



Early History of Live Sound

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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)


DECENTRALIZED DEVELOPMENT

Best of Both Worlds



Researching Amplified Music (Live Sound)

At the Crossroads of:



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

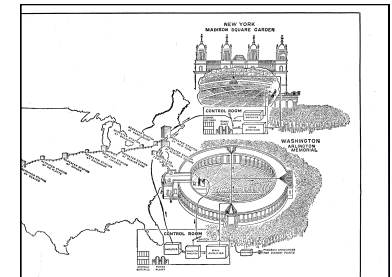
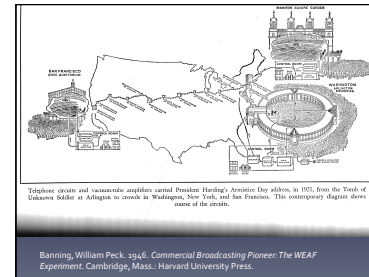


Jos Mulder

Histories

- Driven by demand
 - Larger venues, audience
 - Repurposed venues with inadequate acoustics
- And by Technology
 - Success of Sound Film in late 1920s
 - Improved directionality of transducers
- Mixed with Aesthetic considerations
 - Radio microphone voice (Crooners)
 - Electric guitar (distorted or not)



Live Sound History

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

TRANSECTORIAL INNOVATION

Ca. 1920-30 Radio

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

Vallee's Megaphone



Betty Boop: Poor Cinderella (1934) with Rudy Vallee cameo

Ca. 1915-1921

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

Jensen, Peter L. 1975. *The Great Voice*. Richardson (Texas): The Havilah Press.

Purcell, Carroll W. 1990. *Technology in America: a history of individuals and ideas*. 2nd ed. Cambridge, Mass.: MIT Press.

Armistice Day 1921



FIG. 4

Green, J. W., and J. P. Maxfield. 1923. "Public Address Systems." *J. Audio Eng. Soc.* 24 (4): 184-195.

Martin, W. H., and A. B. Clark. 1923. "Use of Public Address System with Telephone Lines." *Transactions of the American Institute of Electrical Engineers* XLII: 75-85. doi: <https://doi.org/10.1109/AIEE.1923.11841000>

Rudy Vallee

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



Schaden, Chuck. 1971. "Interview with Rudy Vallee 9th September 1971." Accessed 18th April.

Cinema

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

Edward Kellogg, 1930


strong reverberation. That a public address system is capable of magnifying the voice of a speaker so that he will be more easily understood, has been abundantly demonstrated, but many will probably doubt its applicability where the utmost of voice quality is to be preserved and aesthetic considerations control. "I can fancy," an artist, jealous of her reputation, exclaiming, "What, let the people listen to that tin horn and call it my voice?" and our sympathies would be with the artist, or the people, or both. I am not in a position to say whether a voice amplifying system suitable for application to music has been developed, but we would be in serious error if we formed our estimates of the possibilities from some of the public address systems which we know. Their shortcomings from an aesthetic standpoint are no reflection upon the skill or judgment of those who designed and built them. They were developed for a very specific purpose—to get the words across—and cheapness and simplicity were important considerations. The carbon microphone

Kellogg, Edward W. 1930. "Some New Aspects of Reverberation." *SMPTe Motion Imaging Journal* 14 (1):96-107. doi: 10.5594/j14.027.

Bing Crosby



Pantages Hollywood
1930 Equipped by Western Electric



Photos: State Library California



Cal State Library
#001387245

Radio City Music Hall
December 1931



Radio City Music Hall
December 1931
Equipped by RCA





Sound Cinema System on a trolley: Western Electric 12 or 15 A horns with 555 drivers.



RCA PB31 (Olsen Ribbon)

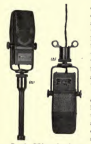


FIG. 3. Ribbon microphone (left) Olsen type; (right) ribbon type.

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RCA 10 foot directional Baffle

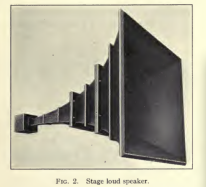


FIG. 2. Stage loud speaker

Double Button Mic



FIGURE 4. NO. 372-W OR NO. 187-W TRANSMITTER (MICROPHONE) MOUNTED IN A SILVER TONICATED HOUSING (BACK COVER REMOVED)

Image source: <http://www.aes.org/aeshc/docs/recording-technology/history/microphones.html>

In order to maintain the illusion of reality, the horns should be placed as near the stage as possible, although care must be exercised in order that the microphones are not placed in front of the projectors or slung in the system will result. It is of interest to note that for this type of work an ordinary horn will give good results. A horn which responds to a narrower frequency band will serve the purpose of audible reinforcement; although, it would prove unsatisfactory for projecting sound for motion pictures. This makes it possible to use a folded exponential type horn with a six-foot air column, which horn may be mounted behind the proscenium arch and above the stage for the stage presentations

Mitchell, Gordon. 1931. "Increasing the usefulness of theatre sound equipment." *Projection Engineering* 3 (8):12-15.

@ Pantages in 1931:

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 singing, and her voice was amplified and projected in such a manner.

Mitchell, Gordon. 1931. "Increasing the usefulness of theatre sound equipment." *Projection Engineering* 3 (8):12-15.

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 (?)

Vallee

- In his *Vagabond Dreams Come True* 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."

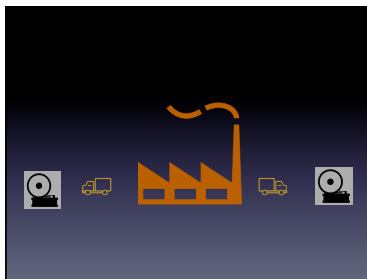
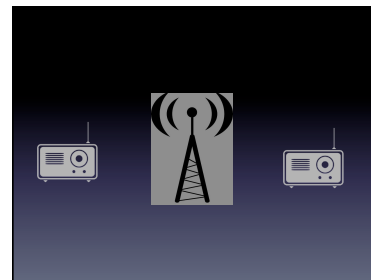
Organ Crooners Microphone novelties

WRIGHT, KEN. r. n. Kenneth T. Wright. b. Hutchinson, Kan. May 26, 1907. h. 6 feet 2 1/2 inches. blue eyes and medium brown hair. w. 160 pounds. p. Hasseltine Turner Wright and L. R. Wright. e. Great Bend, Kan. high school by mechanical and electrical work, organ tuning, writing and music. Began organ work with Midland Circuit out of Hutchinson. Kan., solo organist, presenting original microphone novelties, community singing, and new style "mike" novelties recently inaugurated, and originated by him.

Motion Picture Almanac

Transectorial Innovation

- In the late 1920s and early 30s



Paul Whiteman

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

Melody Maker (UK) Vol 5, August 1930 p. 6/6