Chapter 14. Meeting 14, Interfaces: Sequencers, Rhythm Machines, and Samplers

14.1. Announcements

- Music Technology Case Study Drafts due next Tuesday

  Draft should meet minimum requirements of final paper

  Contact me with questions or problems

  Submit draft digitally by midnight on Tuesday

- Next Tuesday: bring your laptops with PD-Extended and Martingale

14.2. Quiz

- 10 Minutes

14.3. Listening: Oswald

- Audio: John Oswald, "Black"

14.4. Reading: Oswald

- Oswald, J. 1985. "Plunderphonics, or Audio Piracy as a Compositional Prerogative." *Wired Society Electro-Acoustic Conference*. Internet: http://www.plunderphonics.com/xhtml/xplunder.html.

- 1960s: Mellotron, tape-based sample playback machine where each key pressed a tape-head onto a tape

- 1979: Fairlight Computer Musical Instrument (CMI): first polyphonic digital sampler

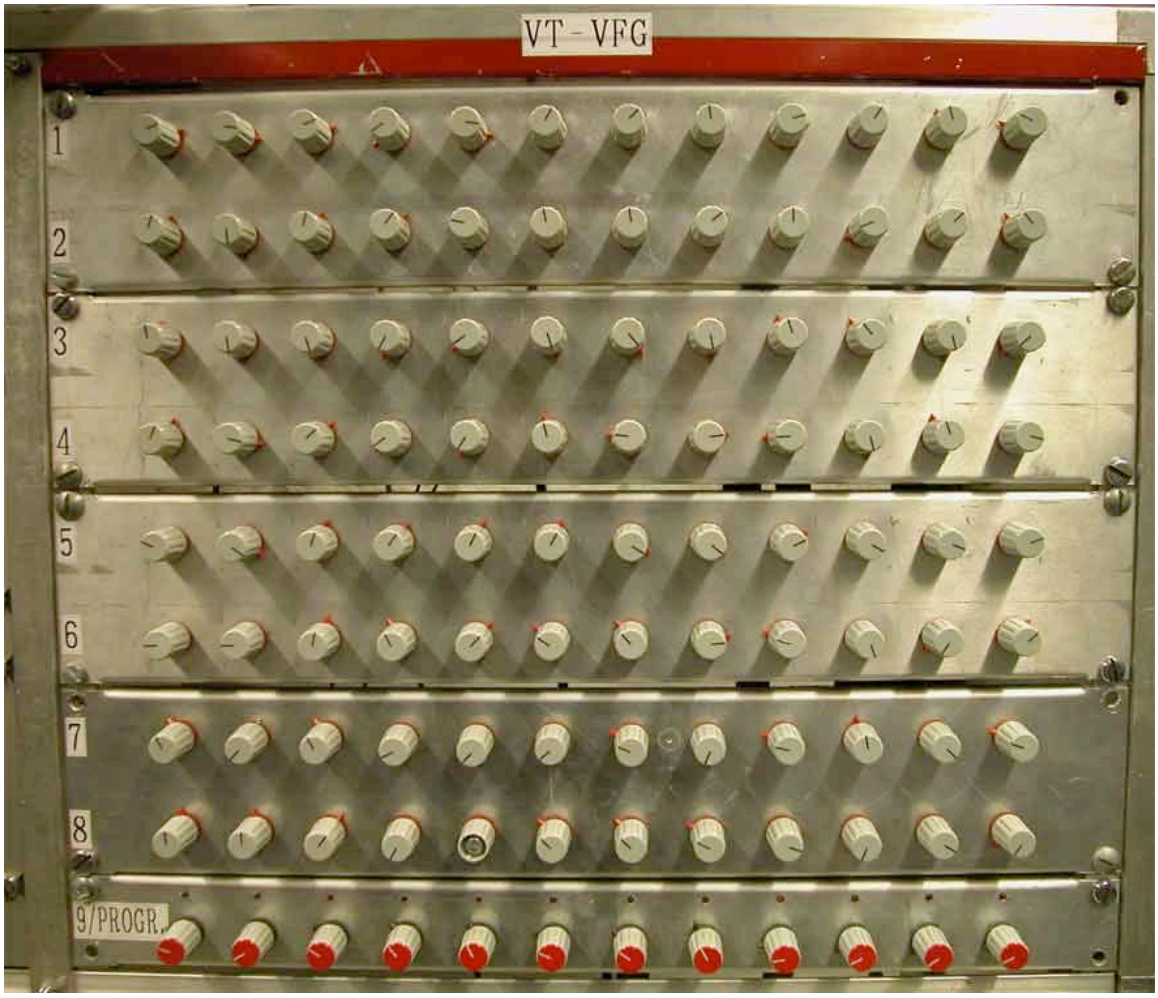
  YouTube (http://www.youtube.com/watch?v=n6QsusDS_8A)

- 1984: Ensoniq Mirage sampler: first affordable sampler

- Can an instrument or a timbre be considered a composition, like a sample?
- Is it a problem that musical notation does not have a quotation mark?
- How can a casual home listener become a more active listener?
- Why, in Oswald's view, might all popular or folk music be public domain?

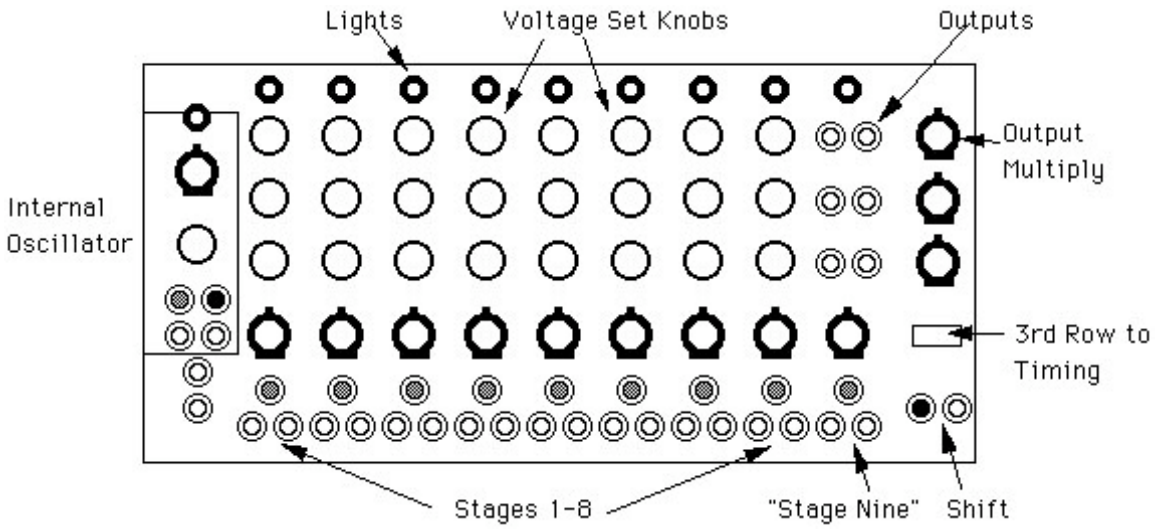
14.5. The Sequencer

- Numerous early synthesizers by Moog, Buchla, and ARP offered various forms of step sequencers
- At a minimum, provided a series of voltages that could be stepped through
- A custom-shaped LFO
- The Sonology Variable Function Generator: a custom sequencer capable at running at the audio rate

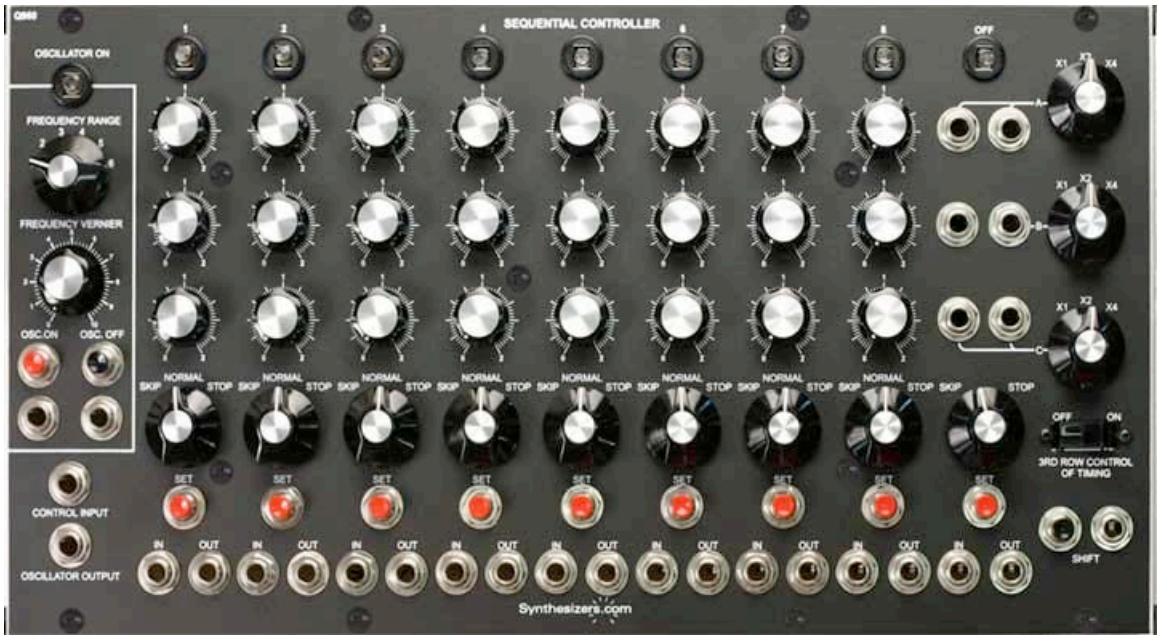


14.6. Moog 960 Sequential Controller

- Sequential controller provided a sequence of voltages that could be used to control any musical parameter
- Moog 960 Sequential Controller (1968)



Courtesy of the Electronic Music Studios at the University of California, Santa Cruz. Used with permission.



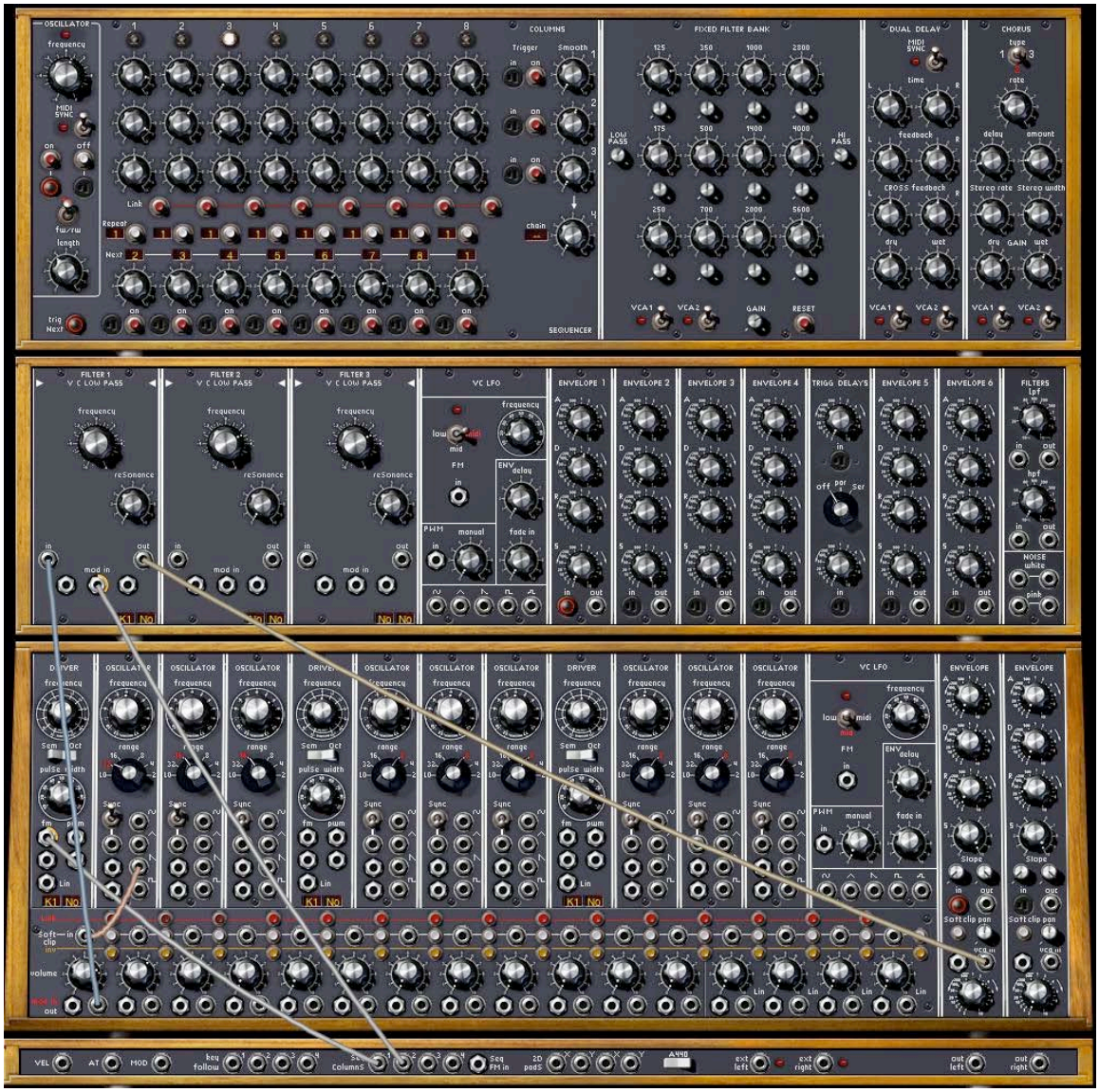
Courtesy of Synthesizers.com. Used with permission.

- Permitted 8 steps, each step with three voltages
- Each step could be played, skipped, or used as a point of loop-back
- With a Moog 962, three rows could be treated as one 24 step sequence
- Output could be shifted by another, independent voltage to create arpeggios
- Examples

  YouTube (http://www.youtube.com/watch?v=H2zpMKKamWI)

  YouTube (http://www.youtube.com/watch?v=gNmzyZaqVwI)

- Arturia virtual Moog modular, with row 1 modulating oscillator frequency and row 2 modulating filter cutoff frequency



Courtesy of Arturia. Used with permission.

14.7. Drum Machines: Early Experiments: Rhythmicon

- 1931: Henry Cowell commissioned Termin to build a machine that could play complex rhythms
- Could produce sixteen parts
- Schillinger with the Rhythmicon

- American Mavericks: The Online Rhythmicon: site (http://musicmavericks.publicradio.org/rhythmicon/index.html)

14.8. Drum Machines: Organ Accompanists

- 1959-1964: Wurlitzer Sideman

  Analog sound sources employing tubes

YouTube (http://www.youtube.com/watch?v=QLgyQG8Pu8s)

14.9. Drum Machines: Analog Drums

- 1970s: Rhythm Ace, by Ace Tone (later Roland)

- 1978: Roland CR-78: programmable drum machine, analog drum voices

  preset rhythms for Waltz, Bossa Nova and Rhumba; preset fills and variations

YouTube (http://youtube.com/watch?v=b0tdkP4GaGg)

- 1980: Roland TR-808 Rhythm Composer

  transistor rhythm (TR); sixteen sounds; 32 programmable steps

Image courtesy of dAvid on Flickr.

YouTube (http://youtube.com/watch?v=jUx7ax62OBo)

- Numerous software emulations available: http://www.hobnox.com/index.1056.de.html

14.10. Afrika Bambaataa

- Associated with Afro-futurism
- From the South Bronx and development of hip-hop in the late 1970s
- Embrace of analog drum sounds and drum machines when not broadly accepted

14.11. Listening: Bambaataa

- Audio: Afrika Bambaataa, "Planet Rock" 1982

14.12. Drum Machines: Digital Sampling

- 1979: Linn Electronics LM-1

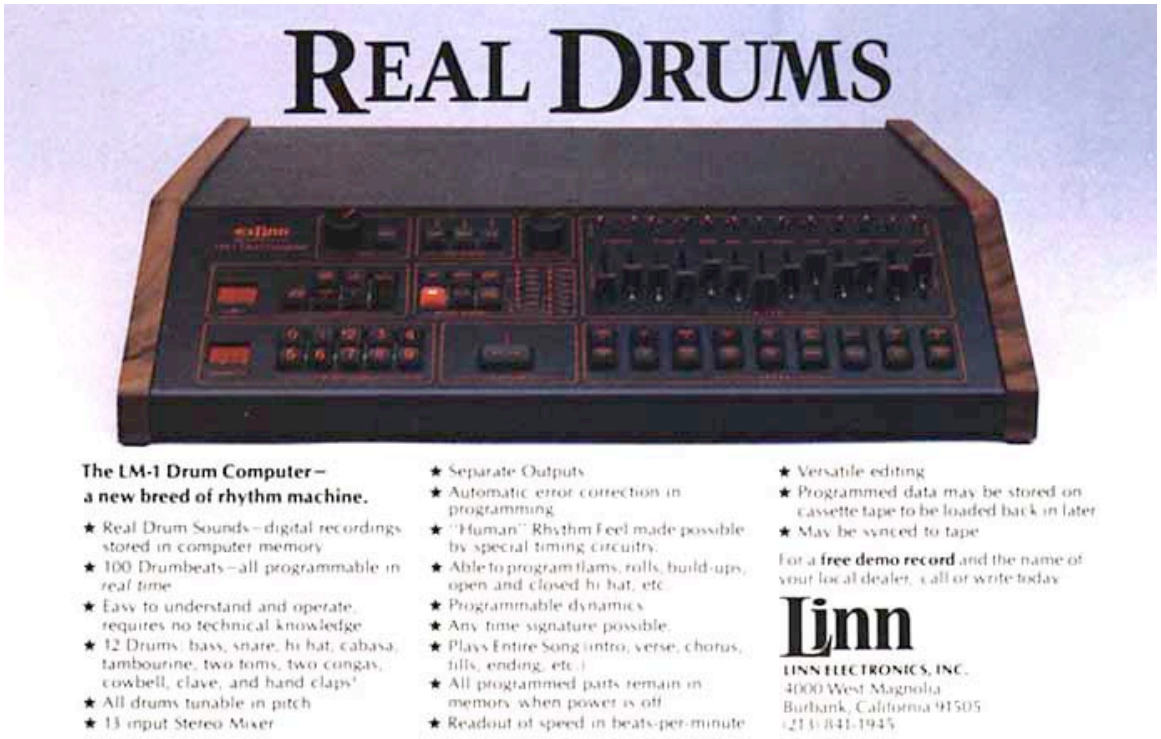
  First programmable sampling drum machine; 18 sounds, $5000

Courtesy of Roger Linn Design. Used with permission.

- 1982: LinnDrum

  $3000

Courtesy of Roger Linn Design. Used with permission.



Courtesy of Roger Linn Design. Used with permission.

- 1984: Linn 9000

  Sampling drum machine with MIDI sequencer

Courtesy of Roger Linn Design. Used with permission.

- 1988: Akai MPC60

  Linn worked with Akai to create MPC series

Courtesy of Roger Linn Design. Used with permission.

- recent: Akai MPC1000

  64 track MIDI sequencer, 32 voice stereo sampler, compact flash data storage

- Pete Rock on the MPC (1:43, 2:43)

  YouTube (http://youtube.com/watch?v=Faad8AmCl8c)

- Examples

  YouTube (http://www.youtube.com/watch?v=gFWazOuwwgw)

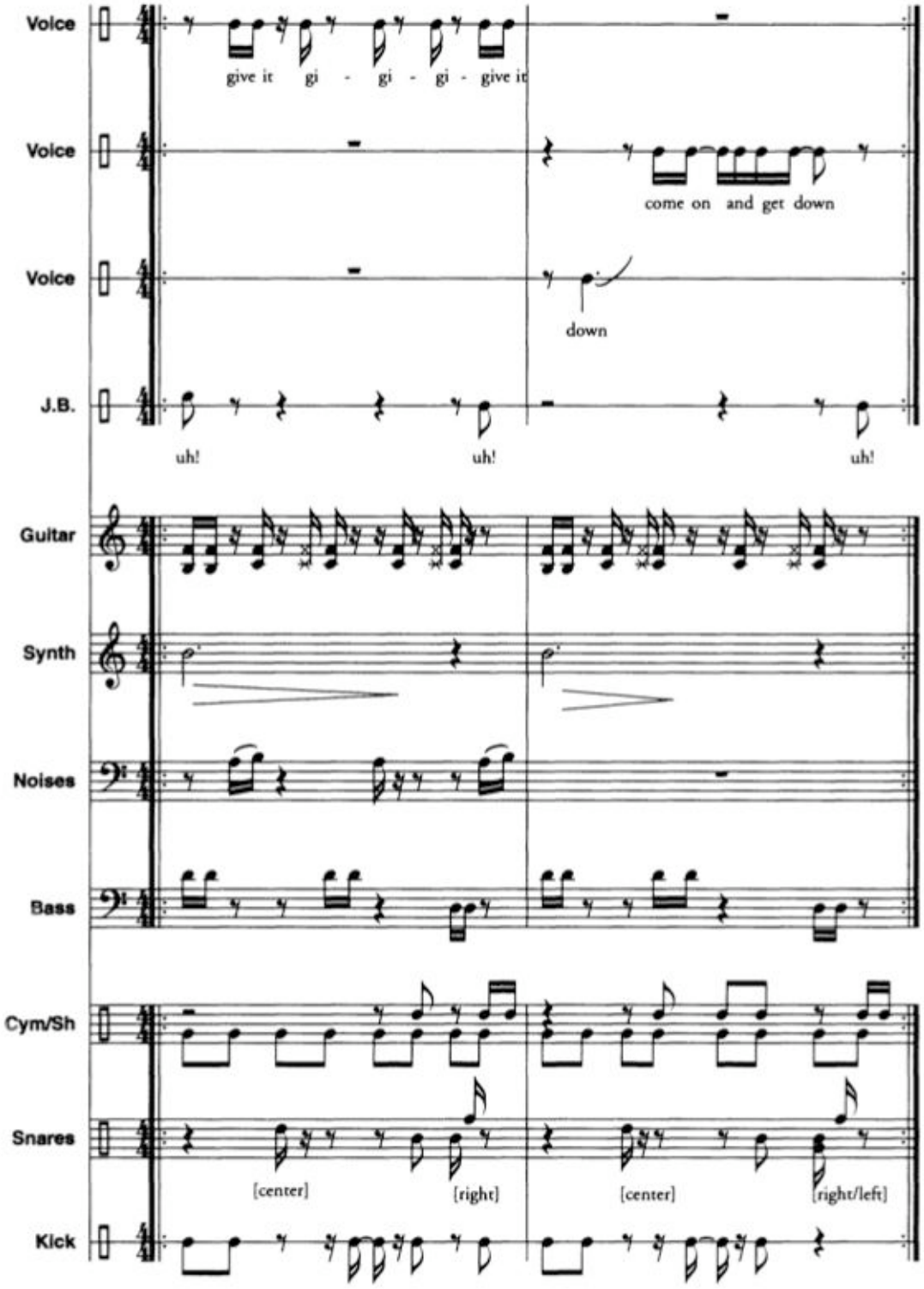
14.13. Listening: Public Enemy

- Audio: Public Enemy: "Fight the Power"

14.14. Reading: Walser

- Walser, R. 1995. "Rhythm, Rhyme, and Rhetoric in the Music of Public Enemy." *Ethnomusicology* 39(2): 193-217.

Figure 1: "Fight the Power," opening groove



- Why does Walser see the use of transcriptions as important?

- What are common arguments why rap is not music?
- What techniques of sampler misuse and audio production are used to create the Bomb Squad sound?

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