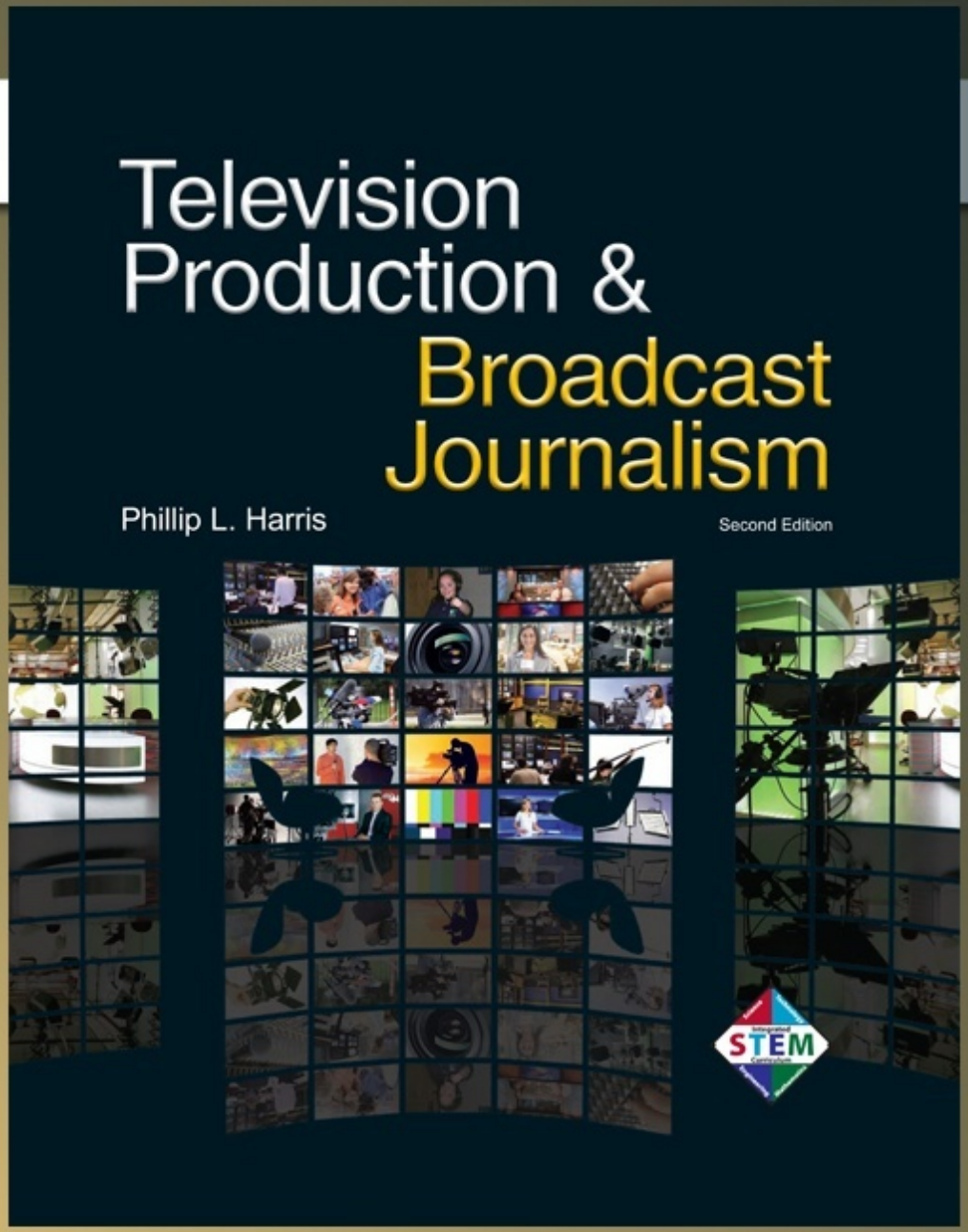

PowerPoint Presentations for

Television Production & Broadcast Journalism

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6
Audio Basics

Objectives

- Explain the function of audio for television productions.
- Identify the most common use of each type of microphone presented.
- Understand the importance of the pick-up pattern classification when selecting a microphone.
- Recall the appropriate VU meter readings for both an analog audio system and a digital audio system.

Functions of Audio

- Voice track
- Music and sound effects
- Environmental
- Room tone

Voice Track

- On-camera narration, or dialogue
- Off-camera narration, or voiceover (VO)

Music and Sound Effects

- Help to:
  - set mood
  - enhance action and emotion of scenes
- Obtaining sound effects
  - Created by production team
  - Purchased on tape, DVD, CD
  - Downloaded from Internet

Environmental Sound

- Background sound
  - Normal sounds in location that help establish setting
  - Sounds that are not the most important sound of the shot
  - Must not overpower foreground sound—probably voice track

Environmental Sound (Cont.)

- Natural sound, or nat sound
  - Sounds that are important to topic of story
  - Often shot on B-roll
  - Calls attention to the story

Environmental Sound Manipulation

- News programming
  - Keep environment sound
  - Modify only to ensure reporter is heard
- Non-news programming
  - Extensive manipulation acceptable

Discussion

Why is it considered unethical to alter the nat sound of a news story?

Room Tone

- Room tone is different in every location
- Always record few minutes of room tone to use as a safety measure in editing
- Can be used as an “eraser” if unwanted sudden sounds are heard during recording
- Room tone is not silence; it is the sound of no human occupation

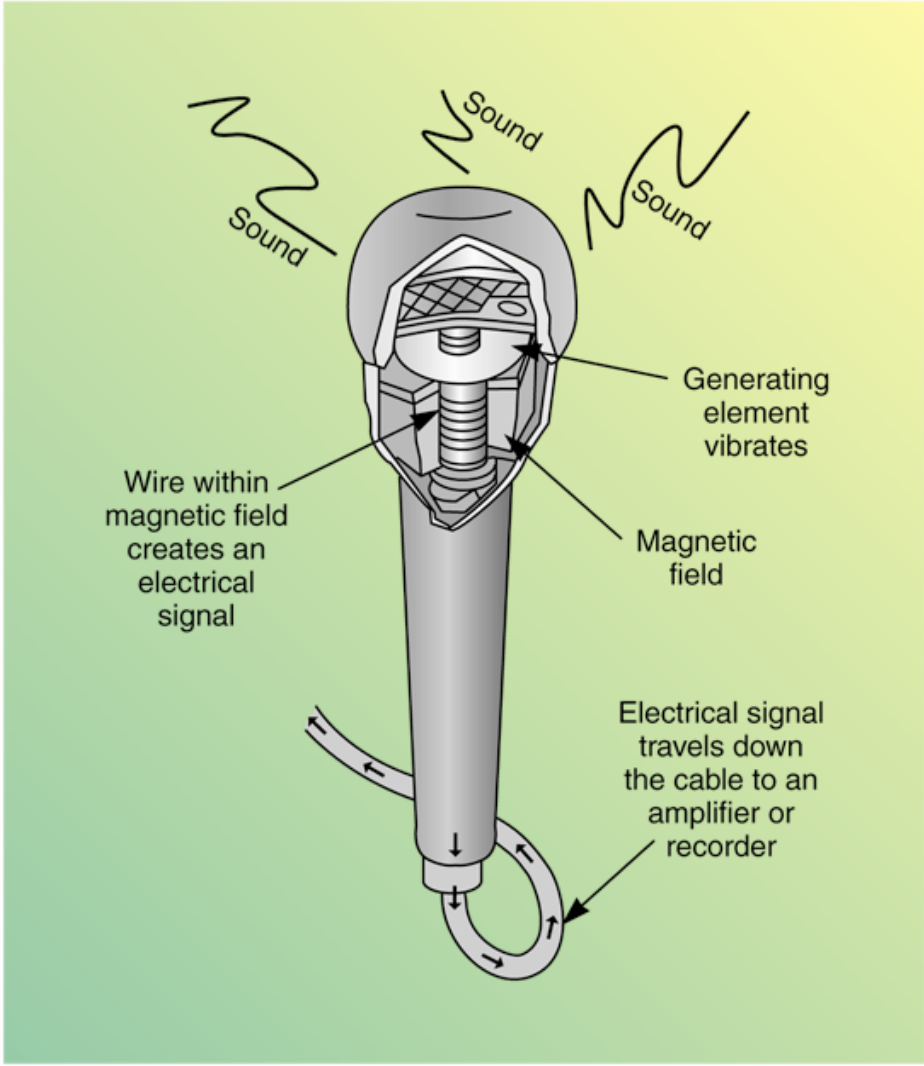
Sound Frequencies

- A factor in choosing microphones for TV use
- Choose mic that is designed to pick up frequencies expected during the shoot
- Especially a factor when recording music
- Use low-frequency mic to record low-frequency sounds
- Use mid-range mic for mid-range sounds and normal speaking voice
- Use high-frequency mic for high-frequency sounds

Microphone (Mic or Mike)

- Generating element, or diaphragm
- Types of generating elements housed within magnetic fields:
  - Diaphragm that vibrates a coil
  - Thin piece of coated film that vibrates a coil
  - Thin piece of metal

Microphone (Cont.)



Wired and Wireless Mics

- Both have advantages and disadvantages
- Quality of mic is directly related to cost

Wired Mics

- Generally slightly less expensive than wireless
- Cables can run 200′ + with no loss of signal
- Longer runs may need amplifier to keep signal strong
- Mic cables can get tangled in performers' feet
- Mic cables must be taped down to floor so as to not be tripping hazard
- Mic cables must be coiled and stored after use

Wireless Mics

- Usually slightly more expensive than wired mics
- No cables to trip over
- Mic may have short wire to a belt-pack radio transmitter
- Receiver is by camera and has short wire to recorder
- No long cables to coil and store

Wireless Mics (Cont.)

- Mic frequency different from other wireless devices:
  - Stage technicians' wireless headsets

Dynamic Mic

- Very rugged mic
- Usually used for speech; mid-range sound

Condenser Mic

- Also called electret condenser mic
- Needs external power—usually battery
- Greater range of sound frequency
- Many different mics designed for particular sound ranges available

Ribbon Mic

- Extremely high quality
- Extremely high cost
- Found usually in radio stations and music recording studios
- Extremely fragile
- Pop filters or spit guards used with them
- Not a hand-held mic

Pop Filter

Non-professional Mics

- Avoid using these if you want good results
- Found on low-end camcorders
  - Pick up operator's breathing
  - Pick up sound of zoom motor of camera
  - Talent far away so their voice sounds like a bucket is upside down on their heads

Boundary Mic

- Placed on flat surface to mic an entire area
- For example, two or three placed on edge of stage to pick up sound anywhere on entire stage

Parabolic Reflector Mic

- Shaped like satellite dish
- Extremely directional
- Most often found on sidelines of football fields to pick up sounds from players

Discussion

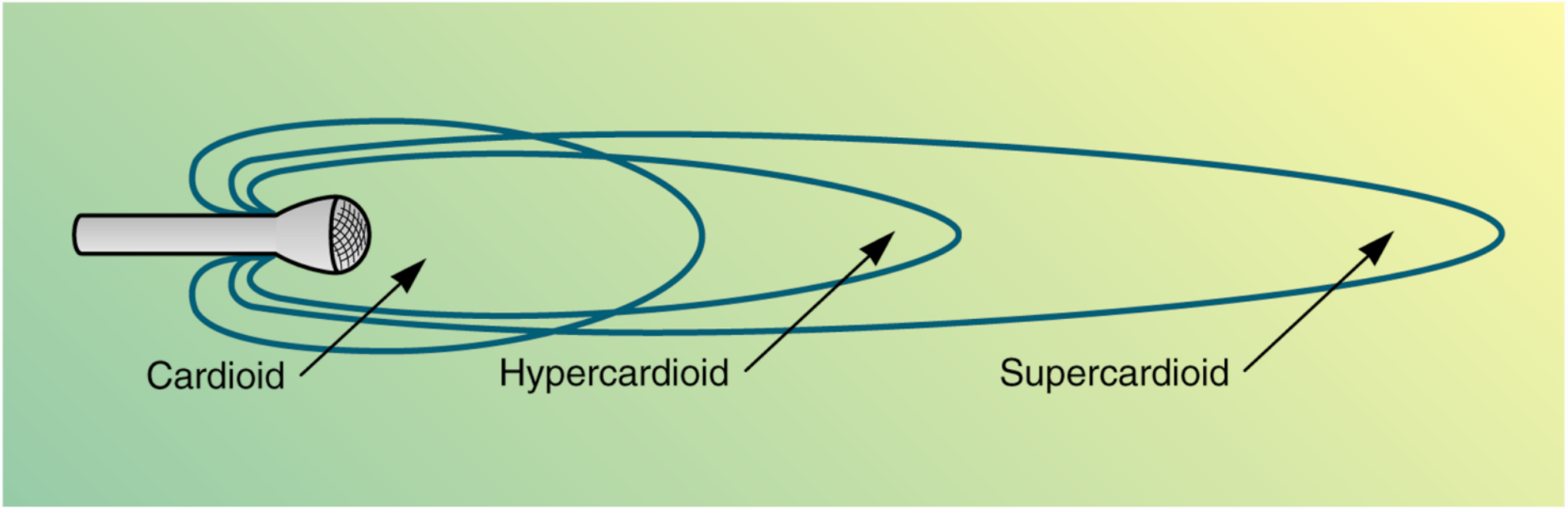
Why would the audio technician need to be very quick on the mute button for the input of a parabolic reflector mic pointed at the football field of a nationally televised game?

Pick-up Pattern

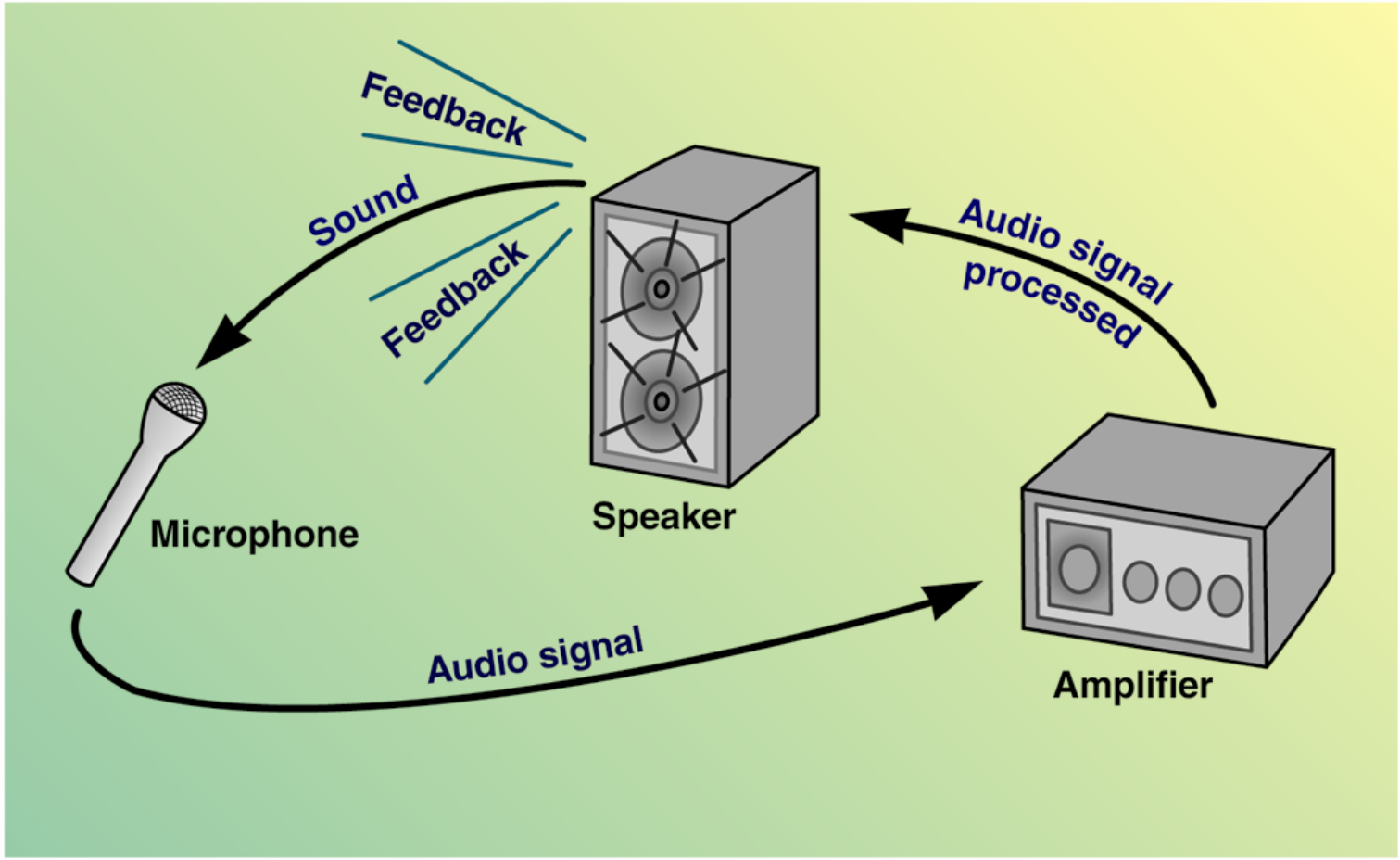
- Refers to direction mic “hears” sound from
- Omni-directional mic
  - Picks up sounds equally well from all directions
- Cardiod mic, uni-directional mic, directional mic
  - Cardioid gets name from heart-shaped pick-up pattern
  - Picks up sound primarily from one direction

Pick-up Pattern (Cont.)

- Hypercardioid mic, supercardioid mic, shotgun mic



Feedback



Hand-Held Mic

- Also known as stick mic

Boom

- Fishpole boom
- Goal is to have mic as close as possible to talent but not dip into the shot

Discussion

Discuss ways to create your own boom that would not tire your arms so quickly.

Lapel Mic (Lav)

Mic Use Guidelines

- Always treat mic like the ear of someone you care for
- Do not shout into mic
- Do not slap head of mic with your hand
- Do not exhale or inhale directly through mic
- Never put lips directly on mic
- Never swing a mic by its cord
- Never blow into mic

Discussion

What type of mics should be used for the following?

- Political speech
- Recording studio
- Broadway play
- Sidelines of Super Bowl

Interviewing Children

- Do not stand over them
- Kneel or squat down to be at least at their eye level or, better still, below their eye level

Mic Cables and AC Cables

- Keep them as far apart as possible
- If they must cross, have them cross at 90° angles and place an object, such as a book or board, between them

High Impedance (HiZ)

- Inexpensive
- Low-quality
- Longest cable runs usually no more than six feet

Low Impedance (LoZ)

- Expensive
- High-quality
- Can tolerate long cable runs
- All professional television gear utilizes low impedance audio signals

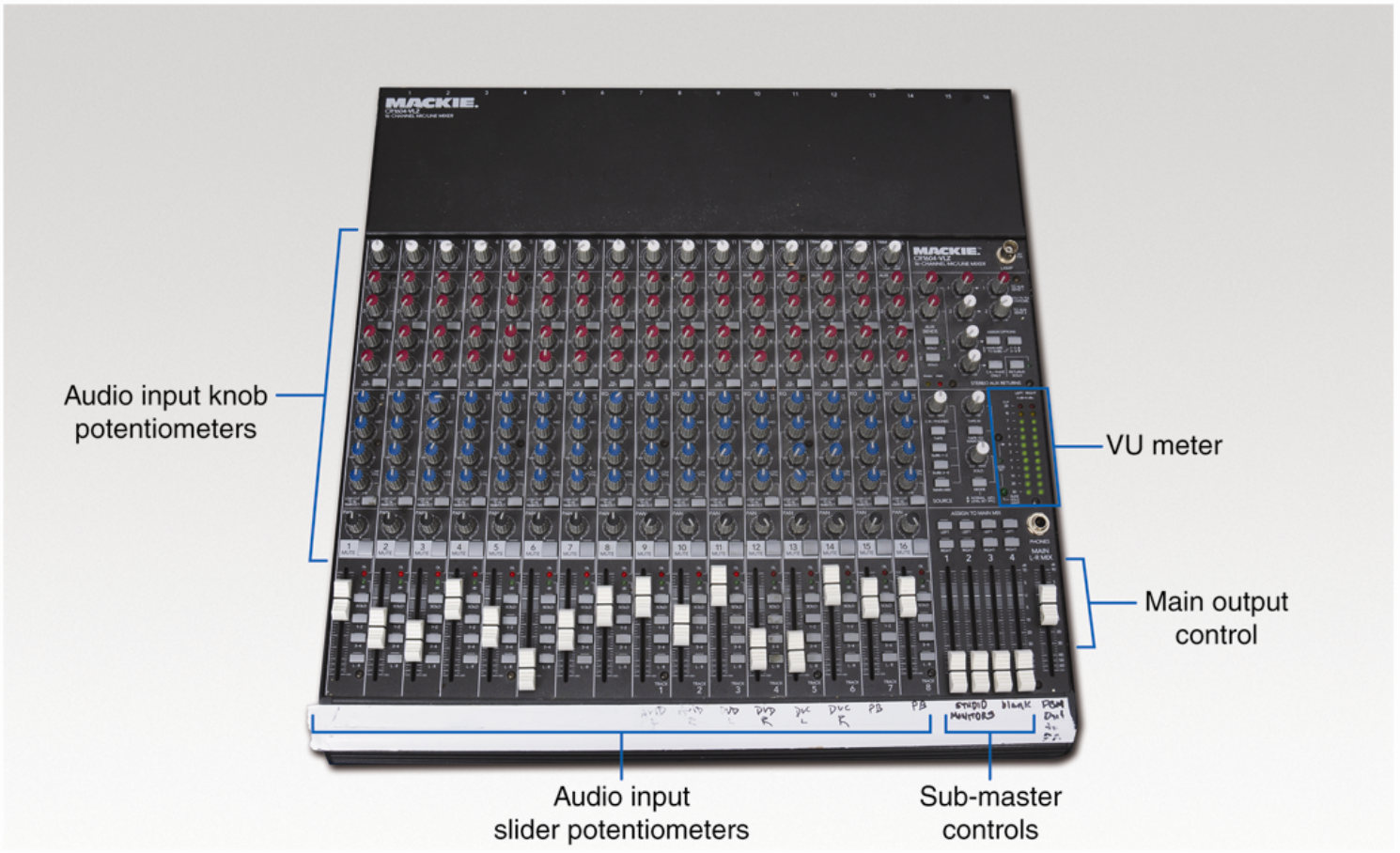
Sound Levels

- Mic level
- Line level
- Power level
- Levels cannot be combined
- “Mic out” must connect to “mic in”
- “Line out” must connect to “line in”
- “Power out” must connect to “power in”

Mixers

- Mic mixer
- Audio mixer

Potentiometer (pot)



Volume Unit Meter (VU meter)

Audio Requirements

- Analog recording systems–VU meter reading of +3 to –3 dB
- Digital recording systems–VU meter reading of about –20 dB
- Audio engineer must wear full muff earphones that block out nearly all extraneous sounds except the recorded sounds
- “Ear buds” are unacceptable

Automatic Gain Control (AGC)

- A poor circuit for analog recording
- An excellent circuit for digital recording

Career Page

- The Audio Engineering Society is the only professional society devoted exclusively to audio technology
- http://www.aes.org/

Review Question

What is the one thing to be aware of when using wireless mics?

Make sure your mics are not using the same frequency as other wireless mics in the facility.

Review Question

Name the four functions of audio and give examples of each.

1. Voice track: dialogue or voiceover
2. Music and sound effects: DVDs, CDs, Internet downloads
3. Environmental: wind blowing, traffic noise
4. Room tone: a room with no people

Review Question

Microphones have pick-up patterns. What is the name of the mic that picks up sound equally in all directions?

Omni-directional

Review Question

What are the appropriate VU meter readings for analog and digital audio systems?

Analog: between +3 to –3 dB

Digital: about –20 dB

Podcast Project

Brainstorm for ideas for 15 minutes.

--5 ideas, be specific as possible.

Sit and further brainstorm with your partner. Hash out ideas, write script, gather your gameplan.

Come tell Ms. Roberts your partner's name and your 3 main ideas for your podcast.

Need 10 Sound Effects – 5 found online, 5 made by you and your partner

PodCast Project

Brainstorm for ideas for 5 minutes.

--5 ideas, be specific as possible.

Wander around and find your partner based on similar ideas.

Come tell Ms. Roberts your partner's name and your 3 main ideas for your podcast.

Glossary

- **audio mixer:** A piece of equipment that takes the sounds from a variety of sources, such as mics, a CD player, or tape player, and combines them into a single sound signal that is sent to the recorder.
- **automatic gain control (AGC):** A circuit found on most consumer video cameras that controls the audio level during the recording process.

Glossary

- **background sound:** Type of environmental sound that is not the focus of or most important sound in a shot.
- **boom:** A pole that is held over the set with a microphone attached to the end of the pole.

Glossary

- **boundary mic:** A microphone used to pick up a sound on a stage or in a large room and is most commonly a condenser type. Boundary mics are usually placed on a table, floor, or wall to “hear” the sound that is reflected off hard surfaces.
- **cardioid mic:** A mic with a pick-up pattern that captures sound from primarily one direction. Also called a *uni-directional mic* or *directional mic*.

Glossary

- **condenser mic:** A type of mic that requires an external power supply (usually a battery) to operate. The generating element is a thin piece of metal foil or coated film. Also called an electret condenser mic.
- **dynamic mic:** A very rugged type of mic that has good sound reproduction ability. The generating element is a diaphragm that vibrates a small coil that is housed in a magnetic field.

Glossary

- **feedback:** A high-pitched squeal that occurs when a microphone picks up the sound coming from a speaker that is carrying that microphone's signal.
- **fishpole boom:** Type of boom that must be physically held over the heads of talent.

Glossary

- **generating element:** A thin surface inside the mic that vibrates when hit by sound waves in the air and creates an electrical signal. Also called a *diaphragm*.
- **hand-held mic:** A mic that is designed to be held in the hand, rather than placed on a boom or clipped to clothing. Also called a *stick mic*.

Glossary

- **high impedance (HiZ):** A type of mic that is typically inexpensive, low-quality, and cannot tolerate cable lengths longer than 8′.
- **hypercardioid mic:** A directional mic with a narrower and longer pick-up pattern than a cardioid mic.
- **lapel mic:** The smallest type of mic that can be worn by talent and is attached to clothing at or near the breastbone with a small clip or pin. Sometimes referred to as a *lav*.

Glossary

- **line level:** The level of audio between pieces of audio equipment. For example, the level of audio going from the output of a CD player to the input on an amplifier.
- **low impedance (LoZ):** A type of mic that is costly, high-quality, and can tolerate long cable lengths.
- **mic level:** The level of audio that comes from a microphone. It is designed to be sent to the “mic in” on a recorder or mixer.

Glossary

- **mic mixer:** A piece of equipment that combines only the microphone signals into a single sound signal.
- **microphone (mic):** The piece of equipment that picks up sounds in the air and sends them to the mixer or recorder.
- **natural sound (nat sound):** Environmental sound that enhances a story and is important to the shot.

Glossary

- **off-camera narration:** Program narration provided by talent that is heard, but not seen by the viewer. Also called *voiceover (VO).*
- **omni-directional mic:** A mic with a pick-up pattern that captures sound from nearly every direction equally well.
- **on-camera narration:** Program narration provided by on-screen talent (seen by the camera).

Glossary

- **parabolic reflector mic:** A very sensitive mic that looks like a satellite dish with handles and is designed to pick up sounds at a distance.
- **pick-up pattern:** A term that describes how well a mic hears sounds from various directions.

Glossary

- **pop filter:** A barrier made of shaped wire covered with a piece of nylon that is placed between a sensitive mic and the talent to avoid damage to the diaphragm of the mic.
- **potentiometer (pot):** A knob or a slider that controls the strength of signal.
- **power level:** The audio level from the output on an amplifier to the speaker.

Glossary

- **ribbon mic:** The most sensitive type of mic used in television. A thin ribbon of metal surrounded by a magnetic field serves as the generating element.
- **room tone:** The sound present in a room or at a location before human occupation.
- **shotgun mic:** A directional mic with an extremely narrow pick-up pattern.

Glossary

- **supercardioid mic:** A directional mic with a narrower pick-up pattern than a hypercardioid mic.
- **voice track:** The audio portion of a program created through dialogue or narration.
- **volume unit meter (VU meter):** A meter on either an audio or mic mixer that indicates signal strength.

Glossary

- **wireless mic:** A mic that uses a short cable to connect the mic to a radio transmitter with an antenna, or the transmitter may be built into the mic itself. The transmitter wirelessly sends the signal to the receiver, which sends the mic signal through a short cable to the recorder.