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Bose Packs Concert Acoustics
Into Home-Speaker Systems

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FRAMINGHAM, Mass. -- Amar Bose has made a career of turning the world of acoustics on its ear.

Over and over again, Dr. Bose, a 67-year-old Massachusetts Institute of Technology professor and chairman of speaker-maker Bose Corp., has defied the conventional wisdom of consumer electronics.

In 1968, he pioneered the use of "reflected sound" in an effort to bring concert-hall quality to home-speaker systems. A decade later, he convinced [General Motors](#) Corp. to let his company design a high-end speaker system for the Cadillac Seville, helping to push car stereos beyond the mediocre. Three years ago, he introduced a compact radio system that can produce rich bass sound, even though his marketers told him the product wouldn't sell.

In the process, closely held Bose has become the world's No. 1 speaker maker, with annual sales of more than \$700 million, and one of the few U.S. firms that beats the Japanese in consumer electronics. The success has vaulted Dr. Bose onto Forbes magazine's list of the 400 wealthiest Americans, with a worth estimated at \$500 million. Dr. Bose insists "that's money I will never see," because he vows never to sell the company, of which he is the majority shareholder.

Plowing Back Profits

"Investment bankers call up all the time," he says. "I never speak to them. My assistant transfers them to finance. Finance says politely, 'we aren't interested.' "

Although Bose won't discuss much about its results, it says sales topped \$700 million for the fiscal year ended April 30, up about 20% from more than \$600 million the year before. Former employees of the 3,500-person firm say its operations are highly profitable. And Dr. Bose says 1996 results will exceed last year's.

He says he takes out only a salary, plowing all the company's profits back into research and development -- some of which isn't even related to acoustics. Five years ago, in the wake of the hullabaloo about "cold

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fusion" supposedly producing energy from water, Dr. Bose assigned six engineers to work on the issue, although it has no relationship to sound. They built what one Bose engineer claims is the world's most accurate calorimeter for measuring heat, and replicated many of the cold-fusion experiments. They concluded, as did many others who tried to reproduce the cold-fusion findings, that the process didn't put out any more energy than was put in.

Starting With a Basement Business

Slim, white-haired and 6-foot-2, Dr. Bose is a different kind of executive. He grew up poor in Philadelphia, where his father immigrated from India and worked as an importer until he lost the business during World War II. While his mother worked as a teacher, he set up a radio-repair business at the age of 14 in the basement that soon became the family's main support.

He entered MIT and never left, earning a doctorate in mathematics in 1956 under famed theorist Norbert Wiener. As a reward for finishing his research, he decided to buy himself a stereo system. Although he had done his homework on the hi-fi's engineering specifications, he was profoundly disappointed with his purchase. "I bought some violin records. It sounded terrible," he says. "A Stradivarius sounded like Woolworth's."

Mulling why something that looked good on paper sounded bad in the open air, Dr. Bose concluded the answer was directional. In a concert hall, sound waves radiate outward from the instruments, and bounce back at the audience from the walls. But home stereo speakers aimed sound only forward. So Dr. Bose began tinkering to develop a home speaker that could reproduce the concert experience.

Music from The Mountain

In 1964, he formed Bose Corp., and four years later introduced his first successful speaker, the 901. Based on the principle of reflected sound, the speaker bounces sounds off walls and ceiling to surround the listener.

Symbolically, Dr. Bose located the company's headquarters atop a 150-foot-high glacial formation dubbed The Mountain, 20 miles west of Boston in Framingham. From this perch have come many innovations. One, much imitated, was the three-way speaker system with a suitcase-sized subwoofer for bass that could be hidden behind a couch, and two small "cube" speakers that handle the high notes. Although others had developed such systems, Bose concentrated on diminishing the size of the cubes. Its latest \$2,500 Lifestyle 20 Music System has two "JewelCube" speakers, each barely bigger than a coffee mug.

"It's the spousal-issue extinguisher," says Steven Frankel, an audio buff and stock analyst with Adams Harkness & Hill in Boston. It takes away the whole issue of 'your-stereo-ruins-the-whole-room,' " he says.

But other Bose inventions have been market flops. Bose engineers spent nine years developing noise-canceling headsets that electronically sense low-frequency sound waves and create other waves that cancel them out. The devices got a lot of publicity for preserving the hearing of pilots on the Voyager, the airplane that made the first nonstop circumnavigation of the globe in 1986. But at \$1,075 apiece, they have been slow sellers to helicopter pilots and wealthy private plane owners. Even with the military buying 1,000 of the headsets a month for tank drivers and pilots, Bose insiders say they are money losers.

But Dr. Bose isn't one to let losses keep him out of the game. In 1984, Bose unveiled the Acoustic Wave sound system, a \$750 cassette-and-speaker-system the size of a boom-box that was sold door-to-door. It flopped. Against the advice of his marketing staff, Dr. Bose then doubled his bet, ordering engineers to create a radio using the same principle, a technology that embeds a speaker in a snaking, 34-inch plastic tube that holds enough air to resonate authentic deep-bass sound in a small box.

Raves for the Wave

That box, the Wave Radio, introduced in 1993, wound up a huge success, despite a \$349 price tag and sales only via direct mail. Review after review raved about the Wave, and people close to Bose say it is selling 200,000 units a year. Sales "are successful beyond anything we ever dreamed," says Sherwin Greenblatt, Bose's president and chief executive.

Another engineering feat is Auditor. Bose engineers were long frustrated by the unpredictability of the sound that emanated from their speakers in such public areas as stadiums and airports. A team spent 10 years developing a computer system that could analyze architectural blueprints and create the sound that a listener would hear after the building was completed.

When he unveiled Auditor two years ago, Dr. Bose conceded it was hard to foresee a payback. But Kenneth Jacob, the project's head engineer, predicts it will eventually help Bose surpass competitor JBL in sales of loudspeakers for public places.

As a marketing tactic, Bose decided against selling Auditor; instead, it is used only by its own engineers. The company guarantees that if the builders use Bose speakers as specified by Auditor, they will get the sound they want. Wayne W. Griffiths, electronics-systems supervisor at the Superdome in New Orleans, says that when the stadium went to replace its 20-year-old speakers, bids from "JBL and Bose were very, very close. Bose got it because of their guarantee."

A Tricky Business

Making it at all in the speaker business is something of a feat. "The days when every 18-year-old went off to college with a ... receiver and two speakers are over," says Mr. Frankel, the Boston analyst. These days, young listeners are more likely to take something inexpensive, such as a Sony Discman. However, speaker makers have high hopes for growth from aging baby boomers, many of whom are installing \$4,000 home-theater systems that use several small speakers hooked to a VCR that can make "Independence Day" reverberate through the house.

The world-wide speaker business amounts to about \$2.5 billion, with Bose's share estimated at about 25%, slightly ahead of No. 2 Harman International Corp., a Washington D.C., firm whose brands include JBL, Harman Kardon and Infinity. Although Japanese electronics firms lead in small speakers for boomboxes, American firms dominate the quality-speaker business. The Japanese disadvantage has its roots in the costly logistics of shipping wood for cabinets to Japan and exporting large, heavy speakers from there.

Blasting Bose

Among its competitors in the fragmented U.S. loudspeaker industry, Bose is feared and disliked. Audio buffs

revile it on the Internet, accusing it of overpricing and criticizing the quality of its sound. "Some people slam Bose because it's cool to do," says Derek Cribbs, a St. Augustine, Fla., computer programmer and speaker buff. "They say, 'no highs, no lows, must be a Bose.'" Mr. Cribbs says he dislikes Bose speakers, "because they beef up the treble to a tinny level and they reproduce too many frequencies out of those little cubes."

Bose's image isn't helped by its hard-line tactics. The company is known to cut off retailers that put its systems on sale below recommended prices. It has also sued many of its competitors for mimicking its ads or the look of its products.

Bose is "litigious and they patent everything that moves," says Andrew Kotsatos, president of Boston Acoustics Inc., a speaker maker in Peabody, Mass. Mr. Kotsatos says Bose's lawyers objected to his company's use of the phrase "invisible subwoofer" in advertising. "We got a letter saying they had a trademark on the phrase 'virtually invisible' " describing the Bose subwoofer.

Thomas DeVesto, president of Cambridge Soundworks Inc., a Newton, Mass., speaker maker, says "I have to be careful. Every time I say something about them, they sue." To settle a Bose lawsuit, Cambridge had to agree to stop running ads boasting that its speakers were "better than Bose at half the price."

A Prickly Attitude

Bose in August lost a suit against archrival JBL over the appearance of its subwoofer. It took the U.S. Supreme Court to extinguish Bose's 15-year libel suit against Consumer Reports magazine, which printed a review saying that sound from a pair of Bose speakers moved "about the room," instead of surrounding listeners, as Bose likes to have it. The High Court ruled in 1984 that the review was protected under the First Amendment as fair comment.

The prickly attitude reflects an engineer's pride in his designs and drive to go his own way. Dr. Bose hints that his engineers are working on products that are far afield from sound. He says Bose couldn't take such risks if it was beholden to outside investors or run by the marketing department.

"Marketing people's perfect product," he says, "is something that has one more knob and is one dollar cheaper."



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