOXES [ Exploration of Social Interaction Through Music ]

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**Abstract** The widespread use of personal mp3 players has isolated music listeners by restricting them to a set of headphones. When plugged into their devices, Carnegie Mellon students are effectively cut off from the surrounding campus community and have no way to interact with the people around them. We propose to construct an outdoor installation titled *Boomboxes* that addresses this issue directly and gives students the opportunity to use their mp3 players in a more collective manner. The project will compose of several specially constructed benches that will house speakers, sensors, and lighting. Any student will be able to connect their portable media device to the main hub, which then activates the space and fills it with the user's music. As more and more listeners fill the space, *Boomboxes* will react by entering a more excited state where the lighting will actually respond to the music and even encourage further interaction. The user-generated interplay between audio and visual elements of the space creates a unique dynamic that aims to better integrate music and social interaction.

**Project Background** Digital media players have redefined consumers' abilities to incorporate music into their everyday lives. Within their pant pocket, users have ready access to entire music libraries, giving them more freedom than ever to choose when and where their music can be heard. But while the technology has revolutionized the way we enjoy music, the design of these portable music players limits the benefits of this freedom to the individual and isolates him from interacting with the community. Essentially, this limitation greatly contradicts music's fundamental ability to bring people together.

How can the benefits of mp3 players be used to promote social interaction?

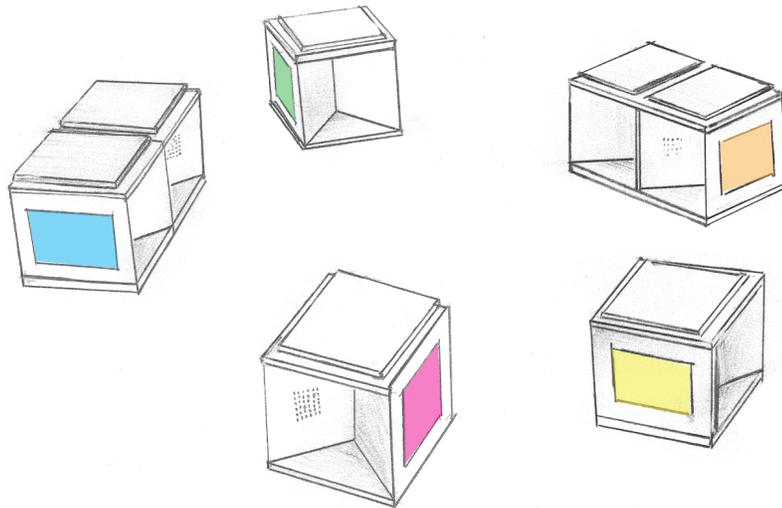
This is the research question we hope to explore through the *Boomboxes* project. By creating a space on campus to address the aforementioned issues, we will gain insight into the relationship between music and social interaction. The preliminary questions will then be: How would mp3 device users react to the opportunity to share music in a public setting? Would the public find such sharing to be a positive or negative externality? Do mp3 players have the potential to invite community?

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## Project Design

The design of *Boomboxes* consists of three primary elements - music, architecture, and lighting - each of which is determined to varying degrees by the actions of the users. The greatest degree of freedom is represented in the music played. Users are able to freely share any music they want from their portable devices. Further manipulation of the space is derived from the modularity of its architecture. Distinct units serve to house speakers and other electronics, as well as provide seating and multipurpose surfaces. These units can be arranged by the users to best suit the given social situation. Finally, the lighting of the environment changes in response to the actions of the users. The modular units communicate with one another to gauge the overall level of social interaction occurring within the space and illuminate colors as a reward to encourage further interaction.

Fig. 1: Boomboxes space composed of 1.5' x 1.5' x 1.5' wood seating



## Project Budget

The construction of the project will utilize recycled goods when available to both reduce the environmental impact of *Boomboxes* and keep down costs.

Raw Materials (Wood, acrylic, hardware)	\$350
FM Radio Transmitter/Receivers	\$150
Electronics (XBee Modules, RGB LEDs, Arduino)	\$400

## Timeline

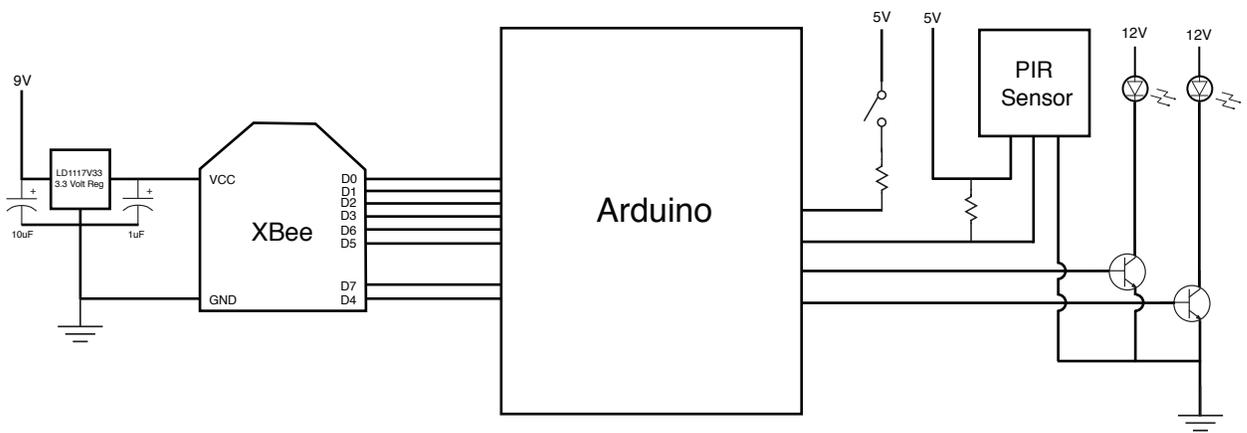
Jan-Feb: Design and research w/ Christine Mondor (Architecture)  
Feb-Mar: Prototyping  
Mar-Apr: Construction and continued Prototyping

April 14, 2008: Boomboxes will be placed on campus (The Cut)  
May 8, 2008: Meeting of the Minds presentation  
May 9, 2008: Making Things Interactive final show

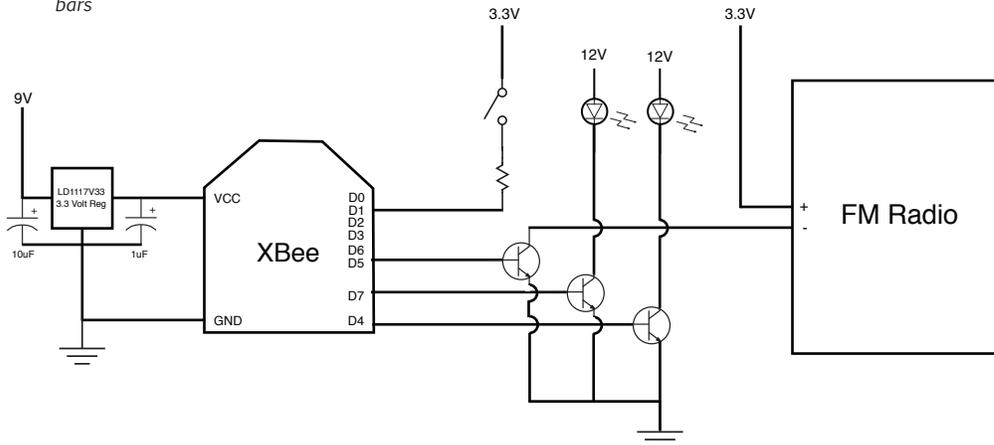
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**Circuit Diagram** The circuits involved include one main, "Hub", XBee wired to an Arduino and 5 other XBees operating in the individual seats. Below, the diagram for Seat #2 is shown with the appropriate XBee pin connection. However, the corresponding seat buttons are wired to unique XBee pins so that the Arduino knows exactly which seat is in use.

*Fig. 1: 'Hub' XBee with Arduino, I/O Switch, and PIR Sensor*



*Fig. 2: 'Seat 2' XBee with FM Radio and LED RGB+White light bars*



## State Diagram

