COMMAND PERFORMANCE

How can you achieve the best possible audio fidelity? Hire real musicians. Here's how a company of engineers and performers is reviving the tradition of live music at home.

The pursuit of perfect sound in the home has given birth to towering speakers, cables of garden-hose girth and amp- lifiers that draw more power than a standard wall socket can provide. Audio enthusiasts spend their lives experimenting with these technologies in an effort to make recorded music sound more realistic. Yet despite the advanced state of audio science, you can achieve better sound from a device that weighs only a few pounds and fits under an airline seat.

Namely, a violin. Or a flute. Or an alto sax.

As captivating—indeed, as essential to modern living—as reproduced music can be, there is nothing like the real thing. Live performances have a richness that electronics may never duplicate. Juilliard-trained cellist Sarah Koo cites an appropriate analogy: "Hearing recorded music is like seeing a picture of a Monet painting in a book. Hearing live music is like actually seeing the huge panels hanging in a museum, with all the colors and textures right there before your eyes."

Sadly, though, live music has largely vanished from our lives. The ever-increasing demands of modern life have pushed live concerts off our Palm Pilots. But an innovative Connecticut-based acoustical engineering company seeks to change that.

BY BRENT BUTTERWORTH PHOTOGRAPHY BY GROSS & DALEY

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The company, SH Acoustics, represents a unique alliance between audio engineers and musicians. They have joined forces to make it easy for home owners to find talented performers for in-home concerts, and to provide an ideal environment in which those musicians can flourish.

According to Koo, private concerts have increased in popularity to the point where she and her Juilliard colleagues spend a sizeable percentage of their performing time in luxury homes. "We play all sorts of events in homes: parties, weddings, benefit dinners, you name it," she says.

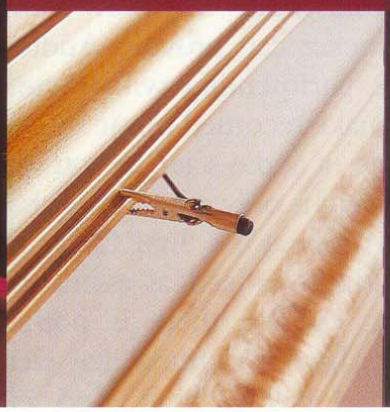
"The homeowner might have purchased a new piano or a work of art, and wants to hold a special event to debut it," adds Heidi Torvik, who holds bachelor's and master's degrees from Juilliard and who, like Koo, regularly performs in private homes. "In Florida every year, I play a concert series in a historic home. After all, chamber music was meant to be played in homes."

Few private homes, though, make ideal performance spaces. "Homes are the worst situation for us," Torvik explains. "We're usually shoved into a small space, and the acoustics are a mess. Carpets and drapes make a room sound dead, and it interferes with your playing. I have to force the sound to compensate for the poor acoustics. It takes away the rewarding aspects of playing."

Koo agrees: "The audience is expecting a concert atmosphere, but when we have people sitting 20 inches away from us, there's no place to warm up, and the room acoustics are poor, it's very difficult for us to convey that atmosphere."

Acoustician Steven Haas came to the same conclusion when he began working on home theaters after designing performance spaces for several years. "Home theaters have begun to achieve the look of a concert hall, but they don't sound like a concert hall," he says. "A typical home theater might have a reverberation time"—the time it takes for a note to stop echoing—"of half a second. In comparison, a small concert hall might have a reverb time of 1 to 1.5 seconds. In a symphony hall, it's about 1.8 to 2 seconds, and in a cathedral it could be 3 seconds. All that reverb gives the sound a full, enveloping character that an ordinary home theater can't match."

Concertino helps those who wish to orchestrate concert hall-quality performance spaces in their home; the company prides itself on its ability to replicate the sound of any concert hall.



Tiny Sennheiser microphones (left) pick up sound from various points in the room. The microphones feed the Concertino processor (above), which in turn connects to amplifiers that power the various speakers in the system.

Haas found that his residential clients were fascinated by the work he had done on such projects as the Zankel Hall performance space in New York City's Carnegie Hall and at the new Jazz at Lincoln Center hall. He also discovered that many of his customers were performers themselves. "One client in Atlanta commissioned a $200,000 pipe organ for his home," Haas says. "People who are that serious about music should have great performance spaces in their homes."

Thus was born Concertino.

"I realized that a living room or a home theater wouldn't replicate the concert experience," he continues. "So I looked at options to duplicate the acoustic environment of the concert hall. For years, my commercial firm had been designing electronic enhancement systems to improve the acoustics of performance spaces. These systems are impractical for homes—

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Additional speakers, including a custom-built ceiling speaker and a pair of extra rear speakers, allow the proprietary Concertino audio processor to produce an ambient sound effect that replicates the concert-hall experience.

they start at $500,000—but I found one company that could adapt their system for residential use."

The Concertino system employs at least eight high-quality microphones mounted unobtrusively in various parts of a room. According to Haas, each microphone "listens to what's going on in that part of the room." Some are more directional to focus on the performers, some are less directional to pick up the reverb in the room. The microphones connect to a proprietary digital sound processor, which alters the sound to replicate the acoustic characteristics of a concert hall, then sends the sound out to as many as 24 speakers.

The system is based around the same speaker configuration found in a home theater—front left, center and right, plus speakers on the side and back walls of the room. To these, Haas adds extra speakers on the side walls near the front of the room. These speakers simulate the early sonic reflections that an orchestra shell would provide in a concert hall, and they allow the performers to hear themselves more clearly. He also adds speakers on the ceiling to provide additional reverb. Finally, special bass processing adds reverb at low frequencies; in his years of evaluating concert halls, Haas has found this characteristic particularly important.

HAAS ORCHESTRATES A MINI-CONCERT FOR ME, with Torvik and Koo performing chamber music in the TK Theaters showroom in Manhattan, the first of five demonstration facilities he plans to open this year. (The other locations include Denver, San Francisco, Los Angeles and Medford, N.J.) I arrive expecting to hear an artificial effect like that produced by the execrable "hall" and "stadium" modes found on many surround-sound processors. Instead, I hear an extraordinarily natural sound. I close my eyes and Torvik and Koo sound as if they are onstage in a medium-sized concert hall, instead of standing in an eight-seat home theater. I never feel as if I am lis-

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tening to speakers instead of natural sound reflections in a hall, partly because of Haas' careful system design and partly because the system does not require a high level of sound from any of the speakers—after all, it is only reinforcing, not reproducing, the sound.

Figuring the effect is fine-tuned to sound best for those sitting in the center seats, I move around the room. But no matter where I stand or sit, I experience realistic concert-hall ambience. And when Haas switches off the Concertino processor, the sound collapses as the room's lush furnishings soak up most of the character of the flute and cello, leaving Torvik and Koo sounding lifeless and fatigued. This demonstration shows clearly how inappropriate even a well-designed home theater is for live music performance—and how Concertino fixes that problem gracefully and naturally.

The sound the audience hears is only half the story, though, particularly for the homeowner who wants to perform as well as listen. Luckily, I am able to experience Concertino from both viewpoints. I muster a musical performance on my own, accompanying myself on my cherished National resonator ukulele (a loud instrument that produces sound with an aluminum cone, and simply oozes with character) while singing and whistling some of my favorite jazz standards. The feeling reminds me of the first time I played in a large New York City club—or the first time I drove a truly capable sports car. It's a feeling of power, a feeling of freedom, a feeling that I could do almost anything. My performance improves dramatically as I hear my little uke ringing out to the 30th row of a virtual Carnegie Hall.

Haas demonstrates some of Concertino's presets—modes designed to simulate halls of different sizes. SH Acoustics' technicians can customize these presets to a client's taste. For example, the technicians might create a dozen variations of a concert hall optimized for cello, so a homeowner who plays that instrument can find his or her signature sound—or change the sound from week to week.

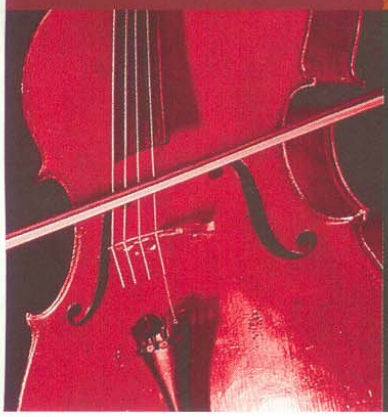
According to Haas, Concertino can also replicate the sound of any hall you wish. "We've been measuring concert halls for nearly 20 years," he says, "so we have data on many of the world's best performance spaces. Or you can commission us to measure the hall of your choice and create a simulation of it. For example, you could commission us to measure traditional-music halls in Hawaii, so we could create the ideal environment for a ukulele performance."

Critical to the Concertino concept is the service the client receives after the installation. After all, contracting musicians lies outside the expertise of most homeowners.

"We start with a gala opening," Haas explains. "We have a consultant who has planned the openings of several major arts and sports venues across the country. She will coordinate performances and other services for the opening."

From there, Torvik and Koo, who have signed on as con-

With the Concertino system, even the subtlest tones of delicate instruments like the cello come through clearly, without tonal coloration or the other negative effects produced by many hall-simulation modes found in surround-sound processors.



One of the CAT speakers (right) used in the New York Concertino showroom. According to SH Acoustics' Steven Haas, any speakers that meet his company's performance standards can be used in a Concertino system.

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sultants for SH, take over. "We can arrange any kind of musical performance you want," Torvik says. "We've developed a network of musicians all over the country, from New York to L.A. and Fargo, North Dakota, to Miami. We have connections through Juilliard; the alumni are spread around the world. We've selected only top-flight musicians for this program."

"The homeowners can sit in, too," Koo adds. "That's a lot of fun! Sometimes they just want to read through some music with us, and sometimes we'll establish a couple of tunes to play. Many times people want to sing Broadway show tunes. Whatever you put in front of us, give us a couple of minutes and we're ready to play. That's the training we demand of the musicians in the program. We've set the standard quite high."

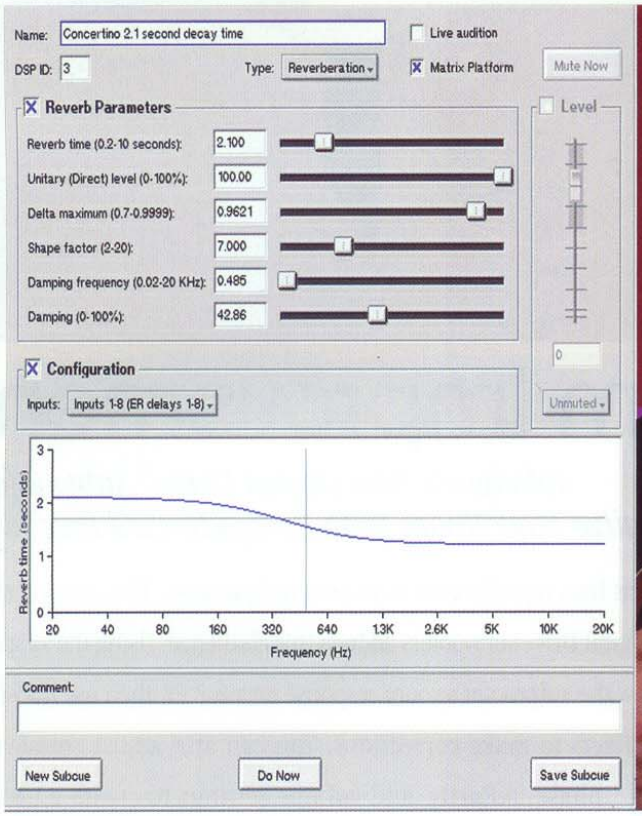
"As long as we've heard it or you have the music, we can work it up. It can be classical, jazz ... I even get asked to play Jethro Tull," Torvik concludes.

Concertino systems start around $85,000 for a basic system; the cost depends on the quality of speakers, amplifiers and microphones the client requests. The company's first three systems were being installed at press time. "One is for a client who hosts a lot of outdoor events," Haas says. "We're installing a big outdoor system which will be concealed, so the speakers will look unobtrusive and the wires will be hidden. The yard has a beautiful mountainous view you would not want to defile. Another is a well-known professional musician who just wants it to rehearse and enjoy with his friends. The third is a corporate executive who entertains a lot, and whose kids are starting to take music lessons."

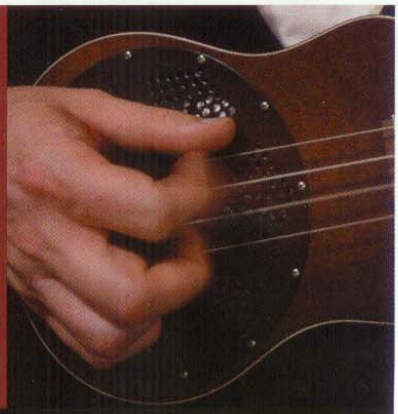
Haas points out other benefits to Concertino besides music performance. One potential use is for dramatic presentations; a Shakespearean actor could use it to rehearse. It would also be appropriate for poetry readings ... and even for business meetings. According to Haas, "Many meeting spaces are so acoustically dead that you can't hear the presenter, and no one wants to walk around with one of those microphones you clip onto your belt. With Concertino, you can give a presentation without a mic, and the audience can ask questions without a mic, too. There are corporate lecture halls and meeting rooms already set up with systems like this."

Of course, recorded music will always have its attractions; it's unlikely that most homeowners would want to pay the bill for an afternoon with Sting. But as gratifying as it is to explore the subtleties of a recorded performance through repeated listening, the recording will always sound exactly the same. Every live performance, though, is unique—a personal experience shared exclusively by you and your fellow audience members. For luxury homeowners, the Concertino program can make this magic happen. HE&D

For more information on Concertino, contact SH Acoustics at 866-277-9700 or www.shacoustics.com.



Your installer sets up the Concertino processor using special software (left) that runs on a laptop computer. The system simulates practically any acoustic environment, and the sound can be tailored to your specific tastes.



You need not own a Stradivarius to benefit from Concertino. It produces concert-hall sound even from humble instruments like acoustic guitars, drums, dulcimers ... and a resonator ukulele.