

Combating Congestion

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Stage Directions Mar 01, 2007

How wireless systems thrive in the face of adversity at San Diego's Old Globe Theatre



Wireless systems are ubiquitous these days, with everything cutting the cord from portable navigation systems and handheld Internet-enabled devices to specialized two-way business radios. As cables and connectors uncoil into our collective repository of all things forgotten but properly recycled, it should come as no surprise that sound design for theatre has benefited on many levels from advances spawned by the "Wireless Age." Admittedly, wireless systems are not new in theatre. Since their introduction in the early '80s, wireless microphones have been used onstage in form factors ranging from traditional handheld devices to micro-tiny lavalier transmitters hidden along an actor's

hairline. Behind the scenes, wireless intercom has served in an equally important capacity, offering stage managers communication capabilities with working crews, and individual crewmembers specialized channels of communication for dedicated talk among themselves.

Early wireless systems had their advantages and disadvantages. On one hand, freedom of movement was gained exponentially. On the other, sound quality wasn't quite as good, and the range of operation was short. With time, these problems were conquered. Today, the sound and performance of better wireless systems is of premium quality. As a result, wireless challenges facing contemporary sound designers are of a different sort, often arriving from an increasingly hostile outside world, where bandwidths allotted by the FCC for the operation of professional wireless systems are under constant siege from competing devices seeking to fulfill expanding needs. Like our highways, congestion is the norm within these frequency spectrums, as wireless operators vie for shrinking space.

Such are the obstacles frequently confronted at San Diego's Old Globe Theatre, which began as a venerable room first built in 1935, modeled after Shakespeare's Globe in London. Rebuilt in 1982 after an arsonist's flames destroyed the original landmark structure in 1978, the Old Globe has risen to prominence among the nation's regional theatres with recognition by a special Tony Award, selection of its production of *Skin of Our Teeth* as the first PBS satellite telecast of a live stage production, a visit from Queen Elizabeth II, several notable Broadway transfers and recordsetting subscription ticket sales.

According to Old Globe sound director Paul Peterson, when wireless operation goes wrong in San Diego, it's like getting struck by lightning. Lying in the shadow of Balboa Park, the Old Globe Theatre complex is surrounded by high concentrations of RF activity coming from a multitude of sources, including broadcast television signals from both the U.S. and Mexico. All of it represents potential interference, with threats of "hits" taking out portions of the theatre's own wireless signals, or even rendering them totally useless.

"HDTV is well on its way to becoming the worst problem," admits Peterson, dreading February 17, 2009, the day the FCC has marked as the official date when all broadcasters will be required by law to make a complete transition to the digital format. "We already have to be very careful of how we allot our wireless frequencies in the theatre to make sure that not just our wireless mics are being affected, but also that our intercom systems aren't getting stepped on as well."

For those unfamiliar with the particulars of wireless operation, frequency agility refers to the ability of a system to operate among different frequencies. Within the crowded world of RF traffic, this is a feature that can be used to carry out the synthesized scanning of hundreds of different transmit and receive frequencies until the best performing frequencies are located. Wireless systems with auto-frequency selection perform this service automatically with the press of a button.

The Old Globe's PRO850 system is centered around a pair of base stations housed directly onstage and eight lightweight headset transceivers. "With its frequency agility and auto-frequency selection, the PRO850 can adapt to whatever comes its way in terms of competition," notes Peterson. "We've obtained some dramatic improvements in performance compared to the outdated system it replaced as well, most significantly in the area of operating range. We wanted our stagehands to be able to freely roam just about anywhere and still be in communication, and to that end, the PRO850 gave us what we needed. Our basement is filled with concrete walls. When you went down there before, you were out of range after taking two steps on the stairs down. Now we can go anywhere downstairs, and even into the parking lot, and still not lose communications. Our crews are on a very loose leash."

Complementing the HME PRO850 system within the Old Globe's working RF plan are 10 (soon to be 12) new channels of UHF-R wireless microphones, provided by Shure, Inc., which recently joined 10 channels of existing U1A and U1B wireless (also from Shure and owned by the theatre for the last nine years). Serving performers onstage, the Shure wireless, like the PRO850, is frequency agile and incorporates auto-frequency selection. Beltpack receivers worn by onstage talent are generally used with headworn lavalier mics, while Beta 58A-equipped handheld transmitters are kept at the ready for announcements and other needs.

Another wireless item of note in use at the Old Globe is a Shure PSM 600 system. Normally used for personal monitoring of live, onstage concert performances, at the Old Globe this PSM 600 sees duty running wireless loudspeakers bringing sound reinforcement to special effects.

"The PSM 600 can be used for a lot of things," explains Peterson. "For example, we've wrapped a receiver in a blanket wired to a loudspeaker that gave voice to an effect simulating a baby crying. We've done the same thing with other sounds using loudspeakers hung overhead or behind walls. The deceit comes in quite handy at times, and is an ideal aural illusionist's tool. Used skillfully, you can bring a fair degree of spatial trickery to sound as well."

In his role as sound director at the Old Globe, Peterson's responsibilities are twofold: he is both the department head and resident sound designer. As part of his former role, his duties include administrative and budgetary concerns. In the latter, he designs about 60 to 80 percent of the theatre's productions in any given year.

"Regardless of what hat I'm wearing, my goal is to ensure that we're ready to serve any production that comes our way," he says. "Wireless systems are a big part of any performance, and for that reason, they have to be dependable, night after night. The systems we have are very compatible with one another and provide us with the rock-solid reliability we demand. When a visiting company arrives, I want them to look around and know we have them covered. With a reputation like ours at stake, there's no other way to approach this job."

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