

Chapter 16. Meeting 16, Ensemble Microphone Techniques

16.1. Announcements

- Mix Report 2 Due Tuesday 10 April (be sure to review requirements)
- Recording session this Wednesday, 11 April, in Killian Hall
- No class next Monday, 16 April
- Next quiz will be Wednesday, 25 April

16.2. Recording Session Assignments

- 11 April (Wednesday): Meeting 17, Workshop: Recording Session 1
Engineering crew: four students [names removed for privacy]
Instrumentation: 5 singers, including soloist
Location: Killian Hall
- 23 April (Monday): Meeting 19, Workshop: Recording Session 2
Engineering crew: four students [names removed for privacy]
Instrumentation: piano and horn
Location: Killian Hall
- 2 May (Wednesday): Meeting 22, Workshop: Recording Session 4
Engineering crew: five students [names removed for privacy]
Instrumentation: gtr, bs, drum kit, 3 vocal, more
Location: TBA
- 7 May (Monday): Meeting 23, Workshop: Recording Session 5
Engineering crew: four students [names removed for privacy]
Instrumentation: 14 singers, 7 male, 7 female
Location: Killian Hall

- Need at least four people to move gear before and after

16.3. Stereo Applications: Drum-kit overheads

- Given all the microphones, wide coincident might be preferred
- Stereo overheads

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"Simple" setup: overhead stereo pair 2 meters above the drumset,
plus a dynamic mic on the bass drum.

Figure 14-2 in Eargle, J. *The Microphone Book*. 2nd ed. Focal Press, 2004.

- Ensemble mics

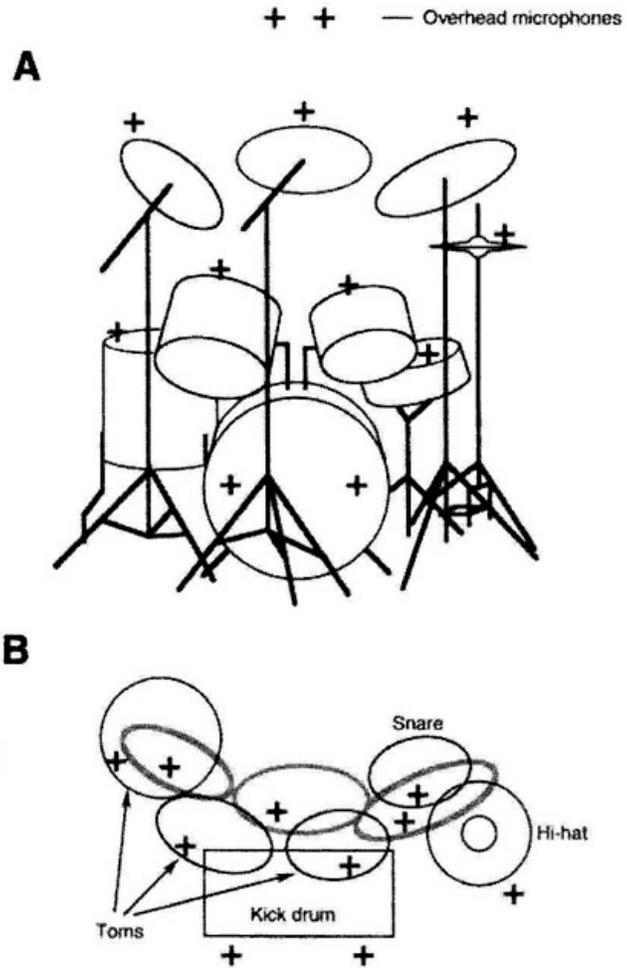


FIGURE 14-3 ———
 More detailed pickup of
 the drum set. Front view
 (A); top view (B).

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16.4. Stereo Applications: Acoustic Guitar

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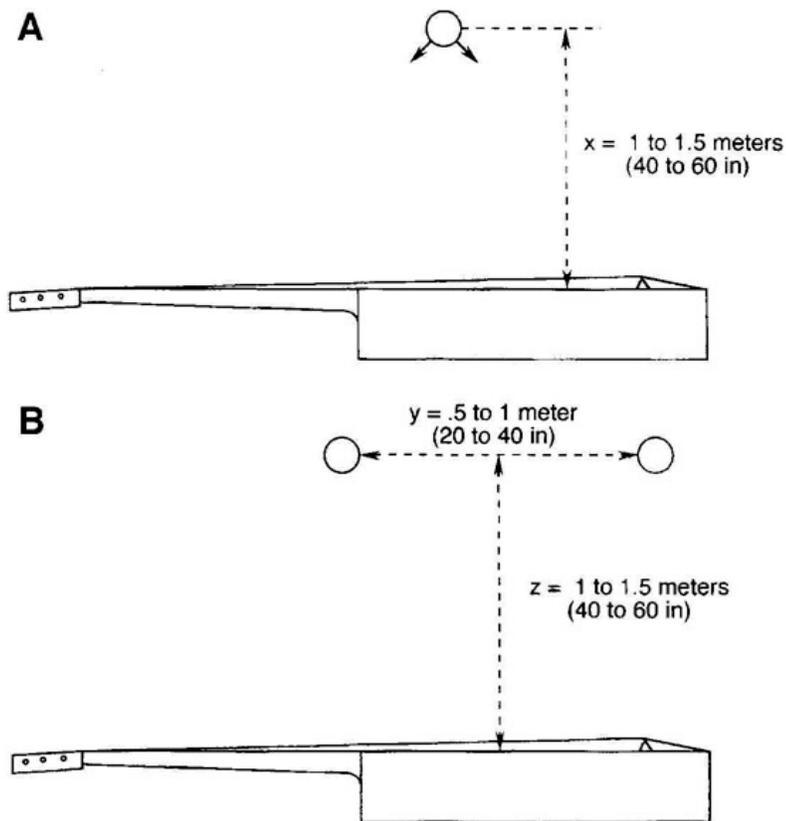


FIGURE 13-6 Recording the guitar: using coincident or near-coincident microphones (A); using spaced microphones (B).

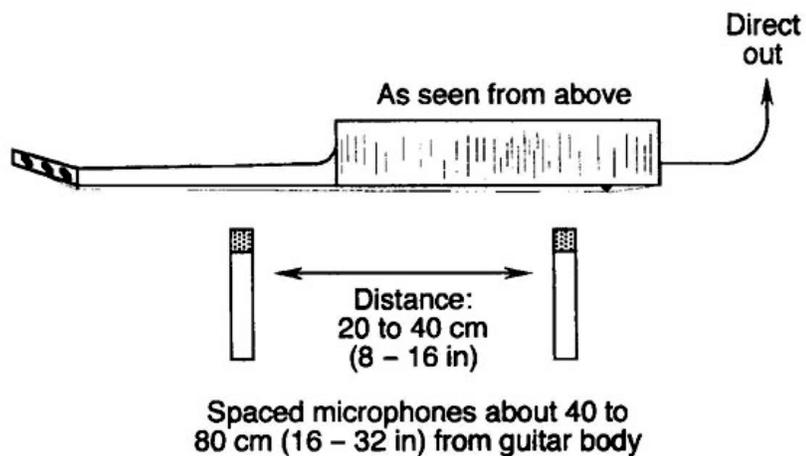


FIGURE 14-17 Recording the acoustical guitar with microphones and direct input to the console.

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16.5. Stereo Applications: Keyboard Percussion

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"Widely splayed" pair of cardioids for recording vibraphone in stereo

Figure 14-8 in Eargle, J. *The Microphone Book*. 2nd ed. Focal Press, 2004.

16.6. Stereo Applications: Piano

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Image removed due to copyright restrictions.

Recording piano using coincident and near-coincident microphones.

Figure 13-5 in Eargle, J. *The Microphone Book*. 2nd ed. Focal Press, 2004.

Image removed due to copyright restrictions.
Recording piano using mics under the raised lid.
Figure 14-9 in Eargle, J. *The Microphone Book*. 2nd ed. Focal Press, 2004.

16.7. Recording Ensembles

- Goal is often to capture instruments and room
- Need for archival security
- Need for post-production flexibility

16.8. Multiple Mics and Comb Filtering

- Combining slightly delayed signals can result in comb filters
- Can mitigate by careful positioning
- Can mitigate by post-production time delays
- Some leakage can be good
- Leakage needs to work with ultimate panning positions

16.9. Recording Ensembles: Close Captures, Small Groups

- Using Rejection
- Mixtures of omnis and cardioid

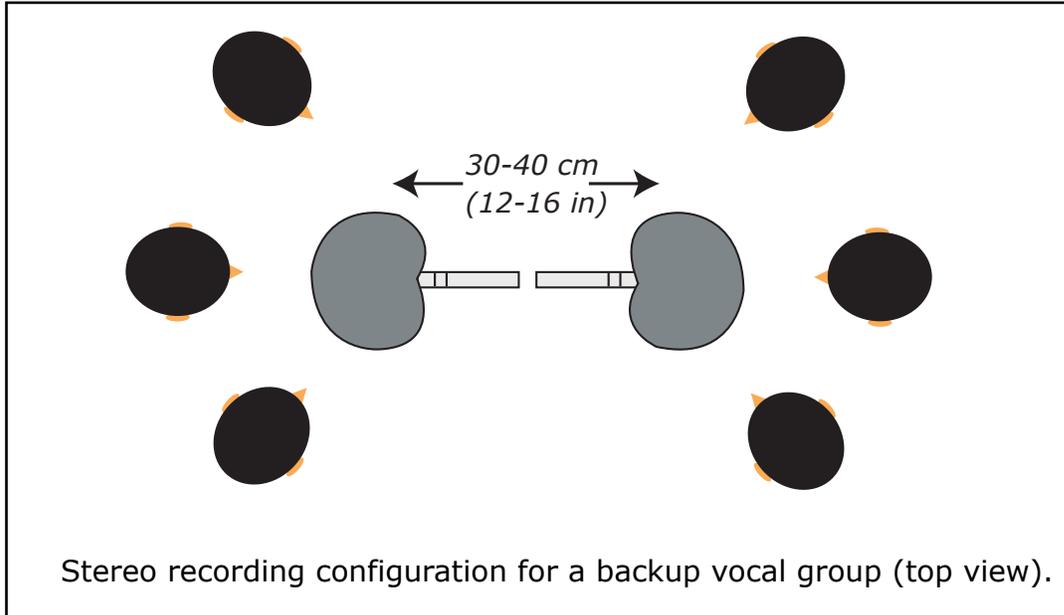


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16.10. Recording Ensembles: Close Captures, Considering Panning

- Some isolation, some mixture, with ambiance
- Maintaining stereo field

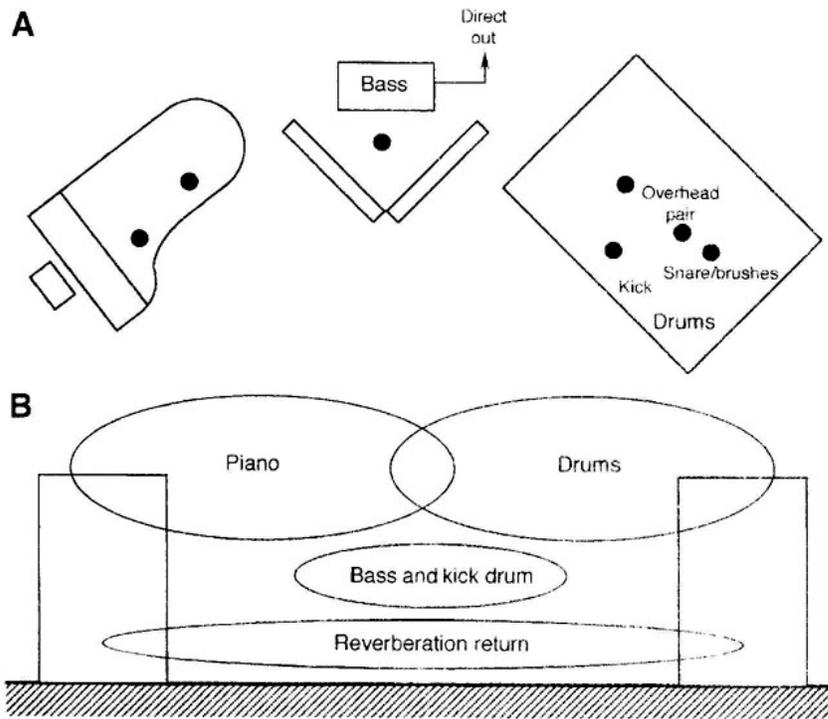


FIGURE 14-21 ———
 Recording a jazz trio:
 studio layout (A); target
 stereo soundstage (B).

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 Source: Eargle, J. *The Microphone Book*. 2nd ed. Focal Press, 2004.

16.11. Recording Ensembles: Close Captures, Considering Panning

- Maintaining stereo field

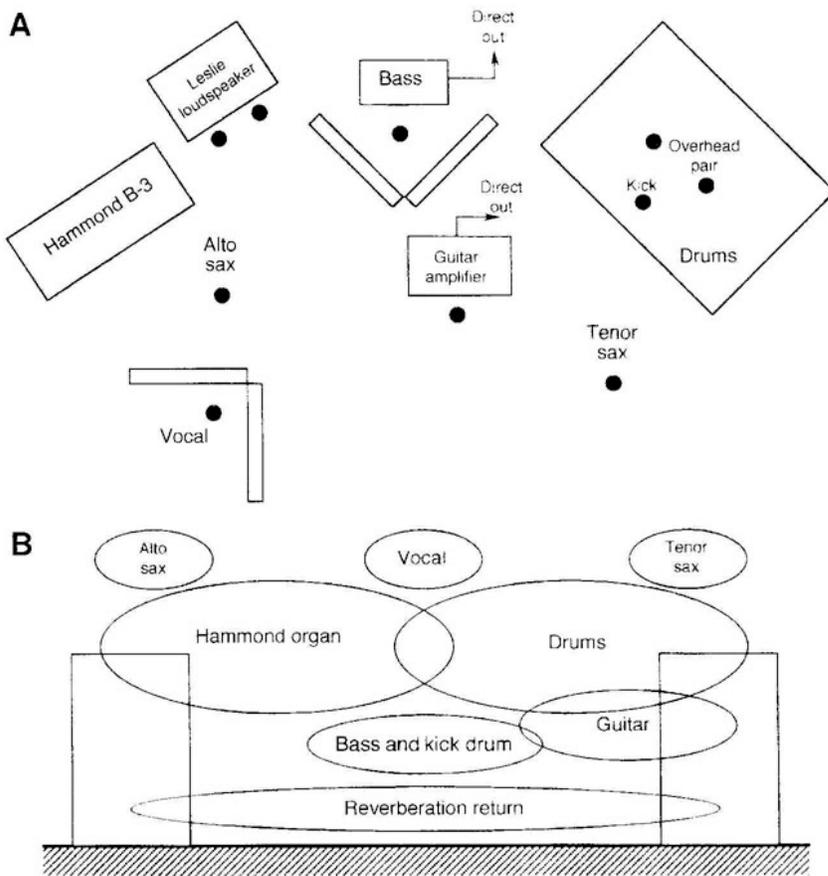


FIGURE 14-22 Recording jazz vocal with small instrumental group: studio setup (A); target stereo soundstage (B).

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16.12. Recording Ensembles: Comparing Distant and Close Captures

- Notice the direction the musicians are facing:

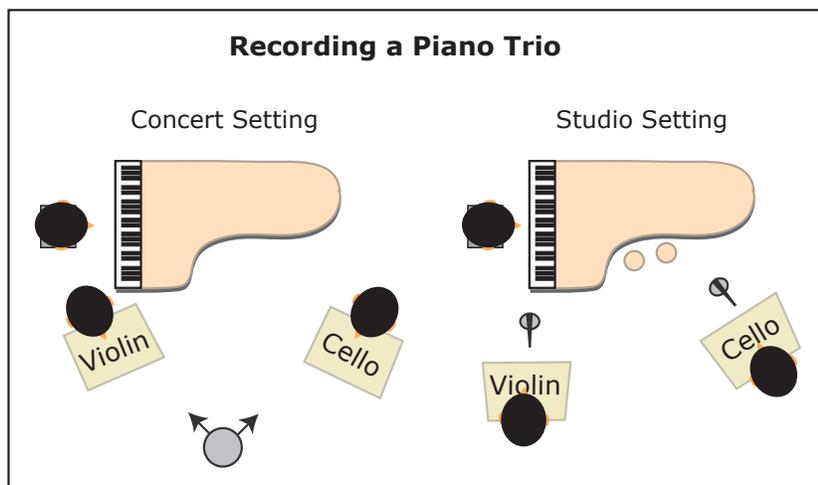


Image by MIT OpenCourseWare. After Eargle.

16.13. Recording Ensembles: Concert Recording with Multiple Stereo Captures

- Pair of cardioids and pair of omnis is most common approach

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Three examples of mixed arrays: ORTF plus flanking omni mics.

Figure 11-16 in Eargle, J. *The Microphone Book*. 2nd ed. Focal Press, 2004.

16.14. Recording Ensembles: Multiple Stereo, Room, and Section Captures

- Can combine stereo captures, room captures, and section captures
- Mixing may require significant time shifting
- The closer the microphone the greater the mixing time shift
- Orchestra example

Image removed due to copyright restrictions.

Large orchestra with chorus example.

Figure 13-13 in Eargle, J. *The Microphone Book*. 2nd ed. Focal Press, 2004.

16.15. Recording Ensembles: Multiple Stereo and Section Captures

- Orchestra in a studio example

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Figure 14-24 in Eargle, J. *The Microphone Book*. 2nd ed. Focal Press, 2004.

16.16. Recording Ensembles: Multiple Stereo and Section Captures

- Orchestra with soloists in a studio

Image removed due to copyright restrictions.
Figure 13-15 in Eargle, J. *The Microphone Book*. 2nd ed. Focal Press, 2004.

16.17. MOSS Track Sheets

- Must document all aspects of every recording session

MOSS Track List

Date:

	Source	Microphone	Position/Axis/Array	Distance	Input	Preamp	48V (+/o)
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							

16.18. Microphone Positioning: Exercise

- Exercise: You are to record a trio of piano, acoustic bass, and trumpet. You have 6 AT 4041, 4 AKG 414, 2 Earthworks TC20mp, and 2 Sennheiser MD-421.

16.19. Microphone Positioning: Exercise

- Exercise: You are to record a string quartet. You have 6 AT 4041, 4 AKG 414, 2 Earthworks TC20mp, and 2 Sennheiser MD-421.

16.20. Microphone Positioning: Exercise

- Exercise: You are to recording a group of 5 singers, including a soloist. You have 6 AT 4041, 4 AKG 414, 2 Earthworks TC20mp, and 2 Sennheiser MD-421.

16.21. Studio Practices: Positions

- Lead engineer, LE (1)

Greets performers, runs session, communicates with performers

- Preamp and patch operator, PPO (1)
Does level setting, patches pre-amps, monitors signal
Setup stands, microphones, run cables
- Assistants (2 or more)
Create primary documentation
Setup stands, microphones, run cables

16.22. Recording Sessions

- If you are working on a session, arrive as early as possible
- Come prepared with a specific microphone plan and position
- All must pay attention and document settings in track sheets; must write own track sheets and turn in at end of term
- Each member of group will be responsible for their own mix

16.23. Recording Practices: Procedure

1. PPO zeros all pre amp levels, disengages all phantom power
2. All begin setup of microphones based on plan and expected instrument positions. LE oversees all microphone installations.
3. Assistants documents all channel assignments (microphone, wall input number, phantom power), tracing cables to ensure accuracy.
4. LE greets musicians, tells them where to set-up, has assistants provide necessary chairs, stands, power, equipment, etc
5. PPO powers phantom power for each channel necessary
6. PPO adds modest gain and checks for signal on each channel, having assistants check each microphone one at a time (snap test)
7. LE directs musicians to provide level-setting information.
8. PPO level-sets, directing the LE to get diverse material as necessary
9. LE initiates recording, tags audio with date and composition titles.

10. LE and PPO, in the case of excessive peaks, can cut the take and re-level set
11. LE directs additional takes as necessary
12. Strike: PPO zeroes preamp and turns off phantom power
13. Strike: LE oversees all microphone removal and storage
14. All cables, stands, and other equipment is stored

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