



# Microphones and Capturing Audio

# **IMPORTANT IDEAS ON Audio**

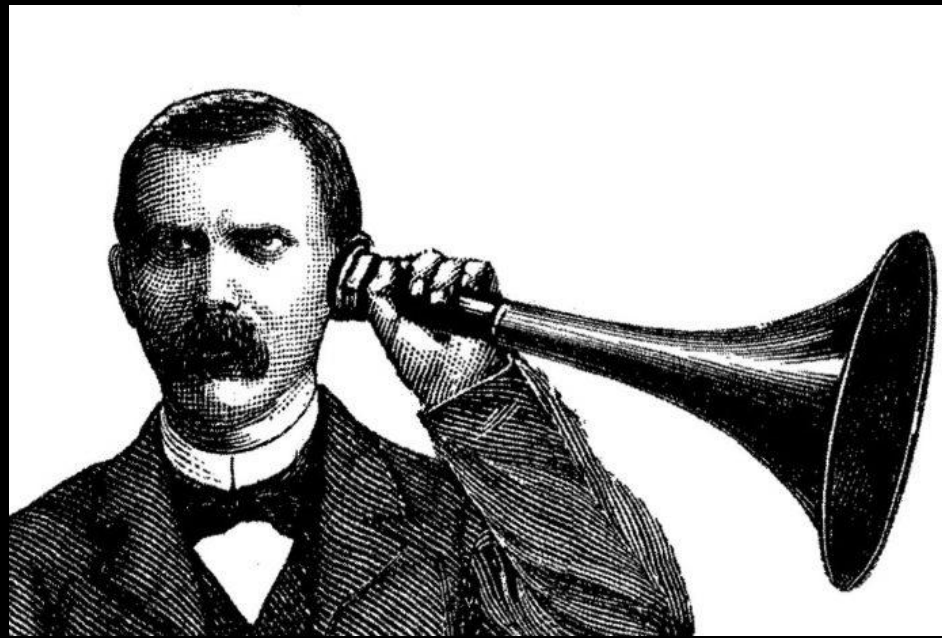
*“Audio can make or break ANY film.”*

*Audio makes up **51%** of a viewer’s **TOTAL EXPERIENCE** in watching a film...*

*Unless it’s **BAD** audio. Then it makes up **99%**.*

# DIFFERENT TYPES OF MICROPHONES

And what they do well...or not so well...



# ALL MICS HAVE DIFFERENT PICK-UP PATTERNS

**PICK-UP PATTERN** = THE DISTANCE, ANGLE AND AREA WHICH A MIC PICKS UP SOUND THE BEST (CLEAR, FULL, LOUD)



# Electret Microphones

- ▶ Used in most SMARTPHONES.
- ▶ Generally good at reproducing subtle nuances of quieter sounds
- ▶ Electret mics can **OVERLOAD** easily if volume levels are too high.
- ▶ **PICK-UP PATTERN** and **PICK-UP DISTANCE** (1-inch → 24-inches)
- ▶ **Digital Processors** w/in smartphones only pick up sound when SOUND IS HAPPENING or **CONSTANT**.
  - ▶ They **STOP** when they don't HEAR SOUND.



# Lavalier/LapelClip-on Mics

- ✓ Commonly used for video shoots and television talk shows.
- ✓ Easily placed close to the direct source of someone's voice.
- ✓ inconspicuous and portable.
- ✓ **PICK-UP PATTERN** and **PICK-UP DISTANCE** (6-inches → 18-inches)
- ✓ does NOT work well for recording live concerts or for LARGE ROOM ambient field recordings.
- ✓ one mic can usually capture only ONE voice WELL



# Condenser Microphones

- ▶ Better at reproducing subtle nuances of quieter sounds.
- ▶ widely used in **studio recordings**--most commonly used for recording acoustic instruments and voices
- ▶ For capturing a more **accurate**, PURE, or "**flat/neutral**" profile or sounds.
- ▶ **HOWEVER**, they can **OVERLOAD** easily if volume levels are too high



\$6,995.00  
Guitar Center



\$299.00  
Sweetwater



\$1,700.00  
Sweetwater



\$1,300.00  
Sweetwater



\$3,200.00  
Sweetwater



\$699.00  
Sweetwater

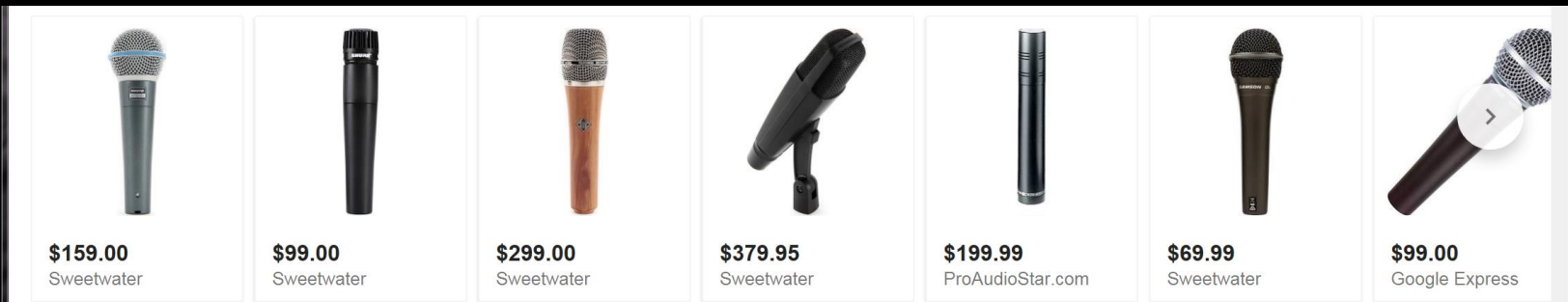


\$549.00  
Sweetwater



# Dynamic Microphones

- ➔ Dynamic microphones **amplify** certain frequency ranges more than others.
- ➔ They do **not** overload or distort as easily as condenser microphones
- ➔ Tend to be less expensive than condensers.
- ➔ Dynamic microphones are recommended for **live** concerts and studio or radio voice-overs.

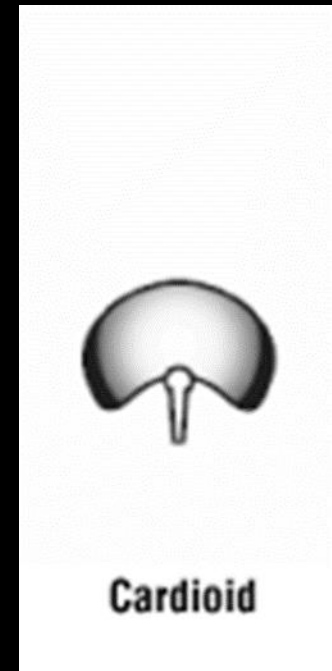
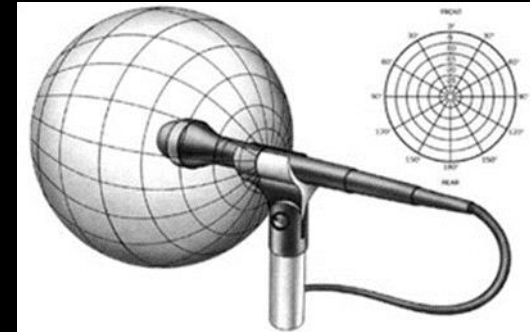




# MIC Directionality and PICK-UP PATTERNS

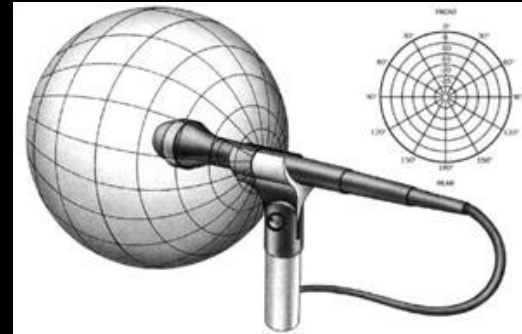
Four different types of *pick-up patterns*

- A microphone **pick-up pattern** is the acoustic pattern which a microphone collects the best quality of sound.
- Need to SELECT the BEST MIC for the job.
- NEED to **KNOW HOW** to use a mic EFFECTIVELY **BEFORE** using it!!!
- **GIGO** → Garbage in – Garbage out.



# Omni-directional Pick-up Pattern

- ⚡ Omnidirectional microphones capture sounds equally from all angles.
- ⚡ They are commonly used for recording multiple instruments and voices.
- ⚡ Frequently used as “table mics” in a conference room.
- ⚡ They can pick-up a lot of ambient noise.

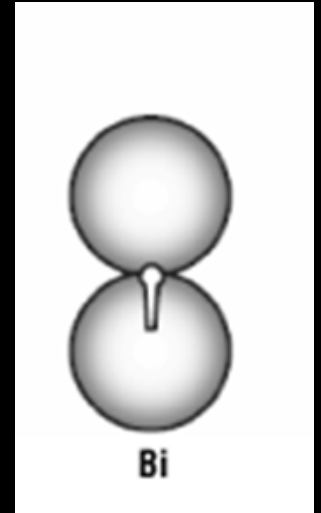


Omni



# Bi-directional microphone Pick-up Pattern

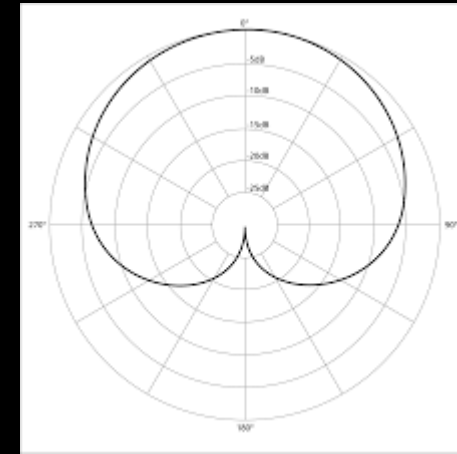
- ✓ **Bidirectional** microphones capture sounds directly in front and in back of the capsule.
- ✓ A bidirectional mic is commonly used to record vocal duets or is placed above an acoustic instrument.
- ✓ Bidirectional microphones reject sounds from the sides.
- ✓ They can also exhibit what is known as the *proximity effect* which amplifies the **bass frequencies** of a voice as it gets closer to the microphone.
- ✓ Often employed by radio DJs and singers.



# Cardioid microphone Pick-up Pattern



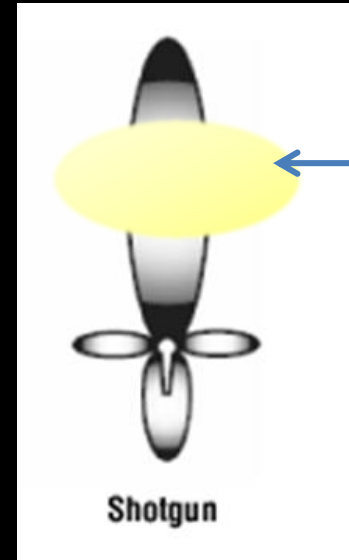
- **Cardio** → **Heart**
- **Cardioids** capture the sounds directly in front of the capsule.
- Cardioid mics are used for live-concert vocal recording and amplification because the pick-up pattern does not capture loud, distortion-causing sounds such as those from a PA system.
- **Proximity effect**. They also amplify the bass frequencies of a voice as it gets closer to the microphone, creating the proximity effect.



# Shotgun Microphone Pick-up Pattern

## Hypercardioid Pattern

- Shotgun microphones contain a recording capsule embedded in a long hollow tube.
- The capsule picks up a highly exaggerated *hypercardioid pattern* of sounds far in front and in back of the microphone.
- Shotgun mics are used for recording in an environment where a narrow pick-up range is needed.



Audio Sweet Spot



