Early History of Live Sound
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Best of Both Worlds
Researching Amplified Music
(Live Sound)

Histories
• Driven by demand
  — Larger venues, audience
  — Reprojected venues with inadequate acoustics
• And by Technology
  — Success of Sound Films in late 1920s
  — Improved directivity of transducers
• Mixed with Aesthetic considerations
  — Radio microphone vocal (crooners)
  — Electric guitar (distorted or not)

Live Sound
• Did not simply arrive with Radio or Electric Recording
• This paper:
  • Provide a framework for
    — Framing the history
    — Sharing the history with others
  • (like social scientists or musicologists)

Centralization in recent decades
• Touring with own or preferred gear
• Broadway musicals with prescriptive sound (system) designs
• Global enterprises
  — Live sound gear
  — Live sound rentals

AMPLIFIED MUSIC AND SOUND LEVEL MANAGEMENT
Jos Mulder

DECENTRALIZED DEVELOPMENT
Live Sound History

- Decentralized
- Many different little histories
  - And engineering heuristics
- Consequence for typical career path
- What relation to other disciplines?

TRANSECTORIAL INNOVATION

Ca. 1915-1921

- Telephony
- Jensen and Pridham (1915)
  - Worked on improving telephone receiver

Ca. 1920-30

Radio
- WEAF & Roxy Rothafel (1922)
- Talk to stage PA to direct shows
- Rudy Vallee

Vallee's Megaphone

Cinema
- Very rapid success of Sound Motion Picture
- Improved directionality of Transducers
- Mixed Systems for Film and Reinforcement

Rudy Vallee

- Interviewed by Chuck Schaden
- Recorded Sept. 9th 1971 (28 minutes)
- Excerpt from 6m23

Edward Kellogg, 1930

Bing Crosby

Pantages Hollywood
1930 Equipped by Western Electric

Radio City Music Hall
December 1931

Radio City Music Hall
December 1931 Equipped by RCA

RCA PB31 (Olsen Ribbon)

RCA 10 foot directional Baffle

Double Button Mic

Radio City Sound Equipment.
Journal of the Society of Motion Picture Engineers
21 (3): 181-197.


Pantages, Hollywood, 1930 Equipped by Western Electric


In order to maintain the volume and balance of the sound, the levels should be given in each of the speakers in order to keep them from being imbalanced in color this is, the speakers are not placed in front of the projector or shaping in the cinema. For this reason the levels are changed at the time of the show, and the time will vary in each show. This makes it possible to use a balanced sound, and the sound coming from a certain source will never be perceptible without the presence of other sounds.

To avoid frequency distortion of the sound, the sound should be divided into two parts, one for the high frequency, and one for the low frequency. This makes it possible to use a balanced sound, and the sound coming from a certain source will never be perceptible without the presence of other sounds.

The microphones are divided into two parts, one for the high frequency, and one for the low frequency. This makes it possible to use a balanced sound, and the sound coming from a certain source will never be perceptible without the presence of other sounds.

Image source: http://www.aes.org/aeshc/docs/recording.technology.history/microphones1.html

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There recently appeared in a stage presentation a young lady crooner, who is rather noted among her acquaintances for her small voice. This young lady had achieved a measure of success in singing over the radio, where by microphone technique she was enabled to retain the low-volume characteristics of her voice and increase thus the pleasing qualities for which she is known. However, several of her friends were rather doubtful of her ability to project her voice sufficiently in the theatre. A pleasant surprise was at hand for these doubters — many of whom, untrained in the arts of sound amplification are still wondering just how it was done.

At the rise of the curtain, the young lady was seen standing upon a raised platform, with what was ostensibly a music rack placed slightly to one side and a bit in front of her. On this stand, concealed from the audience was placed a microphone which served to pick up the weak voice waves. These waves, electrically converted, were passed through amplifiers and projectors on to an unsuspecting audience. So expertly was the presentation handled that the performer was able to sing in a very low voice, retaining all the intimacy of that type of singing, and her voice was amplified and projected in such a manner.

Vallee
- In his 'Vagabond Dreams' (Vallee 1930, p. 68) writes:
  - I have found a megaphone to be absolutely essential when we consider that the great cathedrals of today, seating three and sometimes four thousands people, were not built for the natural reception of a soft voice like mine.
- Vallee apparently later claimed that he personally devised his first sound system in 1930 as we can read in Pleasants (1974, p. 134), also in (Lockheart 2003):
  - "It sounds like a real Goldberg contraption," he told Paul Whiteman, "but it works. I borrowed an old carbon mike from NBC, hooked up a homemade amplifier with some radios, and I've got a sort of electronic megaphone. I had the legs sawed off the radios so they don't look so strange."

Paul Whiteman
- Hollywood Gardens (cap. 3,600) 1930
- "Mikes for Vocal work and softer instruments (clarinet features for instance)"

Live Sound closely related to other Audio Engineering Disciplines
- Until the mid 1930s to Cinema
- When stage shows disappear from Cinemas
- Relation with Sound Recording develops through music (?)