

To Move Out of the Way

Jason Victor Serinus
talks to
Alon Wolf
about the
Magico
Phenomenon

Alon Wolf can be mesmerizing. When the founder of Magico gets going on one of his favorite subjects, loudspeaker design, the strength of his convictions, depth of technical knowledge, and sureness of response are enough to hush many a skeptic into silence.

Not that what Wolf says invites skepticism. On the contrary, it makes perfect sense. Take, for example, two of his favorite pet peeves: the medium-density fiberboard (MDF) used in a vast number of speaker enclosures, and loudspeaker design that is behind the times.

"Look around you," he explained during one of our many extended conversations. "Every carpenter decides he wants to be a speaker manufacturer, and before you know it, there's another MDF box with a nice veneer and off-the-shelf or modified ScanSpeak or Accuton ceramic drivers on the market.

"I built my first aluminum speaker 10 years ago. Aluminum is a far more appropriate material for a box than MDF, which is the worst thing you can use.

A box should be both well damped and stiff; MDF is very damped, but it is not very stiff. The box should also have mass. But since MDF is structured of resin and glue, it's not really hard. When you attach a driver to an MDF box, because it's a damped material, the MDF swallows up a lot of the energy the driver is putting out. It stores the energy, which builds up until you hear the box flexing. When you hear a driver in a well-damped aluminum enclosure, you hear things you never heard before, because all the energy is free to come out into the room."

Magico speaker cabinets are either all-aluminum—as in the huge Ultimate horns (\$329,000/pair) and the Model 6 six-driver floorstander (\$146,000/pair)—or constructed of an aluminum skeleton: the groundbreaking Mini II two-way monitor (\$29,600/pair) and V3 three-way floorstander (\$25,000/pair, reviewed by John Atkinson in this issue). In the Mini II, for example, both the front and rear plates are made of aluminum. The speaker's wooden parts—made of extremely stiff, 17"-ply Baltic birch plywood that tends not to store energy—are sandwiched between the aluminum plates without the use of wood screws. The drivers are attached directly to the front aluminum plate, which in turn is attached to the rear plate with rods. Thus, Magico avoids one of Wolf's absolute no-nos: screwing drivers into wood or MDF.

"After a month," he asserts, "the vibration loosens the screws. You tighten them back up, but you can only tighten them so much before the inserts you use start turning. In less than a year, you no longer have a good coupling. No matter what kind of inserts you use, no matter what kind of a process you do, in one year, it's gone. Once you don't have perfect coupling, all bets are off as to what you're really hearing. Are you hearing the driver, the box, the flopping around? Your resolution is gone."

To investigate Wolf's claim, I checked out a pair of MDF-cabineted loudspeakers that had gone through several rounds of manufacturer upgrades. Sure enough, not only were some screws loose, but others had been tightened so many times that they kept rotating in place. My concern over how much longer the larger-diameter screws I replaced those useless bolts with would themselves



Above: Magico V3s, below: the Ultimates.

"The degree of technological advance and execution in the loudspeaker industry is very low. It's been the same old same old for the last fifteen years."—ALON WOLF

remain tight led me to listen closely to Wolf's spiel.

"The truth is that there has been a lot of advancement in the science of acoustics and material that you do not see migrating into loudspeakers. You see it in electronics, but not in any electromagnetic product that the industry has been putting out. The degree of technological advance and execution in the loudspeaker industry is very low. It's been the same old same old for the last five years."

How's that for a blanket condemnation? But lest any speaker manufacturer feel singled out, Wolf's critique also extends to audiophile reviewers.

"There is a whole review industry making a living off discussing subtle differences between what are basically variations on the same speaker," he says, "and there is a lot of crap out there. If cars were made the same way, when you took them for a spin on the freeway and went faster than 35mph, the car would fall apart, you'd die, and the car manufacturer would be put out of business.

With the High End, you can do whatever you want, say whatever you want. You can get away with everything if you've got a good advertising package, a good line, and a good budget. I have been frustrated about this for so many years. It's part of the reason why I'm in the business. I couldn't find anything out there that satisfied me."

Wolf is far from alone. Who can possibly count the number of manufacturers who got into high-end design because they couldn't find a single product on the market that made them happy?

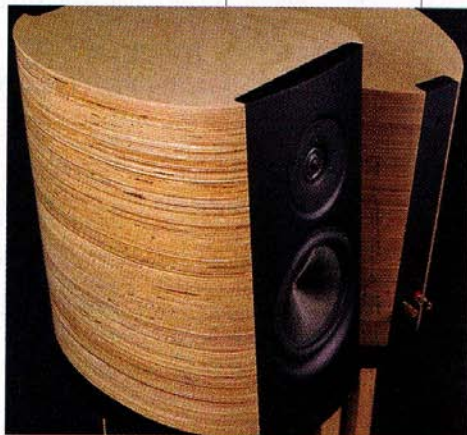
Music and Audio: Lifelong Passions

As technically sound as Wolf's design philosophy may be, his passion for accurate sound reproduction is rooted in a deep love of music. He treasures a photo of himself playing the accordion at age two. Wolf first began to study the violin when he was six. Soon, recorder and classical guitar were part of his life. The photo of Wolf playing the guitar on the Magico website (www.magico.net) isn't just window dressing; he won several scholarships to a conservatory in Israel, and, after coming to the US, continued studies at the San Francisco Conservatory of Music. Wolf's other childhood interests included sound reproduction and industrial design.

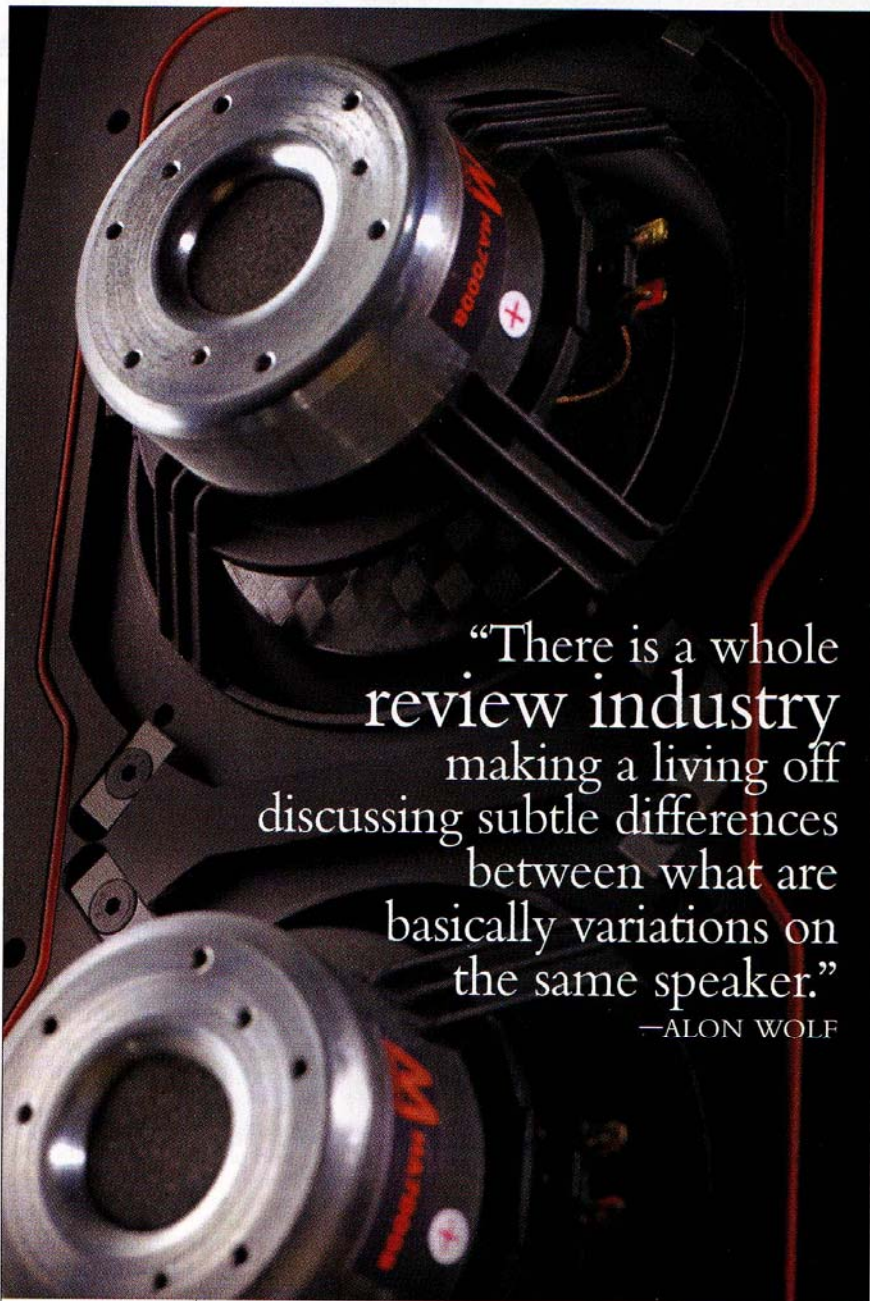
"I was interested in sound reproduction from the time when I first remember myself," he reveals. "But a decent system was not easily available in Israel when I grew up in the 1960s and '70s. The first time I heard Quad 57 electrostatics, when I was 14 or 15, I thought I'd died and gone to heaven. That experience, which initiated my craze to build a system that could re-create the feeling I had back then, has screwed¹ my mind ever since."

After completing obligatory military service in Israel, which included 18 months of advanced study in physics and math at the Israeli Air Force Academy, Wolf came to the US. With his first American paycheck, he bought a turntable and preamp. He also bought a pair of headphones, because he couldn't yet afford an amp or speakers. In addition to studying music, he continued studies in industrial design. He stopped pursuing a career in music only when he realized that he could never make it financially as a classical guitarist without em-

¹ Thankfully, Wolf's brain does not contain MDF.



Above: Magico's woofers unmasked, below: the Minis.



"There is a whole review industry making a living off discussing subtle differences between what are basically variations on the same speaker."

—ALON WOLF

bracing a teaching career, which he wished to avoid.

Wolf's new goal was "to make money fast so I could do my art. I'd heard lots of stories of people getting rich real fast somehow, and thought if I did, it would give me time to do my thing." His first foray into the fast buck began with home-security products. In 1989, as the company's top salesperson, the 25-year-old was sent to open branches in Santa Barbara and his future home, the Bay Area.² Less than a year later, he started his own security company. By the time he was 30, he'd made enough money to stop working and pursue his interests in design.

He began doing commercial computer-animated design just about the time *Jurassic Park* was released, in 1993. Freelancing on movies, TV series, and commercials, he worked for Sony, Disney, LucasArts, and other companies, and worked on the movies *Antz* and *Shrek*. He also worked on video games for Electronic Arts and

² The beautiful Oakland hills, to be exact. If, from the roof of his house, Wolf looks down toward Oakland's barrio, as far below him as the eye can see, he can probably spot our own humble casa.

project design for Sony. For 10 years, he did high-end design work on very sophisticated software in a virtual environment—experience he soon applied to the audio realm.

Magico's Beginnings

Wolf also continued his audio pursuits. A self-described autodidact who works 20 hours a day and needs only four hours of sleep, he began researching speaker technology, and absorbed the physics at the core of industrial design. About 16 years ago, he started to come up with ideas for building better loudspeakers.

"The last speaker I actually bought," he says, "was the Sonus Faber Extrema, which I immediately found faults with, took apart, and reassembled. It eventually got to the point where I felt I could only have the speakers I wanted if I built them myself. Thanks to my work in industrial design, I was able to produce things on the computer that no one else was doing. My early designs were far more organic and flowing—speakers that are rounded and that sort of thing—than anything that was available back then. Now that approach is sort of catching on."

Fifteen years ago, Wolf built his first aluminum speakers. Each weighed 500 lbs. (Each Magico Model 6 weighs 650 lbs.) Soon he was building speakers for friends. Eventually, at a demo of speakers made by a different company, he encountered premier mastering engineer Paul Stubblebine, who told him he'd been traveling the world for many years looking for a speaker for his studio. Wolf said that he was building speakers right down the street, reached for his card, and invited Stubblebine over for a listen.

Two weeks later, Stubblebine called. He arrived one Saturday morning lugging his mastering tapes and Pacific Microsonics equipment, hooked everything up, and listened to full orchestral recordings for eight hours. Wolf, sitting right behind him, had no idea if Stubblebine liked what he was hearing. Eventually, Stubblebine rose and said, "Well, I have to leave now. It's late. Sorry I took up your day. I'd like to come again, if possible." Wolf replied, "Sure."

Stubblebine returned in a couple of weeks and spent four more hours. Finally, he turned to Wolf and said, "These are the most amazing loudspeakers I've ever heard. I'd like to buy a pair. How do we do that?" Wolf eventually completed building the Walls, the 800-lb speakers that Stubblebine still uses in his mastering studio.

"That's when my mind made the switch," says Wolf. "I realized that I had something that not just crazy people like me would appreciate."

Soon Wolf had built his first big extruded-aluminum speaker, the Reference, which served as the precursor to the Model 6. In between, he built others, including a pair for Jeff Rowland. Each time he received a commission, he was able to start fresh with a new design. "That's how I built the big

horns," he says. "People appreciated what I was doing, and were happy to go along on a really wild ride to see how much we could push it."

For 10 years, Wolf built speakers 10 hours a day while doing animation work full-time. Sometime in 2002, a Hong Kong distributor asked him to build the finest possible, price-no-object, two-way loudspeaker that would also be a work of art. Thus was born the Mini, a sealed (*ie*, portless) two-way with unique curved sides and sculpted aluminum stand. Once the distributor saw and heard it, he ordered more Minis for his clients. Even as he worked on those Minis, Wolf continued to build pairs of his huge horns. Over the next four years, he perfected the Ultimate.

Less than three years ago, Wolf dropped his other work, entered the consumer market, and went double full-time with Magico. The Magico team also includes VP of engineering Yair Tammam, who serves as "the brain behind a lot of the stuff that we do in terms of physics, such as writing software, building drivers, and doing simulation."

The Word Gets Out

Stereo Sound of Japan first wrote about the original Mini in early 2005, and subsequently gave it a Best Buy recommendation and their 2005 Grand Prix Award. Three other Japanese publications soon followed suit; *Audio Basic* devoted a cover story to the Mini in summer 2005.

Across the seas, online publication *6Moons* jumped on the bandwagon.

Then, beginning with its March 2006 issue, *The Absolute Sound* focused first on the Ultimate and then on the Mini, and granted the minimonitor several awards. *Stereophile*, whose requirement of "five US dealers minimum" for any component reviewed protects audiophiles from companies and products that are here today and gone tomorrow, began covering Magico in January 2007, discussing the Mini, the V3, and the Model 6 in our online reportage of the 2007 Consumer Electronics Show (<http://blog.stereophile.com/ces2007/011407magico>). Now, with at least thirteen Magico dealers in the US (in addition to at least 17 others throughout the world), this feature and

John Atkinson's review of the V3 appear simultaneously.

Why, with so much publicity, has Magico been slow to assemble a dealer network? The answer lies in Alon Wolf's commitment to impeccability, as reflected in the Mini's elegant design and his website's sophisticated layout. "I choose dealers who can represent the product properly," Wolf explains; "dealers who conduct business on an ethical stan-

"It eventually got to the point where I felt I could only have the speakers I wanted if I built them myself."

—ALON WOLF



Above: the Model 6 loudspeakers, below: Model 6 side housing.



ard I can accept, and deliver real value and service in return for customers' hard-earned dollars. I get a call a week from a home-theater dealer who wants to carry Magico, but I'm very careful about whom I work with. A lot of dealers are so cynical. It's not about the sound; it's just about how to survive. I don't care how many Minis you can sell—if I don't like you, I can't do business with you."

Technological Breakthroughs

Magico has spent over four years developing new proprietary drivers that are composed of different weights of carbon fiber woven together. The cone in the V3 weighs 7gm and is made of the same material used to make helicopter blades. "You can put this cone upside down and stand on it and nothing will happen to it," says Wolf. "You can't do this with titanium; it will bend. This stuff has been around five years, but no one else is using it."

This driver breakthrough has now been applied to the Mini II, whose new proprietary driver replaces the original Mini's semi-proprietary, modified driver. Given the new woofer's 75mm voice-coil—the original driver's was 32mm—and a neodymium magnet strong enough to lift a 5-lb steel plate, Magico claims that the new drive-unit can sustain a lot more power and dissipate heat much more effectively. As a consequence, the Mini II now extends down to 36Hz, and has a lot more beef in the low end.

"The new driver can sustain a lot more punishment without distortion," Wolf explains. "The cone is supported both in the center and in the middle, which adds a lot more stiffness. Soft cones—polypropylene, just about any substance—lose piston motion as the frequencies lower, and start to wobble. That's where you start getting group-delay issues, and your bass is out the window—soft, woolly, and out of focus. The larger voice-coil, with its extra support and greater control, helps prevent this."

In response to criticism that neither the Mini II nor the V3 plumbs the depths, Wolf emphasizes that his sealed designs have a 12dB/octave rolloff, while ported designs have a 24dB/octave or greater rolloff. Sealed designs, which are hard to execute properly, maintain a far gentler slope of bass decline, and offer bass of greater integrity because the woofer need not work so hard. Because ported designs have extra boom at the port's resonant frequency, Wolf maintains that many audiophiles, including reviewers, are fooled into thinking that most ported speakers extend far lower than they do. Having since measured several ported designs that claim low bass, I've seen the truth in Wolf's assertion.³

Magico crossovers are designed in a virtual environment, using proprietary software that emulates a passive crossover design. After measuring the drivers, impedance, and other physical elements of the speaker, and importing figures into a software-created virtual environment, Magico can simulate

the crossover to an accuracy of ¼dB. In the case of a three-way speaker, for example, once Magico builds the crossover in their virtual environment, they can send a signal to three different amplifiers and feed the speakers via a virtual passive crossover. They can then change values in the computer and immediately hear the difference.

"You cannot create the perfect phase if you can't see what's happening in real time right in front of you," says Wolf. "You just can't. Unless you have a controlled function that dictates your slope as you go from one driver to another so they are in perfect summation and there is no cancellation between drivers, you cannot have good phase integration. Your soundstage is screwed up because your off-axis integration is not good. There are a lot of technical advances available today to create much better loudspeakers, but a lot of speaker manufacturers have not adopted them."

Magico's Bottom Line

Magico's ultimate goal is to create "objectively fine loudspeakers" that maintain integrity at high sound-pressure levels.

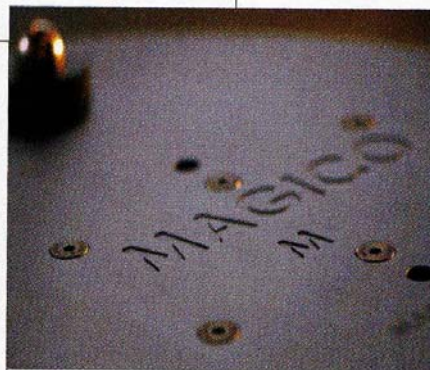
First priorities include achieving low distortion levels, coherent phase and impedance behavior, and an even power response. After those issues are satisfactorily addressed, extended and linear frequency response comes next.

"If our design efforts measure well," says Wolf, "we will probably have a pretty darn good-sounding loudspeaker. If we don't like what we hear, it's usually small things that need changing, and we know where to adjust. As long as the subjective changes fall within the objective scientific parameters that we are willing to accept, that's fine. Plus or minus 2dB across the entire spectrum is a lot. I mean a lot. I can make the speaker sound lush or lean, or bright or dull, within these parameters. But I don't build speakers just to sound good for me. I don't sign off before the science part is safe and sound.

"Our goal is to give you a technically unassailable speaker that performs well in any reasonable environment. If a speaker has a hump at 80Hz just because it sounds better to its designer in a particular environment, then the hump remains there no matter what. If the speaker lacks a full midrange, or its bass alignment is off, there's nothing you can do to change it. If you have a 10dB suckout at a poorly executed crossover point, the energy missing is never coming back. Magico would rather give you a solid design that has everything there rather than one with missing or added parts that consumers cannot retrieve or subtract. The goal of a Magico design is to move out of the way. That's the bottom line: to move out of the way."

"The goal of a Magico design is to move out of the way. That's the bottom line: to move out of the way."

—ALON WOLF



Above: the top plate of the Mini II stand, below: the Mini II woofer.



³ Was I initially fooled? Only my hairstylist knows for sure.