MUS 302: RECORDING STUDIO PRODUCTION
LECTURE 2:
HISTORY OF RECORDED MUSIC
ERAS OF RECORDED MUSIC

1. Pre-Recording Era / Notation Era

2. Acoustical Era / Early Label Era

3. Electrical Era / Mature Music Era

4. Magnetic Era / Independent Era

5. Digital Era / Self Produced Era
PRE-RECORDING/ NOTATION ERA
1440 - 1870

- Music is written and performed, but there is no way to document it outside of transcription.
- The printing press (invented in 1440) allows for sheet music to be mass produced.
- The first “sound recording” is made by transcribing the vibrations of sound waves.

Johannes Gutenberg’s printing press, ca. 1440.
1473: Printed Sheet Music

- The printing press soon started being used for music notation, allowing for the distribution of sheet music.
- Up until then it had been written by hand on parchment - or even carved in stone tablets! *(like in Babylon in the 14th Century BC)*
- Sheet music is the oldest form of music documentation and distribution. And it hasn’t changed...much!
- Orchestras were the first “record players,” performing the same piece of music written by a composer across Europe.
• 1857-60: “Phonautograph”
  Edouard-Léon Scott de Martinville made visual representations of sound waves known as “Phonoautograms.” They were heard for the first time in 2008 after audio historian David Giovannoni and physicist Carl Haber developed a way to stitch together 16 photoautograms into one short audio file.
  • This is truly the earliest sound recording...Creepy!
• Recordings are made by someone speaking, singing or playing an instrument into a horn.
• The vibration of the original sound moves a membrane at the end of the horn which in turn moves the needle, cutting into whatever recording medium is being used (foil, wax or shellac.)
• Only a small band of frequencies are captured, from about 100Hz to 2500Hz.
• Record “producers” are involved in the recording and promotion of music, not the actual production of it. They act mainly as “archivists,” capturing the sound.

Edison’s first “tin foil” cylinder
1877: “Phonograph”
• Thomas Edison’s first modern sound recording was made using his phonograph which captured sound through a horn and indented grooves with a needle onto a metal cylinder wrapped in tin foil.
• Most importantly he could also play back the sound recorded on his phonograph. “Mary had a little lamb...”

1885: Wax Cylinder Record
• Wax becomes the standard method of recording sound and distributing it. The only problem was that the wax would wear out after it was played a few dozen times.
• However, cylinders could then be reused to record new sound.
1886: “Graphophone”
• Alexander Graham Bell’s answer to Edison’s phonograph, the graphophone also played wax cylinders.

1887: “Gramophone”
• Designed by Emile Berliner, the Gramophone used discs made of hardened rubber that he called “vulcanite” - instead of wax cylinders.
• The discs were 5-7” in diameter and held about 2 minutes of sound.
• This new format could only be recorded on once because of the material, but made it easier to mass produce records.
1896: Piano Rolls
This is obviously not acoustic sound recording, but an important part of recorded music history just the same. Piano rolls were long strips of paper with holes punched in them, designed to be used with player pianos.
They were used to record the performances of famous pianists, but didn’t always capture every part of the performance (dynamics, pedaling and tempo.) Famous pianists and composers made their own rolls for distribution, including Gershwin, Rachmaninov, Debussy, Mahler, and many others. Jason Moran recently made use of piano rolls in his 2019 show at the Whitney!
1898: 10” 78 rpm Record
These 10” shellac records held up to 3 minutes per side, although Edison experimented with 7”, 12”, 14”, 16” and even 21” 78 rpm discs. *(RPM stands for “Rotations Per Minute.”)*

Sound was cut into directly into wax master discs using a “vertical cut” by the needle, or straight up and down. The wax master discs were then coated in metal (aka “electroplated”) and then pressed to make copies that were coated in shellac.

1903: 12” 78 rpm Record
Victor introduces the 12” 78, which increased the playing time up to a possible 5 minutes per side. However, 10” records with 3 minutes per side would remain the standard for 78’s
An acoustical recording session using a horn.
1917: Original Dixieland Jass Band
The first “jazz” album was recorded in 1917 in New York City by the ODJB. They recorded “Livery Stable Blues” and “Dixieland Jass Band One Step” for the Victor label. In many people’s opinion, this began the modern era of recorded music.

The drummer Tony Sbarbaro had to set up far behind the other musicians and was limited to using woodblocks and other small traps in order not to overpower his bandmates.
Microphones begin to be used to amplify sound before it is cut into a master record. Quality of sound recordings improve as the frequency range is extended from 60Hz to 6,000Hz.

Record labels hire individuals to seek out new talent and “produce” hit records. They were called “A&R Men,” meaning Artist and Repertoire, but we now know them simply as “Producers.”
1925: First Electrical Recording
Leopold Stokowski and the Philadelphia Orchestra were the first ensemble to benefit from the new technology, recording Saint-Saëns Danse macabre, opus 40 with a single Western Electric condenser microphone in early 1925.

Electrical recording allowed for extended frequencies to be captured, meaning you could hear everything from the low contrabassoon up to the high flutes in the orchestra. (However, the microphone couldn’t handle the percussive timpani so it was replaced by a bass saxophone. The orchestra size was also reduced to only 42 members - compared to the normal 100 or more.)
1934: The Acetate Master

The term “acetate” actually refers to an aluminum record that has been coated in lacquer. It was a process that was first developed in France and soon became the new standard way of “cutting” masters (instead of using wax.)

Acetate records continue to be made today for use as masters. (Also called a “lacquer.”)
1942: World War II
At the height of WWII, the War Production Board needed shellac for use on signal flares and explosives (it was used as a coating on shells.) They ordered the U.S. record industry to cut the amount of shellac used in records by 70%, which lead to companies grinding up old records to mix with their limited supply of shellac to make new records.
Using recycled material however caused the sound quality to suffer. This would in part be responsible for investigating new material options for record making...

1942-44: AFM Recording Ban
The American Federation of Musicians banned union members from recording new material because of royalty disputes. The union wanted to ensure a fair payment by the recording companies to artists.
Record labels fought back by releasing old pre-recorded and shelved material, but eventually gave in to the union’s demands ending the strike.

Scrap for Shellac!
MAGNETIC/INDEPENDENT ERA
1945 - 1975

- Magnetic tape becomes the norm and the “Long Playing” record makes its debut.
- Stereophonic Sound is introduced.
- “A&R Men” who were employed by labels slowly turn into Independent producers.
- Multitracking becomes possible for the first time.

Fritz Pfleumer with the first tape machine, ca. 1928
• **1945: Magnetic Tape is Adopted**
  - Magnetic tape had been widely used in Germany since 1935, but it wasn’t until allied forces occupied Germany that the technology became known in America.
  - It soon became the standard for audio masters in radio and music recording because the quality was so much higher than cutting directly to wax or acetate. *(Acetate records were still made from the tape masters in order to press copies of the records.)*
  - The magnetic tape had to be loaded into a large **Reel-to-Reel** machine.
1948: The 33⅓ rpm “Microgroove” Vinyl
- In 1948 Columbia Records releases the first “LP” or Long Playing vinyl record which is 12” and holds 23 minutes of music per side. It’s smaller grooves allow it to hold more music.
- It was advertised as being “unbreakable,” unlike its brittle shellac cousins.

1949: 45 rpm Vinyl Single
- RCA Victor introduces the 7” 45rpm “single” which holds up to 5 minutes of music per side, effectively replacing the 78 in functionality and quality. Great for jukeboxes!
- It brought about the concept of the “single,” which is still in use today. (The sales of singles are still charted in the “Top 40” chart!)
1955-1957: Stereophonic Sound

The mid-late 1950s saw the introduction of “Stereo” sound, where two channels (left and right) play back simultaneously. Up until then all recorded music was Monophonic (or simply “Mono”) meaning that there was only one channel of music.

Record companies wanted to push this new technology, in part because it meant they could sell new Stereo systems! However, Mono continued to be thought of as the “serious” sound format through the 1960’s (The Beatles intended all but their last three albums to be Mono.)

1959 record by Esquivel, produced by Johnnie Camacho for RCA
1951: Multitrack Recording

- Les Paul is recognized as the pioneer of multitrack recording (*when you record yourself playing over a previously recorded track of yourself.*)
- He first tried this multitrack method in 1948 using two acetate discs and two cutting machines and recorded a version of the song “Lover.”
- Les was given a tape machine by Bing Crosby that he and his wife Mary Ford would make many multitrack recordings with including the 1951 hit “How High The Moon.”
1958: The 8 Track Tape Machine

Les Paul became frustrated by the sound degradation that occurred when “bouncing” his multitrack recordings down to make room for new tracks, so he had the first 8 track tape machine custom built for him by Ampex. - it cost $10,000 (about $90,000 today!)

The Beatles wouldn’t get hold of an 8 track until 1968, meaning that up til then they were recording to only 4 track tape (and bouncing down…)

8 tracks became standard in studios only after 1967
1964: Vinyl Becomes Standard
- Vinyl becomes the standard and 78 shellac records stop being produced.

1965: The 8 Track Tape Cartridge
- This is different than an 8 track tape machine! The 8 track cartridge is a portable playback device that could hold ≈ 11.5 minutes per track. There were four tracks in stereo (4x2=8!)
- In 1965 the Ford Motor Company began factory installing 8 track cartridge decks into their cars. 8 tracks caught on because was the first time drivers had choice over what they listened to in their cars (*up until then it was just AM radio.*)
- 8 Tracks became less popular in the late 70’s and by the 80’s were no longer sold in stores.

The inside and outside of some old 8 track cartridges!
MAGNETIC/INDEPENDENT ERA

• 1968: The Cassette Deck
  • Cassette tapes were introduced in 1963, but didn’t start getting installed in car dashboards until ’68. Cassettes were more portable than 8 track cartridges and more versatile as well as you could record directly on them.
  • Cassettes were hugely popular in the 80’s and early 90’s thanks to the Walkman - and then made an ironic comeback in the 2010’s.

Cassettes don’t like Arizona heat!
• 1971: The First Synthesizer
  - Robert Moog started making synthesizers in 1964 (the Beatles used a Moog on “Abbey Road”), but it was his first compact synthesizer, the “MiniMoog” that made him famous.
  - The MiniMoog wasn’t an acoustic instrument, but created sounds by using a voltage-controlled oscillator and change those sounds by using envelope filters and noise generators.
  - The soundtrack to “A Clockwork Orange” was recorded on a Moog synth.

“Moog” rhymes with “rogue.”
• Digital equipment begins to appear in the recording studio, including drum machines, synthesizers, Digital Audio Tape, and eventually computers, DAWs, and effect plugins.
  • Compact Discs become the standard way to release music - until MP3s take over.
  • It becomes easy to “self-produce” your own music in a home studio.

Remember CDs?????
1979: The First All Digital Album

Ry Cooder’s “Bop Til You Drop” was the first “digital” rock and roll album, recorded using 3M’s Digital Mastering System, which was one of the first kinds of Digital Audio Tape.

It was recorded at 16-bit/50kHz, but released on vinyl! (CD is standard 16-bit, 44.1kHz)

Ry Cooder also produced the record himself.

The sound is kind of harsh and bright...
• 1979: The Tascam Portastudio
  • Tascam made home recording cheap and easy with its Portastudio, a 4-track cassette recorder.
  • Tascam still manufactures Portastudios - now they are digital.

Allowed for easy home recording and demos.
• 1980: Roland 808
• The TR-808 was one of the first drum machines and by far the most famous.
• Producers could program their own beats into the machine.
• It continues to be used in hip-hop to this day.
• People thought it would replace drummers………..
1982: Compact Disc
- Sony and Phillips worked together to develop the CD, which was first released in 1982.
- Sony also introduced the first ever CD player which cost $1000! ($2,600 today)
- CDs made 16-bit/44.1kHz the standard for digital format.
- They used a laser beam to scan information stored on the disc’s surface.
- The length of the first CDs were 74 minutes to accommodate a complete recording of Beethoven’s 9th symphony. (They would later became 80 minutes.)
1983: MIDI
MIDI, or *Musical Instrument Digital Interface*, standardized the way synthesizers communicated with each other and with computers.

1983: Yamaha DX7
The DX7 is the most popular synthesizer in history and can be heard on almost every pop hit of the 80’s.
Producers loved it because it could replace horn and string sections, saving time and money while giving songs a more “modern” sound.

DX7: The sound of the 1980’s!
1987: Sony Digital Audio Tape
- Sony develops Digital Audio Tape or “DAT.”
- DAT converted audio into digital data on a magnetic tape using a microprocessor.
- It would convert the data back into analog audio signals to play over a stereo.

1991: ProTools
- When first released it was the first multitrack computer based recording system. Now ProTools is the industry standard of DAWs (Digital Audio Workstations.)
- It displays digital representations of sound waves on the computer screen, making it easier to edit.
1993: Software Synths
- Software synthesizers (as opposed to hardware synthesizers like Moog and DX7) are computer based synthesizers.
- The first Soft Synth was claimed to be created by Seer Systems in 1993.

1996: VST Plugins
- The company Steinberg introduces “Virtual Studio Technology” to allow effect plugins software synths to integrate into DAWs like ProTools.
- Studios no longer need lots of outboard gear!
- The first VST effects bundled with their DAW “Cubase” were reverb, chorus, stereo echo and an auto-panner.
1999: Napster & Downloads

- MP3s were first introduced in 1993. “MPEG Audio Layer-3” - Moving Picture Experts Group.
- MP3 is a LOSSY audio format (Data is left out to make the file smaller.)
- MP3s started to threaten CD sales when the peer-to-peer sharing platform Napster was launched in 1999.
- People could get MP3s of their favorite music for free online and download it to their computers - so why would they want to buy a CD?
- The RIAA (The Recording Industry Association of America) would sue Napster for millions of dollars for copyright violations.

2001: Apple iTunes

- iTunes was a revolutionary way to organize music and allowed you to rip CDs, turning your songs into MP3s.

2001: Apple iPod

- The iPod one again changes the way people consume music, making CDs and CD players further obsolete by allowing people to load MP3s from iTunes directly onto their iPods.

2003: The iTunes Store

- Apple tried to appeal to the Napster Generation by introducing a download service.
- It introduces the concept of the 99¢ download, destroying the album as we know it by allowing people to pick one song here and another song there instead of buying the whole album as a whole.
- By 2008 the iTunes Store is the #1 music retailer in the world, having sold billions of songs.
DIGITAL/SELF PRODUCED ERA

• 2007: Apple iPhone
  • iPhones were basically iPods that you could talk on and let people to buy music directly from their phones. (Later stream…)

• 2008: Spotify
  • Streaming company Spotify launches its platform in 2008, once again shaking up the music world and the way music is consumed.
  • The way Spotify pays artists has come under scrutiny because instead of paying a fixed price per song or album, Spotify pays out royalties based on artist streams compared to a proportion of total songs streamed on the platform. This basically = not a lot of money!
  • In 2020 Spotify CEO Daniel Ek suggested that “the secret to success is not higher Spotify payout rates, but more output from musicians.” Really?? WTF dude.

“Give me your money!” - Daniel Ek
• 2020: Vinyl’s Comeback!
  • In 2020, for the first time since 1986, vinyl sales surpassed CD sales!
  • Vinyl LPs began making a comeback in the early 2010’s, sparked by hipster interest and reissues of classic records.
  • Vinyl records do sound better…and they are a multi sensory experience.
THE END!