
14.1. Announcements

• Controller/Interface/Instrument Design 1: comments and grades this weekend
• Due Wednesday 6 April: Controller/Interface/Instrument Design 2 Proposal
• Due Wednesday 13 April: Performance Frameworks Draft
  Must email me now with special requests for groups

14.2. Quiz Review

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14.3. Reading: Ghazala, The Folk Music of Chance Electronics: Circuit-Bending the Modern Coconut


• How did Ghazala get started building instruments?
• What are the basic techniques of chance electronics?
• What is Ghazala’s notion of the immediate canvas?
• How is the coconut a useful metaphor for building new instruments?
• For Ghazala, what are living instruments?
• Why might Ghazala’s approach be seen as a democratization of music making?

14.4. Reading: Collins, Handmade Electronic Music


• Laying of hands: radios, circuit boards
• The cracklebox
• Adjusting, replacing, and manipulating clocks in toys
• Using potentiometers, photoresistors, and alternative electrodes
• Circuit bending: the difference between bent and hacked?

14.5. Hardware Hacking: Mini Telharmonium

• Materials: DC Motor, amplifier, alligator clips
• Motor creates pulses that, when fast enough, produce a tone
• Variation: jumping speaker; using a speaker as a microphone
14.6. Hardware Hacking: Electromagnetic Transduction

- Materials: Tape head, phonograph cartridge, guitar pickup, amplifier, alligator clips
- Can read magnetic variations and transduce vibrations
- Guitar pickup and iPhone
- Tape heads and ID cards
14.7. Hardware Hacking: Piezo-electric Transduction

- Materials: piezo microphone, slinky, amplifier, alligator clips
• Can pick up surface vibrations for direct transduction
• Can pick up vibrations travelling through a slinky
14.8. Hardware Hacking: Victorian Oscillator

- Materials: 9v battery, speaker, three alligator clips, metal materials
- Connection to speaker from battery is created and broken through mechanical feedback

14.9. Hardware Hacking: Video Excerpts

- Project tutorials / Laying of Hands, Chapter 11
- Project tutorials / Hack the Clock, Chapter 12-15 (1:07, 1:13, 1:14)
- Circuit bent examples:
  - Emir Bijukic: Solar Cell Calculator
  - Michael T. Bullock: Open-backed radio
  - Chapman & Collinson: The Bent Radio Orchestra
  - Seth Cluett: Open-backed Cassette
14.10. Listening: Collins, Behrman, Yasunao Tone


- Listening: David Behrman, Players With Circuits

- Listening: Yasunao Tone, Imperfection Theorem of Silence
21M.380 Music and Technology: Live Electronics Performance Practices
Spring 2011

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