

Chapter 26. Meeting 26, Studios

26.1. Announcements

- Mix Report 2 due today (no extensions!)
- Track Sheet Logs: show me after class today

26.2. Disc Formats into the 1950s

- 78 RPM discs
 - 1900 to 1925 discs recorded between 74 and 82 rpm
 - 78 rpm based on a 3600 rpm motor with 46:1 gear ratio: 78.26 rpm
 - Covered in shellac
 - Available in 10 inch (3 minutes) and 12 inch (4-6 minutes) formats
- 33.333333 RPM discs
 - Columbia Records: June 1948 releases Long Playing Record
 - Use of more-narrow grooves (microgroove)
 - Use of vinyl offered better sound quality
 - 12 inch diameter, 30 minutes or more per side
- 45 RPM discs
 - RCA Victor introduces in 1949
 - 7 inch diameter, 4 minutes per side
 - Designed to have uniform size, easy distribution, automatic changers (jukebox)
 - Became known as “singles”: one tune per side
 - The B or flip side offered a bonus track

- Extended Play (EP) 45s achieved 7 minutes per side

26.3. Early Magnetic Recording Devices

- 1930s: Magnetophone (AEG, Germany)
- 1940s: Commercially developed in the late 1940s by American Jack Mullin with Bing Crosby
- Reel to reel audio tape recording machines spread in 1950s with companies like Ampex

The BEST BUY in **Recorders!**
 Complete PUSH-BUTTON CONTROL

- CUT TAPE COSTS IN HALF
- OUT PERFORMS EVERYTHING IN ITS PRICE CLASS
- HIGHEST QUALITY & RESPONSE EVER BUILT INTO A PORTABLE

15,000 cps at 15 & 7 1/2 inches per second

AMPEX
 AMPEX ELECTRIC CORPORATION
 Redwood City, California

Advanced Series 400-A
 Write for Bulletin A-211

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AMPEX
300

**The portable recorder
you specified**

now the famous
**Ampex portable fits your
professional recording
needs exactly**

Low Impedance Output . . .
All lines, 150 volts, balanced or unbalanced, from tape recorder program level.

Low Impedance Input . . .
Sensitively high for low impedance microphones. Low impedance inputs are secured by necessary plug-in transformer.

Instantaneous Start-Up . . .
Cooling time is 1/2 plus machine loss time of 1/2 a second.

Illuminating Record Safety Button . . .
You're alerted as tape is removed from record.

Saddle Tan Case . . .
Hand-carried case of rugged leather for extra portability and safety.

HIGHEST QUALITY IN THE SMALLEST PACKAGE

Superb Fidelity - Program response 20 to 15,000 cps, at 75 db/sec. Down to noise floor 4 db at 15,000 cps. Low noise floor 10,000 cps. Speed-tape rate over 55 db. Filter and equalizer. 30 db E.P.P. Separate main and sub program levels.

Accurate Timing - Precision motor drive. Timing accuracy within 20 microseconds in 30 second playback.

Accurate Detection - Double auto bias. "Loop" search. 10 ms delay. Large scale error correction program level. Can be used for editing after record is played.

Dependable Service - All parts have been tested in operation of more than 10 years. Full service and repairing organization available for maintenance.



The 300 really fits in your case. It's portable, portable performance. It's the 300, the 300, the 300 professional portable recorder.

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- Multitrack recording on tape, pioneered by Les Paul, developed as early as 1954

26.4. Analog Audio Multitracks: Les Paul

- 1940s: Guitarist Les Paul (1915-) experiments with adding and bouncing tracks in direct to wax disk recording
- 1948: produced “Lover (When You're Near Me)” album with this technique, combining up to 8 guitars
- Modifies an Ampex Model 300 mono tape recorder to record multiple individual tracks

FOR

Critical TAPE RECORDING to 40,000 cycles

Tape recording is superior to all other reproduction methods and "AMPEXED TAPE" has the greatest fidelity and range now possible. Simplified operation plus sure results make AMPEX unexcelled for all critical recording uses. Dual tape speeds with automatic speed and equalization change is but one of many exclusive AMPEX features.

Unequaled for

TELEMETERING • BROADCASTING • RESEARCH

AMPEX

**STANDARD OF
THE GREAT
RADIO SHOWS**

Simultaneous

- ERASE
- RECORD
- PLAY BACK

MODEL 300

Price \$1575
(f.o.b. San Carlos)

Meter Control
Panel \$114 Extra



AMPEX ELECTRIC CORP., San Carlos, California

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ADDRESS _____

CITY _____ STATE _____

Our need is for:

- | | |
|--|--|
| <input type="checkbox"/> Laboratory Research | <input type="checkbox"/> Telemetry |
| <input type="checkbox"/> Multi-Channel Recording | <input type="checkbox"/> Industrial Recording |
| <input type="checkbox"/> Recording-Broadcasting | <input type="checkbox"/> Aerophysical Research |

AMPEX ELECTRIC CORPORATION
SAN CARLOS, CALIFORNIA
DEALERS IN PRINCIPAL CITIES

- By 1953 develops first 8 track recorder
- Employed different playback speeds of each track
- In class listening: Les Paul and his wife (audio)

26.5. Reading: Horning, From Polka to Punk: Growth of an Independent Recording Studio, 1934-1977

- Describe the trajectory of recording and mixing equipment used at the Cleveland Recording Company.
- Describe the trajectory of clients that recorded at Cleveland Recording Company.
- What were some of Hamann's technical achievements?

26.6. Tom Dowd: Recording Engineering Innovator

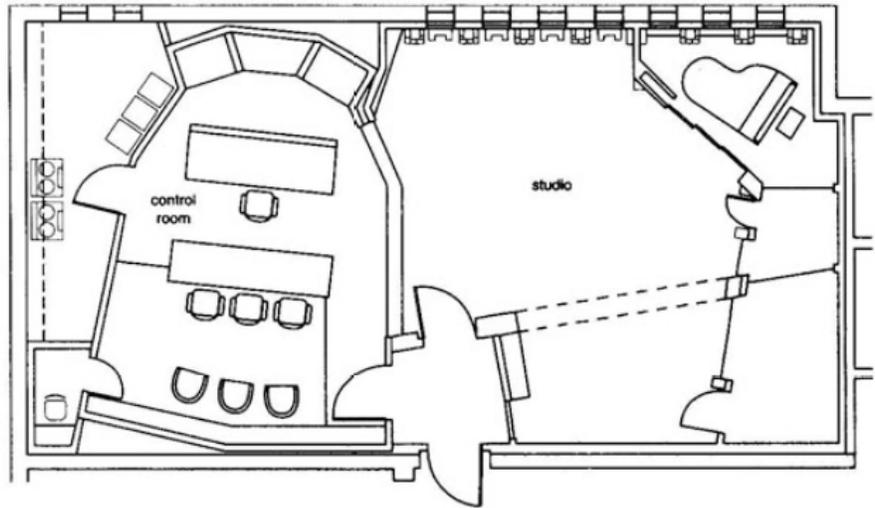
- “Tom pushed those pots like a painter sorting colors. He turned microphone placement into an art” (Atlantic's Jerry Wexler on Dowd; Horning 2002, p. 144)
- Video clip: Tom Dowd: The Language of Music, Chapter 2 (00:02-01:16, 2:42-3:47, 4:10-5:08)
- Video clip: Tom Dowd: The Language of Music, Chapter 7 (3:40-7:05)

26.7. Monitoring and Studios: Simultaneous Recording

- To improve isolation during simultaneous recording, studios have multiple (isolation) rooms (booths)
- Permit visual contact (windows, video) and aural interconnections
- Requires a monitor feed to be sent from the recording unit to each musician
- Permits musical, expressive performances and great mix flexibility

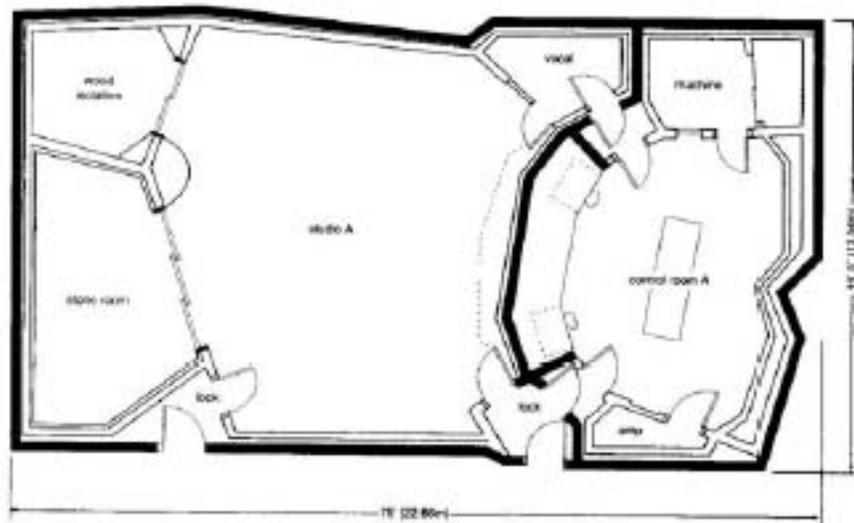
26.8. Studio Design Examples

- Sony/Tree's Music Studio, Nashville



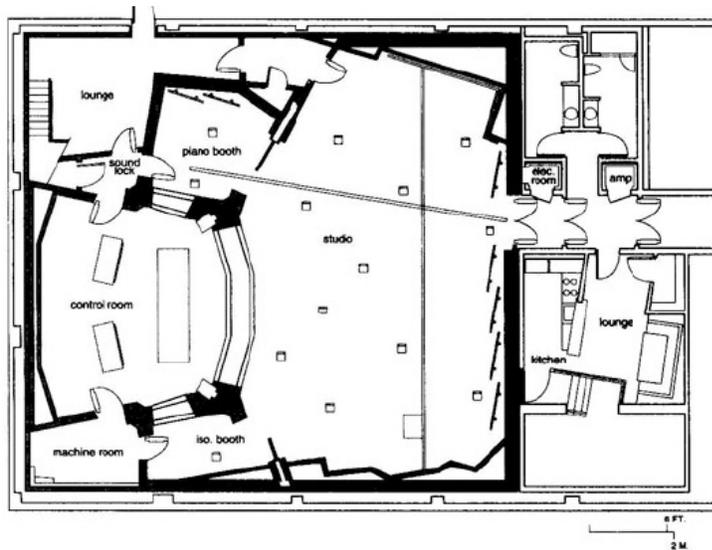
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- Paisley Park's Studio A



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- Studio X, Seattle



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26.9. Monitoring and Studios: Non-Simultaneous Recording

- For maximum isolation, can record each part (or section) separately and then overdub
- Requires a monitor feed of previous tracks to be sent to each musician
- Possible benefits using a consistent (or composed) tempo via a click track
- Permits greatest mix flexibility, but sometimes challenging performance contexts

26.10. Headphone Monitoring with MOSS

- From within the DAW, create auxiliary channels for each monitor channel
- Use send controls on each channel to send to the appropriate aux channel
- Route output of aux channels to physical outputs on the computer interface (RME)
- Patch up to 8 monitor channels into HearBack Hub inputs
- Distribute personal mixers via CAT-5 cables



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26.11. Mix Report 2 Examples

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Spring 2012

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