

A Sound System for Tanglewood Music Center

At this storied venue, flexibility is the key



Seiji Ozawa Concert Hall.

Each summer, Boston Symphony Orchestra relocates in the Berkshires, taking up residency at Tanglewood Music Center. Named after Nathaniel Hawthorne's cottage on the grounds where he wrote *Tanglewood Tales*, it has been the summer home of Serge Koussevitzky, Leonard Bernstein, Seiji Ozawa, and the Boston Pops. The range of musical offerings each summer is wide; no sooner do you attempt to nail down what Tanglewood is all about than something new will spring up. Dr. Douglas McKinnie, head of sound for Tanglewood, has been working at Koussevitzky Hall, the main venue there, for over 25 years, "I started here as an intern during my student days," he says. "The music is of such outstanding quality that I have con-

trived ever since to be part of that summer season." And, really, who can blame him?

"The Tanglewood amphitheatre, the Koussevitzky Music Shed, first opened in 1938; in 1959, the acoustic was modified by Leo Beranek," through his company BB&N, notes McKinnie. "The hall now has better acoustics than many modern halls, I might say. The 'shed,' as these places are commonly known, is in fact one of the first such band shell summer sheds built in the US. It is open vertically for approximately 9m [25.5'], then there is a large enclosed volume above." The open-sided canopy covers a seated area for 5,000 people. Unlike later sheds that have steep grassy embankments, Koussevitzky is surrounded by flat,

open lawns where, on a good night, another 15,000 people can enjoy a concert. "There exists a reverberation of several seconds, and there are plenty of reflections around the band shell; it is ideal for orchestra, especially if performing with operatic singers, and not so good for sound reinforcement."

But sound reinforcement has been required almost since day one, as McKinnie explains. "There are something like three performances a week by the Boston Symphony; often, before they play, there will be a speech-based event, perhaps a panel discussion of the program, or a music lecture; with a reverberation time of several seconds and seven or eight open microphones on stage, these can be highly problematical. Over the years, we have lobbied to address this situation. The initial premise by the administrators was 'Why do we need a big PA system for some speech reinforcement?' The answer is about directivity. We had a musicologist who came regularly; he gave many presentations in lecture halls, and typically only ever needed two speakers on sticks. 'Why,' he asked, 'is the sound so bad when I come and present in this shed?' An influential man, he had the ear of the administration, so through him we persuaded them to try a larger point-source solution. I approached Mike Weirich and John Geritz at SAVI, and, taking the stance of someone without knowledge of sound reinforcement, asked him, 'If you wanted to provide two speakers on stands for such a presentation and wanted to achieve good intelligibility in this hall, what would you do?' John introduced two rolling stacks of d&b

audiotechnik C4/C7 loudspeakers as a portable system for the speech events, and we did a season. It was a big improvement. It was then a process of taking things to a more logical conclusion, including flying the system and furthering its development to fit more of the venue's needs."

Specialized Audio-Visual Inc. (SAVI) is based in Clifton Park, New York. A d&b installation and production sales partner for many years, the company has forged a long and fruitful relationship with Tanglewood, that first season's C4/C7 solution being very much a tryout for both parties. As of last summer, they fitted complete installations in Koussevitzky and at nearby Seiji Ozawa Concert Hall.

McKinnie says, "At the end of that summer, I again approached the administrators and said, 'We have done this with these d&b speakers; we could make an even better job of it if we put them up in the air as an exploded cluster.' That opened the door to renting a system for the following summer season. Previously, SAVI had provided an in/out on-demand solution. The shed had a PA system before, with delay speakers for coverage beneath the far reaches of the main canopy, but it was old. The directivity of the d&b system, down to much lower frequencies, was the big advantage; they just performed much better."

"Nevertheless, there was a dilemma," he adds. "For many of these speech-based events, the audience might only be fifty percent. Although most of them would sit close by the stage, there would still be a significant number who chose to sit at the rear. When full, a delay was required. The dilemma was, if the house is half full, do we leave the delay on and mess up the intelligibility, or turn it off and have all those people in the distant seats not hear? The answer was a bigger system, and perhaps one that could stay up for most of the time. We trialed that scenario for a couple of years; SAVI were very helpful in that respect;

it was a time of advancing technology, and so we were inclined to experiment, presenting several different systems rented in for specific weekends over a summer season. One system stood out, in that everyone who used it said they preferred it to any other: the d&b J-Series line array. What made it most suited was the elimination of that delay scenario I outlined. We were able to get rid of the old house system delays, and the J-Series could still deliver to most of the seated areas. Yes, there remained some areas that required delay, but, by addressing them much more locally and directionally with d&b Q7s dotted around the roof a few meters in from the lip, we were able to present a proper solution. The SAVI team set them up, and we ended up with a system where sound was completely localized to the stage, whereas before the system had dragged the sound image out off the stage. Besides the much-improved intelligibility, we now also had an ideal system for the visiting contemporary acts that play through the summer—the likes of James Taylor or Steely Dan, for example. For the rockier acts, all we needed to do was pull in a few more J-SUBs."

This is a story of many intertwining strands, not least the influence of the Boston Symphony; its head of sound, Steve Colby, says, "My contribution to this design, which was primarily guided by the SAVI staff and the Tanglewood audio department, was to encourage the use of as few delay speakers as possible and to depend primarily on a carefully angled main array of left, right, and center J-Series loudspeakers. Additional Q-Series delays are hung as low as practically possible to help with clarity at the rear of the house. Like any reverberant hall, the primary goal was to keep PA coverage on the body of the audience and off the reflective structures and surfaces that would cause unwanted reflections and clouding."

Colby's contribution to the evolu-

tion of the eventual installed system design was promulgated on a combination of experiences; his 35-plus years as principal sound engineer for the BSO, Boston Pops activities occurring outside of Tanglewood, and, during the summer seasons, a variety of events within the Tanglewood shed system for Boston Pops and Jazz Fest, which is staged within Ozawa Hall. "As a house engineer for the jazz festival, what I most appreciate is good, even coverage that also provides a strong directional location back to the performers," said Colby. "Smooth transitions through crossover points in the vocal range and a PA with easy tuning attributes and tools installed in the amplifiers—that's why I find the d&b systems ideal for both venues."

"As with Koussevitzky, we put a temporary system into Ozawa first of all," explains Weirich. "Again, we started with d&b C-Series; this is a narrow hall with a pristine acoustic. The hall is three tiers, the stalls, and two balconies; the stage also opens to the rear, where another grassy embankment allows promenading listeners to sit in on the performance. Space for sound reinforcement is tight and, frankly, the C-Series was physically too large; when d&b developed the Q-Series, it was an ideal opportunity for us to readdress the system design. As with Dr. McKinnie, it seems that Tanglewood gets under your skin and our system engineer, Dave Harris, has made Ozawa his own. It's a small, but complex, design with Q7 loudspeakers at each level for the side seating, Q1s eight deep to the main hall, and Q7s to the rear, with further towers of Q1s and Q-SUBs out on the lawns. This takes a long time to rig and trim; Dave is meticulous about delay times. Initially, this was very labor-intensive, but now he knows the room so well it's quickly managed."

"SAVI has become the go-to contractor for seasonal audio needs at



An audience listens to a concert in Ozawa Hall.

Tanglewood," concludes Colby. "In that capacity, I have done many projects with them through the years, including larger installs where I was the designer and many 'PA du jour'

projects for the BSO. For the larger arenas and outdoor performances that are such a highly visible part of the Boston Pops touring activities, d&b is also the speaker of choice."

The summer of 2012 will see more musical events at Tanglewood, and will, of course, offer something for just about every palette. "The Boston Pops typically present with star guests," says McKinnie. "Often, they perform with their own combo, or even a small band. They will play in front of the orchestra, and the BSO will provide a string, brass, and wood accompaniment. Just occasionally, if there is a need—for example, the *Concerto for String Bass*, by Henderson, where some reinforcement is required—the orchestra does sometimes perform with the J-Series." Does it affect their stage listening environment? "This orchestra tours extensively, and they are well accustomed to playing big arenas where the acoustic environment is a lot less hospitable than that which they experience at Tanglewood; they're used to it, and it is great."

Tanglewood celebrates its 75th anniversary this summer. [RSS](#)