



Steering Sound to Where it Belongs

Cutting Edge Technology to Send Sound Where it Belongs

By [Ned Potter](#)

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- It's nice to think of the world as a symphony, but most of the time it's cacophony — clashing noises coming from all around us.

"When you listen to sound over loudspeakers," says F. Joseph Pompei at the Media Lab at the Massachusetts Institute of Technology, "you don't have any control over where the sound goes. Sometimes you don't want it to go everywhere."

Pompei has devised a way to solve that problem. He has figured out how to "steer" sounds by aiming them only where he wants them to go with a device he calls an "Audio Spotlight."

A Beam of Sound

It looks like a disc-shaped loudspeaker, trailing a wire, with a small laser guide-beam mounted in the middle. When Pompei points the flat side of the disc in your direction, you hear whatever sound he's chosen to play for you — perhaps jazz from a CD.

But when he turns the disc away, the sound fades almost to nothing. It's markedly different from a conventional speaker, whose orientation makes much less difference.

Here's a quick explanation of what's going on: In nature, sound travels in waves — spreading in every direction, bouncing off some surfaces and being absorbed by others. It is certainly not linear. If you've ever left your seat at a ball game to get a hot dog, and learned from the roar of the crowd that you just missed the big play, you know all about that.

But Pompei's Spotlight transmits ultrasound that is very similar to the high-frequency signal a doctor uses to examine a baby in the womb. Ultrasound is too high-pitched for the human ear, but it can be aimed in a straight line and made to give off audible sound along its path.

"So you can control where your sound comes from and where it goes," says Pompei.

Real-World Uses

Pompei says he thinks marketers and exhibitors could have a wonderful time with his invention. A voice in a store could invite you to a sale on the next floor, perhaps. Or you could stand in front of a painting at a museum and hear from the artist and then hear a different recording when you move to the next painting.

But the best use of these new sounds, says Pompei, would be to promote peace and quiet.

Daimler-Chrysler has already tried the technology in a prototype truck, so that each passenger can listen to his or her favorite music without the annoyance (and, for the driver, danger) of headphones.

Likewise, imagine sitting at home next to a family member, who's watching some show you detest — but you don't care because you're outside the beam of sound and can't hear it.

No more yelling at the kids to turn that thing off? "Right," he answered. "You'll say, 'Turn it away from me.'"

— ABCNEWS' Richard Sergay contributed to this report.

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