

# Solange De Santis

Toronto's Four Seasons Centre

By Solange De Santis

Toronto

If the real estate agent's mantra is "location, location, location," then the guiding principle behind the design of the Four Seasons Centre for the Performing Arts, Toronto's new opera house, is "acoustics, acoustics, acoustics."

Since the Canadian Opera Company (COC) is in the driver's seat as owner and manager of the new theater, it decided to build for the ear so that patrons in the very last row could as easily hear the delicate trills of the Queen of the Night in Mozart's "Magic Flute" as the rolling orchestral and vocal surf of Wagner's Ring cycle.

The C\$150 million (US\$135 million) theater is Canada's first house built specifically for opera. It's also the first in North America since the Metropolitan Opera some 40 years ago moved into a new home at Lincoln Center in New York, noted acoustician Robert Essert. "Opera is making a comeback worldwide, but it's not necessarily growing in the big houses. The smaller companies are the future," he said in an interview at the Four Seasons Centre's June 11 opening.

Acoustics were an especially sensitive subject for the Canadian opera because its former home, the barn-like Hummingbird Centre built in the early 1960s for touring Broadway shows, was often criticized for poor sound. In its 56-year history, the COC has also dragged its productions around to various ill-suited theaters and concert halls in Canada's largest city.

At the speeches during the June 11 opening, there was a palpable sense of relief that the opera house finally came to fruition after some 30 years of plans that, until now, crashed due to various political and economic factors. About four years ago, the province of Ontario donated the land, appraised at C\$31 million, and luxury hotel company Four Seasons Hotels and Resorts kicked in a C\$20 million naming-rights gift to start the project rolling. The second-largest gift, C\$10 million, came from the Fraser Elliott Foundation to name the auditorium after law-firm founder R. Fraser Elliott.

"It's an incredibly focused project," said COC technical director Julian Sleath, leading a tour of the Four Seasons Centre about a month before the opening. "We had a strong, mission-based client that said the most important thing is acoustics for opera," said Robert Campbell, project manager with theater designers Fisher Dachs Associates of New York, in a telephone interview.

Getting the acoustics right posed certain challenges in Toronto, where the city block occupied by the theater is bombarded by outside noise. A subway line runs on its west side; a streetcar line rumbles by on the north side. Screaming ambulances arrive and helicopters land at nearby hospitals; two large adjacent hotels and the major thoroughfare of University Avenue attract heavy traffic. Even the pedestrian crossing at one corner announces a green light with a loud two-note signal to aid the blind.

Essert, of Sound Space Design Ltd., London, worked with architect Jack Diamond of Toronto's Diamond and Schmitt Architects Inc. and Fisher Dachs to create a hall that, when empty, would be completely silent.

"We arrived at a noise criteria of N1," said Sleath, explaining that the noise in a typical office reaches a level of N40 and even an empty theater usually has a noise level of N15 to N25, reflecting the ambient noise of fans, air conditioning and heating systems and electrical hum.

The auditorium, a classic European horseshoe with four balconies and an oval, egg-shaped ceiling that gives the room a warm feeling, is enclosed in a concrete "tub" that sits on nearly 500 hard, foot-thick rubber pads and is isolated from the rest of the building by a two-to-three-inch "acoustic joint," or rubber-lined gap that insulates it from outside noise. In addition, three-foot-thick walls run between the tub and the shell.

Electrical components and ventilation systems are other sources of noise that had to be quieted. Electrical transformers are mounted on springs to keep their usual buzz out of the house.

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Heating and air conditioning units are in rooms underneath a huge air chamber, or plenum, under the orchestra pit.

The plenum holds a reservoir of air that is moved through the auditorium at a slow, quiet rate of less than 1.5 miles per hour. To avoid the noise of ventilation fans, air vents were installed under each of the 2100 seats in perforated stanchions. The air flow was tested to insure that audience members won't have air-cooled legs. In addition, all ductwork and electrical conduits are split by a flexible isolator as they cross the acoustical joint into the house.

In what would seem to be a poor business decision, the COC is moving from a theater that seats 3,000 to one with one-third fewer seats, but that, too, was an acoustic decision, said Essert. "They decided on a business plan that would work in a 2000-seat house. From my perspective, the more people there are, the more sound is soaked up. I say, deliver more sound to the ears," he said.

The floor of R. Fraser Elliott Hall is hardwood, not carpet, which absorbs sound. The four balconies feature decorative front panels containing small lights that give the hall, decorated in muted shades of grey and beige, a glowing appearance. The panels are molded sheets of glass fiber reinforced gypsum mounted on thick plaster and the gypsum is textured to provide more sound-reflecting surfaces. The ceiling is also made of textured plaster.

Another acoustical, non-commercial decision involved the orchestra pit. At the Hummingbird Centre, 2/3 of the pit is under the stage, which doesn't allow maximum sound from the orchestra, said Sleath. Shrinking the pit means selling more seats, but "one decision from day one was not to compromise the size of the orchestra pit so you could get up to 110 musicians in there for a Wagner opera," said Campbell.

However, the pit can be downsized for a smaller orchestra, with two parts on lifts that be lowered and rolled out into the basement, and additional rows of seating rolled on and added to the auditorium. Being able to raise and lower the pit helps the conductor find the right balance with the singers for each production.

The opera company's main tenant will be The National Ballet of Canada, which dropped out of earlier plans to be a co-owner, and a few minor compromises were made for the sake of the dance company, said Campbell. "The narrower the proscenium, the more sound you get out into the room, but we had to widen the proscenium two to three feet, something like from 49 feet to 52 feet. Their scenery was made for the Hummingbird, where the proscenium is wider, and it's hard for a dance company to trim scenery since it's all built to the dance floor," he said.

In the fall of 2006, the hall gets put through its operatic paces, as the COC opens its first complete Ring cycle in September and begins its regular season in October. After several test concerts in May and June, Essert described the sound as "warm and enveloping, with a bloom and a beauty to it. The singers get support for themselves, but the singers and the orchestra also get a wonderful balance."

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