

COIS2830 – WEEK 10

Recording History and Milestones:

Where did we come from, how did we get here?

A quote

“I remember once, I was very, very struck by finding a diary entry ... somewhere that...a man had heard a Victrola for the first time. An English clergyman had gone to a garden party, and he'd heard an Edison, wax-cylinder Victrola. And he'd come home and was just completely traumatized by it. And he described it as being ...he said that he had heard "A voice from Hell": this "undead, hideous parody of the human voice," and that mankind was "doomed," and, "how could God let such things be?"

And he was ... completely sincere. I doubt if he would've had the same reaction... the next time around. But ... this diary entry caught him... on the cusp of the change.

We don't ... find it extraordinary that we can hear the voices of the dead whenever we wish to. “

William Gibson, No Maps for These Territories (2000)

Strictly Acoustic (1877 to 1925)

- Edison wax cylinder phonograph
- Earliest commercial medium for recording and reproducing sound
- Thomas Edison 1877 and patented in 1878

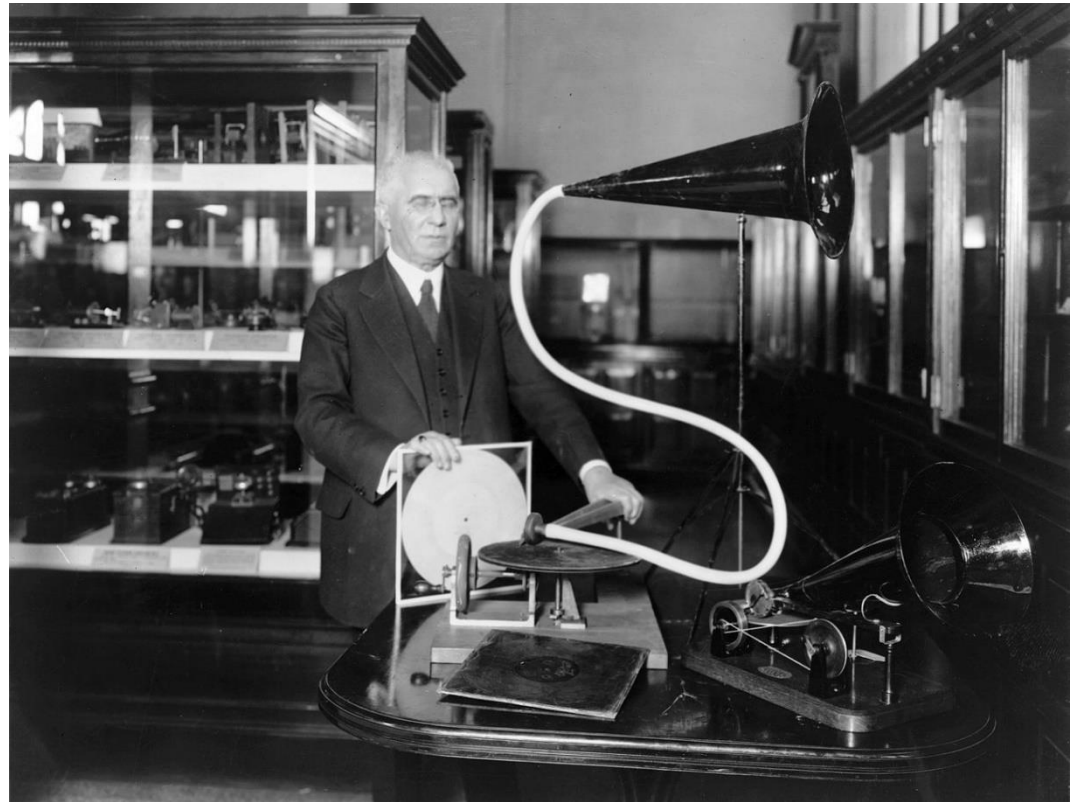
<https://www.youtube.com/watch?v=EOiFt47CsXo>

<https://www.youtube.com/watch?v=Mp3lK1cGj5o>



- "EdisonPhonograph" by Norman Bruderhofer, www.cylinder.de - own work (transferred from de:File:Phonograph.jpg). Licensed under CC BY-SA 3.0 via Commons - <https://commons.wikimedia.org/wiki/File:EdisonPhonograph.jpg#/media/File:EdisonPhonograph.jpg>

Gramophone and record 1889



"BerlinerDisc1897". Licensed under GFDL via Commons -
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Electrical recording (1925 ->)




- Turning sound into electrical impulse
- Sound & film
- Mass production
- Amplification
 - Turning electrical impulse into sound
 - Loudspeaker

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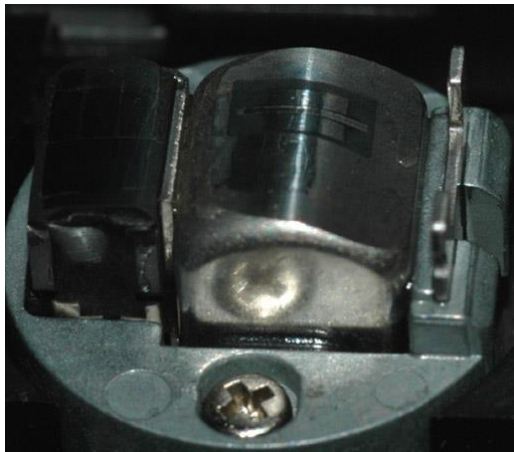
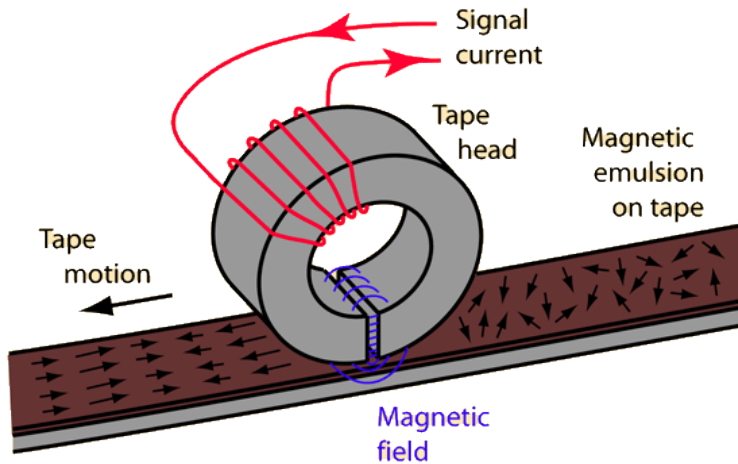
Magnetism (1945 ->)



- Magnetic tape
 - embedded tiny magnetic oxide particles in a plastic binder on a polyester film tape
 - Fidelity
 - Stereo vs. mono
 - 2-track
 - Multi-track
 - Manipulation
 - Duration
- 



Magnetic Tape



- Tape heads are made from ferromagnetic material
- A magnetic field magnetizes the emulsion on the tape.
- A coil of wire around the ring carries the required current to **produce** a magnetic field
 - proportional to the signal to be recorded.
- If recorded tape passes over the head, it **induces** a voltage in the coil.
 - Same head can be used for recording and playback.
 - Many machines have separate record and playback heads

Les Paul (1949)

- Worked with early companies to develop multi-track machines
- “Sound-on-Sound”
- “Overdubbing”
 - Record and playback at same time
- Brought this technology into live performances



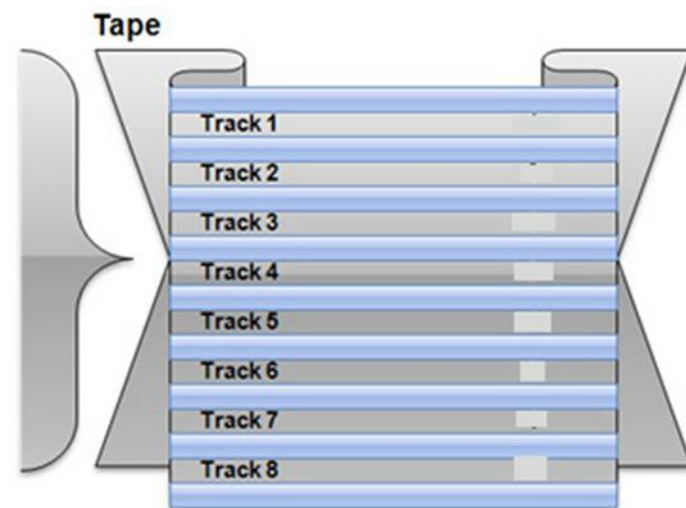
<http://www.lespaulfilm.com/>

How High the Moon (1951)

<https://www.youtube.com/watch?v=NkGf1GHxhE>

Multi-Track recording

- Tape was divided into sections, called “tracks”
 - Still use this nomenclature today
- Ampex – 3 Track recorder (early 50’s)
 - Backing music on 2 tracks (stereo)
 - 3rd track for vocalist
 - Phil Spector and early Motown – “Wall of Sound”
- 4-Track machine next milestone (Late 50’s & Early 60’s)
 - Early Beatles, Stones, Beach Boys, etc
 - By “bouncing” tracks between two 4-track machines advanced recordings possible
 - Beatles *Revolver*, *Sgt. Peppers*
 - George Martin
 - Each bounce reduces fidelity and increases noise
- 8-track machine – Ampex 1957
 - First one sold to Les Paul - \$10,000
 - 7 feet tall 250lbs



Multi-Track recording

- 1966- 16 Track, 1968 – 24 Track
 - \$10,000 - \$30,000
- Home multitrack.
 - 1972 4 track reel-to-reel \$1000
 - 1979 Cassette - \$1200 (Tascam Portastudio 144)
 - 1983 – Fostex X-15 - \$500?



Digital recording

- Late 70's
 - 32 tracks, still uses tape
 - Sound is “sampled” – turned into 0 and 1
 - 44.1 kHz – 44100 times per second
 - These digital signals stored on each track
- 1982 – first commercial CD (Compact Disc)
- 1992 – ALESIS –Digital 8 track home studio
 - “ADAT”
 - \$3995
 - Still uses tape
 - VHS



"ADAT-XT" by Iainf 12:05, 13 July 2006 (UTC) - Bomba Rassss.. Licensed under CC BY 2.5 via Commons - <https://commons.wikimedia.org/wiki/File:ADAT-XT.jpg#/media/File:ADAT-XT.jpg>

Cut/Copy/Paste: Pre-Computer

- https://www.youtube.com/watch?v=_TARpAdIjRM
- https://www.youtube.com/watch?v=rXEBDCX_O6M