

First Tests: Divx/DVD Player and \$400 Dolby Digital Receiver

THE WORLD'S #1 A/V MAGAZINE

StereoReview®

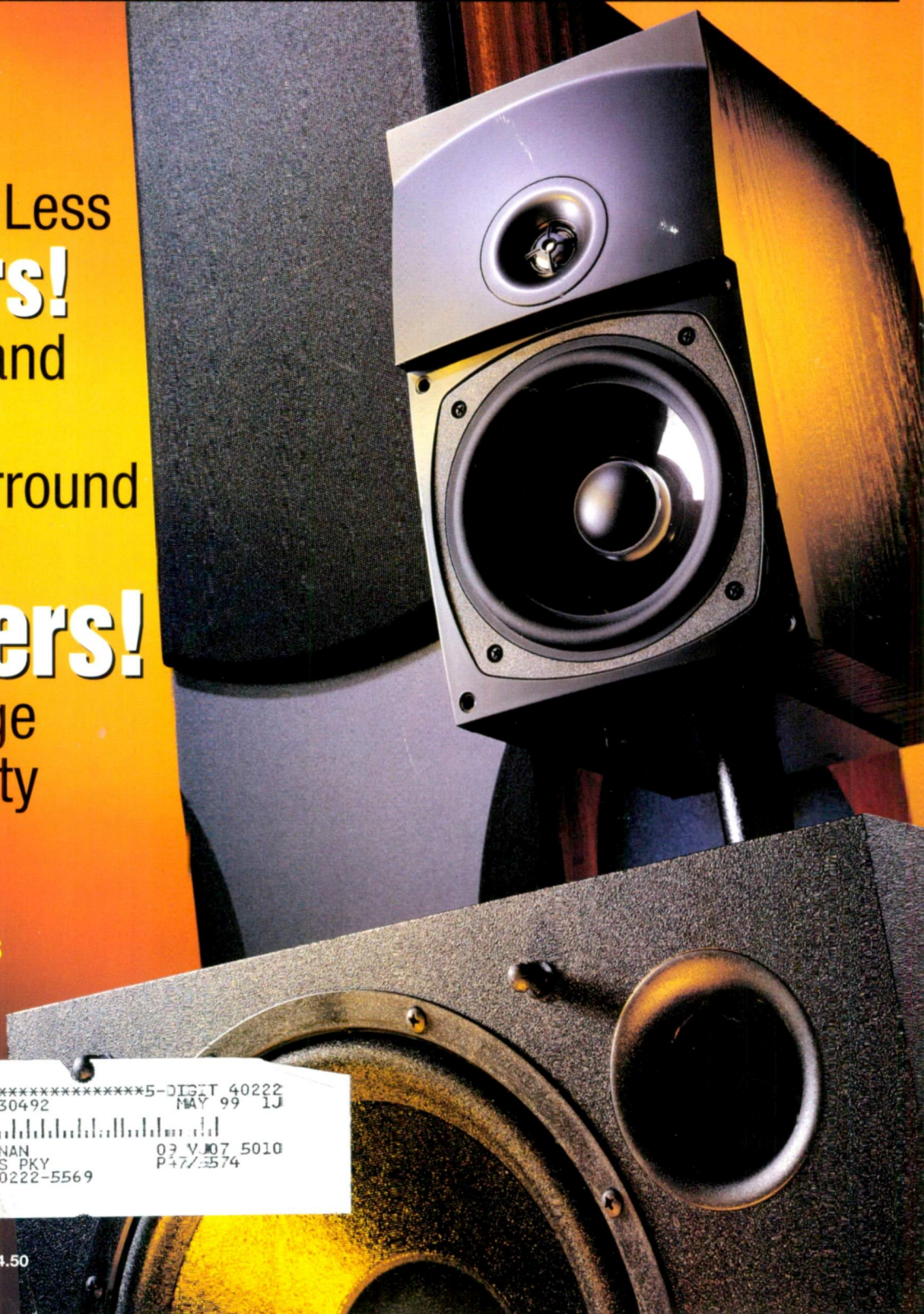
HOME THEATER ■ AUDIO ■ VIDEO ■ SURROUND SOUND ■ MUSIC

Speakers!
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 For \$300 or Less

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 Can Two Grand
 Get You the
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Speakers!
 How to Judge
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6 Surround Sound
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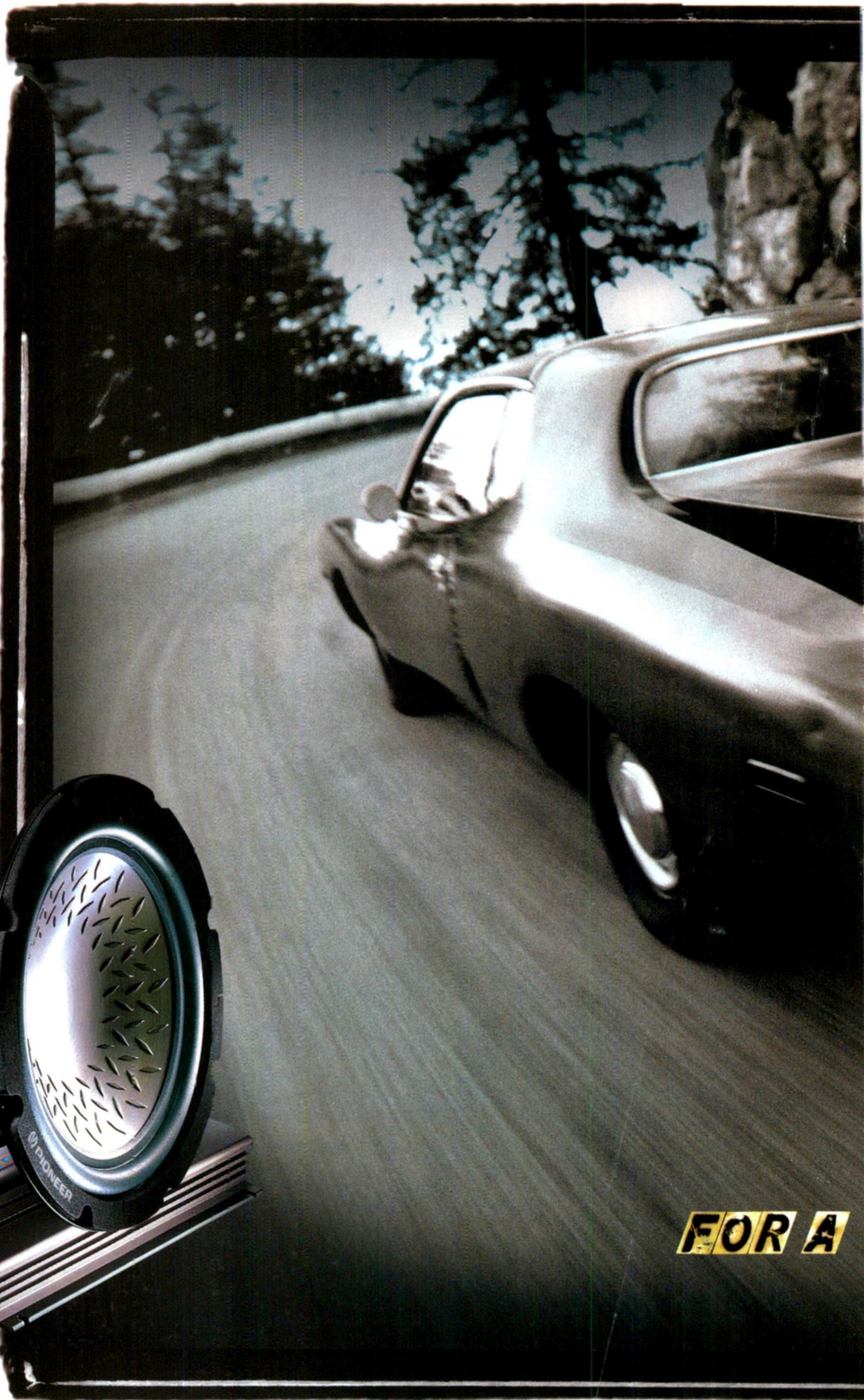
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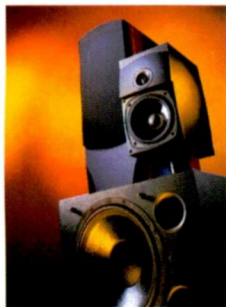


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ON THE COVER

Clockwise from top, the Klipsch Synergy Premiere 300 tower speaker (see test report on page 50), the Energy e:XL-R surround speaker (page 54), and the PSB Alpha Subsonic 1 subwoofer (page 48).

Photo by
Dave Slagle

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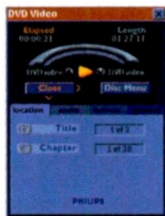


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RANDOMplay

EDITED BY BRIAN FENTON

Home DVD Recorders?

Would you like to replace your VCR with a DVD player/recorder? The major consumer-electronics manufacturers would love to sell you one. Unfortunately, it's been impractical because of the lack of low-cost MPEG-2 audio/video encoders — to say nothing of the lack of standards, of course.

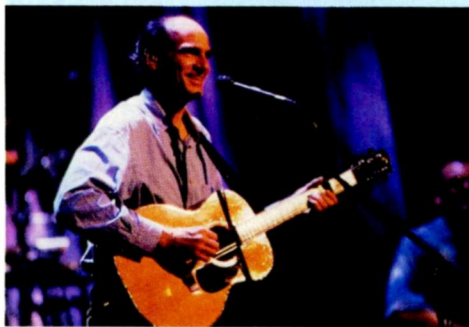
Don't give up hope, though. A Silicon Valley startup, iCompression, has started selling in sample quantities a single-chip MPEG-2 encoder for less than \$200. (Its main competitors, IBM and C-Cube, sell encoders for more than \$1,000, mainly for professional broadcasting gear.) If things happen as quickly as iCompression hopes, you could see DVD camcorders by the end of next year.

Marked Discs

Just because most movie studios are supporting DVD, don't think that they're not still worried about pirates stealing their content, especially with new recording devices such as digital VCRs and DVD-RAM and DVD+RW computer drives

JT Does DVD

When James Taylor performed at the Beacon Theater in New York recently, the concert was "conceived, recorded, and produced specifically for the DVD-Video format," according to Sony



either already here or on the horizon. DVDs can't be copied easily because they're protected by the Content Scrambling System (CSS) on the digital side and Macrovision on the analog side. However, CSS doesn't provide any way to trace the source of copyrighted materials, which is what digital "watermarking" is designed for.

Hollywood studios and both consumer-electronics and

computer manufacturers have been working for more than a year to choose a watermarking technology that embeds an invisible but nonremovable source ID in the DVD image. While the studios worry about piracy, the manufacturers worry that sales of new digital recorders could be hindered without Hollywood's support. Enthusiasts, of course, fret over the possible introduction of

Music. Frank Filipetti — who won a Grammy Award for engineering *Hourglass*, Taylor's most recent CD — is in charge of the DVD-Video realization of the concert.

When asked on the night of the show how he was going to mix the 5.1-channel Dolby Digital soundtrack, Filipetti was honest: "I don't know," he said, adding that he wasn't even sure if the mix would put the listener "tenth-row center or up on the stage with James." Well, as it turns out, his final mix brings Taylor up front, closer to the listener, with the surround channels used mainly to provide ambience.

The concert was also broadcast live on PBS — well, most of it was. After PBS broke away, Taylor came on to perform another four songs, including the perennial favorite *Sweet Baby James*. They'll be "bonus tracks" on the DVD and VHS releases due in October. — B.F.

Sounds Like A Bulldozer

We've all heard speakers that sound so bad that they deserve to be run over by a bulldozer. But these CSI/Speco speakers were pulverized because of their looks. Okay, it wasn't because they looked bad, it was because they looked a little too much like Niles Audio's OS-1 and OS-5 speakers. As part of a lawsuit settlement, the entire remaining stock — totaling about 2,600 speakers — had to be destroyed.



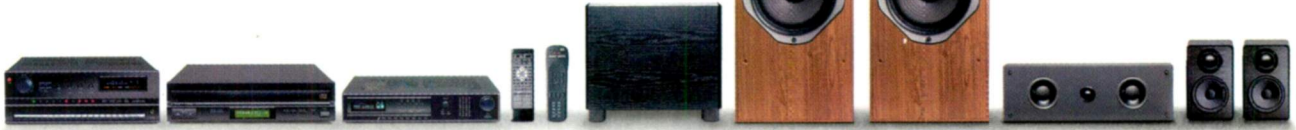
Promises, Promises

You've been hearing about DTS-compatible hardware for a while, and even seen some of it reviewed in these pages, so you must be wondering, "Where are the movies?" Good question. DTS has been announcing the imminent arrival of DVDs encoded with its brand of 5.1-channel sound for over a year now, but nothing has hit store shelves yet. The explanations vary, depending on who you ask and what day it is. They run the gamut from glitches in the authoring software (don't ask) to ball-dropping by the movie studios and distribution companies — apparently everyone but the parent company itself. DTS has built a good reputation in the high end, has fans for its laserdisc and multichannel music releases, and has gotten the Japanese engineering community to embrace its standard, which is why mass-market DTS receivers and DVD players started appearing earlier this year. But if the first DTS-encoded DVDs haven't appeared around the time you read this, competitor Dolby Labs just might succeed in slamming DTS's window of opportunity shut for good.

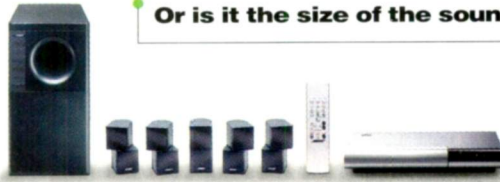
— Michael Gaughn

As you begin your search for the ideal home theater audio system, ask yourself what's important:

Is it the size of the equipment?



Or is it the size of the sound?



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- *Home Theater Technology* summed it up by saying, "Everything is included and carefully thought out.... The performance is awesome."*



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visible artifacts to the picture.

Three new patents awarded to Digimarc Corp. of Portland, OR, a digital watermarking developer, should make everyone breathe a little easier. One of the more interesting technologies covered by the patents allows the watermark to automatically locate itself in areas of the picture where it will be least obvious to viewers and to vary its density to maintain invisibility.

Billions to Serve

Speaking of piracy, China is gearing up for a format war over the next generation of Video CDs. You don't remember Video CDs? No surprise — they never caught on here. But the format is huge in China, with sales last year of 15 million players. Now, three incompatible formats are vying to be the next-generation Video CD. Some manufacturers are proposing to leap to DVD instead. We don't know which format will win, but with a billion potential customers, it's sure to be a fierce battle.



Science Fashion

"A wearable musical instrument" is what Teresa Marrin, a grad student at the M.I.T. Media Lab, calls her "conductor's jacket," though she admits that, at least for now, it's more of a research tool. In a recent concert by the Boston Pops, conductor Keith Lockhart wore the jacket so that Marrin could gather data and learn how he uses motions to communicate his intentions to the orchestra. Meanwhile, a computer translated his body's movements into a kind of psychedelic light show, classical style.

The jacket has eight sensors that measure position and orientation, plus three for temperature, respiration, and heart rate. Because a conductor's muscular tension and sweating can be "important indicators of musical information," the jacket also contains four sensors to measure tension and one for sweat.

Student conductors "have vastly different movements," according to Marrin, and her jacket could be used to help them recognize the gestures of great conductors and compare them with their own. "Teaching conductors how to conduct better is a noble goal," she said. But she is also worried that the classic performance arts are in danger of becoming irrelevant, and she hopes to use the jacket to understand "how to build the next instrument," one that is more in tune with modern times. — B.F.

PHOTOS BY RICH FLETCHER

A/V Digest

Meridian has introduced a data-compression scheme called Meridian Lossless Packing (MLP). Expected applications

include high-sampling-rate multichannel audio on DVD and multiple channels on CD. Dolby will handle the licensing of the technology. . . . The first Super Audio CD players using the Sony/Philips Direct Stream Digital (DSD) coding scheme are scheduled to hit stores in Japan next spring and in the U.S. by next fall.

"Duke it out." For the gory details, visit the "Bird Lives" Web site at www.birdlives.com. — Ken Richardson

Music Hath Power

Studies conducted by psychologists at the University of California at Irvine showed that students who listened to the music of Mozart before taking math exams scored approximately 10 percent higher than others. That might explain why Sony Classics' *Mozart Makes You Smarter* (SK 66245) has been popular among high school and college students.

Sony Music Entertainment's plant in Carrollton, GA, donated enough copies of a classical collection called *Build Your Baby's Brain Through Music* so that each baby born in Georgia's 100 state hospitals over the next year could receive a copy. When the state's governor described the album enthusiastically on a TV talk show, he created a nationwide demand. Now available through Sony Special Products, it contains 11 selections by Mozart, Handel, Schubert, Vivaldi, and Bach. To order, call 800-338-7834. Price: CD, \$9.99; cassette, \$5.98 (plus tax and handling).

— William Livingstone

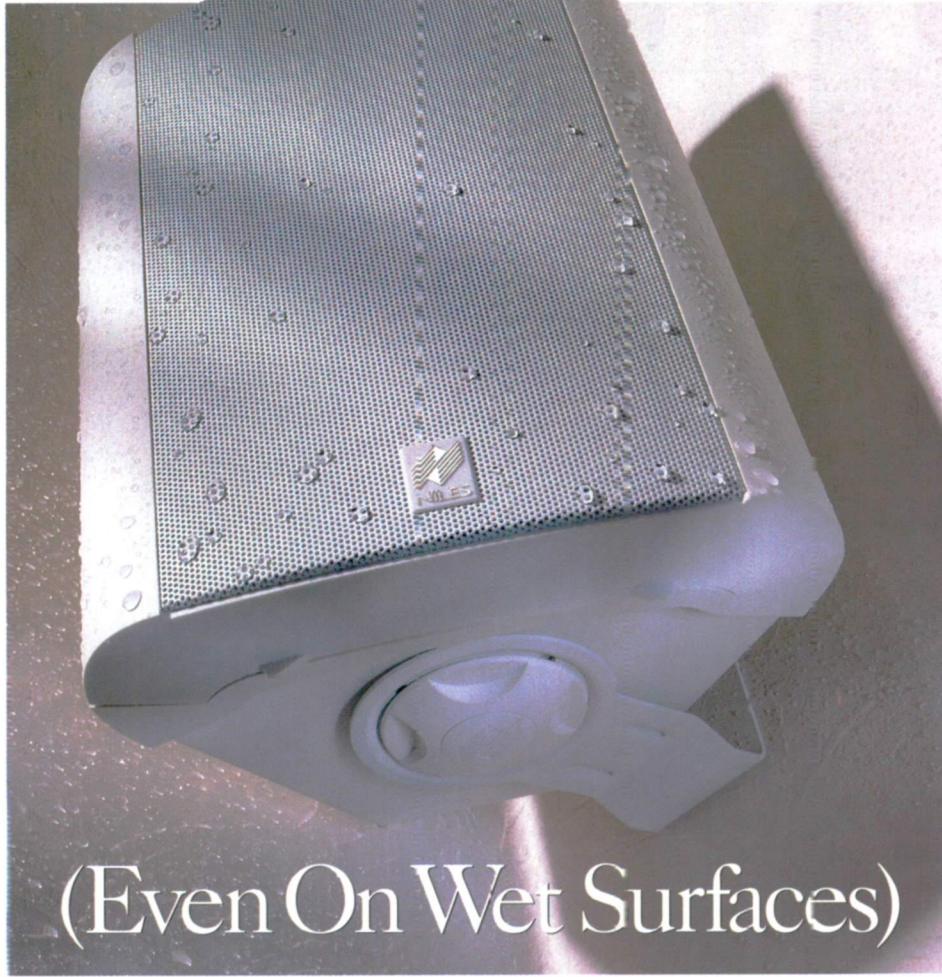
Groove Tubes

You've got your home theater outfitted with Dolby Digital, DTS, DBS, DVD, Divx, a big-screen TV, and all the latest tweaks. So what's missing? According to Valve Amplification Company (VAC), tubes. Long since abandoned in the mass market, tubes have become all the rage with the audiophile "elite" — and they lie at the heart of VAC's new

Visionary home-theater system. Is this just some marketing gimmick, or yet another example of high-end hubris? Neither, according to Kevin Hayes, VAC's owner and president, and Visionary's designer: "Far from being outmoded, the vacuum tube is still the choice of many recording studios and musicians. And in the context of sound, it still provides the highest realism." Before you decide a tube-based home theater sounds just right for you, though, consider the base price of admission: a cool \$25,000. — M.G.



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Sonically. The OS10 handily outperforms many traditional bookshelf speakers. Much of its superb sonic character comes from its unique tweeter design. Constructed from a composite matrix of elastomers and natural fiber substrates, the ElastoDynamic™ tweeter yields extended frequency response with stunning detail and clarity. But to be a great speaker, you need great bass. Here the OS10 shows its true horsepower thanks to its injection-molded, polypropylene Woofer cone, supple butyl-rubber surround, and powerful magnet structure.



Visually. The OS10's aerodynamic shape speaks for itself. But what may not be readily apparent speaks just as loudly. The



(insects or moisture can't creep in) and will not fade under the sun's rays. The grills and brackets are aluminum; the connectors are gold-plated; all the hardware is brass or stainless steel—this speaker will not rust! And Niles guarantees it for two years—that's twice as long as most manufacturers.

For the name and phone number of your nearest authorized Niles dealer call 1-800-BUY-HIFI (1-800-289-4434).

OS10's tapered enclosure tucks neatly into corners or under eaves, complementing any décor—inside or out. Its clever pivoting bracket (standard equipment on the OS10) gives you endless mounting solutions. Available in white or black, either finish is paintable for a truly custom look.

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"Iron Dan." "Der Spieler." "The Velvet Anchor." SportsCenter fans witnessed a milestone last spring when Dan Patrick took his seat behind the anchor desk for his 2000th consecutive broadcast. Day in and day out this bulwark of sports journalism has consistently raised the bar at SportsCenter, and redefined the way a generation thinks about sports.

Co-anchor Kenny Mayne sums it up best:

"He's that big industrial scale in the locker room upon which all others must be weighed." And amidst the hubbub of the evening's celebrations, what did the Man-of-the-Half-Hour have to say?

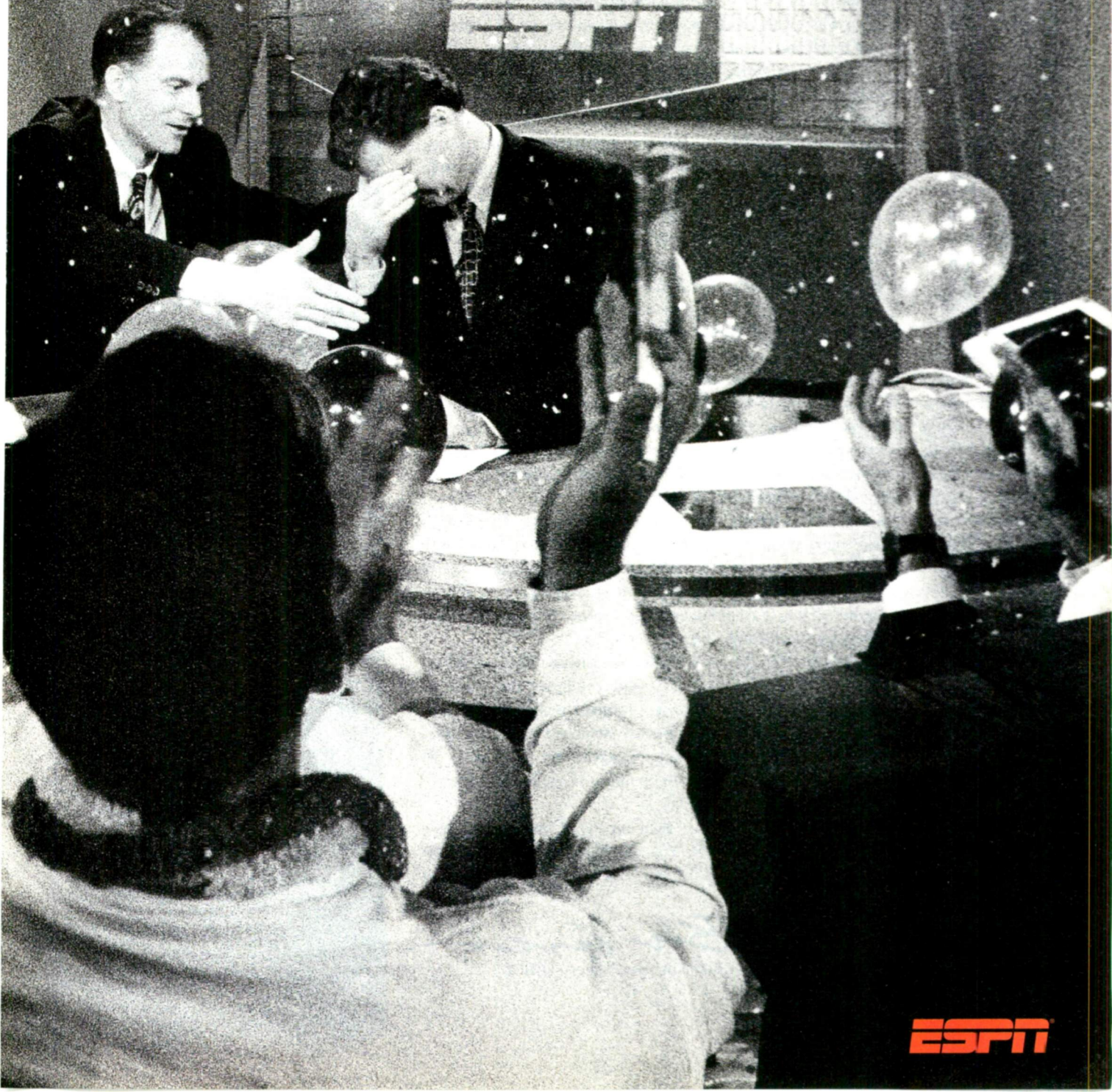
"I'm honored, but it's all just a lot of fuss. I'm just out there doing what they pay me to do." Sure Dan, sure.

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BOB ANKOSKO

It's the Speakers...

AS WE WERE PUTTING the finishing touches on this issue, our annual Speaker Special, I was reminded of a bizarre encounter I'd had. My wife and I were out and about one Saturday afternoon when I spotted a small sign in a storefront window that read "Fred's Audio" (all right, so I don't remember the real name . . .). The store turned out to be the "showroom" of a tiny speaker company. Inside we were greeted by "Fred," who was owner, chief designer, and salesperson. I explained that we were interested in the best-sounding speakers we could get for about \$500. He pointed to one of many nondescript boxes that lined the walls and popped a disc in a big fancy CD player that topped off an impressive stack of electronics.

The sound that came out of those "speakers" was so godawful that my wife and I glanced at one another in utter disbelief while trying to maintain fake smiles. Boy, did I feel sorry — and embarrassed — for that poor guy. He had put his heart and soul into those squawkers but clearly didn't have a clue. The moral of the story: You can empty your bank account on a killer stack of electronics and tweak it 'til your spouse throws you out of the house, but if the speakers aren't up to par, you might as well invest your time and money elsewhere. Speakers are far and away the single most important link in the audio chain. Put in more practical terms, if you have \$1,000 to spend on a stereo system, earmark \$500 for the speakers.

Now that you've heard my tale, I'd like to walk you through this special issue. Our tour begins on page 67, where speaker guru Dave Clark answers some of the most commonly asked questions in "Everything You Always Wanted to Know About Speakers (But Were Afraid to Ask)."

If you're in the market for a pair and don't want to spend more than \$300, turn to page 72. In "Small Speakers with Big Potential," veteran *SR* reviewers Dan Kumin and Ken Pohlmann team up to put models from six well-known brands to the test. If you're a bargain hunter, don't miss this feature.

If you're serious about home theater, be sure to check out Corey Greenberg's take on three surround-sound systems in "\$2001: A Speaker Odyssey" (page 82). And when it comes time to hit the stores in search of that perfect speaker, you'll learn very quickly that judging sound quality is the most challenging — and rewarding — part of the job. "How to Audition Speakers" (page 79) gives you some pointers and even provides a checklist of what to listen for.

I'd be remiss if I didn't mention this issue's awesome lineup of equipment reviews, all of which are sporting a bold new look — and feel. (See "Tech Talk" on page 34 for details on our new streamlined review format.) Besides those three home-theater speaker systems Corey reviewed, the list includes a novel flat-panel speaker system, the world's first \$400 Dolby Digital receiver, and — ta da! — the first Divx/DVD player. Turn to page 43 for two opinions on the Divx player — and the controversial marketing concept behind it.

Finally, I'd like to call your attention to "Random Play," our exciting new opening department that begins on page 8. You can thank art director Drew Thompson for its lively graphics as well as the new look he has brought to "Test Reports" and the music sections.


Bob Ankosko, Editor in Chief

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All non-amplified Cambridge SoundWorks home speakers are now covered by our limited 10-Year Parts & Labor Warranty.¹ Whether you buy our *New Ensemble*[®] today or if you bought our original *Ensemble* in 1989. It's our way of saying "thank you" to our hundreds of thousands of customers.

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We have assembled some of the very best surround sound systems ever, featuring our *Ensemble* and *MovieWorks*[®] speaker systems. They also feature incredible 10th Anniversary Sale prices – Savings of \$100 to \$400.

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We are pleased to announce special prices on our multimedia speakers. *PCWorks*, which "astounded" *PC Magazine*, has been reduced \$30 to \$69.99! *SoundWorks*[®], which just received the Editors' Choice Award from *PC Magazine*, has been reduced \$70 to only \$149.99! *MicroWorks*[®], which received the "MVP" Award from *PC Computing* magazine, has been reduced \$100 to only \$249.99!

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If you buy selected surround sound systems, or any Cambridge SoundWorks brand speakers, qualified customers make no payments until 1999!*

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Save \$100 On Ensemble IV Home Theater System – No Payments Till 1999!*

The country's best-sounding affordable surround system. *Ensemble IV Home Theater* was recently rated "Best Buy" by a leading consumer publication. Sony's Pro Logic receiver has 100/100/100/100 watts per channel. 10-Year Parts & Labor Warranty on speakers. 2-year warranty on the receiver. Reg. \$599.98



Save \$339 On New Ensemble II Home Theater System – No Payments Till 1999!*

This remarkable system features our outstanding *New Ensemble II* sub/sat speakers. *Stereo Review* said *Ensemble II* "can only be compared with much more expensive speakers." *The Surround*[®] II 5.1 speakers switch from dipole to bipole operation, for great surround sound with any recording. The Marantz SR66 high-performance Pro Logic surround receiver sounds terrific. Speakers backed by 10-Year Limited Parts & Labor Warranty. Receiver backed by 3-year warranty. Reg. \$1,329.96



Save \$400 On MovieWorks 5.1 Home Theater System – No Payments Till 1999!*

MovieWorks 5.1 makes movies or music sound fantastic. Stereo Review calls it "clearly one of the best one-box home-theater speaker systems I've heard." Sony's Dolby Digital AC-3 receiver uses the latest surround technology. Ten-Year Parts & Labor Warranty on non-amplified speakers.† 2-year warranty on the receiver. Reg. \$2,399.98

NEW!
10 YEAR WARRANTY

150 Watt, 12" Powered Subwoofer.
"An aural atomic bomb...nothing short of phenomenal." -**Boot**

10th Anniversary Celebration
\$1,999⁹⁸
\$56 Month*

Two-Way Shielded Main Speakers

Powerful Dolby Digital 5.1 Receiver By Sony

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Wide-Range High-Output Center Speaker

Save on our multimedia systems. Save \$100 on MicroWorks High-Output Speaker System. Save \$30 on PCWorks – The Best Multimedia Speaker Value.

MicroWorks is a powerful amplified subwoofer/satellite speaker system – with over four times the acoustic output of most multimedia systems. Its wide frequency range, natural tonal balance and high output make it ideal for presentations, or for a terrific home stereo system or a two-channel home theater sound system. MicroWorks comes with a 30-Day Total Satisfaction Guarantee and a 1-Year Limited Parts & Labor Warranty.

PCWorks is a compact, amplified speaker system which has been carefully fine-tuned to produce the natural, accurate, wide-range sound. Just plug it into a portable CD player, multimedia computer, TV, clock radio, or boom box – anything with a headphone jack – for rich, beautiful sound. PCWorks comes with a 30-Day Total Satisfaction Guarantee and a 1-Year Limited Parts & Labor Warranty.

10th Anniversary Celebration
\$249⁹⁹
Reg. \$349.99
Save \$100
\$15 Month*

PCWorks system with satellite speakers and subwoofer with built-in amplifiers comes finished in black or computer beige.

10th Anniversary Celebration
\$69⁹⁹
Reg. \$99.99
Save \$30



MicroWorks system with satellite speakers and subwoofer with built-in amplifiers comes finished in black or computer beige.



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"...one of the leading wonders of the computer world." **PC Gamer**
"Cambridge SoundWorks manufactures loudspeakers that provide exceptional sound quality at affordable prices." **Stereo Review**

"The only speakers you'll ever need."¹ **PC Magazine**
"I haven't heard better speakers at this price." **PC World 2/97**
"...as accurate as systems costing twice as much." **PC Gamer**
"...nothing short of stunning."² **Computer Gaming World**
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See Bob Rock.

The new Sunfire *True Subwoofer* by Bob Carver has received reviews that are redefining the subwoofer industry.

There has never been a subwoofer like it!

There will never be a subwoofer like it!*

It's a small eleven inch square bass cube, and it shakes the walls and rattles the rafters. It has its own built-in two thousand, seven hundred watt amp!

**Trust Bob.
It Rocks!**

SUB REVIEWS



"The True Subwoofer is an achievement on par with the space shuttle and the twinkie."

—Al Griffin

Home Theater, Feb, 97



"Talk about floor shaking bass...turned up to maximum level, I don't think there was anything in the house that wasn't shaking, including the concrete foundation!"

"Don't, I repeat, don't even think about purchasing another subwoofer without giving the Astonishing True subwoofer a listen"

—Joseph M. Cierniak

The Sensible Sound, Issue # 60



"The lowest, flattest, deepest bass I have EVER heard or measured."

—Julian Hirsch

Stereo Review, Dec. 96

*Strictly speaking: for 20 years or until patent expires.



<http://www.sunfirelabs.com>

Bob Carver's
Sunfire
from his mind ... and soul

NEW PRODUCTS



Philips Is the analog cassette that Philips pioneered in the 1960s finally history? The Philips CDR880 CD recorder (successor to the CDR870 tested in the January issue) boasts a Direct Line Recording mode for making bit-accurate "clones" of standard CDs. The deck has a one-touch recording mode and works with either write-once CD-R discs or rewritable CD-RWs. Single optical and coaxial digital inputs and outputs are provided as well as an analog input and output. Price: \$649. Philips Electronics, Dept. SR, 64 Perimeter Center E., Atlanta, GA 30346; phone, 800-531-0039; Web, www.philips.com

Sunfire How low can you go? Sunfire's True Subwoofer Signature is a 13-inch cube designed to reproduce deep bass down to 16 Hz at a room-shaking 106 dB sound-pressure level. The sub has a 10-inch flat-diaphragm driver with a 2 $\frac{3}{8}$ -inch excursion and Bob Carver's patented "power-tracking down-converter" amplifier, rated to deliver 2,700 watts. Controls include a 36-dB-per-octave low-pass crossover that's variable from 35 to 100 Hz. The Signature weighs 65 pounds and is finished in black lacquer. Price: \$2,195. Sunfire, Dept. SR, P.O. Box 1589, Snohomish, WA 98290; phone, 425-335-4748; Web, www.sunfire.com



RCA Home-theater enthusiasts will appreciate the Dolby Digital capability of the DS5451RB Digital Satellite System from RCA. When its optical output is fed to a Dolby Digital decoder/amplifier, you'll be able to enjoy the 5.1-channel surround sound that DirecTV is now broadcasting with letterboxed pay-per-view movies. A dual-output LNB allows the dish to be connected to a second DSS receiver. The DS5451RB features "advanced" on-screen program guides for navigating among the hundreds of available channels. It has two pairs of gold-plated A/V outputs and S-video and VCR control outputs. Price: \$449. RCA, Thomson Consumer Electronics, Dept. SR, 10330 N. Meridian St., Indianapolis, IN 46290; phone, 800-336-1900; Web, www.rca-electronics.com



Sony The Mini-Disc (MD) format that's popular in Japan is getting a boost here with the introduction of products like Sony's ZS-M7 "personal audio system." Measuring 20 $\frac{3}{4}$ x 10 $\frac{5}{8}$ x 5 $\frac{3}{8}$ inches, the stylish minisystem can record from CD to MD at the touch of a button, automatically synchronizing the start of CD playback and MD recording. Highlights include 20-track programming, an AM/FM tuner, and a vertical front-loading CD tray. A built-in clock provides timer-recording capability. The amplifier in the 14-pound system delivers 7 watts per channel to the built-in speakers. Price: \$650. Sony, Dept. SR, 1 Sony Dr., Park Ridge, NJ 07656; phone, 800-222-7669; Web, www.sel.sony.com

NEW PRODUCTS

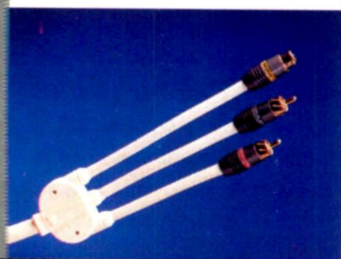


Pioneer Bit by bit, making your own compilation CDs is getting easier. Pioneer's PD-R555RW CD recorder features bit-accurate recording capability for copying regular CDs (and even DTS-encoded CDs) to write-once CD-R discs and rewritable CD-RWs. Its sampling-rate converter simplifies digital-to-digital recording from non-CD sources such as MiniDisc and DAT by automatically synchronizing playback and recording. Automatic recording-level control is available for dubs from analog sources. Like all consumer CD recorders, the PD-R555RW supports SCMS, the Serial Copy Management System. Price: \$699. Pioneer, Dept. SR, 2265 E. 220th St., Long Beach, CA 90810; phone, 800-746-6337; Web, www.pioneerelectronics.com

Monster Cable

Hook up with the Interlink 403 S-video POD from Monster Cable. Combining separate stereo audio and S-video cables into one integrated A/V cable, it gives you a fighting chance of keeping your home-theater wiring from becoming an unsightly, tangled, and confusing rat's nest. All connectors are gold-plated. Prices: \$50 to \$140 depending on length.

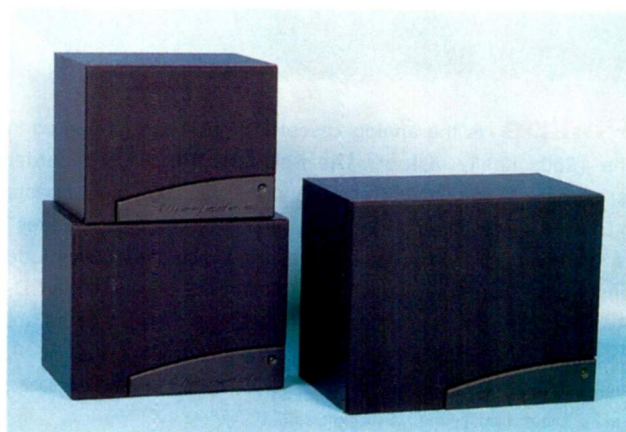
Monster Cable, Dept. SR, 455 Valley Dr., Brisbane, CA 94080; phone, 415-840-2000; Web, www.monstercable.com



RadioShack

Let RadioShack's Optimus PRO-LS3 indoor/outdoor speaker be the life of your next barbecue — even if it rains. Each 11-inch-tall, water-resistant enclosure contains a 5-inch polypropylene woofer and a 1/2-inch tweeter. Sensitivity is given as 87 dB, nominal impedance as 8 ohms, and power handling as 75 watts. Mounting brackets are supplied. Price: \$200 a pair. RadioShack, Dept. SR, 1500 One Tandy Center, Ft. Worth, TX 76102; phone, 800-843-7422; Web, www.radioshack.com

Wharfedale In the latest British invasion, Wharfedale is introducing three new powered subwoofers to the U.S. market. All models have front-firing drivers, line-level and speaker-level inputs, controls for level, crossover, and phase, and black cabinets with removable black cloth grilles. The SW-10 (\$400, top left) has a 10-inch driver, a 75-watt amplifier, and a rated bandwidth of 27 Hz to 100 Hz. The SW-12 (\$650, bottom left) and SW-15 (\$900, right) have 12- and 15-inch drivers, respectively, and feature 150-watt amplifiers and automatic on/off switching. The SW-12's bandwidth is given as 21 Hz to 105 Hz, the SW-15's as 20 Hz to 93 Hz. All of the enclosures are sealed, acoustic-suspension designs. Wharfedale, distributed by M. Rothman & Co., Dept. SR, 50 Williams Dr., Ramsey, NJ 07446; phone, 800-227-7491



Thiel To step up its home-theater presence, Thiel is offering the 28 1/2-inch-tall MCS1, a three-way magnetically shielded speaker designed for the front left, center, or right channels. Two 6 1/2-inch metal-diaphragm woofers are mounted above and below a 3-inch midrange driver with a concentric dome tweeter that shares the same voice coil. The dual-ported cabinet is heavily braced and has a 3-inch-thick front baffle and 1-inch-thick walls. Frequency response is given as 50 Hz to 20 kHz ± 2 dB, sensitivity as 90 dB SPL/W/m, and nominal impedance as 4 ohms. A variety of wood finishes are available, including red-stained morado (shown), walnut, oak, and cherry. Price: \$2,200 each. Thiel, Dept. SR, 1026 Nandino Blvd., Lexington, KY 40511; phone, 606-254-9427; Web, www.thielaudio.com





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"A beautifully engineered, great sounding SYSTEM..."

Home Theater, February 1998



The remarkable RT2000p, with built-in powered subwoofers, delivers exceptional performance to satisfy both audiophiles *and* film fanatics. Discover the extra thrill of the deep, precise bass that these remarkable speakers bring to your music and movie listening. You'll be amazed by their uncanny ability to reveal the subtlest details and sonically "disappear" by virtue of their open spacious sound-stage. Visit your local Polk dealer today to experience for yourself the sound that has the critics applauding.

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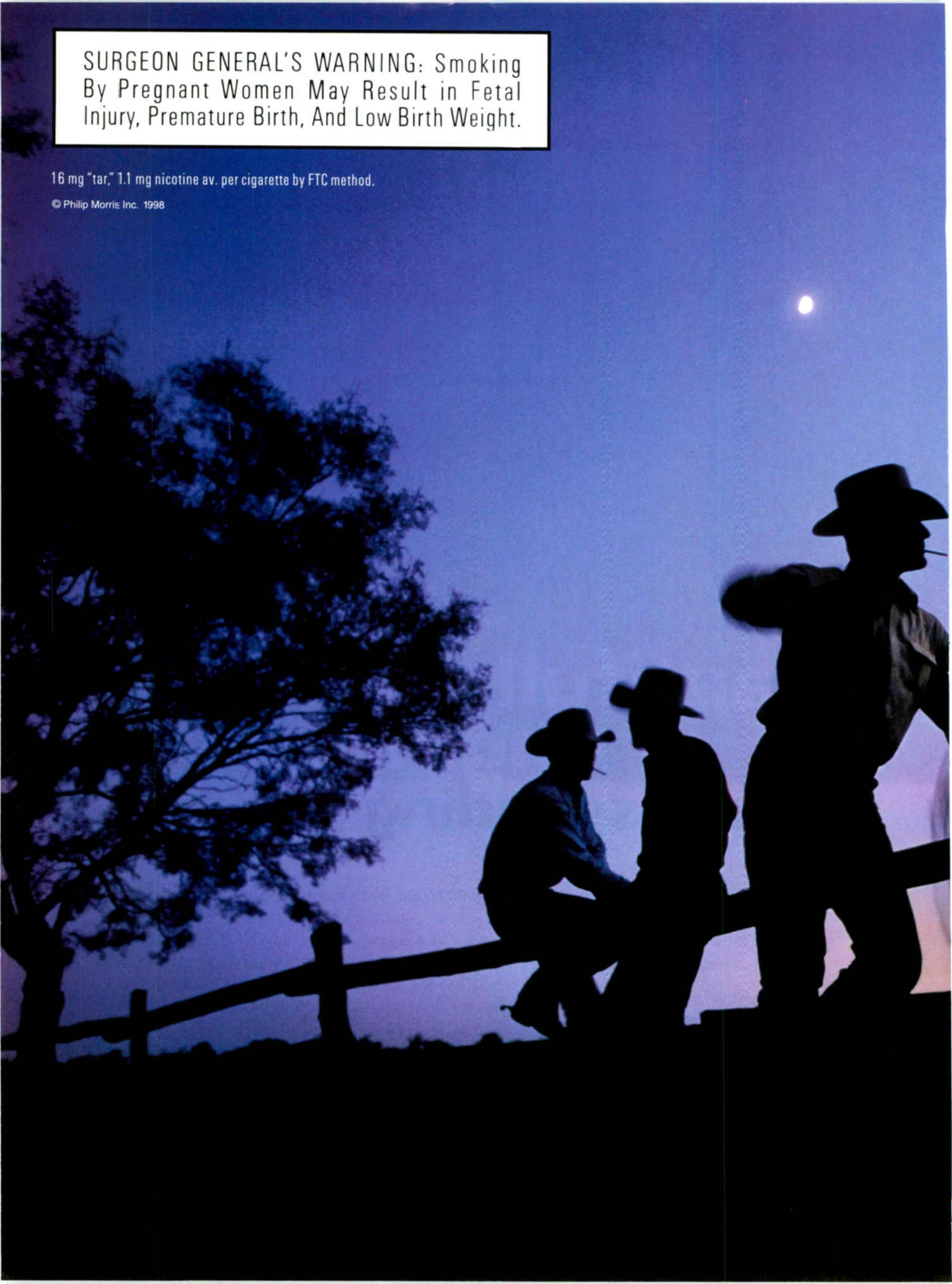
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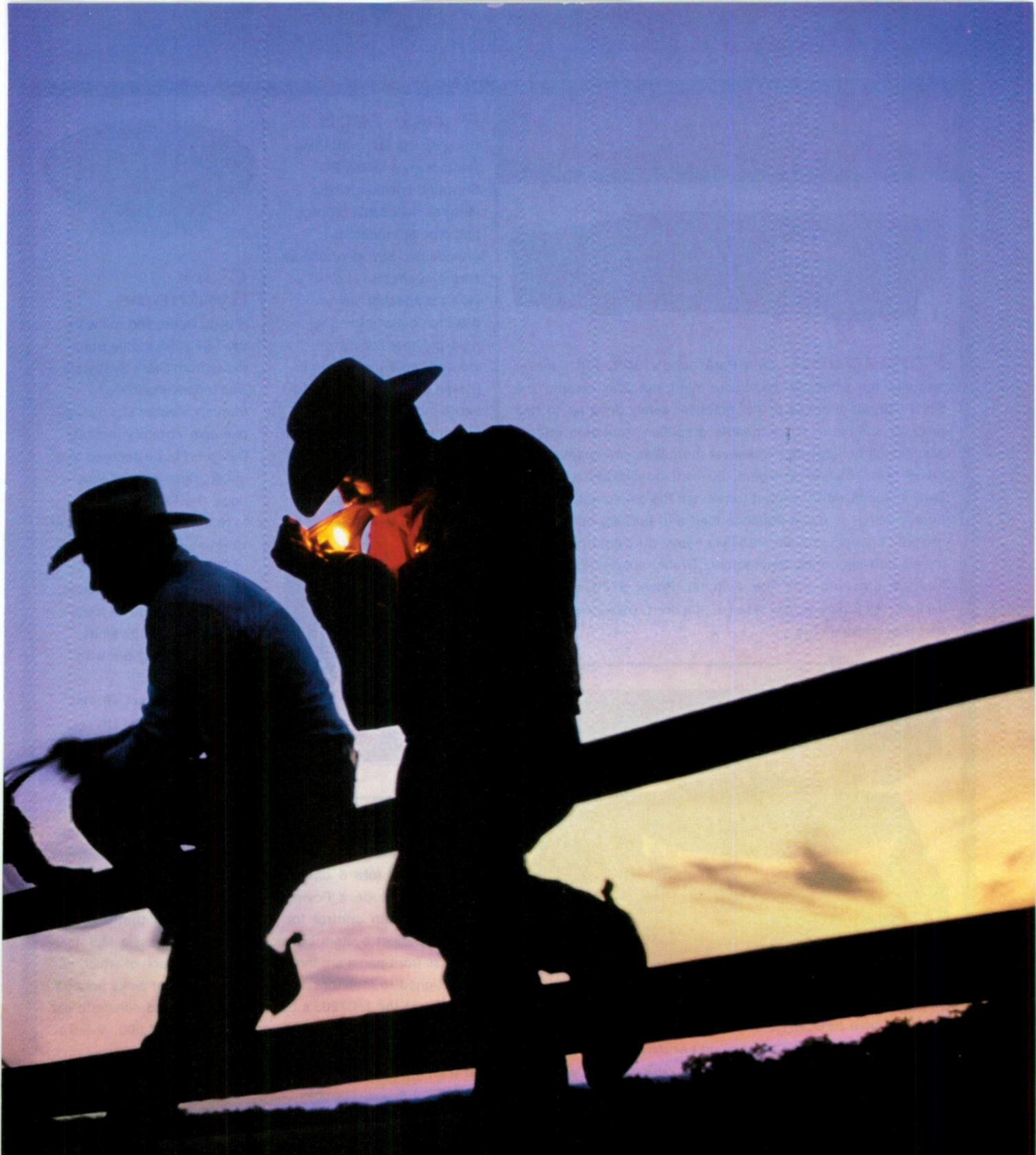
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NEW PRODUCTS



Parasound With Parasound's S/PS-140 speaker switcher, the tunes can blow your mind, not your system. The S/PS-140 lets a single power amplifier safely drive up to four pairs of speakers. A switchable amplifier-protection circuit, which must be activated whenever more than two speakers are being used, inserts a 4-ohm, 60-watt noninductive resistor bank in series with the input to prevent the amp's output stage from "seeing" a low-impedance load and burning out. All single-path connections are made via heavy-duty gold-plated terminals and spade-lug connectors. Twenty spade-lug connectors are provided with the switcher. Price: \$120. **Parasound**, Dept. SR, 950 Battery St., San Francisco, CA 94111; phone, 415-397-7100; Web, www.parasound.com



Rotel Vinyl lives — at least for some of us. Rotel's RP955 is a belt-drive turntable that plays analog discs at speeds of 33 $\frac{1}{3}$ and 45 rpm (that's revolutions per minute if you grew up with the CD). A servo control maintains overall speed while the 3-pound aluminum-alloy platter minimizes low-level speed fluctuations. The cast-alloy tonearm incorporates premium radial bearings, and the turntable is supplied with a moving-magnet phono cartridge and stylus. Price: \$600. **Rotel**, Dept. SR, P.O. Box 8, 54 Concord St., North Reading, MA 01864; phone, 800-370-3741; Web, www.rotel.com

NOTE All prices and product information are supplied by the manufacturers. Dealer prices may vary.

Phase Tech

Bring up the rear with Phase Technology's Model PC Surround speaker, which features selectable bipolar and dipolar modes to provide two flavors of diffuse surround effects. The 14 $\frac{3}{4}$ -inch-tall speaker has a 6 $\frac{1}{2}$ -inch direct-radiating rigid-polymer flat-piston woofer, two 4-inch polypropylene midrange drivers, and two 1-inch soft-dome tweeters. Price: \$700.

Phase Technology, Dept. SR, 6400 Youngerman Circle, Jacksonville, FL 32244; phone 888-742-7385; Web, www.phasetech.com



Clark Synthesis

Shake, rattle, and roll with the TST 229F tactile transducer from Clark Synthesis, which converts low-frequency audio signals into palpable vibratory motion. Designed to be secured to a couch, floor joist, or even a deck, the TST 229F is said to reproduce the full range of vibratory signatures from 15 to 800 Hz. It has a continuous power-handling rating of 100 watts, and its transduction force is given as 1 $\frac{5}{8}$ foot-pounds per watt. Price: \$350.

Clark Synthesis, Dept. SR, 8122 Southpark Lane, Suite 110, Littleton, CO 80120; phone, 800-898-1945; Web, www.clarksyn.com

McIntosh The THX-certified MC7205 five-channel home-theater power amplifier is rated to deliver 100 watts to each channel into 8 ohms, or 200 watts each into 4 ohms. Highlights include a Power Guard anticlipping circuit and a rear-panel gain control for each channel so that you can achieve perfect system balance. Behind the classic McIntosh all-glass front panel are three power meters, each of which can be assigned to monitor any channel. Large heat sinks account for most of the MC7205's 53-pound weight and eliminate the need for potentially noisy fan cooling. Price: \$4,500. **McIntosh**, Dept. SR, 661 W. Redondo Beach Blvd., Gardena, CA 90247; phone, 310-327-9107; Web, www.mcintoshlabs.com



EVERY BREATH,
every whisper.
Passionately
Delivered
since 1946.

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KLIPSCH.



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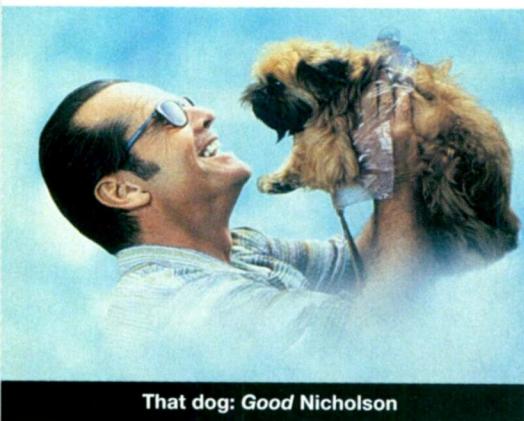
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Hot DVDs

RECOMMENDED NEW TITLES AND CLASSIC REISSUES BY RAD BENNETT

AS GOOD AS IT GETS

Among the elite minority of romantic comedies that go straight for the heart without insulting the intellect, last year's *As Good as It Gets* is five stars all the way, and so is this DVD presentation. In the scene where Best Actress Helen Hunt takes a bus to Manhattan to see Best Actor Jack Nicholson, the camera pulls back to reveal the



COLUMBIA TRISTAR HOME VIDEO

That dog: *Good Nicholson*

skyline at night. All those little lighted windows and not one iota of on-screen shimmer. Perhaps rock-steady video is becoming more common now, but it still seems incredible on a disc that pushes the capacity of DVD, with the movie's 139 minutes accommodated on one single-layer side. And the audio here is clean and spacious, the Dolby Digital 5.1-channel mix used for maximum effect but seldom gratuitously. As a welcome bonus, the stars and director James L. Brooks provide an entertaining commentary track that sheds light on the movie and on filmmaking in general. Titles like *As Good as It Gets* are so trumpeted that they often disappoint. Not this one.

Two-sided (Side A, 1.85:1 letterbox; Side B, pan-and-scan); English, Dolby Digital 5.1; English and French, Dolby Digital two-channel matrix surround; English, French, and Spanish subtitles; 139 min. Columbia TriStar Home Video, \$29.98.

A NIGHT TO REMEMBER

Criterion was one of the first companies to give consumers "more than the movie" on laserdisc, so its entry into the DVD market has been eagerly awaited. No

one should be disappointed by its handling of *A Night to Remember*, the 1958 movie that, compared with the romance-and-disaster formula of James Cameron's *Titanic*, is more a documentary-style feature that stars the ill-fated ship itself. This transfer is typical of Criterion's best work. The black-and-white picture is immaculate: sharp as a tack and with excellent contrast in both dark and light scenes. Ancillary material includes a 1993 hour-long documentary on the making of the film, as well as several trailers. There's also an excellent screen-specific commentary in which Don Lynch and Ken Marschall, author and illustrator of *Titanic: An Illustrated History*, tell us how a scene relates to actual history as we're looking at it, an exciting concept that really pays off on this DVD. My only quibble is with Criterion's failure to include any subtitles or foreign-language soundtracks.

One-sided dual-layer; Dolby Digital one-channel mono; letterbox (1.66:1); 123 min (feature). Criterion, \$39.98.

L.A. CONFIDENTIAL

This nifty, neo-noir mystery, one of the most acclaimed movies of 1997, arrives on a handsome DVD. The picture is clear while preserving a bit of the period halo given to certain scenes. Colors are handled with ease; even Best Supporting Actress Kim Basinger's bright-red lipstick looks unnaturally natural, her lips sharply outlined with no blur or edging. What's more, the audio strikes me as among the best Dolby Digital 5.1 mixes in the young DVD catalog. Music is focused at all times, and the surround effects during the final shootout help place you in the middle of the action. Extras include an 18-minute documentary, a music-only track, a trailer, and TV spots. There's also a cool interactive map showing different locations in the movie; highlight one of these, and you'll get live-action footage with a voice-over description. Scene-selection menus are live-action, too, giving a miniature preview with sound. At its low price, *L.A. Confidential* is a bargain on DVD.

One-sided dual-layer; English and French, Dolby Digital 5.1; closed-captioned; English, French, and Spanish subtitles; letterbox (2.35:1); 138 min (feature). Warner Home Video, \$24.98.

CABARET

Not expected to make much of a showing against *The Godfather* at the 1972 Academy Awards, *Cabaret* walked away with eight Oscars, including Best Director Bob Fosse, Best Actress Liza Minnelli, and Best Supporting Actor Joel Grey. It is still respected as one of the best movies of a Broadway show, and to celebrate its 25th anniversary last year, Warner Bros. struck a new print, resurrected a period documentary (*The Recreation of an Era*), and filmed a new one (*Cabaret: A Legend in the Making*), all of which are now on this DVD version. The detailed picture brings out textures ranging from cobblestones to curtains, seeming tangible enough to touch. The Oscar-winning sound is notable here for its clarity, highlighting the drama with quality rather than quantity in music and dialogue sequences. And the new documentary offers interviews with the stars, composer John Kander, lyricist Fred Ebb, and production personnel. Package notes indicate a "Side B," but Warner wisely decided to go with a dual-layer disc so you can enjoy the movie and the ancillary material without having to turn the disc over, one of the nicer features of DVD that is becoming more prevalent.

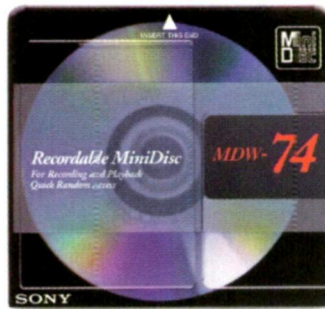
One-sided dual-layer; Dolby Digital two-channel matrix surround; English, French, and Spanish subtitles; letterbox (1.85:1); 124 min (feature). Warner Home Video, \$24.98.



WARNER HOME VIDEO

Those lips: *Confidential Basinger*

SONY

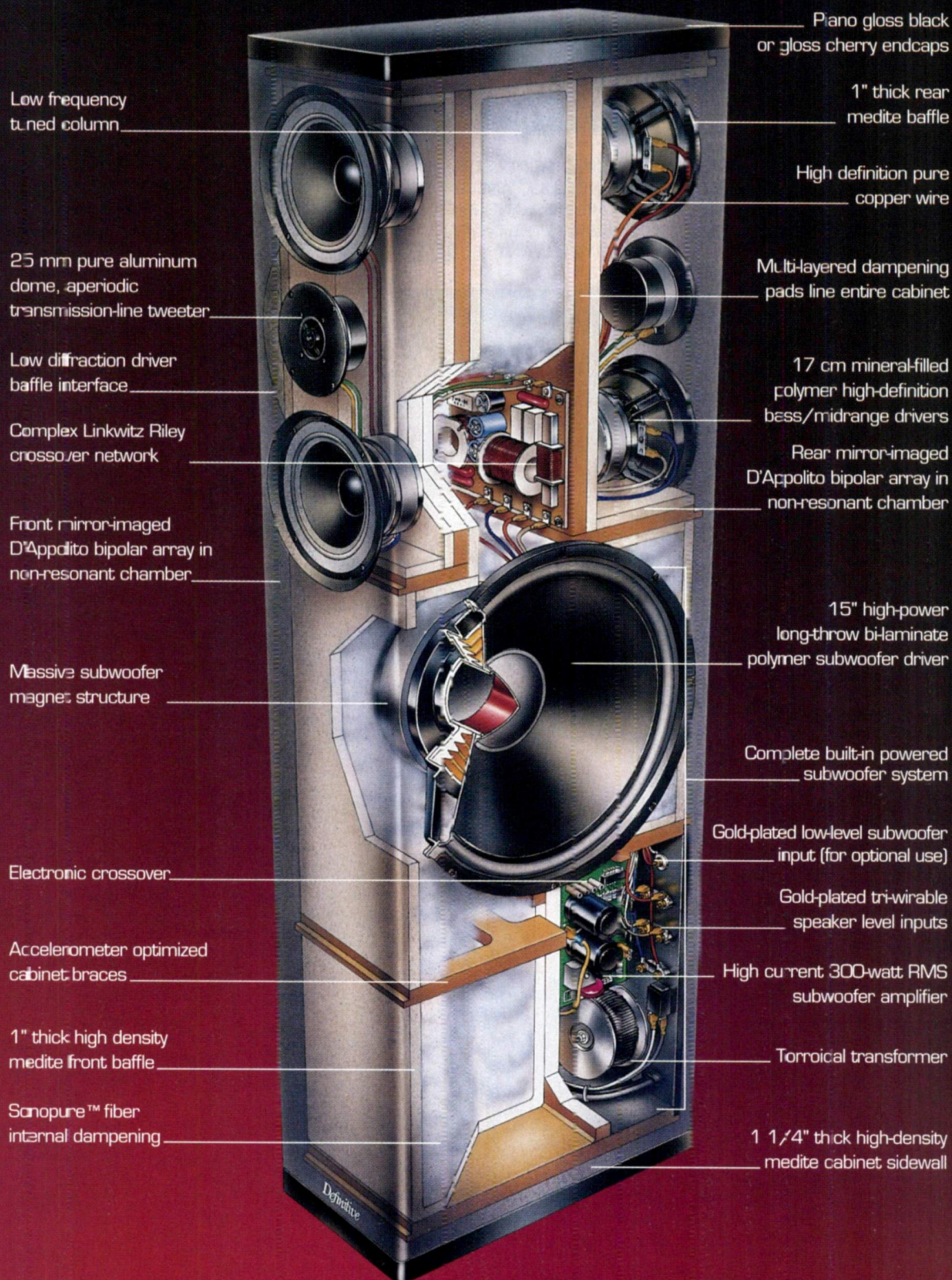


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-Julian Hirsch, Stereo Review

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"The first speaker I have been able to audition in my own familiar surroundings that has given me that special thrill that usually costs ten or more times its price to obtain."

—Julian Hirsch, *Stereo Review*, USA

"Absolutely Unsurpassed"

—*Prestige HiFi, France*

Our unprecedented Grand Prix triumph confirms what the world's top reviewers all know: that our amazing BP2000, BP2002 and BP2004 combine highly advanced technology and superior build quality to achieve truly unsurpassed sonic performance plus unequalled value.

"Literally Staggering"

—*Home Theater, USA*

Definitive's revolutionary BP2000, BP2002 and BP2004 combine our incredible bipolar technology with dual built-in high-powered subwoofers (BP2000: 15"/300 watts/\$1499 ea., BP2002: 12"/125 watts/\$999 ea., BP2004: 10"/125 watts/\$749) for extraordinary sound quality beyond anything you've ever heard.

"The Best Performance You Can Get"

—*V.T.V., England*

Both music and movies are reproduced with outstanding purity, transparency and life-like realism. And the astounding high resolution imaging, magnificent soundstaging, awesome bass and explosive dynamic impact will totally envelop you in sonic ecstasy. Yes, these speakers are simply amazing!



Definitive's award-winning BP2000, BP2002 and BP2004 Home Theater Systems all combine our revolutionary bipolar technology with two awesome built-in powered subwoofers for unsurpassed performance.

See our dealer list on page 32

"Most Spectacular Speakers Ever... Amazing Music and Home Theater"

—*HiFi Review, Hong Kong*

In addition to being an audiophile's dream, the BP2000, BP2002 and BP2004 are also the main speakers in Definitive's Ultimate Home Theater Systems. These astonishing systems are absolutely the finest sounding available. They recreate a "you are there" virtual reality that actually puts you into the sound-space of the original cinematic action.

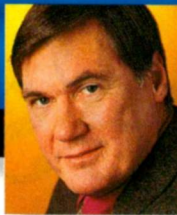
"Astounding...The Stuff of Dreams"

—*Home Cinema Choice, England*

Experts agree that these complete Dolby Digital AC-3* and DTS* ready home theater systems will deliver the ultimate listening experience in your home. They combine BP2000s, BP2002s and BP2004s with our perfectly timbre-matched center and rear surround speakers. Awesome dual powered subwoofers are already built into the sleek towers. Experience these Grand Prix award-winning superspeakers today!

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 Shelley's Stereo Video: Santa Monica, Woodland Hills •
 Systems Design: Redondo Beach • Videotek: Westminster.
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 Carstons Stereo/Video: Danbury • Roberts Audio Video: New London •
 The Sound Room: Westport • Stereo Shop: Hartford.
DC & Washington Suburbs- Myer-Emco.
DE- Sound Studio: Wilmington.
FL- Absolute Sound: Winter Park • Audio Advice of NW Florida:
 Pensacola • Audio Advisors: West Palm Beach • Audio Center: Deerfield
 Beach • The Audiohouse: Vero Beach • Cooper for Stereo: Clearwater •
 Hoyt Stereo: Jacksonville • Palm Audio: Destin • Sound Components:
 Coral Gables • Sound Ideas: Gainesville • Sound Insights: Ft. Pierce •
 Sound Waves: Lakeland • Stereotypes: Daytona Beach.
GA- Laser Disc Enterprises: Atlanta • Merit TV: Columbus •
 Stereo Connections: Valdosta • Stereo Festival: Atlanta.
HI- Honolulu Home Theater: Honolulu.
IA- Ultimate Electronics: Cedar Rapids, Des Moines •
 Archer Audio Video: Ft. Dodge • Audio Video Logic: Des Moines •
 Audio Visions: Sioux City • Hawkeye Audio: Iowa City, Cedar Falls •
 Renier's: Dubuque.
ID- Ultimate Electronics: Boise • Wise Buy: Idaho Falls.
IL- Absolute Audio: Rockford • United Audio Centers: Chicago &
 Suburbs • Good Vibes: Champaign • Jon's Home Ctr.: Quincy •
 Sound Forum: Crystal Lake.
IN- Classic Stereo: Ft. Wayne, Mishawaka • Kings Great Buys:
 Evansville • Ovation Audio: Clarksville, Indianapolis, Lafayette.
KS- Accent Sound: Overland Park • Advance Audio: Wichita •
 Audio Junction: Junction City, Manhattan.
KY- Ovation Audio: Lexington, Louisville.
LA- Alterman Audio: Metairie • Mike's Audio: Baton Rouge •
 Wright's Sound Gallery: Shreveport.
MA- Nantucket Sound: Hyannis • Pittsfield Radio: Pittsfield.
MD- Gramophone: Baltimore, Ellicott City • Myer-Emco: Gaithersburg,
 Beltsville, Rockville • Sight & Sounds: Easton • Soundscape: Baltimore.
MI- Contemporary Audio: Okemos • Pecar's (Detroit) Troy •
 Classical Jazz Holland • Sound North: Iron Mtn. • Stereo Center FRAV:
 Flint • Court St. Listening Room: Saginaw.
MN- Audio King: Minneapolis & Suburbs, Rochester, St. Cloud •
 Audio Designs: Winona.
MO- Independence A/V: Independence • Sound Central: St. Louis.
MS- Ideal Acoustics: Starkville • McLelland TV: Hattiesburg •
 Players A/V: Ridgeland.
MT- Rocky Mt. Hi Fi: Great Falls.
NC- Audio Video Systems: Charlotte • Audio Visions: Wilmington •
 Now Audio Video: Durham, Greensboro, Raleigh, Winston Salem •
 Tri City Electronics: Conover.
NE- Custom Electronics: Omaha, Lincoln.
NH- Cookin': Nashua, Manchester, Newington, Salem, S. Nashua.
NJ- Camera and TV Stop: Medford, Egg Harbor • Monmouth Stereo:
 Shrewsbury • Woodbridge Stereo: West Caldwell, Woodbridge.
NM- Ultimate Elect.: Albuquerque • Sound Ideas: Albuquerque.
NV- Ultimate Elect.: Las Vegas.
NY- Audio Breakthroughs: Manhasset • Audio Den: Lake Grove •
 Clark Music: Albany, Syracuse • Stereo Exchange: Manhattan •
 Hart Elect.: Vestal • Listening Room: Scarsdale • Rowe Camera:
 Rochester • Speaker Shop: Amherst.
OH- Absolute Theater: Powell • Audio Craft: Akron, Cleveland,
 Mayfield Hts., Westlake • Audio Etc.: Dayton • Classic Stereo: Lima •
 Ohio Valley Audio: Cincinnati • Paragon Sound: Toledo • Stereo Visions:
 Columbus • Threshold Audio: Heath • Unique Home System: Cincinnati.
OK- Audio Dimensions: Oklahoma City • Photo Video: Stillwater,
 Shawnee • Ultimate Electronics: Tulsa.
OR- Bradford's HiFi: Eugene • G. C. Sise A/V: Portland, Beaverton •
 Kelly's Home Ctr.: Salem • Magnolia HiFi: (Portland) Beaverton,
 Clackamas • Stereo Plant: Egan.
PA- Audio Junction: Pittsburgh • Audio Lab: Fairless Hills • Gary's Elect.:
 State College • GNT Stereo: Lancaster • Hart Elect.: Blakely •
 Hi Fi House: Abington, Broomall, Camp Hill, Harrisburg •
 Listening Post: Pittsburgh • Palmer Audio: Allentown • Stereo Shoppe:
 Selinsgrove, Williamsport • Stereoland: Natrona Heights •
 The StereoShop: Greensburg.
RI- Stereo Discount Ctr.: Providence.
SC- A/V Design: Charleston • Custom Theater & Audio: Myrtle Beach •
 Upstairs Audio: Columbia.
SD- Audio King: Sioux Falls • Sound Pro: Rapid City.
TN- College HiFi: Chattanooga • Hi Fi Buys: Nashville • Now Audio Video:
 Knoxville • Modern Music: Memphis • Sound Room: Johnson City.
TX- Home Entertainment: Dallas, Houston, Plano • Audio Tech: Temple •
 Audio Video: College Station • Bunkley's Sound Systems: Abilene • Bjorn's:
 San Antonio • High Fidelity: Austin • Krystal Clear: Dallas • Marvin
 Electronics: Ft. Worth • Sound Quest: El Paso • Sound Systems: Amarillo.
UT- AudioWorks: Salt Lake City • Crazy Bob's: St. George • Stokes Bros.:
 Logan • Ultimate Elect.: Layton, Murray, Orem, Salt Lake City.
VA- Myer-Emco: Falls Church, Tyson's Corner, Fairfax • Audio Connection:
 Virginia Beach • Audiotechnics: Roanoke • Home Media Store: Richmond.
WA- Bunch-Finnegan TV: Kennewick • Magnolia HiFi: Seattle & Suburbs,
 Tacoma, Silverdale, Spokane • Pacific Sight & Sound: Wenatchee.
WI- Flanner's A/V: Milwaukee • Hi-Fi Heaven: Appleton, Green Bay •
 Sound World: Wausau.
Puerto Rico- Precision Audio: San Juan.
Canada- A & B Sound: Calgary, Edmonton, Kelowna, Vancouver &
 Suburbs, Victoria • Advance Electronics: Winnipeg • Bay Bloor Radio:
 Toronto • Canadian Sound: Brampton, Ont. • Digital Dynamics:
 Clearbrook • Harrington Audio: Peterborough, Ont. • Kebecson:
 Montreal • Lint's: Newmarket, Ont. • Sound Decisions: Duncan,
 B.C. • Sound Gallery: Newfoundland • Sound Room: Vancouver •
 StereoLand: Windsor • Trable Cief: Ottawa.
Mexico- Contact Grupo Volumen: Mexico City.

Music in Pro Logic

Q. I own a number of CDs that were supposedly encoded in Dolby Surround. I assume they are meant to be played in Pro Logic mode rather than with one of the ambience modes such as Hall or Studio, but when I do decode them with Pro Logic, the center channel is so strong that the stereo spread seems to disappear. Am I alone in my opinion that such recordings sound much better with the center channel switched off?

**Michael Portantiere
New York, NY**

A. I've encountered at least one music producer who admits that his "Dolby-encoded" CDs are actually recorded in normal stereo fashion, and then played through a Pro Logic decoder. If they decode properly, they are labeled as surround discs; if not, they're plain stereo. So it's not surprising that the results can be a bit unpredictable, and every disc should be judged on its own merits. It might sound fine using Pro Logic, with or without the center channel, or maybe better with an enhancement mode; there are no rules.

The phenomenon you mention is known as "center build-up" among record producers and it is what you get when a recording is not properly mixed for Pro Logic playback. The problem can be exaggerated by a system that is improperly set up, so make sure your front left, right, and center speakers are balanced.

In many surround systems, the three front speakers are placed in a straight line across the front of the room. But that is not ideal, because the center speaker will be closer to the primary listening position than the others. Sounds reproduced by the center and another speaker will appear to come out of the center. Fixing this might be as simple as moving the center-channel speaker back a bit or the other two forward.

Mono CDs

Q. Could you explain to me why certain record companies are issuing mono CDs of albums that were stereo on LP, and charging full price for them?

**Ben Hume
Dover-Foxcroft, ME**

A. Without examples I can only speculate, but the only discs I've encountered similar to what you describe are recordings from the 1960s that were never intended to be released in stereo in the first place. Throughout the decade a vast quanti-

ty of music was recorded specifically for release as 45-rpm singles, and these were almost always mono. The earliest stereo 45 in my fairly extensive record collection is dated 1968.

But the studios did have stereo recording equipment, and many producers recorded vocals on one track and instruments on the other so that they could be balanced later and, perhaps, edited. These would then be mixed to mono for the 45 release. The most famous of these recordings were the early hits from the Beatles, but there were lots of others, too.

When this material was rereleased on LPs and tapes, however, some record companies could not stop themselves from mastering them as if they were stereo. Lots of these ended up as two-channel mixes on CDs as well, especially on compilation discs. Other labels, however, took a lesson from producer George Martin, who remastered the Beatles records mixed to mono as they were originally.

CD Rejection

Q. Since I bought it some eight years ago, my CD player has been extremely reliable in spite of fairly heavy use, but from the beginning it has rejected certain CDs. The discs are from a variety of labels and constitute only a small part of my collection. But what would cause this?

**Fred Clare
Boulder, CO**

A. For all the rigor of the CD standards established by Philips and Sony, there are some variances. If your machine hugs one side of a particular tolerance and a disc is at the other, they may not work together. Sometimes that means a particular disc will never play in your machine but has no trouble in others. Sometimes it's just the pressing, and a replacement CD will be fine. Sometimes a disc will play today, but not tomorrow. It's one of the frustrations of digital audio, but given the enormous amount of information encoded on a CD and the mechanical irregularities of both CDs and players, it's amazing that such fatal read-errors don't happen more often.

Technobabble

Q. I bought a secondhand cassette deck without its operating instructions, and it has some things marked on the panel that I don't understand. It's an "Ultrawide-

band Linear Phase Cassette Deck" with "bias fine trim," "meter ballistics," and "headroom safety." What do these things mean, and how do I use them? **Lev Litsin**
New York, NY

A. The "Ultrawideband" stuff is just marketing hyperbole. Meter ballistics refers to the speed with which the level meters react to an audio signal. But I can't imagine why your deck is labeled that way unless the ballistics are adjustable (and that's unlikely).

"Headroom safety" probably means that levels are set fairly low compared to the meter readings, so even if you go "into the red," there's some headroom before things start to distort.

"Bias trim," on the other hand, is an important feature — if you use it properly. Tapes and recorders must be closely matched to achieve optimum performance. Even if you are careful to make sure that the bias switch is set for the proper kind of tape, the switch settings are only approxi-

mate; the bias-trim control lets you fine-tune the match.

If yours is a three-head machine, setting the bias trim is fairly easy. Set up to record something with lots of high-frequency information — interstation FM noise is good, or anything with lots of snare drums and cymbals. Then switch back and forth between source and tape, varying the control until the two signals sound as similar as possible. With a two-head machine, you'll have to record a bit, rewind, play it back and compare it with the original, tweak the control, record again, and so forth. The way most decks are set up, turning the bias up too high will dull the sound, and keeping it too low will make it too bright.

Dimpled Dome

Q. When I removed the grilles from my speakers, I discovered that the dome in one of the tweeters had been pushed in (I suspect by my 1-year-old daughter, or possibly her 11-year-old brother, who has been

known to bounce balls in the house). I'm not sure I can hear any difference, but there's no access to the rear of the tweeters, so how do I repair the problem?

Richard Katzenberg
Delevan, WI

A. If you can't hear a difference, I'd leave it alone. If you really want to fix it, I've known people who've put a bit of chewing gum on a stick and gently pulled out a dent in a paper or plastic dome driver. You have to make sure no gum remains on the dome, however, and removing the gum might aggravate the problem. Moreover, this trick won't work with a metal dome.

An acquaintance of mine with the same problem once simply put his lips gently on the dome and sucked the dent out.

If you have a question about audio, write to Q&A, Stereo Review, 1633 Broadway, New York, NY 10019; e-mail, StereoEdit@aol.com. Sorry, only questions chosen for publication can be answered.

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Tests, Reconsidered

YOU DON'T NEED me to tell you that audio equipment is getting more complicated. Just saunter into any audio showroom and look at the number of buttons on the remote control of a typical *stereo* receiver, much less one with Dolby Digital surround-sound decoding. Some of this complexity is needlessly handed down from generation to generation of equipment, like a genetic defect. (I'm thinking here of the multiple ways to enter track numbers greater than 9 on the laserdisc and DVD players from a certain manufacturer.) Much of it, though, grows out of the need to control a numbingly enormous number of features.

All this complexity makes choosing equipment more difficult. Your ability to use it at home can be affected greatly by a subtle design point often overlooked in a blow-your-socks-off showroom demo. A prime example would be the lack of a volume-setting indicator on an amplifier or receiver, or one that is invisible in the dark or with the TV off.

This electronic and ergonomic complexity also makes an equipment reviewer's life, to use a euphemism, interesting. To report full test results on all significant aspects of, say, an A/V receiver would require more than a full page of data. We simply don't have room for such numerical extravagance, much of it irrelevant to a rational buying decision anyway.

Given the rapid changes in technology, our equipment reviews and, especially, our lab tests have to keep pace. That means stripping out of the printed test data numbers that are less important or irrelevant. For example, we've replaced the test for dynamic range in reviews of digital equipment with other, more audibly relevant tests, like noise modulation. Phono-stage input capacitance was discontinued even earlier. We've also discontinued running de-emphasis-on data with digital components, except where performance is grossly defective.

Our FM tuner lab data are also being streamlined to those few numbers that are most significant for urban and fringe-area reception, and Dolby Pro Logic surround data will only be printed in those cases where the component doesn't have Dolby Digital decoding or where the Pro Logic behavior is aberrant.

On the whole, these changes give us a little more room for a livelier graphic presentation and for a few new measurements, most of which concern the performance of digital equipment (a category that now includes amplifiers and receivers). We've already added tests for excess noise, which indicate how much noise and distortion a digital audio device adds to a signal at low levels. And with our new noise-modulation test, we finally have a way to characterize the previously untested middle part of a digital component's dynamic range. That's the region below our lowest distortion test level, -20 dBFS (decibels referred to digital full scale), and above the region where the excess-noise and linearity results become significant (around -80 dBFS).

While I'll explain the noise-modulation test more fully in a later article, I can say

Given the rapid changes in audio technology, our equipment reviews and lab tests have to keep pace.

here that it measures the amount of *change* in distortion-plus-noise level a digital system produces as the signal ranges between -40 and -120 dBFS. Ideally, there should be no change, or 0 dB modulation, meaning that the distortion-plus-noise level from a perfect digital component should be invariant with changes in the signal level. The test signal and procedure are very sensitive to even slight deviations from perfect performance. And even slight deviations are psychoacoustically relevant since bad performance in this test (noise modulation greater than about 3 dB) is likely to be audible sometimes with music or movie soundtracks.

With the addition of the noise-modulation test, it is unlikely that the design of a piece of digital audio equipment could "mutate" in a way that its sound quality is affected, for better or worse, and *not* have the change be detected by at least one of our tests.

We are also, with considerable caution,

rethinking and revising how we handle what are, paradoxically, both the simplest pieces of equipment we test and the ones that are most difficult to characterize adequately with words or lab data — you guessed it, speakers.

To begin with, we are trying to put more verbal emphasis on what a speaker *sounds* like. This has always been a minefield for reviewers, where one's "nasality" is another's "laid-back midrange," or one's "tight" bass is another's "lack of extension." You need look only as far as this month's comparison of six \$300 speakers (page 72) to see how two very skilled listeners can differ in their verbal descriptions of the *same* speakers. But such differences in description go with the territory, and it may take some time for readers to calibrate their tastes with the tastes and vocabulary of our reviewers, let alone their own perception of a reviewer's judgment with what the speaker under test was actually doing.

To help with the latter, we are introducing a set of speaker lab tests that we hope

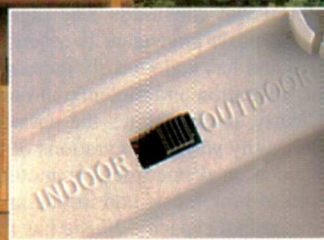
will eventually present enough data for you to validate the written opinions. For now, in addition to more-or-less standardized impedance and sensitivity measurements, we've added a test for bass overload frequency. This, too, will be described in detail in a future article. Basically, it is the reviewer's judgment call of the frequency at which a speaker's output at a given drive level becomes dominated by audible distortion (including buzzes, rattles, and port noise) when playing specially shaped low-frequency tone bursts. (This has to be a judgment call because measuring speaker distortion in a listening room in a psychoacoustically relevant way is virtually impossible.)

The Holy Grail of any speaker test is, of course, a reliable frequency-response graph, or, better, a series of graphs showing how the response varies with frequency and direction. We're working on it, and we plan to enhance all our speaker test reports with meaningful response graphs in the near future. □

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**No Wonder it's
Taking the Outdoors
by Storm.**



Hazardous to Your Health

THE TOBACCO INDUSTRY has increasingly come under fire from federal and state governments because its product exacts a terrible price in return for its addictive pleasures. The tobacco industry is highly profitable, in fact, because its product is literally irresistible. A smoker's daily life begins with that first drag and is measured by the cigarettes consumed throughout the day. Society has determined that the pleasure from using this product is outweighed by its harm, and therefore its use should be discouraged.

Aside from occasional accusations of price-fixing or bouts of lyric-bashing, the music industry rarely receives governmental scrutiny. Not even the most politically correct (or ambitiously upwardly mobile) politician has grasped the magnitude of the effect that music has on our society. Music is insidiously interwoven in our lives, and our dependence on it is deep-rooted.

Like the very air we breathe, music is all around us. And just as addicted smokers crave smoke in their lungs, it seems that we crave music in our ears. We must begin each morning with a musical fix from our clock radios, and we must listen to music as often as possible throughout the day. In cars and trains, lobbies and offices, restaurants and elevators, even at the beach — we must have music everywhere. If you don't believe me, just try to go a few days without hearing music of any kind, via any medium, and you'll see that you can't avoid it and will wonder how you could live without it.

The addictive qualities of music could perhaps be overlooked if the effects of music were benign. But they are not. First and foremost, the health risk is obvious. Imagine yourself in a vast open countryside with only the soft sound of birds and the breeze. That is the primeval environment our delicate ears were designed for. They were not evolved to cope with today's technological assault of high-powered amplifiers and efficient loudspeakers and headphones playing at literally deafening levels. Make no mistake, the music we love to play so loud is plunging millions of people into a world of deafness where, ironically, they will not only be free of music but of any sound at all.

The other negative effects of music are

numerous and frightening. Which of us, on the road or in a park, hasn't been annoyed by the boom of someone else's music? How many acts of violence and mayhem have been committed because a stereo was too loud? The rage second-hand music engenders is a serious problem and has undoubtedly increased levels of frustration and violence in our society. Clearly, music excites the passions in an unhealthy way. The gyrations of men and women on dance floors is another symptom of how music can invade and impair our mental capacity. Music has the power to stupefy. How enormous is the loss to our nation's productivity because workers are daydreaming to soothing strains of music instead of energetically tending to their work?

While the indirect costs of music addiction are difficult to assess, the direct

The addictive qualities of music could perhaps be overlooked if its effects were benign. But they're not.

costs are startlingly manifest. Each year, billions are spent on the purchase of music recordings, a sum equaled by the cost of concert tickets, T-shirts, posters, and other music paraphernalia. And the cost of playback hardware easily surpasses all of these costs. It would be impossible to calculate the massive wealth that music has shifted from the thin wallets of common people into the bulging coffers of powerful music conglomerates and a few music celebrities. Because of that music monkey on our backs, citizens are tragically robbed of their hard-earned wages.

It is especially sad to see pregnant women carelessly exposing their unborn children to music. Indeed, many mothers *deliberately* play music to these youngest of captive audiences, holding speakers near their wombs to unnaturally stimulate the fetuses, in the belief that it is somehow therapeutic. Actually, the only sounds reaching these helpless fetuses are bass-heavy booming noises. Surely that is directly responsible for the unhealthy taste

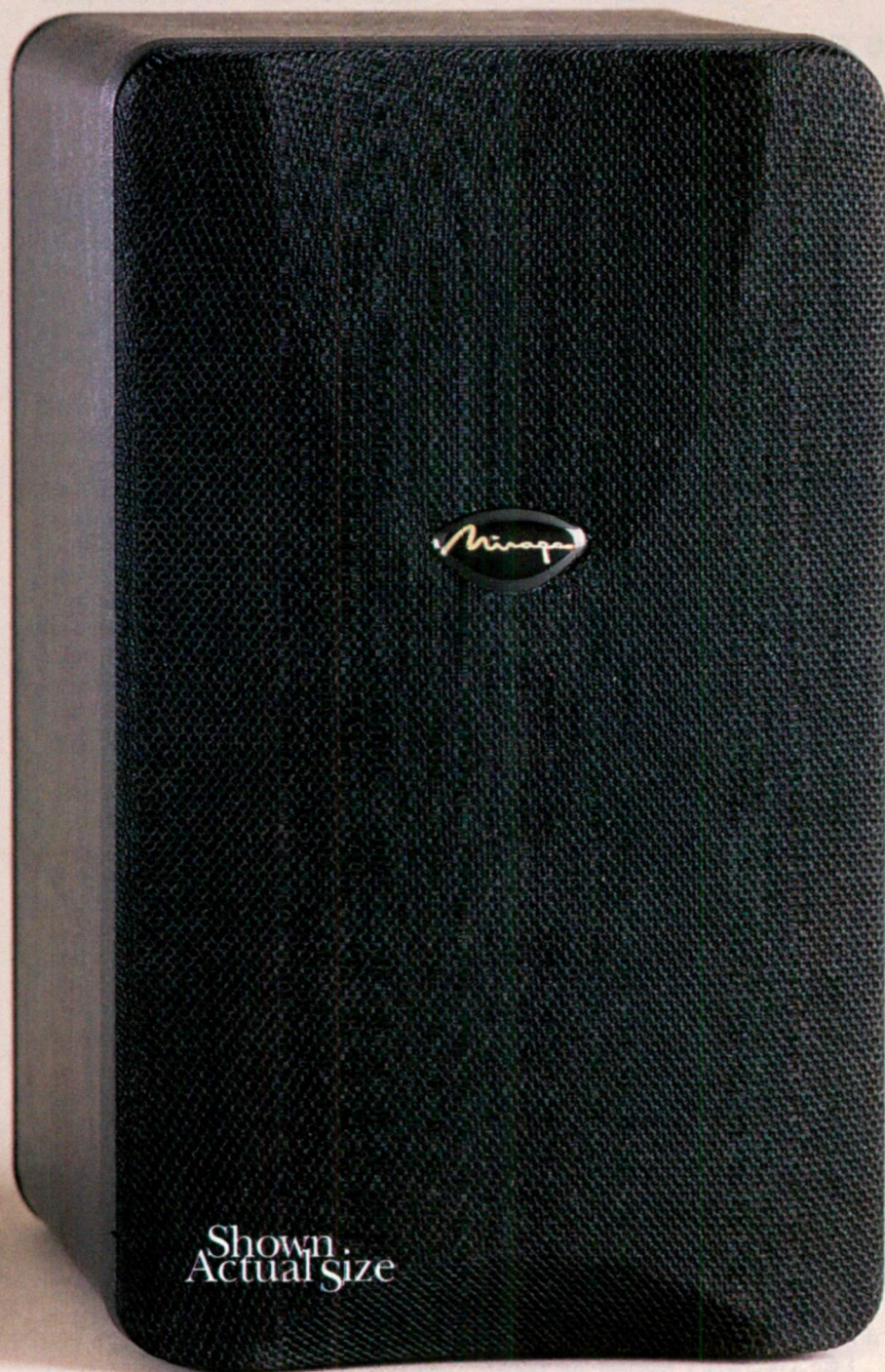
for bass music shown by today's kids. Surely the increase in juvenile delinquency is directly linked to the bass-heavy, barbaric rhythms of popular songs. Similarly, there is no question that much music is designed to encourage in its listeners feelings of rebellion and defiance. This is counter to the best interests of society.

Clearly, music addiction is grievously injurious. We must carefully weigh the small pleasures of music against the monumental consequences of its unregulated use. Even the most ardent music supporter must concede that restraints are needed. Because of the scope of the problem, the best solution is governmental control. No one easily cedes control to the government, especially when it comes to the arts, but when the health of society is threatened, when individuals cannot control their actions, then individual choice must be taken away and responsibility assumed by government.

I advocate this multifaceted approach: First, restrictions must be placed on music advertising, especially when the ad-

vertising is targeting children; for example, cartoons using music must be outlawed. Second, educational programs must be developed to inform children of the effects of music; in conjunction, music-free zones must be created around schools and in other public places. Children must be taught that it is okay to just say no. Third, a great tax burden must be placed on music products both to discourage their purchase and to create a fund to compensate the victims of music, and their attorneys. Fourth, a new generation of safer music must be developed, music that discourages foot-tapping, dancing, humming, or another active participation. Fifth, alternative forms of safe entertainment, such as gum-chewing and gazing out the window, must be promoted. Sixth, whistle-blowers who identify the dangers in music should be compensated with a largesse that will send a clear message to the music industry. Only in this way can we free society of this dangerous addiction that is music. □

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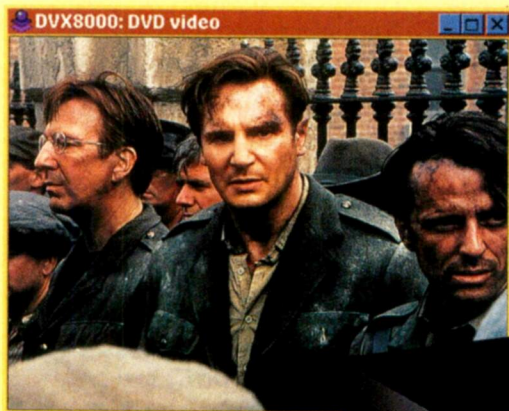
Flip through the pages of *Stereo Review*, and you'll no doubt appreciate just how many products we review over the course of a year. Yet it's rare to come across one that can be called unique. The Philips DVX8000 Multimedia Home Theater can.

Interestingly, the DVX8000 (\$5,000) is not particularly new, having been

drive and game port. The rear panel sports not only digital audio inputs and a six-channel Dolby Digital analog output but also I/O ports and a modem jack. This isn't just another preamp.

Although there are other so-called "convergence" products that attempt to combine the personal computer and the TV, the DVX8000's attention to A/V performance sets it apart. But the real question I had when unpacking the big box was — even if it does do some audio things well, some video things well, and some computer things well, how seamlessly does it *integrate* them?

Because the DVX8000 is designed to do so much, it's difficult to describe concisely.



The Philips DVX8000 lets *Michael Collins'* film-like quality show through.

introduced late last year. We passed on an opportunity to review it at that time because the test sample simply wasn't ready for prime time. But Philips never stopped tweaking the design, and now it has a compelling product, though still not without flaws.

Like Tiger Direct's PC Cinema (reviewed in "Peripherals" last month), the DVX8000 is a computer built for home-theater applications, but it looks more like a piece of A/V gear and less like a computer. In fact, it looks a lot like a Marantz A/V receiver (not too surprising since Marantz is owned by Philips and contributed to the DVX8000's design). It's bulkier, however, and behind the flip-down door along the bottom of the front panel you won't find A/V controls but a floppy-disk



In its audio clothes, it's a Dolby Digital processor and preamp, an A/V switcher and controller, and an AM/FM tuner. Switch to video, and it's a DVD player, a line doubler, and a TV tuner. Plus, it's a classy home PC with a DVD-ROM drive, too.

Like a beefy A/V receiver, the DVX8000 has a front panel with a total of

about 35 buttons or knobs, including a large rotary master volume control, two smaller bass and treble knobs, input and mode-select buttons, and tuner seek and scan buttons. There's also a blue vacuum-fluorescent display, front-panel A/V input jacks, and a headphone output. Around back, there's a full complement of A/V inputs and outputs, including inputs for a satellite receiver, a laserdisc player, and two VCRs (one is a record loop). Audio-only inputs include one for a CD player and a tape-recording loop. Digital inputs, which can be assigned to any logical source, include one optical, one coaxial, and one AC-3/RF for a Dolby Digital-ready laserdisc player. Besides Dolby Digital decoding, the DVX8000 offers Lucas-film Cinema Re-EQ.

The computer section is built around a 233-MHz Pentium MMX processor. It's got 32 megabytes of random-access memory (RAM) and a 3-gigabyte hard drive. The keyboard is wireless, with an integrated pressure-sensitive pointing device. The right and left pointer buttons are on opposite sides of the keyboard so that they can be clicked with the right and left thumbs, which more or less precludes one-handed operation — and clicking the primary (left) button with my left thumb took this righty a little getting used to.

For input and output, the computer has one parallel and two serial ports. It also has two USB (universal serial bus) ports, which I was unable to test because I had no USB-compatible peripherals to try out — there are precious few available on the market. But assuming that the USB ports work, they should provide an easy way to add accessories to the machine. That's important because, unlike a "normal" computer, the DVX8000 is not designed to be opened to install an expansion board or to add extra memory or a bigger hard drive. It's *possible* to get to an expansion slot, I suppose, but you'd have to hack through the preamplifier section first. The unit's construction makes it evident that combining a PC, an A/V preamp, and a DVD player so that they all work in harmony and without interference is difficult — at least if it's done correctly.

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○ Unique low-frequency circuitry
gives your system extra THUMP

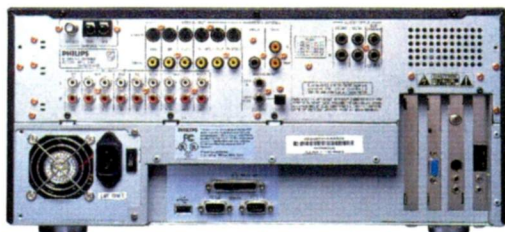
○ Selector switch for three
levels of POW!

PERIPHERALS

The video section is where the hybrid nature of the DVX8000 is most obvious. The machine can be hooked up either to a standard monitor (through its S-video or composite-video inputs), or to a VGA or SVGA computer monitor (more likely, either a data-grade projector or a high-end projection TV with a VGA-compatible input). For the best picture the VGA output must be used, because that's the only one that takes advantage of the built-in line doubler, which converts the interlaced NTSC video image to a progressively scanned one.

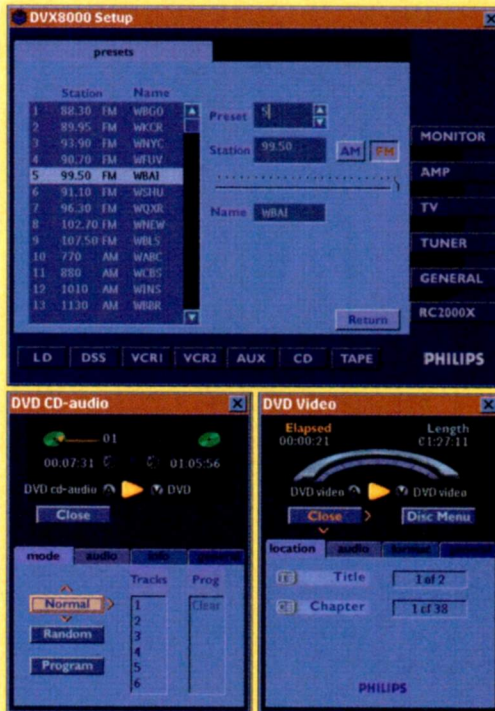
Not having a VGA projector, I viewed the output on a fairly typical (17-inch) computer monitor; the line-doubled picture looked great. Some of the improvement I noticed was undoubtedly because the smaller screen size of my monitor (compared with most TV sets) produced an image with a greater apparent resolution, just as a 13-inch TV will look "sharper" than a 32-incher. That said, the image produced was the best and most nearly artifact-free that I've seen with both program material and test patterns from the *Video Essentials* DVD. I'm convinced that if the DVX8000's output was viewed on a VGA-compatible projector, the improvement created by the line doubler would be clearly evident in any home theater.

How did the picture look on a regular (NTSC) TV? The image from DVDs was comparable to that from stand-alone DVD players I've used; there were no unpleasant surprises. In *Mi-*



The rear panel of the DVX8000, with its A/V connectors and computer ports, makes the hybrid nature of the component obvious.

chael Collins (Warner), the beauty of Ireland and the grittiness of 1916 Dublin were unmistakable. I could swear that the dust of the crumbling General Post Office — each speck was visible — was falling to the floor of my home theater as each round of shells exploded around me with frightening realism.



Programming the station presets for the AM/FM tuner, or controlling the A/V functions is simplified by on-screen menus.

The computer-generated graphics didn't fare quite as well viewed on the TV. The control menus, designed to be readable on a TV, were just fine — the lettering and graphics were large and appeared smooth. And for casual Web browsing, the TV display was adequate. But because of the inherently limited resolution of an NTSC picture, it's just not practical to use a TV or video monitor as a primary computer display device. But that's a problem with NTSC, not the DVX8000.

After initial setup, you don't even have to look at the computer menus.

The front panel gives some control over the unit's operation. However, you don't get even a play or pause control for the DVD player. Fortunately, the remote control included with the DVX8000 is the Marantz RC-2000 learning remote, a powerful device that can easily control an entire home-theater system. An infrared transceiver/repeater supplied with the DVX8000 allows it to be installed behind

closed doors and still talk with the remote. The setup software provided with the DVX8000 makes programming the remote a snap. And since you can back up the remote's programming on the computer's hard drive, you don't even have to worry about losing the data if the remote's batteries go dead — which

is good, because the RC-2000 is a bit of a battery hog.

Tuner performance was very good on both the FM and AM bands. I particularly liked the ease with which I could program station presets — including their call letters — using the wireless keyboard. Up to 30 can be stored, and they can be shared in any order among AM and FM stations. I was pleasantly surprised that the tuner was not affected by radio-frequency hash despite being located directly on top of a PC chassis. Even AM performance was better than average — though that required getting the supplied loop antenna as far from my video monitors as I could.

But the DVX8000's usability did fall short when it came to playing CDs. There were two major flaws: First, disc loading was unacceptably slow — and the longer the wait, the audio inexplicably muted whenever the track number changed.

The first CD I played was a test disc with 99 tracks. I put it on the tray, closed the drawer, and after a couple of seconds figured that I had forgotten to set the "autoplay" default (I hadn't). So I hit the play button on the remote. Still nothing. Figuring that there was something wrong with the disc, I popped in a music CD. *It didn't play right away either*, so I figured that I had just run into a computer glitch and was about to reboot the machine when the disc started playing. The *shortest* start time I encountered was with a four-track disc (Shostakovich's Symphony No. 5, Linn CKD 004), which took about 12 seconds to get going. The maximum was for a 99-track test disc, which took an intolerable 2 minutes and 5 seconds to begin playing. Equally perplexing was that the audio output would mute every time the player changed tracks — you'll never hear a song's first note again! Obviously, while the DVX8000 can play your CDs, these quirks mean you won't want it to! But at least you can connect an external CD player to the DVX8000 — Philips was thoughtful enough to include an input for one.

The CD-player flaws are unfortunate, especially from a company that co-invented the CD, marring what is otherwise a well-thought-out attempt to bring high-fidelity audio, video, and computing together. The DVX8000 could be the heart of an excellent home theater — just don't expect it to play CDs. □

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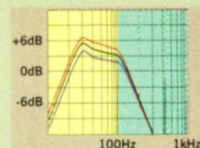
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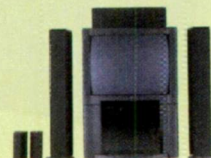
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Zenith/Inteq DVX2100 Divx/DVD Player

COREY GREENBERG

I am already on the record as something less than a fan of Digital Video Express's pay-per-view Divx DVD format — all right, I hate the concept of Divx down to the very marrow of my bones. But I also like to think of myself as an open-minded guy, and I wanted to give the Zenith/Inteq DVX2100 Divx player a fair shake out of the box. Maybe if I'd shaken it even harder, it wouldn't have taken a full hour to get the thing to play a movie.

The problem seemed to be either with the player's built-in modem or at the other end with Digital Video Express's database — customer service never figured it out. To enable the Zenith/Inteq or any other Divx-compatible player to play Divx DVDs, you have to run the supplied telephone extension cable from the player's modem jack to a working phone line, call Digital Video Express customer service toll-free, and open an account by giving your name, ad-

dress, and credit-card information. (I used my second line, the one I normally use for faxing and going online. I can just imagine how long it would have taken to solve the problem if I had only one line.) Then you move the on-screen cursor to the "register" button, hit the remote control's Enter

key, and — in theory — you'll be registered and ready to Divx the night away.

But when I tried to register the sample player, its modem would dial Digital Video Express, wait a few seconds, and then hang up, giving me an on-screen error message recommending that I call customer service — which I'd already done! The customer-service representative was very nice and very patient, but after three failed registration attempts, she put in a conference call to a technical-assistance rep at another location, and the three of us went through the routine of unplugging the player, waiting 10 seconds, plugging it back in, and going through the process a few more times. Finally it worked, and I was able to hang up the phone and watch my first Divx disc. Thank God you only have to register once!

Digital Video Express likes to compare the Divx format to the small-dish DSS digital satellite TV system. Well, I spent maybe five minutes registering my DSS on the phone with DirecTV and USSB before the picture blinked on my TV screen and everything was working perfectly.

Maybe I should cut Divx a little slack, though, since the system has been up and running for only a few weeks on a test-market basis. Currently available at Circuit City in Richmond

FAST FACTS

KEY FEATURES

- Plays standard DVDs and Divx pay-per-view discs
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DIMENSIONS 15⁷/₈ inches wide, 3⁷/₈ inches high, 11¹/₈ inches deep

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PRICE \$499

MANUFACTURER Zenith, Dept. SF, 1000 Milwaukee Ave., Glenview, IL 60025; phone, 847-391-7000; Web, www.zenith.com

ANOTHER LOOK **Ken C. Pohlmann**

As I unpacked the Zenith/Inteq DVX2100 Divx/DVD player, I had two questions: does it take anything away from the DVD format, and does its ability to play Divx discs add anything to it?

As a DVD player, the DVX2100 wasn't too bad. Overall, the Zenith/Inteq's DVD picture quality was a notch or two below that of my Sony DVP-S300. On the other hand, it was several notches above that of MPEG-2 satellite broadcasts. Dolby Digital sound quality was identical to that of other players that use an outboard decoder. Over six hours of viewing, I did not hear any snaps, crackles, or pops through my audio system.

The on-screen menus are attractive and straightforward, and the operating features worked well. There were some typos in the on-screen menus and minor glitches in operation, so if you are sensitive to occasional disruptions, you should wait for second-generation models (this is good advice for any new consumer-electronic product). The DVX2100 handled audio CDs with no complaint, but it could not play CD-R discs. It was somewhat sluggish in initializing discs and slow to respond to user commands, but not fatally so.

I did my comparisons with Divx and DVD copies of *The Rock*. They were different versions (the DVD was widescreen), so they had undergone different mastering — an all-important criterion for determining picture quality. The Divx picture was quite clear — I could see each strand of Sean Connery's unkempt hair — but in some scenes it showed more MPEG-2 artifacts than the DVD version. For example, in one brief shot, fog was not reproduced as a consistent gradient but instead as layers. These artifacts were also present on the DVD disc, but they did not register as

significantly on either the Sony or the Zenith player.

It is impossible to say whether Divx coding has inherently greater limitations than DVD; both use MPEG-2 video data compression, so the only difference is in the encryption, which is not data-intensive. Still, this particular DVD of *The Rock* looked better than this particular Divx of *The Rock*. Other Divx titles looked much better than the Divx *Rock*, with reproduction that should please most viewers. Divx Dolby Digital sound quality was identical to that of DVD Dolby Digital. (Dolby Digital encoding is straight-ahead, so there isn't as much room for variation as in MPEG-2 video encoding.) If first-generation Divx is this good, I think that subsequent generations will be competitive with DVD.

Although critics complain that the first Divx discs lack cinematic perks such as widescreen presentation, director's cuts, and theater trailers, a Divx player can play regular DVDs that already have those materials. Moreover, there is nothing in the Divx standard that precludes future titles from embracing these perks. What many Divx critics forget is that the storage capacity of a DVD, while large, is finite. All those cinema perks take up disc space, leaving less for the film itself. Omitting them gives Divx titles more bits for MPEG-2 picture coding. Thus, all else being equal, in theory a Divx disc could have higher picture quality than the DVD version.

In concept, the Zenith/Inteq DVX2100 convinced me that Divx takes nothing away from the DVD format. A Divx player does everything a DVD player does, and more. The DVX2100 lacks some of the niceties of full-featured DVD players, such as a component-video output, video zoom, or slow reverse, and its picture quality is

somewhat lower, so it's definitely not the best DVD player ever made. But is it competitive with DVD-only players in its price range? Certainly. At this price point, I could live with it.

Of course, I was most interested in the player's Divx feature. When you pay \$4.49 for a new Divx disc, you have two days before it expires. You can watch it once or many times, skip around or play it straight through. After the viewing period is up, when a disc is loaded, the menu asks if you'd like to watch it again; if so, you have to agree to pay about \$3.25 for another two-day viewing window. Alternatively, you can convert the disc to DivxSilver status for unlimited playback on the same account, for a one-time fee of \$20 or so, or upgrade to a DivxGold disc (priced like a comparable DVD) that offers unlimited viewing on anybody's Divx player. All billing is automatically performed via modem, purchases are handled seamlessly, and playback begins immediately.

Most interestingly, Divx adds the option of inexpensive viewing. I am not chagrined that it would cost me an extra \$3.25 to view a Divx movie again. Frankly, after seeing *Flubber* once, I'm pretty sure I wouldn't want to see it again. It doesn't cost anything to open or maintain a Divx account, and you can play DVD discs on a Divx player without an account. I like the Divx concept. I think it is a harbinger of how movies and music will be delivered in the future. Bottom line: Considering the \$4.49 initial purchase price of Divx movies, Divx seems to be a useful feature. These first-generation Divx hardware and software samples were beaten by second-generation DVD hardware and software, but the contest could be much closer in the near future.

and Circuit City and The Good Guys! in San Francisco, the whole shebang is slated to go national in "late summer," with RCA and ProScan players added to the line. (There were some indications at press time, however, that the national rollout might not happen until sometime in the fall.) On the other hand, with all the hype, all the promises, all of the money invested in this thing, including the millions of dollars paid to a handful of Hollywood studios just to get them to sign on, and with the anti-Divx zealots watching their every move, you'd think Digital Video Express would have worked out all the

bugs before this thing even got near the market.

Zenith sent along four Divx titles for me to evaluate the system with, and a more mindless smorgasbord of crapola I can't imagine — *George of the Jungle*, *For Richer, For Poorer*, *Mimic*, and *The Rock*. At least they blow stuff up real good in the last two, so I went and bought the DVD versions of these flicks at Tower Records to compare the Divx-mastered discs played on the Zenith and regular DVDs played on a Toshiba SD-3107 DVD player (\$799, now discontinued). Both players' S-video and coaxial digital audio outputs were

connected to my reference home-theater system, comprising Theta and Krell electronics and NHT speakers (four Model 3.3s plus an Audio-1 center). A Pioneer Elite Pro-1009 60-inch widescreen (16:9) rear-projection TV completed the picture.

So how did the Divx discs look and sound? The 5.1-channel Dolby Digital soundtracks for *Mimic* and *The Rock* sounded similar on both the Divx and regular DVD discs, although I did hear occasional clicks out of one or more speakers during Divx playback, including a loud click in the left surround speaker during the opening Simpson/

Bruckheimer Films logo in *The Rock*. But I experienced an even stranger and more perplexing glitch while watching the same movie. A couple of times when I paused the Divx disc and then hit play again, the sound went out of sync and actually lagged a fraction of a

IN THE LAB

DVD VIDEO PERFORMANCE

Setup level	7.5 IRE*
Differential gain	4 IRE
Differential phase2°
Horizontal luminance frequency response (re level at 1 Mhz)	
at 4 MHz	-0.76 dB
at 5 MHz	-1.89 dB
at 6 MHz	-1.95 dB

CD AUDIO PERFORMANCE

Maximum output level	2 volts
Frequency response	
20 Hz to 20 kHz	+0.32, -0.12 dB
Noise level (A-wtd, re -20-dBFS** input)	-74.2 dB
Excess noise (without/with signal)	
16-bit (EN16)	+1.65/+4.15 dB
quasi-20-bit (EN20)	+18/+19 dB
Distortion (THD+N, 1 kHz)	
at 0 dBFS	0.041%
at -20 dBFS	0.058%
Linearity error (at 499 Hz)	
at -90 dBFS	-4.3 dB
Defect tracking	
(Pierre Verany disc)	1,500 µm

TECH NOTES

The player would not load one of our test DVDs, but it did play some discs that have been reported to trip up other players. Video performance overall with standard DVDs was merely okay — that is, differential gain was a bit higher than we're used to finding, but it had no visible consequences.

The machine would not play CD-Rs or past Track 40 on a CD-RW version of the *Stereo Review* test CD, so noise-modulation tests could not be done. Otherwise, audio performance overall was also okay. Linearity error was rather high, and I would expect it to have produced rather high noise-modulation results (3 to 4 dB at least) and possibly audible side effects (though not necessarily with music). Consistent with the measured linearity error, the EN16 excess-noise spectrum showed numerous very low-level distortion products during "with signal" tones; such distortion is probably not audible with music. — *David Ranada*

* an IRE is a standardized unit of contrast

** decibels referred to digital full-scale

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- *Andrew Keen*, *FI Magazine*

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- *Don Keele*, *Audio Magazine*

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- *Julian Hirsch*, *Stereo Review*

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second behind the picture! The first time it happened I thought it must be my imagination, but then it happened again a few minutes later. To get things back in sync, I had to remove the disc and reinsert it. This is something I've never experienced in more than a year of watching regular DVDs on four different players. I should also note that the Zenith Divx player consistently displayed the audio format as "AC-3 2-channel" even though it was obviously serving up a 5.1-channel Dolby Digital signal.

Divx movie discs are all presented only in the chopped-off "pan-and-scan" picture format instead of the preferable widescreen format found on DVDs. (That's part of the Divx master plan, by the way — give you stripped-down versions of VHS-tape movies, without all the supplemental material DVD viewers have come to expect. No thanks.) I configured the Toshiba player for a 4:3 aspect ratio and chose the pan-and-scan presentation on the regular DVDs for comparison. I saw several obvious differences between the two versions.

The color rendition on the Divx disc was consistently more washed-out — faces were pale, especially compared with the richer and more natural skin tones on the regular DVDs played on either the Toshiba or the Zenith machine. There was also considerably more pixelization on the Divx discs than on the DVDs. I rarely if ever see any digital tiling effects on DVDs anymore, but I noticed quite a few on both Divx discs.

Whether these video problems occurred because Divx's encryption system was stealing from the discs' bit pool, I can't say. But it is possible that the differences in color and video quality are the result of different mastering for the Divx and DVD discs of the same movies.

Undoubtedly, the concept of a low-cost "rental" DVD that you don't have to drive to the store to return is attractive — surely there are more than a few DVD titles we'd all prefer to watch once or twice for five bucks than own forever for twenty. Well, with DVD rental sources like NetFlix (www.netflix.com) and your local Blockbuster giving us all the advantages of DVDs at the same price, I'm convinced now more than ever that Divx will be the biggest and most costly flop in the history of consumer electronics. Your \$500 is better spent on a DVD player, *without* Divx. □

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— Corey Greenberg, Audio, on the Paradigm Mini Monitor

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PSB Alpha Home Theater Speaker System

KEN C. POHLMANN

It didn't make any sense. Why would a manufacturer go out of its way to piss off the person reviewing its products? But that's apparently what the people at PSB were doing to me. First they shipped the speakers to the wrong address. I had the pleasure of personally lugging eight boxes to my lab on a balmy, 100° Miami summer afternoon. Then I discovered that PSB had helpfully included two extra speakers (completely extraneous) as well as a complete set of steel speaker stands I didn't need either. As I stripped the freshly laundered shirt off my back and wrung out the sweat, I muttered darkly to myself, "This better be one helluva speaker system."

Many people would say that PSB does,

indeed, make a helluva speaker. The company has long enjoyed a reputation for excellent speakers, especially among "insiders." On the premise that anyone can make great-sounding expensive speakers but only the best companies can make great-sounding *inexpensive* ones, I decided to test a PSB home-theater system selling for just over a grand. From PSB's budget Alpha line, I selected the Alpha A/V for the front left/right channels, the

MANUFACTURER PSB Speakers,
Dept. SR, 633 Granite Ct., Pickering,
Ontario L1W 3K1; phone, 800-263-
4641; Web, www.psbSpeakers.com

Alpha Mini for the surrounds, the Alpha Midi for the center channel, and the Alpha SubSonic 1 powered subwoofer.

The original Alpha was PSB's first speaker, and it's a bona fide classic. The new Alpha A/V has essentially identical specifications but is a smidgen larger, has a new 6½-inch poly-coated fiber-cone woofer, and is magnetically shielded. The Alpha Mini is a smaller version of the A/V, which translates to somewhat less bass; the Mini's low-frequency response is down 10 dB at 55 Hz, while the A/V's -10-dB cutoff is rated as 50 Hz. The Alpha Midi center speaker is a Mini turned on its side. It has the same dimensions and uses the same drivers and crossover.

Like the Alpha A/V, the Alpha Mini and Midi are magnetically shielded, and all three speakers have vinyl-covered particleboard enclosures and nonremovable fabric grilles. All are available in black, but the A/V and the Mini are also available in a dark cherry finish. I've always been partial to black, but the Mini supplied for this review had the cherry finish, and I gotta tell you, the cherry woodgrain vinyl looks really terrible. Stick with the black; you can thank me later. The A/V has binding-post terminals, while the other satellites use spring-loaded clips.

The Alpha SubSonic 1's rated -10-dB low-frequency cutoff is 25 Hz. Its rear-panel connections are fairly typical, consisting of two line-level inputs, two speaker-level inputs, and two speaker-level outputs. Before being passed to the outputs, the signal runs through a 6-dB-per-octave high-pass filter fixed at 100 Hz. One control knob adjusts the sub's level, and another adjusts its low-pass crossover between 50 and 150 Hz. A button selects normal or inverted-phase operation. There is no power switch; the amplifier senses the presence (or absence) of an audio signal and turns itself on and off.

After auditioning more than a few home-theater speaker systems, I have a pretty good idea of the optimal placement in my room. I lined up the front speakers against the wall, with the center speaker underneath my TV. The surrounds were placed high on the walls to either side of the listening futon and slightly behind it. I tried the subwoofer along the front wall and then moved it to the left side wall, near the front. Heavy lifting completed, I started my audition with a stack of DVDs to check out the system's movie prowess.

First I test-drove the subwoofer with the explosion-ridden *Desperado*. The .1 channel in a 5.1 system is mainly used for low-frequency effects (as opposed to bass music), and while explosions are hardly

TECH NOTES

Quasi-anechoic "listening window" averaged frequency-response measurements of the PSB Alpha front, center, and surround speakers produced an admirably smooth response, with a deviation of only ± 2.5 dB from 1 kHz up to 20 kHz. But despite its physical similarity to the Alpha A/V mains, the Alpha Midi center speaker had different deviations, enough to preclude a truly close match, and so did the Alpha Mini surrounds. And all three models had a dip in the crossover region (2 to 3.5 kHz), but this is typical of small, two-way speakers. All three also had a broad "peak" (more of a plateau) in the octave centered around 1 kHz, a characteristic that can sometimes lead to harshness at high volumes. Referred to its output at 80 Hz, the response of the Alpha Subsonic subwoofer rolled off to -3 dB at 55 and 130 Hz. In our main listening room, I obtained the best "splice" between the subwoofer and the main speakers with the system's crossover frequency set to 100 Hz.

— David Ranada

	ALPHA A/V (main)	ALPHA MIDI (center)	ALPHA MINI (surround)	ALPHA SUBSONIC 1 (subwoofer)
SENSITIVITY (SPL at 1 meter, 2.83 volts input, 1 kHz)	88 dB	90 dB	90 dB	n/a
IMPEDANCE (minimum/nominal)	4.9/7 ohms	5.7/8 ohms	5.7/8 ohms	n/a
BASS OVERLOAD FREQUENCY (at 90/100 dB SPL)	49/139 Hz	117/147 Hz	117/156 Hz	28/69 Hz

high-fidelity events, a good subwoofer must pound out the thuds without distorting or calling attention to its location. The Alpha SubSonic 1's room-shaking ability was less than that of some other subs I've auditioned, but its output was clean at normal listening levels. I appreciated the adjustable low-pass filter, which let me dial in just the right blend with the satellites (a frequency of around 70 Hz in my room). Overall, if you're looking for raw sonic fury, this sub is a bit tame, but it's very capable at less all-out levels.

Next, I screened the moody, sexy, and violent *Bound*. Its soundtrack creates a realistic sense of interior, with ambience around the dialogue and portentous sounds

like dripping water. I was impressed: the Alphas sounded extremely crisp and realistic, supporting every nuance of this playfully tense drama. Off-screen images seemed to be accurately placed, and the dialogue was crystal clear. I was also pleased with how accurately the Alphas reproduced the film score.

On the downside, although the satellites were tonally matched, the surround field did not merge as convincingly with the front as it should have. The speakers tended to betray their locations, making each source too distinct. In addition, unless I was in the sweet spot, off-axis response was uneven.

Turning to music, I listened to both

HIGH POINT

Clean and accurate movie playback

LOW POINT

Slightly harsh midrange on female vocals

5.1-channel surround and two-channel stereo tracks on the terrific Delos *DVD Music Breakthrough* disc (DV 7002). Music alone is more demanding than movie sound, and most small speakers simply don't cut it with music. But I was generally impressed with the little PSB Alphas. They weren't perfect: indeed, their sound was small compared with that of larger speakers — that was particularly obvious with good recordings of big opera productions, like Wagner's *Walküre* (Solti's recording on London is my favorite). Moreover, the all-important midrange of the Alpha A/Vs was slightly harsh on strongly sung female vocals (including most of Brunnhilde's role in *Walküre*). In addition, the five satellites struggled at the low end, growing boomy at progressively lower frequencies, and their cabinets exhibited a pronounced "ring." Now, don't misunderstand me: every budget-priced home-theater speaker system using small satellites is prone to such problems.

On the up side, I appreciated that all the satellites use the same tweeter, which insures well-matched timbres above 3 or 4 kHz. Moreover, the high end was quite smooth. At one point I used the pair of Minis as my front mains. The Mini has an attractive sound quality, but it lacks the Alpha A/V's low-end punch. All of these speakers play loud for their size and maintain an accurate tonality up till the bitter end. Finally, the conservative nature of the SubSonic is a plus when playing music. It handled the low-frequency content in Madonna's *Ray of Light* album really well. Some subwoofers get very thumpy with this CD, but it stayed musical.

In hindsight, I doubt that PSB was intentionally trying to piss me off. I can forgive the mistake in my address. The company is busy making speakers that are several notches above the norm, and its people clearly have more important things to think about. I even forgive them for including all that extra gear. When you build excellent equipment that delivers a very solid bang for the buck, you're naturally proud of your work and want to show it off. In fact, I liked these speakers so much that I won't even bill PSB for my ruined shirt. I'll let the magazine take care of it. □

FAST FACTS

	ALPHA A/V (main)	ALPHA MIDI (center)	ALPHA MINI (surround)	ALPHA SUBSONIC 1 (subwoofer)
TWEETER	1/2-inch dome	1/2-inch dome	1/2-inch dome	—
WOOFER	6 1/2-inch cone	5 1/4-inch cone	5 1/4-inch cone	10-inch cone
ENCLOSURE	ported	ported	ported	ported
SIZE (HxWxD, inches)	12 3/4 x 7 3/4 x 9 3/4	6 1/2 x 10 3/8 x 9 3/4	10 3/8 x 6 1/2 x 9 3/4	11 3/8 x 14 1/2 x 14 1/4
WEIGHT	11 pounds	9 pounds	9 pounds	26 pounds
FINISH	black roughcast, dark cherry, ebony ash	black roughcast	black roughcast, dark cherry	black roughcast
PRICE (\$1,006 total)	\$249 a pair	\$119	\$199 a pair	\$439



Klipsch Synergy Premiere Home Theater Speakers

DANIEL KUMIN

Klipsch, one of the oldest names in hi-fi, is one of the last speaker companies to jump wholeheartedly into the home-theater waters. Some companies, looking down on surround sound as little more than a fad unrelated to *real* audio, have thrown systems together that fail to address the specific needs of multichannel reproduction. But the Synergy Premiere series suggests that Klipsch has taken the time to think the home-theater puzzle through.

The system I auditioned consisted of a pair of KSP-300 towers, a KSF-C5 center speaker, and a pair of KSF-S5 surround speakers. All three models use as a high-frequency transducer an uncommonly small (1-inch) compression driver wedged to a radial horn, which Klipsch calls a "Tracrix" horn. It is designed to offer

broad coverage with controlled directivity — that is, while the sound radiates evenly, creating a large "sweet spot," less sound is reflected from the walls, ceiling, and floor. This is meant to improve clarity and intelligibility and make overall response more predictable by lessening the influence of the room's acoustics.

The KSP-300 tower mates a passive "satellite" section employing the Tracrix horn and a 6½-inch woofer with a powered subwoofer section featuring a 150-watt amp and a 12-inch driver. Each

MANUFACTURER Klipsch, Dept. SR,
8900 Keystone Crossing, Suite 1220,
Indianapolis, IN 46240; phone,
800-554-7724; Web, www.klipsch.com

speaker has two pairs of inputs, marked Low In and Hi In (for biamping you remove jumper bars running between them). There are also four RCA jacks labeled LFE In and Out (for low-frequency effects, the Dolby Digital .1 channel) and Line In and Out, two large knobs marked Level and LFE Level, and a switch for selecting the on, off, or signal-sensing auto-on AC power modes. I used the standard hookup for most of my listening.

The KSF-S5 surround speaker is a quasi-bipole design with two Tracrix horns flanking a central 6½-inch woofer and operating in phase. The KSF-S5 is designed for wall mounting with the woofer facing the listening position. Each speaker has solid, multiway binding posts.

Setup was uneventful. I experimented with positioning the KSP-300s but ultimately placed them close to the same spot where I put my everyday speakers, which are similar in size, shape, and bandwidth. The center speaker went atop my Toshiba TV, and I placed the surround speakers on high shelves slightly to the rear of my listening position.

With two-channel music, the KSP-300s performed well in most every regard, delivering sound that was smooth and, for the most part, naturally balanced and highly detailed. Some voices, though — like Lyle Lovett's on *I Love Everybody* — had a slightly forward, faintly "shouty" quality. I have to emphasize, however, that this was never more than subtle.

Imaging was tightly focused. The reproduction of the "float in the air" soundstage on Phil Woods's *Here's to My Lady* (Chesky LD3) was occasionally uncanny. But the soundstage, while broad and detailed, wasn't as deep as that reproduced by some conventional-driver speakers I've heard. Also, top-octave "air" or depth was slightly less prominent than that of my everyday cones'n'domes speakers.

The KSP-300s delivered nearly unfettered deep bass, only falling off a bit below about 35 Hz. In fact, their deep-bass extension equaled that of my usual setup, which has a separate, big-ticket 12-inch powered sub complementing a pair of floor-standing speakers.

Bartok's raucous *The Miraculous Mandarin* (Delos DE 3083) showed off the effortless, wide-band dynamics to excellent effect, with lots of big bass-drum and Wagnerian low-brass impacts. The KSP-300s' transient dynamics handled big, noisy full-orchestra attacks with equal aplomb. These speakers punch — and bite — when the music demands. This bright recording did bring out the KSP-300s' slightly forward upper midrange,

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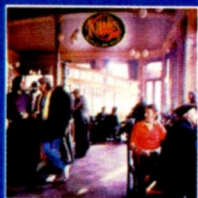
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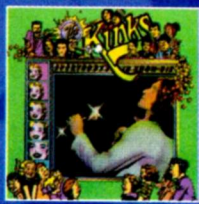
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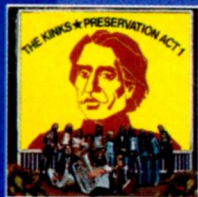
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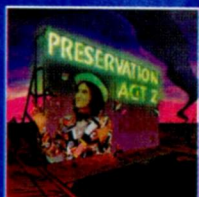
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PRESERVATION ACT 1



PRESERVATION ACT 2



which sometimes made combined string and brass choirs sound "hard."

The towers and center speaker did an excellent job reproducing surround-sound recordings. Front-stage presentation was transparent and focused, with a revealing midrange. This was especially effective with subtle material like the Foley effects and ambience in the *Unforgiven* Dolby Digital DVD. But it could also be too much of a good thing. With *Crimson Tide* — a borderline-harsh DTS-encoded laser-disc — playback at cinema levels became mildly fatiguing. The front speaker trio, with their smooth, open vocal region, reproduced dialogue with outstanding clarity. A slight emphasis in the "presence" region, however, sometimes made voices sound a bit too prominent.

The front trio's dynamic potential with multichannel recordings was huge: they

were able to play very loud well down into the true deep-bass region. Broad-band zowies like the Harrier landing and the helicopter-missile impact from *True Lies* were still clear and well defined even at the highest volume level I could stand. Bottom-octave output was awesome.

A good timbral match between the center and left/right speakers is key to creating cohesive surround imaging and effects. I tested the Klipsch system by comparing the KSF-C5 center speaker with the KSP-300 pair on monaural material and by A/B-ing the KSF-C5 with a KSP-300 (also in mono). In both cases I performed careful level-matching, turning off the KSP-300s' sub amps to eliminate any influence from rogue low bass. The match was good — decidedly better than most midprice front trios — but I was surprised by the difference between the

FAST FACTS

	KSP-30C (main)	KSF-C5 (center)	KSF-S5 (surround)
TWEETER	horn-loaded 1-inch dome	horn-loaded 1-inch dome	two horn-loaded 1-inch domes
WOOFER	6 1/2-inch cone, 12-inch subwoofer	two 6 1/2-inch cones	6 1/2-inch cone
ENCLOSURE	sealed	vented	sealed
SIZE (HxWxD, inches)	42 x 8 3/4 x 18	7 1/8 x 23 7/8 x 7 3/8	8 x 18 1/4 x 7 3/8
WEIGHT	78 pounds	23 pounds	12 pounds
FINISH	mahogany, oak, satin black wood veneer	black matte vinyl	black or white matte vinyl
PRICE (\$2,800 total)	\$2,000 a pair	\$350	\$450 a pair

TECH NOTES

The advantages of Klipsch's horns showed up in the "listening window" frequency response of the KSP-300, which had response deviations of only ± 2 dB between 1 and 15 kHz. And over a region spanning more than two crucial octaves (2 kHz to 9.7 kHz), response was a still flatter ± 1.2 dB. The KSF-C5's response had deviations in similar locations, but they were larger (spanning ± 3 dB above 1 kHz) and included a wide peak around 7 kHz. Also, the center speaker's midrange response is compromised once you listen from more than 15 degrees off-axis horizontally, because of interference between its two woofers. Take the bass overload frequencies for the KSP-300 with a grain of salt. They're valid for a standard hookup (during which the 6 1/2-inch woofer is the one that distorts), but not for a bi-amplified hookup in which the sub and main sections are driven separately (with the latter protected by high-pass filters). With that arrangement, the KSP-300 proved immune to overload up to 100 dB SPL.

— David Ranada

	KSP-300 (main)	KSF-C5 (center)	KSF-S5 (surround)
SENSITIVITY (SPL at 1 meter, 2.83 volts, 1 kHz)	90 dB	90 dB	87 dB
IMPEDANCE (minimum/nominal)	4.6/8 ohms	3.5/6 ohms	4.2/8 ohms
BASS OVERLOAD FREQUENCY (at 90/100 dB SPL)	22/39 Hz (see text)	82/131 Hz	78/104 Hz

HIGH POINTS

Impressive dynamic range.
Excellent deep-bass extension.

LOW POINTS

Timbre mismatch in center speaker
makes voices too prominent.
Front-to-back pans not always smooth.

center and left/right speakers, particularly on male voices. The KSF-C5 sounded hollower than the KSP-300s, heard either singly or paired — and the deeper the voice, the more audible the change. I noticed the same characteristic, to a lesser degree, on female voices.

The KSF-S5 surrounds produced the broad, smooth coverage Klipsch claimed they would. I A/B-ed them with my high-performance THX dipole surrounds, playing the surround-channel material with the front and center speakers disconnected. The KSF-S5s produced an ambience effect midway between that of dipole and bipole surrounds. Both the “spread” and depth of space were good, but not up to that of my everyday dipoles.

In the *Water Music* excerpt from the Delos *Surround Spectacular* CD, the ambience was slightly “bigger” and richer than with my dipoles, but less precise. Don’t get me wrong: the Klipsch surrounds were clearly better than monopole speakers at ambience reproduction.

The KSF-S5s had some trouble when the action moved between speakers on surround soundtracks. While lateral pans were smooth and just about seamless, front-to-rear pans “jumped” to the surrounds more obviously than they do with my standard setup. This was most easily heard on broadband pans such as the torpedo “swim-bys” in *Crimson Tide*.

Neutral and exceptionally dynamic, the Synergy Premiere is an intriguing loud-speaker system. The KSP-300’s high sensitivity and on-board powered sub allows it to perform well with as little as one-third the power you’d need for a full-range passive system of equivalent bandwidth. And the horn transducers’ consistent directivity delivers above-average sound to a broader than usual listening window while keeping the influence of room acoustics to a minimum.

The Klipsch Premiere Synergy speaker system is a serious effort to address the unique demands of home-theater sound and is well worth an audition. When you consider the dizzying pace of change in audio today, it’s nice to know that good things do still come to those who wait. □

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Energy e:XL Series Home Theater Speaker System

DAVID RANADA

The Energy system tested here is drawn from the company's new line of speakers, the somewhat bizarrely designated e:XL series. The line consists of two floor-standing models; two bookshelf models, from which we selected the larger, the e:XL-16; a dedicated surround speaker, the e:XL-R; and a center speaker, the e:XL-C. For deep bass, we added Energy's ES-10 powered subwoofer, which is not part of the e:XL series.

The most obvious thing about these e:XL speakers is their industrial design. These are modern-looking speakers, with molded-plastic cabinets "acoustically sculpted" to minimize cabinet-edge diffraction and maximize dispersion. Promi-

nent in the speakers' appearance are their aluminum-dome tweeters, which have "tuned ultrasonic acoustic filters" (the gunsight-like construction in front of the domes) and cloth suspensions. The woofer cones of the five main speakers are all injection-molded polypropylene and have nitril-rubber surrounds. All of the drivers are magnetically shielded. Molded into the back of the e:XL-16 and e:XL-R are

MANUFACTURER Energy Loudspeakers,
Dept. SR, 3641 McNicoll Ave.,
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keyholes for wall-mounting (the e:XL-16 also has a threaded insert for use of OmniMount 53 Series pivoting brackets). All of the connections are multiway binding posts, and all the enclosures are ported. The "port" of the e:XL-R is a mass-loaded passive radiator that gives the speaker the appearance of a wide-range dipole, although only its dual tweeters operate in (out-of-phase) dipole mode.

The ES-10's built-in power amplifier is rated to deliver 100 watts into its "heavy duty" driver. Input can either be line-level mono (from a typical receiver subwoofer output) or speaker-level stereo. In either case the signal flows through an internal crossover that has both a volume knob and a low-pass frequency control adjustable between 50 and 100 Hz. If you have an external crossover or other appropriate bass-management facilities in your system amplifier or receiver, you can use the ES-10's line-level "Xover" input, which bypasses the internal crossover. The ES-10 has no speaker-level outputs, no line-level high-pass-filtered outputs, and no phase or polarity controls.

While the speakers' styling may be unconventional, setting them up was absolutely ordinary, with the usual complications of speaker placement and subwoofer adjustment. The manual for the three main speakers was not much help, however. It neglects to specifically state or show that, as dipoles, the e:XL-R surround speakers should be positioned so that their drivers are *not* aimed toward the listener. And neither that manual nor the one for the ES-10 subwoofer recommends a high-pass crossover frequency for achieving the best blend between the subwoofer and the other speakers in the system (should your system's electronics permit such an adjustment). My listening tests and measurements both urge the use of 100 Hz as the high-pass crossover frequency, a value frequently found as the default in many midprice A/V receivers and amplifiers. This will dovetail with the low-pass setting you get when you turn the frequency control on the ES-10 to its highest setting.

I also disagree with the subwoofer manual's contention that placement of the ES-10 "into the room" — as opposed to the corner location we consistently recommend as a starting point — "will deliver progressively more accurate bass performance." Mid-room placement of the ES-10 prevented me from finding subwoofer-control settings that produced even a moderately smooth transition between it and the satellite speakers (a continuously variable phase control would

have helped). I do, however, agree with Energy that extensive experimentation with the subwoofer's position and settings is the key to best bass blending. It is essential if you don't have access to test signals and instruments. In our large sound room, the ES-10 ended up along a wall a couple of feet out from the front-left corner, ignoring the manual's puzzling warning to leave 4 inches of clearance around the subwoofer. Such spacing is really necessary only for the front and back of the enclosure.

At low to moderate listening levels, which I suspect are what most people use most of the time, the sound of the system with soundtracks and, more important, music, was very clear, with excellent dialogue intelligibility and well-defined images portrayed with a good sense of depth when called for by the program material. Overall tonal quality was fairly neutral, with a notable lack of nasality to vocals. Bass through the ES-10 was solid and clean down to extremely low frequencies (below 30 Hz).

The fusion of the front with the surround speakers in terms of ambience was also very good. The system was able to create a convincing three-dimensional acoustic space when playing Delos's stunning *DVD Music Breakthrough* (DV 7002), a Dolby Digital sampler/demo recording that convincingly demonstrates that dipole surrounds can be as valuable for the proper reproduction of music as they are for soundtracks. And when it came time for the air battle in *Air Force One*, the air-to-air missiles, F-15s, and MiG-29s also thundered by convincingly (though in "real life" air-to-air missiles and jets on afterburner are supersonic and should have created enormous sonic booms). Then again, the artificiality of the movie's sound effects here was exceeded by the relatively cartoonish animation of the airplanes.

At higher, more lifelike levels (for classical music), which are probably slightly louder than most people play their systems, the speaker characteristics that produced clarity at lower volumes gave them a slightly raucous or strident quality. With music, strings in many full-orchestra recordings moved too far "forward," and the accompanying brass sections became overly prominent. Some well-recorded voices (like the operatic soprano Renée Fleming on London) took on a slightly metallic edge, and many not so well recorded voices in pop CDs sounded too aggressively "in your face." Even normally genteel harpsichords sounded fiercer than they would if you stuck your head

FAST FACTS

	e:XL-16 (main)	e:XL-C (center)	e:XL-R (surround)	ES-10 (subwoofer)
TWEETER	¾-inch dome	¾-inch dome	two ¾-inch domes	n/a
WOOFER	6½-inch cone	two 4-inch cones	5½-inch cone	10-inch cone
ENCLOSURE	ported	ported	passive-radiator	sealed
SIZE (HxWxD)	12¼ x 6⅞ x 10¾ inches	5½ x 16⅞ x 9¼ inches	10 x 6 x 6⅞ inches	15½ x 15½ x 15 inches
WEIGHT	11 pounds	14 pounds	8 pounds	4¾ pounds
FINISH (vinyl)	rosewood, black ash, white birch	matte black	black ash or white	matte black
PRICE (total: \$1,250)	\$300 a pair	\$200	\$350 a pair	\$400

TECH NOTES

A "listening window" frequency-response measurement of the e:XL-16 showed it to have a rather rough response, with a plateau around 1 kHz and again at 3 kHz. Still, the deviations above 1 kHz fell into a window of only ±2.5 dB. The e:XL-16 is somewhat unusual in *not* having an actual response dip at its crossover frequency (2 kHz). The prominence of the 1- and 3-kHz regions imparted a decidedly "forward" quality to its sound in comparison with many other speakers that do have such a dip. The e:XL-C measured even flatter (±2 dB) over the same range and proved not to match the e:XL-16 all that well (it was actually less forward-sounding at high volume levels). "Listening window" measurements of the e:XL-R surround show good dipole cancellation down to its 2.2-kHz crossover frequency, at which point the speaker's radiation pattern becomes conventional.

— D.R.

	e:XL-16 (main)	e:XL-C (center)	e:XL-R (surround)	ES-10 (subwoofer)
SENSITIVITY (SPL at 1 meter, 2.83 volts, 1 kHz)	87 dB	87 dB	91 dB	n/a
IMPEDANCE (minimum/nominal)	3.9/6 ohms	4.1/6 ohms	3.9/6 ohms	n/a
BASS OVERLOAD FREQUENCY (at 90/100 dB SPL)	73/78 Hz	73/131 Hz	73/131 Hz	78/41 Hz

right next to their soundboards (as I have done on occasion).

This is probably *not* a distortion problem. Even though all the main speakers produced audible distortion with swept test tones, it was no worse than we've found in other speakers recently, most of which haven't had this high-level aggressiveness. It probably originates in the e:XL-16's response variations between 500 Hz and 5 kHz. While there was no

crossover-region dip, which would have led to nasality with vocals, there were other response anomalies whose shapes and frequencies can interact badly with the responses of typical professional recording microphones.

Thankfully, these high-volume problems were far less apparent with soundtracks, both because the music in them usually isn't recorded with the same frequency balance as in music-only recordings, and because the intermittent sounds of dialogue and effects are inherently less revealing than the more stable sounds of music. So while for soundtracks the e:XL system can provide excellent, exciting performance — the modernistic styling will make the speakers seem right at home in any high-tech home theater — if you intend to play a lot of music, I'd advise some careful auditioning with several recordings you really like. □

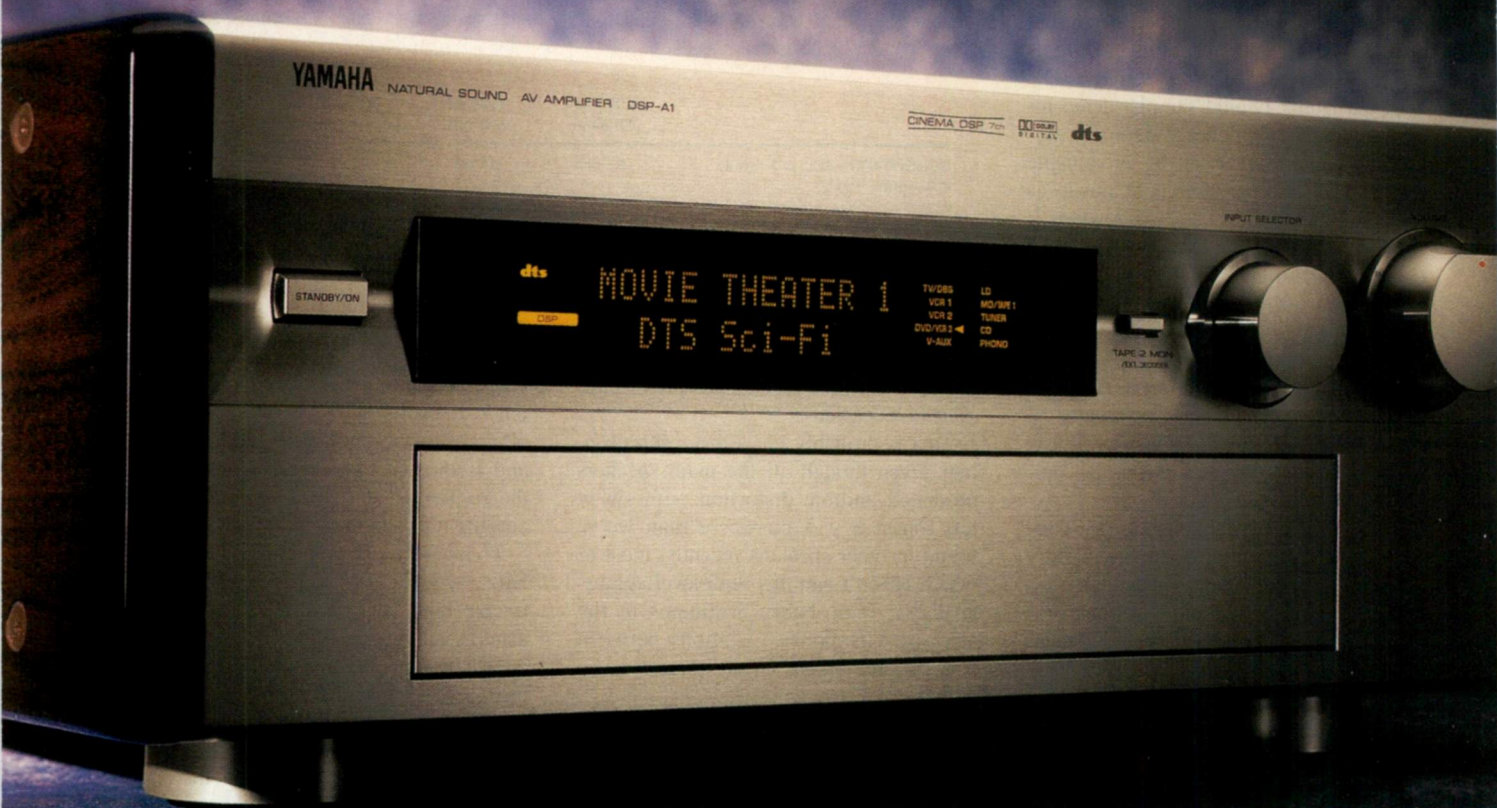
HIGH POINTS

Great with soundtracks.
Clarity at lower volumes.
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LOW POINT

Can sound raucous at high volumes.

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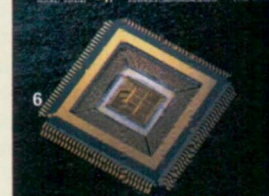
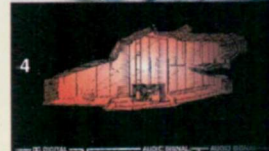
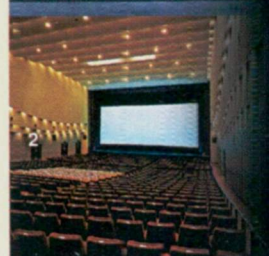
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Kenwood VR-209 Dolby Digital Receiver

DANIEL KUMIN

Is Kenwood's new VR-209 Dolby Digital A/V receiver an amazingly high-watt powerhouse? Not really. Does it have flashy displays and controls? Nope. Does it proffer conveniences like front-panel A/V connections or an on-board RF demodulator for AC-3 laserdiscs? Nosir. Does it use military-spec circuit components and sport an elegant finish? No way. In fact, the unabashedly cost-saving approach of its design is undisguised by the basic-black, light-duty sheet-metal chassis. But is the \$399 Kenwood VR-209 Dolby Digital A/V receiver a flat-out, whazzat-again, gone-insane steal? Uh-huh. Ayup. You betcha.

Why is this seemingly ordinary A/V receiver such a bargain? Because for no more than the price of last year's middling Dolby Pro Logic model, Kenwood will now sell you a Dolby Digital-equipped receiver that can deliver the real goods: the clean, quiet, and spectacularly spacious yet detailed sound of digital 5.1-channel playback

FAST FACTS

RATED POWER

- Surround: 100 W x 5 into 8 ohms at 1 kHz with no more than 0.7% THD
- Stereo: 100 W/ch, both channels driven into 8 ohms, from 40 Hz to 20 kHz with no more than 0.7% THD

KEY FEATURES

- Dolby Digital and digital-domain Pro Logic decoding; Dolby 3 Stereo
- Preprogrammed multicomponent remote control
- One coaxial, one optical digital input
- Three A/V inputs with one record loop
- CD and phono inputs; two tape loops

DIMENSIONS 17½ inches wide,

5¾ inches high, 16 inches deep

WEIGHT 19¼ pounds

PRICE \$399

MANUFACTURER Kenwood USA, Dept. SR, P.O. Box 22745, Long Beach, CA 90801; phone, 800-536-9663; Web, www.kenwoodusa.com

at its best. It has ample power, and, more important, it works well in all the right places — something that's not true of every stripped-down Dolby Digital receiver I've encountered.

Okay, what *don't* you get for your four hundred hard-earned bucks? First, you don't get S-video, so you'd probably want to connect your DVD player or S-VHS deck directly to the TV — scratch the convenience of centralized A/V switching. Second, you don't get enough digital inputs: the VR-209 furnishes only two, one optical and one coaxial, hard-wired to the Video-2 and Video-3 inputs. So using more than a duet of modern components means repeated plugging and unplugging, or else using an outboard digital signal selector (a product category whose time has definitely come). Finally, you don't get a lot of styling, though some may find the VR-209's understated appearance quite handsome.

Only three analog A/V inputs are provided, one of them with A/V outputs for recording. The audio-only jacks — CD, phono, and two tape loops — are somewhat more complete. There are four line-level preamp outputs, but in a rather unusual combination: left and right surround, center, and subwoofer — no front left/right channels. Fairly light-duty binding posts are provided for the three front speaker outputs and spring-loaded terminals for the

"When Velodyne announces a new subwoofer, the earth trembles—literally."
Stereophile Guide to Home Theater, Fall 1997.

"The Velodyne subwoofer is one of those rare components I can recommend to almost anyone . . . I rank the quality, if not the magnitude, of this small California company's achievement up there with Dolby noise reduction and the compact disc."
Audio, November 1987

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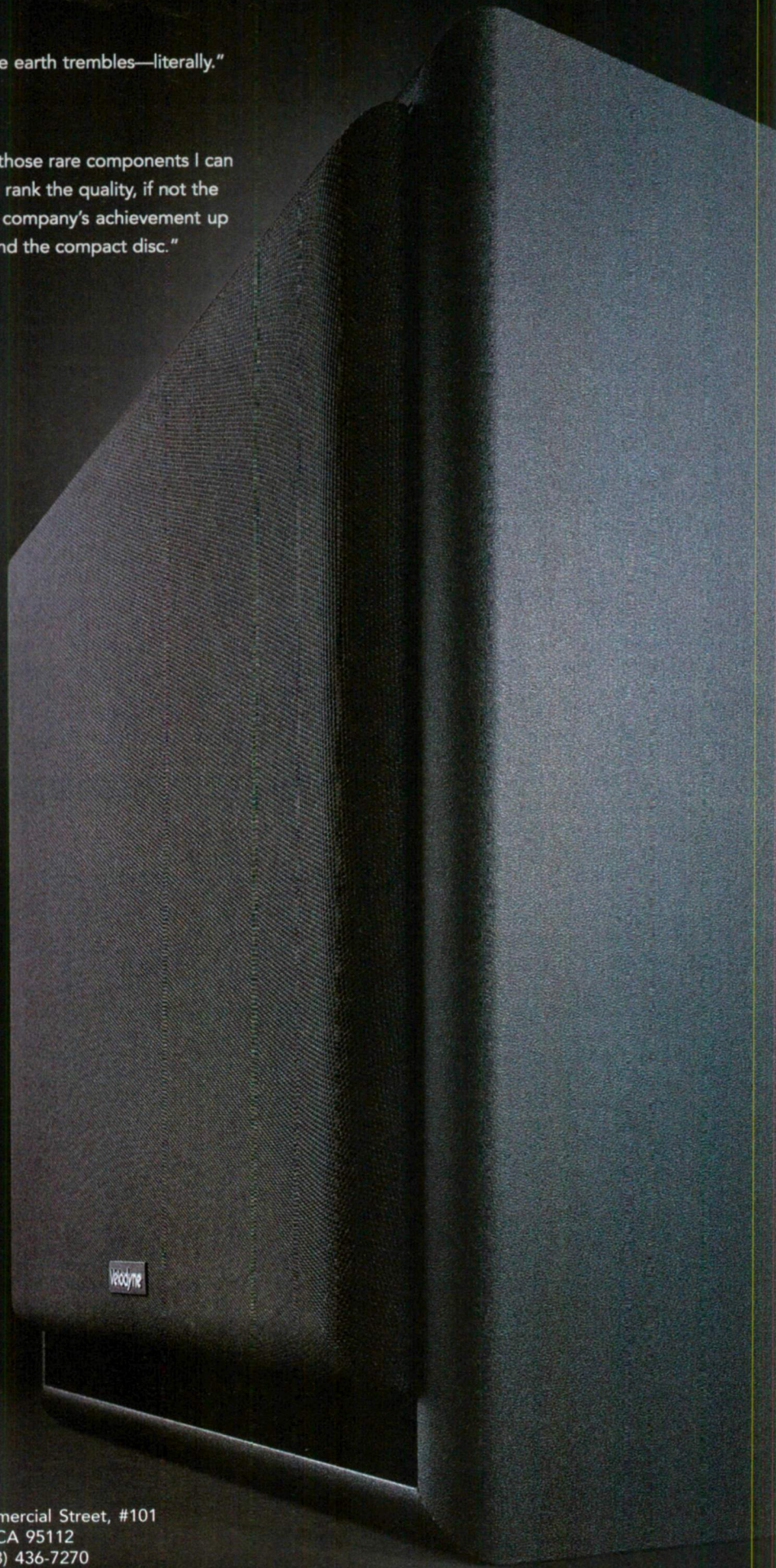
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Only two digital inputs.
No on-screen display; limited front-panel readout.
Some bass-management limitations.

surrounds; a second spring-loaded pair is provided for extension speakers. The only other rear-panel feature is a pair of minijacks for interconnecting components via Kenwood's unified-remote "smart" protocols.

The VR-209 is even simpler up front, with three knobs and fifteen pushbuttons, only four of which — Input Mode, Listen Mode, Sound, and Setup — are likely to see much daily use. Smaller buttons select tuner modes, speakers, and so on. The biggest knob controls master volume. One of the smaller ones is an input selector, and the other is marked Multi Control and adjusts parameters for the mode selected by the four main buttons. In tuner mode, Multi Control functions like an old-fashioned rotary tuning knob — but one smart enough to auto-seek the next station up or down in response to a brisk twist. The main display is a simple blue window with dot-matrix alphanumeric and a few indicators.

The VR-209 is a good deal smaller and significantly lighter than most A/V receivers today, both big pluses in my book. Some credit goes to Kenwood's KAM-1 power modules, which are said to "increase amplifier efficiency to 50 percent, converting up to five times more power to sound than conventional amplifiers." (Wrong! Loudspeakers convert power to sound, not amplifiers — but we get the idea.) A peek inside revealed that the KAM-1s are two colossal integrated circuits, one slightly larger than the other — damn near the size of the average pocket-pager. Otherwise, the interior was astonishingly bare: there was room for another half a receiver in there, easy.

During setup, the VR-209 sprang no real surprises, only a quirk or two related to — you guessed it — bass management. If you switch the subwoofer setting to "no," for example, so that you have full-range left/right outputs, the only choices for the center channel are "no" and "yes" — no full-range center-

channel sound for you! The next parameter, for the surround channels, is a "yes"/"no" thing no matter what; full-range surround channels are just not on the Kenwood's menu. This makes setting up the VR-209 as idiot-proof as possible, though at some sacrifice in configurability.

The VR-209's channel-balancing procedure worked well enough and kept their relative levels within about 1.5 dB over the volume control's full useful range. But its on-board pink-noise generator circulated through the five channels way too fast for effective measurement — an annoyance, if only a small one. The resulting channel balances agreed with the settings dictated by calibration noise signals from test discs, something else I've not always found to be so among budget A/V receivers.

The only other significant setup choice is Input Mode, which lets you trim each analog input's level by 3 or 6 dB so that the loudness will be similar as you switch from source to source (wide-dynamic-range digital recordings typically sound much "softer" than, say, commercial FM radio). It's a nice touch in a price-chopping design. The

40 radio presets can freely mix AM and FM stations. And, unexpectedly, the FM reception was a bit above average. The FM sonics were not jaw-dropping but perfectly suitable for moderately serious listening even to classical music. As usual, AM reception was lousy.

The VR-209's surround presentation left very little to wish for. I listened happily to Delos's latest audio-only, 5.1-channel Dolby Digital disc, *DVD Music Breakthrough* (DV 7002). This full-length compendium of mostly orchestral classical chestnuts simply knocked me out. Sure, I'm responding to the excellence of the recording, but it speaks volumes that a \$400 receiver let its inherent qualities shine through. *Rhapsody in Blue*, although performed in a far "drier," more intimate space than most of the other pieces on the DVD, was among the most fascinating. You won't appreciate just how much a skillful 5.1-channel production can benefit even a nonhyped, naturalistic recording until you hear this one for yourself. It has timbral definition, articulation, and dynamic nuance for days. (Note to Delos: More! More! More!)

Of course, the VR-209 did the trick

IN THE LAB

DOLBY DIGITAL (AC-3) PERFORMANCE

All data obtained from Dolby Labs' AC-3 test DVD using dithered test signals, which set limits on measured distortion and noise. All channel-level controls and LFE attenuation set to 0. All speakers set to "large" if possible (see text). Reference input level is -20 dBFS; reference output level is 283 mV. All are worst-case figures.

Output at clipping (1 kHz, 8/4 ohms)
one channel driven (front)104/164 W
one channel driven (surround)....105/156 W
five channels driven (8 ohms)63 W

Distortion at 1 watt (THD+N, 1 kHz)
8 and 4 ohms.....0.03%

Noise (A-wtd)
left front-75.6 dB

Excess noise (with signal)
16-bit (EN16)+2.75 dB

Frequency response (worst case)
surround20 Hz to 20 kHz +0, -1.1 dB

Channel imbalance (individual channels set at 0-dB gain).....0.9 dB spread or less

Subwoofer output frequency response
18 dB/octave rolloff above 96 Hz

High-pass filter frequency response
11 dB/octave rolloff below 91 Hz

Max. unclipped subwoofer output
9.6 volts

Subwoofer distortion (master volume at -3, subwoofer trim at -3 dB)**23%

STEREO PERFORMANCE, DIGITAL INPUTS

Reference volume setting for noise is the same as for Dolby Digital; subwoofer off.

Linearity error (at -90 dBFS*).....+0.3 dB

Noise (A-wtd)-73.1 dB

Excess noise (with/without signal)
16-bit (EN16).....+2.8/+3.1 dB

Tone-control range
100 Hz.....±9.3 dB
10 kHz+8.3, -9.3 dB

Frequency response (in Source Direct mode)20 Hz to 20 kHz +0, -1 dB

TUNER SECTION

All figures are for FM only.

Sensitivity (50-dB quieting)
mono19.9 dBf
stereo41.0 dBf

Capture ratio (at 65 dBf).....1.1 dB

AM rejection.....63.2 dB


Selectivity
alternate-channel.....70.9 dB
adjacent-channel.....8.2 dB

* decibels referred to digital full-scale
** at 30 Hz, all six channels driven to 0 dBFS

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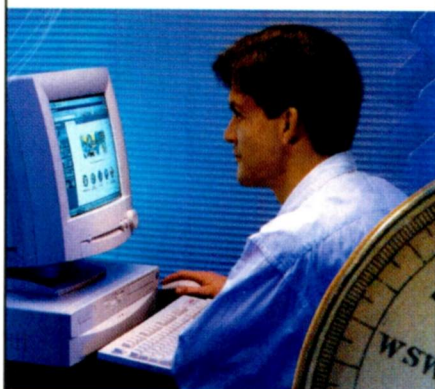


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testreport

on movies, too. The Dolby Digital soundtrack of *Contact* was particularly effective: the time/space-travel sequence, which can easily dissolve into harshness, maintained listenable detail and was pretty exciting even the 15th time around. (But was I the only one to find this a pretty dumb movie?)

With Dolby Pro Logic (DPL) material the Kenwood was exceptionally quiet, as good or better than several of last year's \$800-and-up A/V receivers, and it provided excellent separation, smooth sound pans, and clean, intelligible dialogue — all the hallmarks of digital-domain Pro Logic decoding done right. It passed all of my DPL torture tests, including auditioning the surround channel “naked” on such stumpers as the Copland *Fanfare for the Common Man* from the Delos *Surround Spectacular* Dolby Surround music CD. The only flaw I could find was a very mild touch of surround-channel “pumping” on ultracritical material, like the *a cappella* Palestrina choral selection on the same disc. Pumping was never audible in full-system listening, but it may have occasionally compromised DPL ambience to a very small degree.

So is there any mustard the Kenwood VR-209 receiver did not cut? Well, it did not deliver quite enough power for a full theatrical experience in my system when I ran all five speakers full-range. Despite its “100 watts x 5” rating, it ran about 3 or 4 dB short of “reference level” (the clean volume level I expect from a really good commercial cinema), clipping mildly but discernibly on exposed transients such as the mini-nuke detonation in *True Lies*. Adding a powered subwoofer made a huge difference, of course, but I'd still probably prefer a bit more headroom from the amp for a space as big as mine (21 x 16 feet). The lack of front left/right preamp outputs makes wattage upgrades a bit difficult, which was probably the idea (Kenwood also makes more expensive A/V receivers and no doubt would like to sell a few of those, too).

For serious two-channel listening, the VR-209 had plenty of power to feed my average-sensitivity B&W Model 803 Series 2s. But when I pushed it to real, front-row levels on clean, wide-range music like “Penguins” from Lyle Lovett's *I Love Everybody* (one of the best trap-drum recordings around),

clipping was fairly sudden and moderately hard.

The supplied, preprogrammed remote control is effective, with a relatively straightforward layout. You can cycle separately through the audio and A/V inputs using the Video and Audio keys, but there's no direct access to individual inputs. You can invoke multi-component sets of control codes to cover the basic commands of as many as seven source components, plus a TV set, from most of the top-selling brands.

The VR-209 is unusual in that when you program the remote, the receiver's display labels will automatically correspond to the component type. At the same time, it deletes nonprogrammed inputs from the remote control's Audio and Video input rotations — you have to program in a manual-component “placeholder” code set for old-fashioned, nonremote gear or for arcane components for which no codes exist on board. The input labeling is actually

Kenwood's VR-209 receiver left very little to wish for in 5.1-channel Dolby Digital playback.

pretty clever, but it's a bit disconcerting if you haven't, umm, bothered to read the manual (not that I actually *know* anybody like that). You could find that some of your inputs have vanished.

In general, I found the VR-209 acceptably easy to figure out and use. It's not the most elegant receiver in every ergonomic respect, but it's by no means the worst, either. There are no on-screen displays, and I didn't really miss them all that much. And I actually applaud the absence of the gruesome “extra” ambience modes for music sometimes encountered on entry-level A/V receivers — this daringly different Kenwood model offers only Dolby Digital, Pro Logic, and Dolby 3 Stereo. But one thing buyers surely won't be missing is the few hundred extra dollars they might otherwise have spent to get a good Dolby Digital receiver. With its extraordinarily high-value VR-209, Kenwood has rendered a genuine service to fiscally challenged home-theater aspirants everywhere. Now, guys, how about a \$249 DVD player? □



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Everything You Always Wanted to Know About Speakers



Explained by David L. Clark

YOU MIGHT BE a music maven and a home-theater highbrow. But admit it — there are some things about speakers that you just don't understand. There's no reason to be embarrassed. Ironically, while the speaker is the most important link in the audio reproduction chain, it's also the most misunderstood.

Just as children in the schoolyard often learn dubious "facts" of life that are passed on by more "experienced" friends, some hi-fi enthusiasts are misled by those who think they know better. So I'll try to set the record straight with answers to some of the most "sensitive" questions.

 BUT WERE AFRAID TO ASK

Everything You Always Wanted to Know About Speakers

Do I have to buy special home-theater speakers, or will my stereo speakers work well as the front left and right (main) speakers?

If you have an excellent pair of stereo speakers, keep them. They'll certainly sound better than cheap home-theater speakers. But it's important to understand that the design requirements for ideal home-theater speakers are different from those of traditional stereo speakers. In general, stereo speakers are designed to radiate sound over wider horizontal and vertical angles than the front speakers in a home-theater setup, and their optimum frequency response is along each speaker's axis. For two-channel stereo, those properties result in the best mix of direct sound from each speaker and reflected sound from the room. Many home-theater front-speaker designs, on the other hand, deliberately limit the vertical dispersion of sound to a comparatively narrow angle, which reduces the amount of sound reflected from the floor and ceiling. And the additional rear surround speakers in a home-theater setup are often designed to have a broad dispersion so that they can reproduce ambience with greater diffusion than you could get from two "regular" speakers.

Why is a center-channel speaker recommended for home theater? Stereo does just fine without it.

It does? Try listening to a recording of a center-stage soloist from the center, left, and right sides of your listening room. The soloist's image will shift as *you* change position. This directional distortion

is unacceptable for home theater, because the picture would be telling you one thing and your ears another. The solution is to have a separate center speaker with center-stage sounds directed to it.

What frequency range do rear surround speakers have to handle?

Well, for Dolby Surround recordings, the standard bandwidth is 70 Hz to 8 kHz, though information down to and below 50 Hz exists on some soundtracks. In 5.1-channel Dolby Digital recordings, the surround signals can be full-range. However, most surround processors allow any low bass intended for the surround channels to be redirected to a special subwoofer output, where it is combined with the contents of the low-frequency-effects (LFE, a.k.a. ".1") channel. So you can use small surround speakers that aren't designed to reproduce deep bass as long as you have a subwoofer in the system.

How are the speakers I need for 5.1-channel Dolby Digital surround different from those needed for Pro Logic?

The same speakers will do for both as long as the surrounds have adequate high-frequency response (most do). Remember to redirect deep bass for the surround channels to the subwoofer when you are setting the system up.

Do the center and surround speakers need to be driven with the same power as the front left and right speakers?

In 5.1-channel playback, the same maximum acoustic output may be required from the surround speakers as from the

front trio, just not as often. So to cover all bases, it would be best for the amplifier power to be the same — assuming that the front and surround speakers have the same sensitivity and are the same distance from the listener. (Lower-sensitivity surrounds will actually require *more* power to keep up with the front speakers.) The center speaker is the dominant one for home theater, so for a balanced sound it should be of high quality and be driven by as much power as the others.

What is a dipole speaker? For that matter, how many "poles" are there?

A dipole speaker is one whose radiation coming off the front is equal to the radiation coming from its back but reversed in phase. On the sides of the speakers, there is a "null" where the front and back soundwaves cancel each other. Dipole surround speakers for home theater are usually mounted on a wall so that the null is aimed toward the listening area. The direct radiation is aimed at the front and back walls of the room and reaches listeners only after reflection from room boundaries, making it difficult to perceive where the sound is coming from. (Surround sound is, after all, supposed to surround you!) Dipoles for home theater usually have drivers on opposite sides, one (or more) aimed forward and the other(s) aimed back. The front of the speaker, which faces the listening position, usually has no driver.

In contrast, large panel dipoles (electrostatics, for example) are usually associated with exotic high-end stereo systems, where they are placed so that listeners are on the main radiation axis. The front output is heard as direct sound, and the out-of-phase rear output is reflected from the wall behind the speakers. Bipole speakers are similar to dipoles, but the front and back radiation is in phase. The soundwaves combine at the sides, instead of canceling, which increases bass output.

A conventional speaker box with all of the drivers on one side could be called a "monopole." I guess you can design in as many "poles" as you want, but more will not necessarily produce better or even different results. Some listeners favor direct-radiating monopoles over dipoles as surround speakers, and some surround speakers are switchable between dipole and bipole modes to suit different program material, environments, or tastes.

My listening position is at the rear of the room with my back to the wall. How can I place speakers for a home



DAVE SLAGLE

This Infinity home-theater package is fairly typical, comprising two front left/right speakers, a "TV-top" center speaker, two wall-mountable surrounds, and a subwoofer.

theater or for multichannel (surround-encoded) music?

That is not the best setup, but it can work quite well if you locate the surround speakers high on the side walls facing each other across the listening area. Dipole surround speakers can be located further forward and lower on the walls if they are angled so that the null of each speaker is aimed at the listening area.

Should I switch back to stereo mode when I play CDs in my home theater?

I know a lot of people say that you should switch back to two-channel stereo because it is "proper." I say you should try it both ways. You might find that the music sounds more natural in Pro Logic mode or in an ambience-enhancement mode for music that also uses the center and

surround speakers. Years ago, *Stereo Review* contributing technical editor Tom Nousaine and I ran a blind test at an Audio Engineering Society convention. By a wide margin, the engineers preferred Pro Logic over two-channel stereo for playback of stereo program material.

What is the difference between biwiring and biamping?

To biwire a speaker, you simply run two cables from one amplifier channel to its associated speaker, which — if it's biwireable — will have *two* sets of input terminals. The two sets are joined by metal straps when the speaker is not biwired. As you might expect, since the electrical circuits in both cases are equivalent, biwiring provides little benefit.

Biamping is quite another thing, re-



The metal strap normally connecting these two sets of speaker terminals has been removed for biwiring or biamping.

quiring separate amplifiers for the speaker's woofer and the tweeter. In the first variation, which I'll call "parallel amplifying," each amplifier is fed an identical input. I consider this nearly as useless as biwiring — each amp just has to work a little less.

The Basics

How does a speaker work?

A speaker is a two-step energy converter, or transducer. First it converts the amplifier's electrical energy to mechanical motion, and then that motion is transferred to a radiating device that, in turn, moves enough air to produce sound. Only a few kinds of "motors" are used for the electrical-to-mechanical conversion: magnetic, electrostatic, and piezoelectric. Air movers can be cones, domes, ribbons, or panels (flexible or rigid).

In a conventional speaker driver, an amplified audio signal is fed to an electromagnet called the voice coil. The varying magnetic field that results from changes in the signal's voltage causes the voice coil to move toward or away from a big magnet in the driver's frame. A cone (or dome) attached to the voice coil is thereby moved in proportion to the audio signal, producing sound. This basic "dynamic" speaker was invented 70 years ago, and it's taken that long to refine the concept to today's high performance levels.

Another type of speaker is called electrostatic rather than dynamic. It uses high voltages to produce electrostatic attraction and repulsion over the entire surface of a large but very thin and flexible flexible diaphragm, instead of using a moving voice coil to vibrate a cone or dome. A similar-looking speaker that also uses a large, flat diaphragm is called planar-magnetic. Instead of electrostatic forces, the planar speaker relies on many small magnets interacting with the diaphragm, which is embedded with current-carrying wires. The large diaphragms of the electrostatic and planar-magnetic speakers are better suited for use as boxless flat dipoles than in conventional boxes.

Newer, more "exotic" speakers include rigid panels from NCT Audio (see page 64), NXT, and others that use a piezoelectric "motor," and "HyperSonic" speakers, which mix ultrasonic waves. Both types are unproven in the hi-fi marketplace.

Which are better, 4-ohm or 8-ohm speakers?

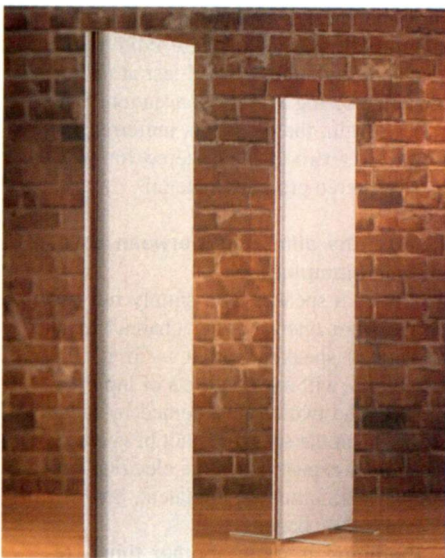
A speaker's impedance rating has nothing directly to do with its sound quality. Speakers should be loosely matched to the capabilities of the amplifier driving them. Check the specs on the amp and on the speaker. Most amps will be able to drive a single set of 4-ohm speakers to a higher power than a single set of 8-ohm speakers — that's fine if the 4-ohm speakers can handle the added power — but some inexpensive receivers will shut down if they sense a load of much less than 8 ohms. Impedance can be important, however, if you want to connect a second set of speakers to an amplifier. You might overstress it with two pairs of 4-ohm speakers even though an additional pair of 8-ohm speakers would be okay.

I've got my eye on an amplifier rated at 200 watts per channel, but my speakers are only rated at 100 watts. Will the bigger amp give me any improvement in sound, or will I just blow the speakers?

Your system will likely sound a trifle louder and cleaner because you may eliminate clipping on the momentary peaks in music or sound effects. Of course, power *is* what ultimately blows speakers when too much is applied for too long, so be careful.

The reason matching amplifier power to speaker power handling is *not* straightforward has to do with the duration that the power is applied. Music makes high-power demands for very brief periods. For example, a dynamic piece of classical music may require more than 100 watts for transient sounds but have an *average* power requirement of less than 1 watt. Speakers are well suited to reproduce such wide variations in level. Amplifiers, on the other hand, are rated to deliver their maximum power continuously and usually have very little "headroom" to handle brief peak demands above that. The bottom line is that even a smallish amp can burn out the speakers connected to it in a minute or less when playing full-power test tones (something only speaker reviewers ever listen to). Your best strategy is to turn down the volume any time you hear distortion. That will let you use all of your available power on peaks, if necessary, while maintaining a low average output power level.

Everything You Always Wanted to Know About Speakers



Top left, the Bose Acoustimass 5 Series III three-piece sub/sat system; bottom left, JBL's HLS Series speakers feature horn-loaded tweeters; above, Magnepan's planar-magnetic MG1.6/QR speakers.

In the second variation of biamping, line-level outputs from an active crossover are fed to the amplifiers; one gets the low frequencies, the other the highs. Then the bass amp directly drives the woofer while the other amp drives the tweeter (or the high-frequency components). This approach *does* make sense because it substitutes an active crossover for the speaker's passive crossover components. This technique never caught on commercially until home theater, where it takes the form of a high-pass filter in the surround decoder and a low-pass filter in the powered sub.

Why are some speakers so big? I've seen some small cubes that would solve a lot of placement problems.

First off, a big woofer needs less amplifier power and is able to produce bass that is lower, louder, and far less distorted than a small woofer. Therefore, bigger is better if you want truly accurate sound or just like lots of bass and have room for big boxes in your listening room. The big problem with the little "cubes" is getting them to blend smoothly with their associated subwoofers.

Why does the room have so much effect on the sound of a speaker system?

Because you get to hear every sound more than once: first directly from the speaker, then reflected and reverberated from the room boundaries. This isn't a bad thing. Stereo music in a moderately

"live" room with a pleasantly reverberant character sounds much better than in a "dead" room (usually with carpeting and heavy drapes) that has little or no reverberation. But movie soundtracks tend to sound better in rooms with less reverberant acoustics because the program material itself supplies the ambience to the surround speakers. A good movie theater's acoustics are far more "dead" than a good concert hall's. When it comes to low-end performance, the room itself contains and strengthens bass output. Without a room's walls, ceiling, and floor, we'd need much more powerful woofers. Don't believe me? Put a speaker outdoors and see how much its apparent bass output is reduced.

A friend of mine warns against using equalizers, even bass and treble controls. But my system has a booming sound quality that I'd like to get rid of.

Go forth and equalize. The overuse of equalization is what has given it a bad name in some high-end audio circles. In a perfect world, playback equalization would not be needed except to suit individual taste. In the real world, every room affects bass response in an irregular way. You can always improve the sound at a single listening position with careful use of an equalizer, but you'll never make it perfect throughout the room.

Equalization is *not* a cure for a bad room or a bad speaker system. After the right speakers are optimally placed in the

room, a moderate amount of equalization can often be applied to advantage in the bass and lower midrange (less often in the treble). Even if test instruments are used, the final tweak should be done by ear to achieve a natural sound.

I've seen some tall, flat speakers. What are they, and how do they work?

They were probably electrostatic or planar-magnetic speakers, because tall and flat is the form those designs naturally take. They are prized for precision imaging and spacious stereo reproduction, which are consequences of the radiation pattern of tall, flat speakers. The jury is still out regarding their suitability as front speakers in a home theater. Although thin, they are not often space savers because their overall area is large and they must be placed a fair distance from the wall behind them for the best sound.

What are the advantages of a horn on a speaker?

Horn drivers were very popular in the early days of hi-fi, when amplifiers were costly, because they enable a vibrating cone or dome to radiate more sound with fewer watts of amplifier power. Now that high-power amps are pretty cheap, speaker efficiency is not so important. However, a horn can also control a speaker's directivity, and that's the main reason for their continued use. A carefully contoured shallow horn on a dome midrange or tweeter can extend response, increase power handling, and improve the consistency of the radiation pattern.

Some speakers cost more than \$10,000 a pair. What can they possibly have that speakers costing one-tenth that much don't have?

Most listeners, myself included, are impressed with the sound of most expensive speakers, so they must have something. In part, it is the quality of their components and materials. A woofer made with a Kapton voice-coil former and edge-wound rectangular aluminum wire is a more expensive proposition than a pretty good one made with treated paper and round copper wire. Second, the cabinet finish of a \$10,000 speaker is likely to be of a fine furniture grade. (It had better be!) Third, alas, is that the economies of manufacturing, distribution, and retailing on a huge scale are just not there for premium-quality speakers. Ironically, one reason they cost so much is because not enough people buy them. It must be frustrating for the manufacturers.

I've heard that using too small an amplifier could damage my speakers. Is this true?

This is an old wives' tale that recirculates every now and then, and it just keeps getting repeated until people believe it. It's true that there is a theoretical mechanism for producing some energy in the tweeter's range by clipping a small amplifier with lower-frequency signals. So the usual dubious advice is to use a more powerful amplifier to prevent clipping, thus saving the tweeter from burning out. That's nonsense! If you burned it out with the small amp, you would have fried it that much faster with the larger amp.

I had a pair of 20-year-old speakers whose foam woofer "surrounds" had

turned into goo. What kind of surrounds should I be looking for in new speakers today?

There's really no need to dwell on what kind of material is used for the mechanical suspension, or surround, around the outer edge of a woofer cone. Manufacturers have told me that additives in any foam used currently for woofer surrounds give much better protection against "surround rot" from ozone or ultraviolet light. I've seen small ads in this and other audio magazines for foam fix-it kits and services. It might be worth investigating these before purchasing new speakers.

A friend of mine places small objects on top of his speakers, or between them and their stands, for better

sound. Could you explain how this is supposed to help the sound?

Easily. Humans have a huge capacity for self-delusion, and ignorance feeds delusion. Science opposes such ignorance, and it can easily be applied to test this hypothesis. Try to identify when the objects are in place and when they are taken away under blind test conditions. That's right, use a blindfold and have someone else make the switches *without* telling you what he's done. If you can't reliably hear a difference over numerous trials, there is no reason to use the objects. (Hint: You won't hear a difference!)

David L. Clark makes his living engineering audio for cars, homes, and computers. He likes to write about it, too.

The Lowdown



How is a subwoofer different from a woofer?

By three extra letters? Really, there's not much more to it these days. Many years ago, subwoofers were added to stereo speakers (which already had woofers) to cover the deepest bass with more power and less distortion. Today, a "subwoofer" is usually an integral part of a speaker system as a whole, whether it reaches the deepest bass frequencies or just covers part of what falls below the midrange. A (sub)woofer in a separate cabinet offers the advantage of letting you position it for the best bass while placing the satellites for the best imaging and ambience.

Why are most subwoofers ported?

A port (or vent) is part of an acoustic resonator that helps the speaker reproduce bass. A sealed speaker has no such resonator, and a bandpass enclosure may have more than one. Debate on the relative merits of the three types gets pretty technical, but it has to do largely with performance below the resonant frequency and with transient response.

In my opinion, it is difficult to pass up the performance advantage of a port in a subwoofer designed to reproduce the very lowest audible frequencies (16 to 32 Hz). For satellites or speakers designed for flat response only *above* 50 Hz or so, the purist in me prefers sealed enclosures and their lower distortion below the cutoff frequency. However, ported and bandpass enclosures win in the "most bang for the buck" category.

How should I set subwoofer level?

It's a subjective thing, not a technical issue, so use your ears and experiment. To save time, I start by using my spectrum analyzer (or you can use a sound-level meter). But final tuning should always be done by ear. For source material, I recommend a classical orchestral CD, not a movie soundtrack with lots of special sonic effects like explosions. Listen for a seamless blend from the upper bass down to the bass handled by the subwoofer. You should never be aware of the sub as a separate source of sound. A double-bass instrument should be free of booming or droning, and a deep voice should never elicit a groan from the sub. Most subwoofers have a few controls to help you achieve a natural blend with the main speakers: a volume knob, a crossover control, and, sometimes, phase and polarity controls. Then there's location in the room. Experiment!

Where should I put my subwoofer for best performance?

Take Tom Nousaine's advice and start by putting it in a corner. While I (and others) don't agree that this works best for *every* installation, Nousaine has run the experiments and analyzed the data. (I respect that more than the "theorizing" I often hear.) Placing a sub in a corner of a rectangular room is guaranteed to excite all of the room's natural "modes," or resonant frequencies, thus producing maximum output. Also, exciting fewer room modes is likely to produce a less even response. However, very few rooms are sealed rectangles of the proper proportion, and the beauty of a separate subwoofer is that you can put it anywhere. If a corner is inconvenient, put it where it is convenient, then listen for the quality of the blend and the level of distortion at maximum output. There is no harm in using a noncorner location, but try a corner *first*.



The back panel of Paradigm's PW-2200 powered sub has level, cutoff-frequency, and phase controls.

What does \$300 buy?

Speakers that sell for \$300 a pair are like utility players — flexible, compact, inexpensive, and usually the first to be traded. They can anchor a modest home-theater system or work great as dorm-room speakers, and they are often the best choices for second systems in a kitchen, shop, or office. Chances are you had a pair in your first stereo.

But their attractively low cost and high versatility have caused this hardy speaker strain to proliferate like tribbles. Innocent folk setting out to buy a nice, simple pair of speakers can quickly find themselves overwhelmed by the sheer number of models.

That's where we come in. We asked a dozen leading manufacturers to send us their best \$300-a-pair speakers, give or take a few dollars, for comparison.

Four manufacturers declined to participate. Among the eight pairs we received, two models washed out in preliminary trials. We then locked ourselves in one of the state-of-the-art recording studios Ken Pehlmann runs at the University of Miami, programmed his cell phone for the local pizza joint, and put the six speakers through their paces with a variety of CDs (see "Acid-Test CDs" on page 78). We also asked Tom Nousaine to provide a set of basic measurements for each speaker (see page 77).

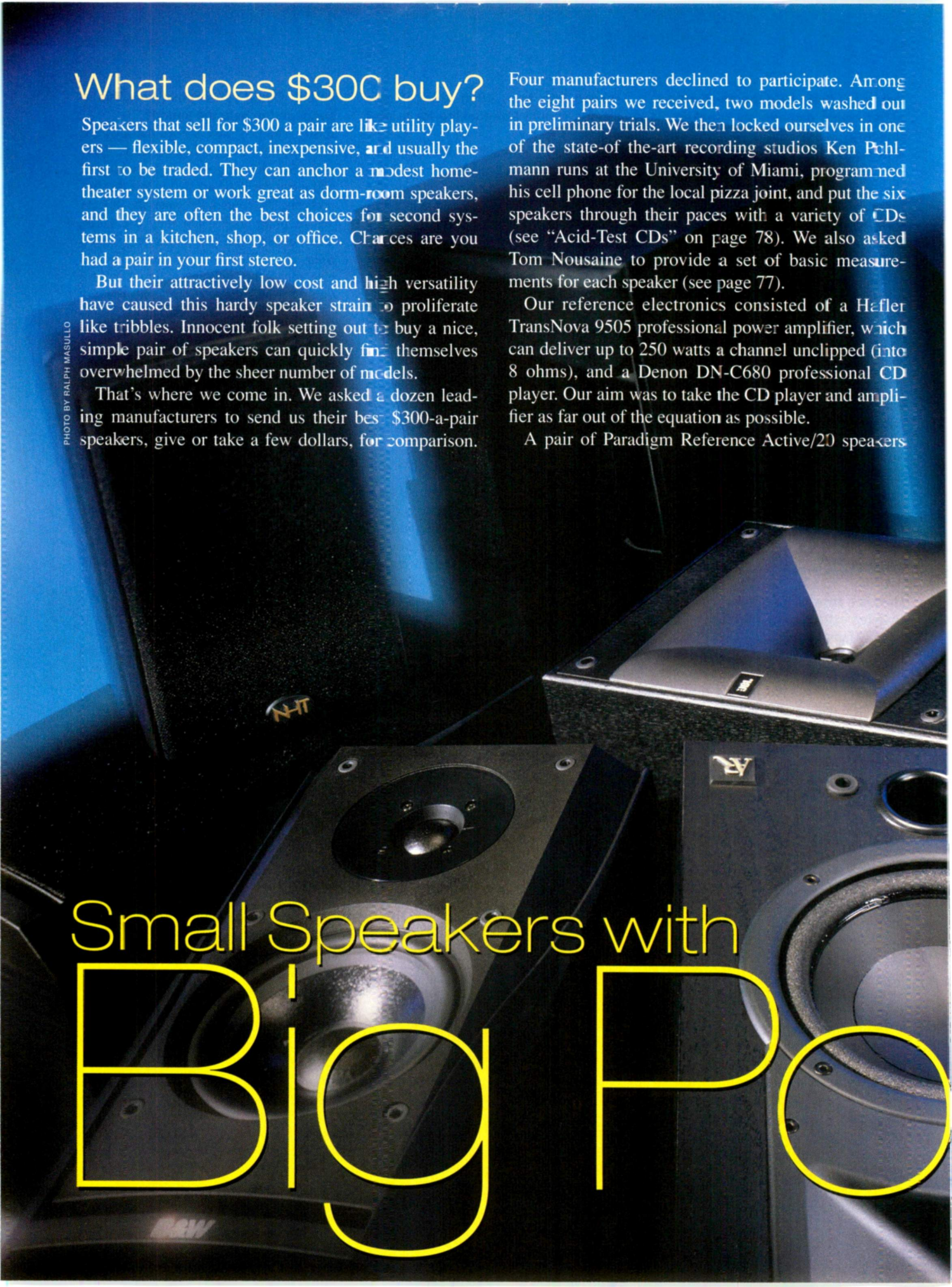
Our reference electronics consisted of a Hafler TransNova 9505 professional power amplifier, which can deliver up to 250 watts a channel unclipped (into 8 ohms), and a Denon DN-C680 professional CD player. Our aim was to take the CD player and amplifier as far out of the equation as possible.

A pair of Paradigm Reference Active/20 speakers

PHOTO BY RALPH MASULLO

Small Speakers with

BIG POWER



served as our reality check. Like the speakers under review, the \$1,600-a-pair Paradigm model is a compact, two-way design, but it has a built-in power amp and electronic crossover. The Active/20, which has been energetically praised by just about everyone who's heard it, gave us a convenient baseline for comparison.

The speakers under review were matched to a set reference level within 0.25 dB. To insure a fair comparison, each pair was set up in the same positions. Except when we were evaluating dynamics, all listening was done at set, repeatable levels.

We judged this sextet against our notion of what an "ideal" small, affordable two-way speaker should be able to do. (Judging them by the standard of the best loudspeakers regardless of size or cost would be absurd.) We listened to each pair for an extended peri-

od, recording our impressions as we went along, and rated them from worst to best on a five-point scale in four areas of sound quality: timbral uniformity, imaging, bass extension, and dynamics (see "How to Audition Speakers" on page 79). Our rating system didn't give us as much room to roam as, say, a 10- or 100-point scale, but that was the idea — to force us to make the tough calls. We did *not* discuss our observations with each other until we had each auditioned all of the speakers, so our individual opinions printed here were reached entirely independently.

Now, turn the page for our take on six models, all worth considering if you're in the market for a pair of small, affordable speakers.

by Daniel Kumin
and Ken C. Pohlmann



tentia

Acoustic Research Model 216PS

Kumin's Take

Timbral uniformity ㊦ ㊦ ㊦ ㊦ ㊦
Imaging ㊦ ㊦ ㊦
Dynamics ㊦ ㊦ ㊦ ㊦ ㊦
Bass extension ㊦ ㊦ ㊦ ㊦ ㊦

Tonal balance from the AR 216PS pair was very nice: smooth over the full spectrum, open, pleasantly airy, and with excellent freedom from male-vocal boom or bloat. Only a mild touch of "honk" in the upper midrange — audible, though really quite subtle, on both the Amanda McBroom and James Taylor test tracks — marred the timbres of male and female voices.

Instrumental/vocal placement and stability were balanced, natural, and spacious. The Smetana String Quartet No. 1 sounded great. Soundstage depth was slightly shallower than with the best speakers in this test, and a tick narrower, too, which cost the ARs a bit. (But some listeners will prefer their somewhat "tighter" pattern.)



The ARs went as low as the best in this group, and they sounded solid, warm but tight, and satisfyingly big while playing the unusually powerful fretless-bass work on the Diane Schuur disc, which can too easily sound overwrought. The speakers were punchy, clean, and crisp at all levels. The power amp clipped before (or maybe precisely at) the point of audible "splating" with the backbeat snare/bass-drum unisons on the tracks by the Thom Rotella Band and by Flim & the BBs.

Pohlmann's Take

Timbral uniformity ㊦ ㊦ ㊦ ㊦ ㊦
Imaging ㊦ ㊦ ㊦
Dynamics ㊦ ㊦ ㊦ ㊦ ㊦
Bass extension ㊦ ㊦ ㊦ ㊦

The AR 216PS speakers provided a bright, clean sound that was appealing with all types of music. The timbre was

accurate, with a slight upper-midrange peak (at least in this listening room) that gave a bit of harshness to female vocals and upper-range percussion. Still, this speaker sounded very neutral and delivered satisfying, realistic reproduction.

The imaging was accurate and stable, but as a result of the necessary tradeoff between imaging accuracy and size, the AR's images were somewhat small. For example, in the Smetana string quartet, the group was precisely placed on stage, but their instruments seemed too small. Image accuracy or size — you choose.

Bass response was excellent. The kick drum on the Jennifer Warnes disc was strong, with a punch that was both accurate and clean, free of boom. But the sound of the bass guitar was a bit on the small side. While this could be attributed to an imaging problem, it seemed fairer to chalk it up to simple bass rolloff.

These speakers handled high volume levels with aplomb, even highly percussive tracks, filling my big studio with suitably driving rock-and-roll. Although the woofers audibly bottomed out at very loud levels, these speakers will come in handy if you want to break your lease — even better, they will do it with relatively low distortion. The AR 216PS impressed me very much by its neutral sonic character even at loud levels.

B&W DM302

Kumin's Take

Timbral uniformity ㊦ ㊦ ㊦ ㊦
Imaging ㊦ ㊦ ㊦ ㊦ ㊦
Dynamics ㊦ ㊦ ㊦ ㊦
Bass extension ㊦ ㊦ ㊦

I found the B&W DM302 an awfully hard speaker to rate on timbre since its overall character was quite natural-sounding and accurate. However, I heard a broad and fairly significant peak — more of a plateau, really — in the "presence" region of the midrange. This caused male voices like James Taylor's to sound somewhat cupped and female vocals to sound slightly forward. The cello choir in the Villa-Lobos *Bachiana Brasileira* No. 1 also sounded a little aggressive — but the same factors increased the perceptible detail noticeably.

Imaging was top-shelf: the Villa-Lobos and Smetana recordings had a lush,



deep, and spacious string sound, without artificial exaggeration. The studio-recorded pop cuts by Phil Woods, Taylor, and others maintained tight focus and sharp localization while still displaying good stage depth. The B&Ws put up a slightly narrower stage width than some of the other speakers in this test, but I didn't think the differences were enough to score it down.

Deep bass was not this speaker's greatest strength, though it performed quite solidly. Bass extension was perhaps a half-octave less than that of the best in the group. I also felt that the DM302 sounded a tad "woofy" when pushed hard in the 50- to 80-Hz region. Dynamics rated very high, however, since the speakers absorbed the full output of the power amp (250 watts per channel) without exhibiting any clear limitations or changing character in any other significant way.

Pohlmann's Take

Timbral uniformity ㊦ ㊦ ㊦ ㊦ ㊦
Imaging ㊦ ㊦ ㊦ ㊦ ㊦
Dynamics ㊦ ㊦ ㊦ ㊦
Bass extension ㊦ ㊦ ㊦ ㊦

The B&W DM302 presented excellent tonal balance, with a transparency that was quite exciting. Its playback of difficult pop and orchestral tracks was extremely clean, with only slight coloration. The sound quality was very crisp, but never harsh or artificial, always very realistic. In particular, I was impressed by the smooth upper midrange and remarkably accurate high end. It had the best tweeter in the group, as was clear from the honest reproduction of the ambience processing on the narrator's voice in the selections from Philip Glass's opera *Akhmaten*.

The imaging was very good, with an excellent left/right soundstage. The images extended appropriately beyond the physical position of the speakers while never leaving a hole in the middle. The soundstage depth was slightly reduced on some of the orchestral recordings with hall ambience, but the synthesized stage depth was correct (and excellent) on the multitrack pop albums, like Paul Simon's *Graceland*.

Bass response (below about 100 Hz) was quite good, with percussion that was tight and punchy on the tracks from *Graceland* and Jennifer Warnes's *Famous Blue Raincoat*. The lowest half-octave was slightly deficient with Madonna's *Ray of Light*, but still excellent for speakers in this price category. You could be quite happy with these speakers even without adding a subwoofer.

This B&W speaker could play very loud without sounding compressed. In some cases I heard a slight timbral change on the loudest peaks — not amplifier clipping but the kind of tightness that occurs when a driver's excursion is maxed. Still, it was less than I've heard from many other speakers in this respect. The B&W DM302 impressed me. I can honestly say that it let me hear things on these CDs that I had never heard before. Because of its transparency, this little B&W is my favorite in this group of six.

JBL HLS610

Kumin's Take

Timbral uniformity ㊦ ㊦ ㊦ ㊦ ㊦
 Imaging ㊦ ㊦ ㊦ ㊦
 Dynamics ㊦ ㊦ ㊦ ㊦ ㊦
 Bass extension ㊦ ㊦ ㊦ ㊦

The JBL HLS610 elucidated rather neatly one of the enduring paradoxes of listening comparisons: different is not always better — or worse. The overall timbral effect of the HLS610 included a couple of subtle but distinct differences from the other five speakers, yet it was in no way inferior to any of them.

All of our vocal test tracks, both male and female, sounded warm yet very open, fully defined, and lucid on the JBLs. String bodies, including those in the rather revealing passages on the Philip Glass and Villa-Lobos recordings, sounded balanced and articulate, with proper "bite" but no harshness. Top-octave balance was just about perfect to my ear: Kenny Washington's "talkative" drumming on the Phil Woods tracks was crisp, present, and "up front," without a hint of spit, sizzle, or lisp. There was a pronounced change when I listened to the JBLs about 30 degrees or more off-axis, where I encountered a slight midrange honk.

Imaging was a bit tougher to call. The JBLs were as good as the best in



every aspect of imaging except a slightly restricted soundstage depth with the Villa-Lobos and Smetana recordings. The variation was subtle, but in the end I deducted a point for it.

Similarly, bass extension was just short of the best I've heard. The low end sounded great, with round but defined tone and no loss of transient "speed" — perhaps the best overall combination of fullness and punch over the entire bass range. But the HLS610 fell about a quarter-octave short of the best in ultimate deep-bass power. Dynamic performance was pretty much unfettered: the power amp ran out of gas before the speakers misbehaved in any overt way. The HLS610 appeared to thrive on the loud life — a trait of JBL speakers since time immemorial.

MANUFACTURER'S SPECIFICATIONS

	Tweeter	Woofer	Enclosure	Size (HxWxD)	Weight	Finish	Price
ACOUSTIC RESEARCH 216PS Acoustic Research, Dept. SR, 527 Stone Rd., Benicia, CA 94510; phone, 707-748-5940; Web, www.acoustic-research.com	1-inch horn-loaded	6 1/2-inch cone	ported	14 1/2 x 8 1/2 x 9 inches	13 pounds	black woodgrain vinyl	\$299 a pair
B&W DM302 B&W, Dept. SR, 54 Concord St., North Reading, MA 01864; phone, 978-664-2870; Web, www.bwspeakers.com	1-inch soft-dome	5-inch cone	4th-order ported	12 5/8 x 7 1/4 x 8 7/8 inches	9 pounds	black ash vinyl	\$250 a pair
JBL HLS610 JBL, Dept. SR, 250 Crossways Park Dr., Woodbury, NY 11797; phone, 800-336-4525	1/2-inch dome	6 1/2-inch cone	ported	16 1/4 x 8 1/4 x 9 1/2 inches	14 pounds	brushed satin-black	\$299 a pair
NHT SUPERZERO XU NHT, Dept. SR, 535 Getty Court, Benicia, CA 94510; phone, 800-648-9993; Web, www.nhthifi.com	1-inch soft-dome	4 1/2-inch cone	sealed	9 x 5 1/2 x 4 7/8 inches	5 7/8 pounds	black or white	\$275 a pair
ROCK SOLID MONITOR Rock Solid Sounds, Dept. SR, 54 Concord St., North Reading, MA 01864; phone, 800-370-3742	1-inch cone	5-inch cone	4th-order ported	9 1/4 x 5 1/2 x 6 inches	5 pounds	black, white, or gray	\$300 a pair
SOUND DYNAMICS RTS-3 Sound Dynamics, Dept. SR, 3641 McNicoll Ave., Scarborough, Ontario M1X 1G5; phone, 416-321-1800; Web, www.sound-dynamics.com	1/2-inch dome	6 1/2-inch cone	ported	14 1/2 x 8 3/8 x 8 1/2 inches	10 1/2 pounds	black ash or rosewood vinyl	\$280 a pair

Pohlmann's Take

Timbral uniformity ㊦ ㊦ ㊦ ㊦ ㊦
Imaging ㊦ ㊦ ㊦ ㊦ ㊦ ㊦
Dynamics ㊦ ㊦ ㊦ ㊦ ㊦
Bass extension ㊦ ㊦ ㊦ ㊦ ㊦

The JBL HLS610 speaker presented a very even spectral balance. The timbre was fairly smooth across the frequency range. The upper midrange was also very smooth (a rarity in this price class) and slightly pulled back. This made it easy to listen to — especially on the Amanda McBroom tracks — but it also darkened the sound on things like orchestral brass. The trombones in the Philip Glass opera had a slightly muted quality. Mellow speakers can be quite seductive, and some listeners will prefer this dark quality, but I judged it a very slight negative.

The imaging was excellent, with an accurate soundstage. The Phil Woods soundstage was nicely spread in the left/right panorama, and I also appreciated the generous front-to-back depth. The speakers presented a good center image, but the image seemed a little diffuse in the upper bass. I attributed this to a spectral anomaly rather than to an imaging problem per se.

Bass response was very good. The kick drum on the Jennifer Warnes CD was very tight and punchy but never boomy. Still, the speaker was slightly deficient in the bottom half-octave — perhaps an unfair criticism to make against a \$300 bookshelf speaker.

This speaker is true to JBL's roots in designing and building professional monitors. It played loud and clean, with only slight compression on loud percussion passages, and its power handling was superb. If you haven't listened to any small JBL speakers lately, mark the HLS610 down as something worth hearing.

NHT SuperZero Xu

Kumin's Take

Timbral uniformity ㊦ ㊦ ㊦ ㊦ ㊦
Imaging ㊦ ㊦ ㊦ ㊦ ㊦
Dynamics ㊦ ㊦
Bass extension ㊦ ㊦ ㊦

The NHT SuperZero Xu sounded mostly smooth through the vocal range and was free of significant colorations except a modest, but consistently audible, "narrowness" or nasality. Midbass and male vocals were free of boom or chestiness, however, and the fine top-

octave extension and transparency were marred only by a mild lisp and a tinge of dryness on things like the ride-cymbal brush work in the Phil Woods cuts.

Imaging was great: the NHTs hit just about the perfect balance of depth, spaciousness, and soundstage precision. Achieving a lifelike compromise between these warring elements is no mean feat for any speaker. The Villa-Lobos piece, with its highly ambient space and dramatic, deep soundstage, was rendered beautifully.

The little NHT had no really deep bass to speak of — no surprise! — but it compensated by delivering tight midbass, especially with the James Taylor CD, which is warm to a fault. Deep-bass rolloff was noticeable on most pop and rock cuts. There was some useful output in the lower octaves, but a significant rolloff below 60 Hz or so was particularly evident with the Messiaen organ Mass and Madonna's hip-hop tracks. Dynamic linearity was only fair, as the NHT did not maintain its full quality at high volume levels.

Pohlmann's Take

Timbral uniformity ㊦ ㊦ ㊦ ㊦
Imaging ㊦ ㊦ ㊦ ㊦
Dynamics ㊦ ㊦ ㊦
Bass extension ㊦

The NHT SuperZero sounded thin, which greatly detracted from male vocals and almost everything else in the lower midrange. For example, James Taylor's usually full voice was reduced to a hollow, slightly nasal shell. On the other hand, male vocals didn't sound as "chesty" as they do with speakers that overly emphasize the midrange. On a more positive note, the upper midrange was smooth and flattering to female vocals, with only a slight harshness on loud passages.

As for imaging, the SuperZeros delivered an accurate soundstage, with instruments nicely defined and solidly placed. However, the panorama was somewhat narrow and lacking in depth.

In the Smetana string quartet I missed the full front/back dimension that is successfully captured in this recording, and the hall ambience was a touch too dry. This tradeoff between soundstage accuracy and size is a classic dilemma.

The speaker had no usable low end. Deep bass was missing, and although the midbass was warm, it was noticeably rolled off. You'll definitely want to add a subwoofer. On the bright side, at least the upper bass wasn't boomy. The sound was also compressed at loud levels, and the overall volume was diminished. The speaker can probably play loud enough for a small room, but it lacks the horsepower to fill bigger listening rooms with clean sound. Overall, although the original NHT SuperZero has a great reputation, I would not recommend this plastic-enclosure version unless small size is your paramount criterion.

Rock Solid Monitor

Kumin's Take

Timbral uniformity ㊦ ㊦ ㊦
Imaging ㊦ ㊦
Dynamics ㊦ ㊦ ㊦
Bass extension ㊦ ㊦ ㊦ ㊦

Among the smallest speakers in the group, the Rock Solid Monitor still held its head up. Timbral balance was natural as a whole, but a couple of pronounced resonances, one in the upper midrange and one an octave or more higher, slightly but audibly colored a good deal of the music I listened to. This coloration was most evident on Amanda McBroom's "The Rose," where her powerful contralto sounded a shade "hoity" (a touch of "megaphone" effect), and there was discernible rasp on sustained massed-string tones in the tracks from Glass's *Akhmaten*. However, the speaker was admirably free from midbass bloat, a test that many mini-speakers fail miserably by pumping up the upper-bass frequencies (around 80 Hz) in a vain effort to disguise their lack of response lower down.

While their imaging was broad and (ouch!) solid, the Rock Solid Monitors' soundstage seemed to hover, cloudlike, around the two speakers instead of spreading smoothly across the full space between and beyond them. Depth was no better (or worse) than average, and spatial localization was good.

Deep-bass performance was a bit unexpected: the Rock Solid Monitor cur-





tailed its acoustic output sharply in the bottom two octaves, yet it did not fall off the map altogether below 80 Hz, as a lot of minis do. I heard useful (though significantly attenuated) output far below that, just enough to let my ears follow the music. Moreover, the speakers puffed an astonishing volume of air from their tiny front ports without producing obvious chuffing sounds or other distracting noises.

In terms of dynamics, the Rock Solid Monitor was no champ — no surprise given its size — but it fared better than I would have guessed. In comparative terms, this little Brit fell only about 6 dB short (at a guess) of the best-sounding speakers in the group during our high-volume rock-and-rhythm-section workouts. Beyond that point it simply refused to play any louder (particularly in the bass), but the output stayed fairly articulate and free of harshness until a decibel or two on up the scale, when it rapidly hardened and brightened.

Pohlmann's Take

Timbral uniformity 🎵 🎵 🎵
 Imaging 🎵 🎵 🎵
 Dynamics 🎵 🎵 🎵
 Bass extension 🎵 🎵

The Rock Solid Monitor presented a fairly neutral tonal balance, with no

disastrous spectral flaws. However, it was certainly not perfect. Most obviously, it was slightly thin, presenting an overly enunciated sound with unwanted brightness as well as a hollow, "tubey" effect on Lari White's vocals. Similarly, the high end was slightly harsh at louder listening levels, especially on percussion. The lower midrange lacked power and punch, but its tonal quality was okay.

Left-to-right soundstaging was good, with images that were well defined and stable. In that respect, the Rock Solid Monitor is a good speaker. However, with some orchestral music the stage depth collapsed, making the sound seem flat compared with that of speakers that provide better front-to-back perspective. Still, this fault was relatively minor.

Low bass was lacking. The small woofers simply could not reproduce adequate bass below about 100 Hz. The ports huffed and puffed mightily (I could feel the breeze a meter away!), but to no avail. What bass there was, was not terrible — relatively tight, not boomy — just thin. I would recommend using a subwoofer to augment the low end.

This small speaker played much louder than its size might suggest. Moreover, loud levels were reproduced cleanly. At the upper limit, compression was apparent on percussive transients, but this was not a huge problem. For its size, the Rock Solid Monitor is acceptable, but if I was going to be stranded on a desert island, I would pick another speaker.

Sound Dynamics RTS-3

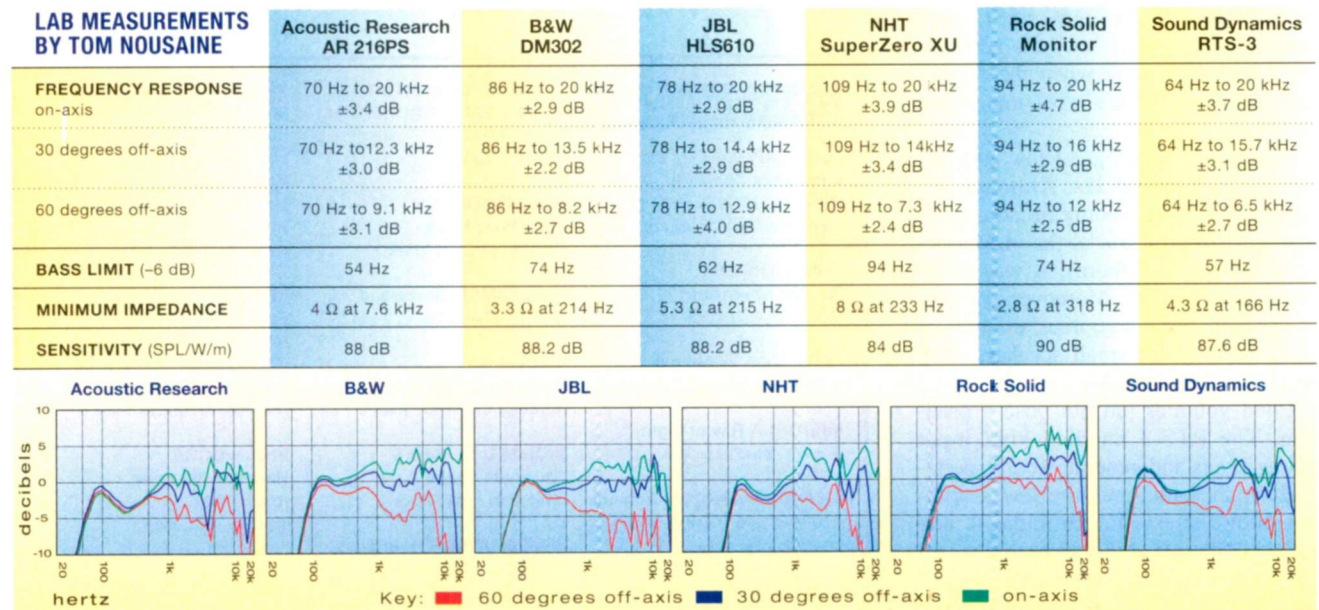
Kumin's Take

Timbral uniformity 🎵 🎵 🎵 🎵
 Imaging 🎵 🎵 🎵 🎵
 Dynamics 🎵 🎵 🎵 🎵
 Bass extension 🎵 🎵 🎵 🎵

This compact Canadian-made speaker sounded terrific just about up and down the line. Tonality was nicely balanced, smooth, and natural at almost every turn except for a very faint but consistent peak at the top of the vocal range, which made some voices, such as Lari White's, sound a shade aggressive or hard. Air and top-octave detail were great, and the lower midrange/upper bass sounded tight, although I heard a slight "wolf" at around 80 Hz that subtly dogged music that passed through this range. It pained me to do it, because it's really a well-balanced speaker, but I had to downgrade the Sound Dynamics RTS-3 for these two small warts.

Imaging was super, with topnotch but unexaggerated stage depth, a tight, stable, but not overfocused soundstage, and believable spatial detail. Only a slightly narrower overall stage width compared with those of the best competitors lowered the RTS-3's score in this category.

The Sound Dynamics speaker's bass extension was outstanding: weighty, tight, and well defined with anything we listened to. Madonna's hip-hop deep-boom vamps rocked all the way down without audible stumbles. The absence of distortion or strain at high



volumes was equally outstanding. Amplifier clipping proved to be the more significant limiting factor in our test environment.

Pohlmann's Take

Timbral uniformity ⚡ ⚡ ⚡ ⚡ ⚡

Imaging ⚡ ⚡ ⚡ ⚡ ⚡

Dynamics ⚡ ⚡ ⚡ ⚡ ⚡

Bass extension ⚡ ⚡ ⚡ ⚡

The Sound Dynamics speakers sounded fairly neutral throughout the spectrum. Both male and female vocals were nicely reproduced, with a great sense of realism. The upper midrange was slightly bright, adding just a little presence, but it was so smooth that this was a negative only on some female vocals. Even then, the brittle quality was reasonably acceptable. The low midrange had tremendous punch on the Jennifer Warnes track, providing big, solid sound from this classic pop recording.

Imaging was terrific. These speakers successfully balanced image accuracy with size, providing a soundstage that was realistically big yet stable and accurate. Image depth was also excellent. The synthesized soundstage with pop material such as Madonna's *Ray of Light* seemed accurate, probably appearing in my studio much as it appeared in hers. Orchestral forces, such as in the Philip Glass opera, were slightly reduced in size, but the staging accuracy compensated. Close your eyes with these speakers, and you'll "see" the performers where they were when the recording was made. That's what imaging is all about.

The RTS-3 had a great low end, extending below 100 Hz. Although the bass was a touch boomy on some particularly stressful tracks (as in Madonna's bass-heavy album), it was fairly accurate otherwise. Moreover, the pair of speakers put out copious amounts of clean bass — for small speakers, they really kick. Remarkable!

Loud volumes did not pose a problem. The RTS-3 handled high input power levels and generated correspondingly high sound-pressure levels without undue stress. In particular, I was impressed by its ability to reproduce all the percussion transients without smearing. Overall, I was extremely pleased

with the performance of the Sound Dynamics RTS-3.

Final Takes

As you can see, we generally agreed with each other — proof that subjective reviews aren't always rooted entirely in fantasy. After we compared notes, we were frankly surprised that our subjective impressions correlated so well. Our sound-quality ratings are close, and more than once we even chose the same adjectives to describe what we heard.

On one hand, that shouldn't be too surprising. After all, we were listening to the same music over the same speakers in the same room with the same signal chain. Moreover, both of us have similarly checkered pasts in the ears-for-hire business. Finally, of course, great minds think alike.

On the other hand, the four ratings we gave each speaker were never actually identical, which suggests that subjectivity is exactly that — subjective. One listener's "mellow high end" may be another's "lack of presence." That is, even if the auditory response is the same, the listener's reaction to it, and subsequent characterization of it, may differ.

Another cause of rating discrepancies is the difficulty in establishing uniform listening criteria. The four categories we used are cornerstones of speaker evaluation, but they overlap to a degree. It was sometimes difficult to determine in

which category an impression was best deposited. When an image seems vague, one listener might decide that the speaker's imaging is indeed at fault. Another might say that the imaging flaw is a symptom but the cause is a spectral error, and thus downgrade the speaker's timbral-uniformity rating instead. In other words, although the ear doesn't fail us, sometimes words do.

So what can you learn from our showdown? Given reasonably controlled conditions, subjective evaluation is a useful element in judging speakers. That isn't a particularly revelatory conclusion, but it's worth noting that "controlled conditions" must include correctly level-matched A/B comparisons. If you listen to one pair of speakers at Store A, then race across town to listen at Store B, all bets are off. Try to establish a familiar baseline and refer all of your comparisons to it. Then your chances of finding the best speakers will be good.

In the final analysis, all six of these small speakers passed our listening test. While some impressed us more than others (Kumin preferred the JBL, while Pohlmann tilted toward the B&W), they all demonstrate that speakers can provide excellent performance even at \$300 or less. Perhaps that's because audio engineers have worked especially hard to make small, low-cost speakers sound good for home-theater applications. Or maybe it's simply the result of good-old-fashioned technological progress. One thing is certain: if you listen carefully to these six speakers and pick the one you like the most, you'll have made a good choice. □



Acid-Test CDs

JOHN EARGLE

Engineer's Choice II
(Delos DE 3512) Track 11 (excerpt from Messiaen's *Pentecost Mass*)

FLIM & THE BBs

Further Adventures
(DMP CD-462) Track 7

PHILIP GLASS Akhnaten

(CBS M2K 42457) Tracks 1 and 2

MADONNA Ray of Light

(Warner 46847) Tracks 2 and 3

AMANDA McBROOM Amanda

(Sheffield Labs 10066-2-G)
Tracks 1, 2, 6, and 7

DIANE SCHUUR AND THE COUNT BASIE ORCHESTRA

(GRP GRD-9550)
Tracks 2 and 4

SHOSTAKOVITCH

Symphony No. 8
(London 411 616) Track 3

PAUL SIMON Graceland

(Warner 25447) Tracks 2 and 5

SMETANA

String Quartet No. 1
(Calliope CAL9690) Track 2

RICHARD STRAUSS

Four Last Songs
(Philips 411 052) Track 1

JAMES TAYLOR Hourglass

(Columbia 67912) Tracks 1 and 3

THOM ROTELLA BAND

Without Words
(dmp CD-476) Tracks 1 and 3

VILLA-LOBOS

Bachiana Brasileira No. 1
(EMI 47433) Track 3
("Introduction/Embolada")

JENNIFER WARNES

Famous Blue Raincoat
(Cypress 661 111) Track 2

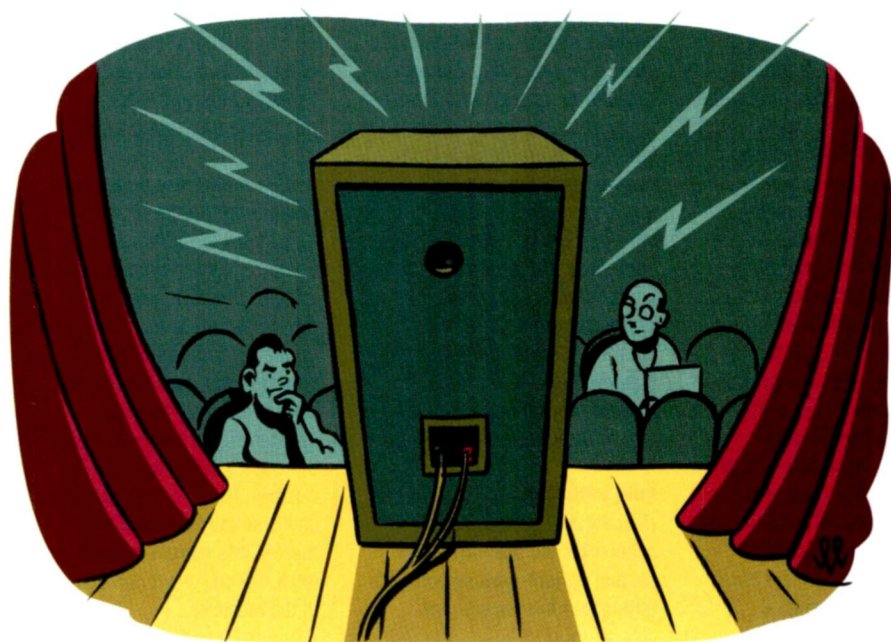
LARI WHITE Wishes

(RCA 66395) Tracks 3 and 6

PHIL WOODS

Here's to My Lady
(Chesky JD3)
Tracks 1, 2, 7, and 9

HOW TO audition SPEAKERS



by Daniel Kumin

SURELY THERE ARE FEW MORE SUBJECTIVE TASKS than evaluating speakers solely by listening. One audiophile's meat is another one's poison, after all. But among experienced listeners — those who have spent hundreds of hours comparing speakers under controlled conditions and who agree on a set of criteria — there should be some common ground regarding methods and conclusions.

That's not to say we have to agree. If your notion of audio excellence runs to maximum bass-slam for dance parties, so be it. The advice, "Buy what you like," has the virtues of being direct, easily followed, and by no means wrong. But if you're prepared to accept "accuracy" as the loudspeaker ideal, you should find the following helpful in finding speakers that exemplify it.

Accuracy in this case can be defined as reproducing the nuances of tonality, dynamics, and ambience in the original recording with as little change as possible, over as broad a useful frequency range as

possible, within the relevant constraints of cost and size. Of course, this definition is circular, because how can you know what the recording "sounds like" until you play it back on some speakers?

You can't — not any more than we can know just how closely the *Mona Lisa* resembles an actual sixteenth-century noblewoman. However, we know that Leonardo da Vinci was a skilled painter and accept his rendition as both an accurate representation and something more: a work of art. Similarly, if we choose an artful recording, we can assume that its playback has the potential to be a fair fac-

simile of the original performance. And even though recording equipment (like microphones) varies in inherent sound quality in almost precisely the same ways as speakers do, the essential qualitative differences among excellent recordings should be far smaller than those between an excellent and a mediocre speaker.

On the Job

There is no substitute for experience, so embrace every opportunity to listen to and compare speakers. And remember, the listening conditions are critical. Always use an excellent amplifier or receiver and a high-quality source component to minimize the variables in what you'll hear. But you can rest assured that the immediately audible differences even between similar speakers are likely to be worlds greater than those between properly operating amplifiers and disc players.

If you listen with an A/B setup that allows you to switch directly between two pairs (or suites) of speakers, proceed with caution. If you're using an A/B "switcher," make sure that the comparison is carefully balanced so that both candidates play at the same volume, within 0.5 dB. (This can be determined only with an accurate sound-level meter.) It is a psychoacoustic fact that if one speaker is more sensitive than the other, and thus plays even slightly louder, it will be perceived as "better."

Here's another tip: placement affects sound quality more than you might guess. Whenever possible, reverse the locations of speaker pairs you're comparing, even when they're side by side, and you'll hear just how much location matters. But don't rely exclusively on A/B comparisons. Also include some one-at-a-time listening sessions to get to know the sound of each speaker pair or grouping.

Obviously, the program material you use is very important. Choose demo discs not for their musical excellence, but for their recording accuracy and ability to highlight particular aspects of sound quality. There are many approaches to selecting evaluation discs. I usually rotate a few familiar tracks so that I can zero in on key sonic characteristics (see "Following the Tracks" on the next page). Not the least of this method's advantages is that you quickly become so thoroughly sick of these snippets that you cease to hear them as music and can focus on how accurately the music is reproduced.

A Listener's Checklist

And when all is said and done, for what, precisely, are you listening? You could

Following the Tracks

Here's a brief sample of the CDs I use most often to audition speakers. You may notice that most recordings are at least five years old, but when you find something that works reliably, there's little reason to change. Use this as a springboard to develop your own list of quick-audition program material.

AMANDA McBROOM *Amanda* (Sheffield Lab 10066). I listen for vocal openness and top-octave air on "Amanda" and "The Rose," bass/midbass smoothness on "Reynosa." A superbly natural live recording with very neutral vocal tones, natural imaging, and warm bass.

THE HOLMES BROTHERS *Jubilation* (Realworld 92127). I usually listen for male-vocal articulation and weight, top-octave openness, and imaging stability on "I Want Jesus to Walk with Me." But this whole CD features close-up, natural reproduction of the Holmes Brothers' singular vocal timbres — excellent for evaluating midrange sound quality. Another track, "I've Had My Chance," features a graphic left-right

soundstage with relatively shallow but discernible depth — good for imaging comparisons.

JOHN EARGLE *Engineer's Choice* (Delos DE 3512). Just about every track on this handy sampler is perfect for some sort of auditioning. There's a huge variety of hall acoustics and soundstage recreations. My regulars: 1) For imaging/depth and low-treble/string tone, the excerpt from Shostakovich's Eighth Symphony (Track 8); its complex, deep, yet precise and spacious stereo image, with wide-ranging, fast-moving timbres, provides a stern test of a speaker's ability to recreate the depth and breadth of a recording. 2) A snippet from Messiaen's *Pentecost Mass* for organ (Track 11) makes a nice change if

you're sick to death of Bach's Prelude and Fugue in D Minor. You can't beat a really good pipe-organ recording for serious bass extension.

THOM ROTELLA *Without Words* (dmp 476). This ultraclean studio recording of a rock/fusion combo features wide dynamics, lots of punchy electric bass, and some reasonably natural top-octave air. I usually check Track 1 ("Since I Met You") at progressive loudnesses for dynamics preservation — though with some speakers you will need *lots* of power to avoid amplifier clipping on the beats where the kick-drum, bass, and snare drum coincide. Listen for signs of dynamic limiting and such obvious mechanical limits as woofer or midrange bottoming.

PHIL WOODS *Here's to My Lady* (Chesky JD3). I listen for imaging coherence and stability, treble air, and upright-bass smoothness throughout this superb jazz-

quartet recording. It presents a very natural small-room image and an outstanding trap-drum sound. Drummer Kenny Washington favors darker-toned cymbals, so I listen more for depth and character than "shimmer" in the top octave. Just about any track will do, but "Johnny Hodges" (Track 2) is the one I use most; the "choked-high-hat" work on the opening is an excellent test.

BEETHOVEN *Early Quartets* Alban Berg Quartet (EMI 47127/8). I listen for low-treble/strings smoothness and imaging precision and depth throughout these two discs. The recording is quite warm and "woody," so if the string tone sounds persistently edgy or harsh, I can be pretty sure something's up. Similarly, the cello reliably uncovers midbass bloat, as it's already so warm that there's little margin for error. Any track will do — but don't get lost in the music! — D.K.

ask this question of a dozen "experts" and get a dozen answers, so take any of them with a dose of salt, mine included.

1. TIMBRAL UNIFORMITY. By far the most important factor to me, this means even emphasis and true timbre ("tone color") over the broad range from bass to treble. In practice, timbral uniformity is impossible to judge as a whole, so I tend to break it into four subcategories.

- *Vocal-range smoothness.* Here I'm listening exclusively to voices, both singing and speaking, for freedom from midrange colorations — probably the most common speaker weaknesses. Most "errors" manifest themselves as tone-color constants that I can pick out in a variety of different voices. This can be a "honky" or nasal quality, a "cupped" tone (as if the words are sung or spoken through cupped hands), or a persistent raspiness or hollowness. I consider these the most serious of audible flaws because once I detect one I will hear it almost constantly, coloring the vocals of artists as disparate as, say, Janis Joplin and Gordon Lightfoot.

- *Bass/mid-bass anomalies.* These are usually simpler to evaluate. The common telltales are boominess or thinness (a tendency to accentuate or short-change certain pitches), or chestiness or hollowness (overbearing or anemic-sounding low male vocals).

- *Low-treble smoothness.* Massed orchestral strings are my usual test here. I listen for string tone that's unnaturally edgy or dry ("dead"-sounding) or overly syrupy. This is one of the toughest calls unless you have some experience listening to live string sections — and even the best strings can sound a touch harsh or steely depending on hall acoustics and playing style. However, keep an ear out for a consistently strident or metallic tone, as well as an unnaturally mellow or rich one. Try several recordings as these qualities can be artifacts of the recording itself.

- *Tip-top treble.* In a great deal of music little actually goes on above 13 kHz or so, and we hear much of what does occur up there more as "sparkle" or "air" than as musical notes. Listening to jazz or rock

cymbals is one reasonably easy way to find treble hooks. High-hat rides — the "tick-tick-ta-tick-tick" that glues together so much jazz and rock — from *naturally* recorded discs make excellent test fodder. They contain clean, repetitive transients. Focus on the character of each individual "tick," noting signs of dullness (too little top-octave sound), "spittiness" (too much), and "smearing" (a sort of vague, lisping, "un-metallic" quality that real-life cymbals don't have).

2. IMAGING. Here I'm talking about spaciousness, soundstaging, depth, and the hundred other terms used to describe how well or poorly speakers conjure up the ambience of a real acoustic space. All in all, imaging may be the most variable speaker quality, and it's certainly the most difficult to evaluate. That's because even the best reproduced sound is not, in fact, very much like the real thing.

That said, I listen first for stability of the image. Does the apparent location of a lead vocalist or instrumental soloist "wander" from side to side, or front to

back, as the music moves up and down in frequency? Is the soundstage arrayed across the full space between the two speakers, spread out beyond them on either side, or bunched up in the middle? Is there a natural sense of front-to-back depth to instruments and voices, without exaggerated (or repressed) reverberation?

All of these questions are tough, and there are no "absolute" answers. Every speaker distorts "reality" in one way or another, so these variations are a matter of taste as much as anything else. And different types of speakers have inherently different imaging characteristics. For instance, dipolar speakers, like most electrostatic or planar-magnetic designs, usually create an enhanced sense of depth and space, but at some sacrifice in the "precision" of imaging and the tight localization of the instrumental soundstage. Controlled-directivity designs, such as those using horns, and certain multiple-driver arrays tend to have just the opposite character, and the great majority of conventional two- and three-way speakers usually fall somewhere in between.

3. DYNAMICS. Virtually all speakers compress dynamics to some small degree. That is, beyond a certain volume, the speaker will not keep producing clean

acoustic output equally over the full frequency range.

One form of dynamic limiting is obvious: audible distortions in which a driver, usually a woofer or midrange, produces buzzes, snaps, or pops on loud transients. Another, far subtler form is nonlinear response, in which the speaker fails to "keep" up with the input signal through some range, usually the deep bass. The result may be a progressive "brightening" at very loud volumes (the midrange/treble section can usually deliver a higher level of clean output than the bass section), or a loss of weight and impact on strong, wide-band transients.

But limiting factors are notoriously hard to judge in casual listening sessions. Can you be sure you're hearing a woofer "bottoming" and not the amp clipping? Speaker distortion and not buzzes or rattles from furniture, floorboards, or windows? Is a telltale brightening caused by speaker limitations and not by your ears' natural "distortion" at very high volume? Unless you're listening in a very familiar environment, you cannot be sure where to lay the fault.

4. BASS EXTENSION. It's a rare speaker that can really reproduce the full audio range, unrestricted, down to 20 or 25 Hz.

Paradoxically, it's also a rare speaker that cannot produce relatively strong output from 80 Hz and up. So when we talk about bass extension, we mean the bottom two octaves in the ten-octave musical range — and the lower one, the 20- to 40-Hz octave, sees very little action from traditional musical instruments. (Big percussion, synthesizers, and soundtrack booms and rumbles are another story.)

Recordings with energy in the sub-40-Hz octave are relatively rare — big bass drums in classical music (like Copland's *Fanfare for the Common Man*) and ultra-low synth-bass lines in pop are your best bets. Unfortunately, it's very hard to judge the deep-bass response of a speaker until you get it home, because placement and room acoustics affect bass more than any other area of speaker performance.

Given all the above, I tend to evaluate speakers with one or two very familiar recordings that have solidly dynamic percussion. I listen for a sense of ease, "weight" (unfettered deep bass), and realistic snap. But I qualify my judgements a great deal until I've had a chance to repeat the trial in my own studio. Only then am I confident enough to call a speaker's low end "good," "bad," "mediocre," or "absolutely fabulous." □

Now Try It with Five (or Six!) Speakers

Auditioning speakers for surround-sound playback changes nothing . . . and everything. Our four listening categories for good sound — timbral uniformity, imaging, dynamics, and bass extension — remain unchanged, though you might give a bit more weight to bass extension and dynamics for movies than for music. And if you're buying speakers for a home theater, you'll probably be shopping for a stereo pair plus specialized speakers for center, surround, and low-bass duties.

The center speaker is the most important, since with movies the center channel delivers all of the dialogue as well as plenty of music and effects. Your most important objective is to find a center speaker whose timbre is as close

as possible to that of your front left/right pair. A good match is needed for a seamless soundstage, smooth pans, and convincing lateral placement. An obvious solution is to buy a center speaker from the same maker as that of the front left/right pair — either literally the same model or a "matched" center-channel model designed to work with them.

Here's a fascinating and useful test, which requires the assistance of an accommodating dealer. Listen to a speech-intensive mono program (TV sound with the stereo off works great) through only a front three-speaker array. Use the A/V receiver or processor's level-matching setup routine to balance the center speaker's output with that of the "phantom" center channel

produced by the front left/right speakers when you select the "no" center-speaker option. Either disconnect the surround speakers or select the Dolby 3 surround mode (front speakers only), then sit dead center and listen while using the remote control to switch between the "yes" and "no" center-speaker settings. What you want is the closest possible match between the center speaker and the speakers flanking it.

Auditioning subwoofers in a store environment is almost a waste of time — room acoustics and placement influence bass performance too dramatically. You're going to have to rely for guidance on the unholy trinity of dealer recommendations, manufacturers' specs, and reviews in magazines like this one. The best advice is to buy a sub only from

a dealer who'll let you try it at home and take it back for full credit if you don't like the results.

The same goes for surround speakers: auditions in a showroom are like trying to catch a feather on a breezy day — fun, but not very rewarding. A good speaker will be a good surround speaker, and a bad one won't be, though treble "air" and deep-bass extension are usually not as critical for surround deployment. It's safe to say that most experienced listeners favor diffuse-radiating dipole surround speakers over direct-radiating surrounds for movies and some music. As with subwoofers, probably the best advice is to follow qualified recommendations and buy surrounds from a dealer who'll let you return them for full credit if you're not happy. — D.K.

\$2000 a speaker



Boston Acoustics



Polk Audio

Can two grand buy you a home theater adventure?

The last time I did a home-theater speaker comparison for *Stereo Review* ("Baby Grands," September 1997), I looked at \$1,000 entry-level systems with five mini-speakers and a matching subwoofer. A cool grand is pretty much the minimum you should expect to pay for serious surround sound, but even the best of such systems must cut corners to deliver impressive sound for so little money. You can get decent bass from the compact "subwoofers" that come with these systems, but not "Whoa, Daddy" bass. You can get clean sound at reasonable volume levels, but what about *unreasonable* levels?

The truth is, if you're trying to fill a large room with realistic theater sound levels, doubling your speaker budget to \$2,000 changes the playing field considerably. Nowhere else

in home theater will an extra thousand bucks pack nearly the same tangible wallop. Instead of settling for a pint-size bass module to fill in the bottom end, you can get a true subwoofer with a 10- or 12-inch driver and a much more powerful built-in amplifier. This upgrade alone will transform a system's sound, giving today's bass-happy digital movie soundtracks a stirringly powerful and dramatic presence.

But the main speakers are where that extra kilobuck really

odyssey

BY COREY GREENBERG



Paradigm

pays off. Spreading an additional \$1,000 around in the way of higher-grade drivers and crossover components, and more solid cabinetry, should add up to sound with fewer typical loud-speaker colorations and distortions than even the best of the entry-level packages, and at much louder volumes.

Boston Acoustics, Paradigm, and Polk Audio have all established themselves as major players in the speaker market, so we asked each company to send me its best-sounding

\$2,000 speaker system. I spent several weeks listening to the three systems with familiar music and movies on laserdisc, CD, and DVD in the 50 x 20 x 18-foot loft that I use for a listening room/home theater. My room is about average acoustically — not too lively, not too dead. My couch sits out into the room, so I can place the surround speakers as far away as the fronts. I played all laserdisc and DVD movies at Dolby reference level, and to insure a fair comparison the volume levels of all three systems were matched at all times to within 0.1 dB using a sound-level meter.

Each speaker system was connected in turn to my reference electronics: an Aragon 8008-ST stereo amplifier for the left/right front channels and a three-channel Aragon 8008X3 for the center and surround channels, with 200 watts for each channel, a Theta Casablanca Dolby Digital preamp/processor, a Theta Data III CD/laserdisc transport, and a Toshiba SD-



both music and movies. Three very different sounds, to be sure — and one might be just right for you.

Boston Acoustics

The VR950 tower speaker is two down from the top of Boston Acoustics' Lynnfield VR line of flagship home-theater speakers. Meant to stand directly on the floor, the 39-inch-tall VR950 resembles, at first glance, the forward/backward-firing bipolar speakers from Mirage and Definitive Technology.

But while the slim-profile VR950 has the same kind of black wraparound "sock" grille and gloss-black wood top cap as the bipolars, it is strictly a no-nonsense forward radiator. The only thing you'll find on its rear is a pair of nickel-plated binding posts.

The VR950's aluminum-dome tweeter has a very small magnet assembly made of neodymium. Using neodymium lets the designer shave the tweeter's size so that it can hug the dual woofers closely in order to approach a point-source radiation pattern. Neodymium magnets are stronger than the more common ceramic magnets, but at the cost of reduced power-handling — too much heat from a screaming voice coil and neodymium quickly loses its magnerection, which accounts for the generous aluminum heat sink mounted to the back of the tweeter assembly. Four small carpet-piercing spikes lift each VR950 tower about a half inch off the floor for the best sound.

The VR12 center speaker is where the Boston system really throws its weight around. While most center speakers tag

along after the "mains" like small siblings, the massive VR12 pulls a Baby Huey, dominating the system both visually and sonically. The VR12 is one of the few three-way centers on the market, and the only one I've seen in its price range. It's nice to see a good, meaty center-channel speaker these days when so many of them feature midget woofers that distort badly if you wick up an action flick. The VR12 won't exactly sit comfortably atop a 27-inch TV, but if you have a 32-inch set or larger you'll be fine.

The little VRS surround speaker is a wedge-shaped number from the dipole camp — that is, it has drivers on both sides firing out of phase. The VRS pair is meant to be mounted on the side walls of a home theater across from the ends of the listening couch, preferably a few feet above a seated listener's head for the most theater-like effect.

Rounding out the system is the VR500 powered subwoofer. Like all Boston Acoustics VR series home-theater speakers, the VR500 is magnetically shielded. The back panel has controls for the subwoofer's volume and low-pass crossover frequency, a polarity toggle switch to help achieve a seamless blend between the sub and the satellite speakers, and both speaker-level inputs and line-level RCA inputs and outputs. A nice auto-power circuit turns the VR500 on when an audio signal is present at the inputs, or off after a few minutes of system silence.

When the time came for some serious listening, the first thing I fed to each of these systems was a CD so that I could hear how the front speakers and subwoofer handled music. Right away with the Boston Acoustics rig, I noticed two very distinct sonic traits: a slightly recessed midrange along with a bit of peakiness in the lower treble. This had the effect of

3107 DVD player. All three center speakers took their turns atop a Pioneer Elite Pro-1009W 60-inch widescreen (16:9) rear-projection TV.

I set up the Paradigm LCR-350s on steel stands in the same positions where I auditioned the floor-standing Boston and Polk front L/R speakers. Identical positioning was maintained for all three sets of surround speakers as well. I placed the surrounds on a slightly taller set of stands off the ends of my couch, with the speakers aimed directly at each other. (The Boston and Polk dipole surrounds directed their energy away from the couch when set up in this position, while the Paradigms fired straight at each other over my head.)

That the three systems sounded *nothing* like each other was only to be expected — but that each one neatly serves a different segment of the home-theater market was a pleasant surprise. One system would be excellent in a really large, heavily furnished living room. Another was a sonic dead-ringer for a Home THX rig, but at a much lower price. And, finally, one system attained the audiophile's Holy Grail of effortless musicality with

Boston Acoustics

Manufacturer's Specifications

	VR950 main	VR12 center	VRS surround	VR500 subwoofer
Frequency response (±3 dB)	45 Hz to 20 kHz	58 Hz to 20 kHz	95 Hz to 20 kHz	27 to 100 Hz
Sensitivity (SPL/W/m)	90 dB	91 dB	85 dB	n/a
Nominal impedance	8 ohms	8 ohms	8 ohms	n/a
Power handling	150 watts	250 watts	100 watts	built-in 100-watt amp
Tweeter	2-inch dome	2-inch dome	two 2½-inch domes	—
Midrange	—	4½-inch cone	—	—
Woofers	two 5¼-inch cones	two 6½-inch cones	4½-inch cone	10-inch cone
Enclosure	ported	sealed	sealed	ported
Size (HxWxD, inches)	38¼ x 6½ x 12	8¾ x 25 x 8½	10¾ x 4½ x 6	15¾ x 15½ x 18¾
Weight	37 pounds	30 pounds	6 pounds	40 pounds
Finish	black cloth, black gloss cap	black ash vinyl	black or white	black ash vinyl
Price (total = \$2,050)	\$700 a pair	\$400	\$350 a pair	\$600

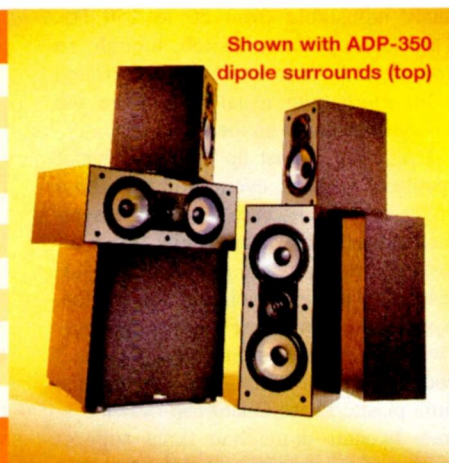
Boston Acoustics, 300 Jubilee Dr., Peabody, MA 01960-6015; phone, 978-538-5000; Web, www.bostonacoustics.com

Paradigm

Manufacturer's Specifications

	LCR-350 front/surround	PDR-12 subwoofer
Frequency response (± 3 dB)	45 Hz to 20 kHz	25 to 150 Hz
Sensitivity (SPL/W/m)	90 dB	n/a
Nominal impedance	8 ohms	n/a
Power handling	175 watts	built-in 110-watt amp
Tweeter	1-inch dome	—
Woofer	two 6½-inch cones	12-inch cone
Enclosure	ported	ported
Size (HxWxD, inches)	21 x 8 x 11¾	16¼ x 14½ x 19
Weight	25 pounds	41 pounds
Finish	black ash	light/dark cherry or black ash
Price (total = \$1,914)	\$299 each	\$419

Paradigm, distributed by AudioStream, MPO Box 2410, Niagara Falls, NY 14302; phone, 905-632-0180; Web, www.paradigm.ca



emphasizing vocal and brass sibilants, while at the same time giving the music a more distant perspective. Guided by Voices' *Alien Lanes* (Matador) lost some of its brash midrange gutsiness, which naturally made me crank up the volume to compensate — but at the cost of even more Robert Pollard-approved Tascam Portastudio tape hiss thanks to the VR950's tipped-up treble.

I also heard a much less focused stereo image than I'm used to in my listening room, so I played a test CD track of the speaker-imaging acid test — mono pink noise. On a system with good imaging and well-matched left and right speakers, mono pink noise should sound like a distinct and narrow stripe of noise hanging exactly midway between the speakers, with no image bloat or skew to one side or the other. Heard over the VR950s, the image was diffuse and hard to pin down.

Once I turned to movie soundtracks, the Boston Acoustics system came alive. The VR12 center speaker, in particular, is a real monster — man, can it slam out the dialogue and sound effects! I've heard much more expensive center speakers that couldn't play nearly as loud or as clean as the VR12. The Dolby Surround soundtrack of the *Apocalypse Now* laserdisc (Paramount) boomed cleanly through my living room at full Dolby reference level even during the infamous "arc light" scene, which gave the VR12 a workout with full-scale infrasonic bass fundamentals whose harmonics overload most center speakers' woofers even with an 80-Hz crossover. The VR12 took the abuse in stride without a hint of distortion.

Too many manufacturers skimp on center-channel speakers, forgetting (or never learning in the first place) that it's the center channel that carries the most water on any given movie soundtrack.

Not Boston Acoustics, which has injected the VR12 with enough wolverine-grade prednisone so that it can fill the largest room without audible distortion. It also has much higher sensitivity than the VR950 — I actually had to reduce the center-channel level on the preamp by five clicks (!) to compensate for the difference — and the system should hit real theater sound levels even driven by a modest A/V receiver. I did hear more midrange presence from the VR12 than from the VR950s, but I found that to be a step in the right direction as far as dialogue intelligibility goes. (A closer timbre match between the center and the fronts is usually preferred, but in this case it would have made dialogue sound distant and harder to hear clearly.)

The \$2,050 Boston system played movie soundtracks very loud, without obvious distortion, and with good, clean dialogue reproduction. It managed to sound very close in character to the best THX-certified systems I've heard, though at a much lower price. It also shared the limitations of THX speaker systems when it came to music reproduction.

Paradigm

The Paradigm LCR-350 is a three-driver, two-way ported bookshelf speaker. A pair of 6½-inch woofers flank a 1-inch titanium dome tweeter. As its name suggests, the magnetically shielded LCR-350 is claimed to work equally well for the left, center, or right front channels, as well for the surrounds. The wood-framed grille gives it a low-diffraction contoured front, which explains why the LCR-350 was one of the few speakers in my experience to sound better with its grille left in place rather than removed. Gold-plated five-

way binding posts are on the speaker's back panel, along with a single flared-mouth port for the woofers.

The LCR-350 was designed to sound the same whether positioned vertically or, when used for the center channel, horizontally. With the same speaker in all five main locations, as Dolby Laboratories recommends for an optimal 5.1-channel setup, timbre-matching in this system is naturally ideal. The potential to create a fully three-dimensional sound field with 5.1-channel movie soundtracks is much greater than with a system whose front speakers sound different from its surrounds. (If you prefer dipole surrounds, Paradigm's \$700-a-pair ADP-350s have the same woofer and tweeter as the LCR-350 on either side for a more diffuse surround presentation with a similar timbre.)

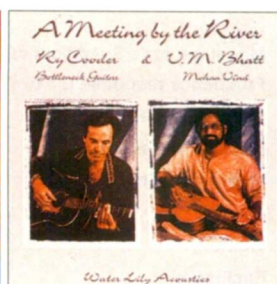
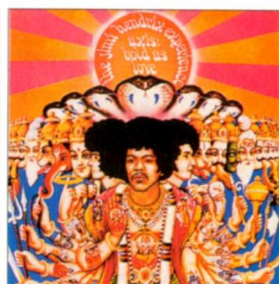
The Paradigm PDR-12 subwoofer has a 12-inch driver powered by a 110-watt amplifier that includes auto-on/off switching and a soft-clipping circuit to minimize audible distortion when the wife takes the kids to her sister's for the weekend and you go on a *T2* binge. The PDR-12 differs from the company's older PS series subs by featuring a ported cabinet instead of bandpass loading. Not being a fan of bandpass subs, I was glad to see Paradigm turn to port-loading. Unlike a ported or sealed-system sub with a fully exposed driver cone, a bandpass sub hides its driver completely inside the cabinet, like the head of a startled turtle, and pipes its woof through a small port on the side or bottom of the cabinet. Bandpass subs are more efficient than ported and sealed systems, but at the expense of bass tightness and sonic definition.

The subwoofer's back panel has stereo speaker-level inputs, a mono line-level RCA input, and controls for volume and for crossover frequency, which is continu-

ously adjustable from 50 to 150 Hz. There's no polarity switch, though, so you might have to move the sub around a bit more than usual to achieve the smoothest blend with the LCR-350s.

Originally, I'd set up the front pair of speakers without even thinking about "right side up" because they have a symmetrical woofer-tweeter-woofer driver array, which should have produced identical results no matter which end was on top. Nope. Mono pink noise revealed a phasey "wrinkle" in the center image that I couldn't explain — until I noticed that the little plastic Phase Guard cap over the 1-inch tweeter dome had three support arms, and the pattern was different when the speaker was flipped upside down. Turning one of the LCR-350s over cured things completely, and the center image on pink noise became as tightly focused and distinct as I usually hear from my reference speakers. It may sound silly and trivial, but it's one of those small, apparently insignificant details that makes all the difference if you're hoping to recreate a musical event instead of just piping in some background muzik.

Once properly set up, the Paradigm system sang like a bird, giving equally astonishing results with music and movies. I can't really say that its strength was more with one than the other. Whether I listened to stereo music, like Radiohead's *OK Computer* (Capitol) or multichannel DVDs like *Boogie Nights* (New Line), the Paradigm rig sounded so true and right



Musical touchstones: from the eclectic sound mix of *OK Computer* to Noel Redding's bass in *Axis: Bold as Love* to the treble purity of Cooder and Bhatt's acoustic guitars.

that, this \$1,914 Paradigm system was very nearly without fault. The treble range, in particular, was really outstanding — smooth, open, and detailed, without a hint of etch or rasp. Ry Cooder and V. M. Bhatt's passionate acoustic slide-guitar duel on *A Meeting by the River* (Water Lily Acoustics) rang out with outstanding treble purity.

The Paradigm rig can also belt it out like a champ when hitched up to good, high-current amps like my big Aragon. Once during the listening sessions, I accidentally played A&M's multichannel DVD music sampler with the volume turned all the way up, and Sheryl Crow's remixed for 5.1 channels "If It Makes You Happy" pinned my back to my couch with an intensely loud but very clean and open sound field. The song sounded so huge and great that I left the volume all the way up and chased it with David Bowie's *The Man Who Sold the World*

other words, I was blown away by the LCR-350/PDR-12 system. Of the three systems reviewed here, it had the highest overall audio quality.

Polk Audio

Polk Audio's RT400 floor-standing tower speakers are said to benefit from the same technology used in the company's flagship \$9,000 SRT home-theater speaker system. The magnetically shielded RT400 mates a ported 7½-inch woofer with a 1-inch polymer-dome tweeter. The back panel has nickel-plated five-way binding posts as well as a flared-mouth bass port.

Unlike the main speakers in the Boston Acoustics and Paradigm systems, the RT400 sounded considerably better with its rather thick plastic-frame grille removed. Other speakers in the Polk line that use the same grille also have round, contoured pads surrounding their drivers to minimize reflections and diffraction from the grille. The RT400, however, doesn't have this pad, and the grille is a source of diffraction and noticeably degraded imaging and midrange smoothness when left in place.

The CS225 center speaker uses the same tweeter as the RT400 tower along with a pair of flanking 4½-inch woofers. Instead of a ported cabinet, however, the CS225 is a sealed box. And while the RT400 (and even the RT f/x surround speaker) sports good binding posts, the CS225 has cheaper, spring-loaded "push-in" connectors. On the positive side, the CS225's uniquely angled cabinet lets you turn the speaker over so that the drivers are angled upward if you need to mount it below the TV screen.

The RT f/x surround speakers offer the choice of a bipolar or dipolar radiation pattern with the flick of a small toggle switch, located on the back panel and normally hidden against the wall. In dipole mode, the RT f/x's fore- and aft-firing tweeters operate out of phase for a



IMAGES COURTESY PARAMOUNT, NEW LINE

Center-speaker challenge: Martin Sheen's voiceover on *Apocalypse Now* (laserdisc). Multichannel challenge: the raucous soundtrack to *Boogie Nights* (DVD).

that I had to work hard to find fault with it. Okay, so the upper midrange was ever so slightly subdued, and the lack of a polarity switch on the subwoofer meant I had to move it over a few feet to achieve a seamless electric-bass sound at the overlap with the LCR-350s. But other than

(Rykodisc). The five LCR-350s and one PDR-12 shook the room with an utter authority and control I just don't expect to hear from speakers this affordably priced, while never losing the high-end clarity and refinement I've come to expect from speakers bearing the Paradigm badge. In

diffuse surround effect; switching to bi-pole mode wires the tweeters in phase for less diffuse, more localizable surround-channel imaging. The RT f/x's single front-mounted 5¼-inch ported woofer is unaffected by the mode switch.

Polk's PSW150 subwoofer features the same 10-inch driver used in the SRT speakers. The back panel has the usual controls for volume and crossover frequency (adjustable from 50 to 125 Hz), speaker-level inputs and outputs, line-level stereo inputs, and both an auto-on circuit and a polarity switch. Unlike most ported subs, the PSW150 has neither a front- or rear-mounted port — its Power Port is on the bottom of the speaker, which is mounted on a wooden platform that elevates the port above a rug or carpet. Polk claims that placing the port on the bottom couples it to the floor boundary, thereby improving deep-bass response. At least you'll know this is one speaker port the kids won't be stuffing French fries and toy soldiers into.

After reading my impressions of the Paradigm system above, you might think that's all she wrote — buy the Paradigms, end of story. But the truth is, not all rooms are alike. The acoustics of a listening/viewing room — whether it has thick carpeting and lots of overstuffed furniture, or wooden floors and bare, echoey walls — play a large role in shaping the sound of any speakers heard in it. The Paradigm system sounded just about perfect in my own moderately damped room, but I've heard Paradigm speakers sound quite dark and distant in rooms that were on the acoustically dead side.

In such rooms, the brighter Polk system will have a more natural treble balance. What sounded like an overabundance of treble energy in my room would be just the ticket to overcome the excessively damped acoustics of many other

rooms, thus improving the sense of treble air with music and the intelligibility of soundtrack dialogue. Aside from the brightness, the RT400 tower speakers had a smooth, open midrange and impressive imaging. The treble balance sounded the same with the grilles on or off, but the overall sound was noticeably better with the grilles removed.

The CS225 center speaker had a lighter-balanced sound than the RT400s, which made dialogue slightly hissy, with less body to the voices. Martin Sheen's voice-over throughout *Apocalypse Now* lost a bit of his trademark chesty warmth, sounding more like Charlie than Poppa Sheen. As for the RT f/x surrounds, I played quite a bit with their dipole/bipole switches to see if I could hear any difference in the surround sound field. With pink-noise test signals, I could hear a clear difference between the diffuse ambience in the dipole mode and the smaller, more localizable sound field produced by the bipole setting. But I noticed less of a difference with actual movie soundtracks, whether Dolby Surround or 5.1-channel Dolby Digital. The dipole mode sounded slightly "bigger" and more enveloping, but in the bipole mode the speakers still sounded more like dipole surrounds than like conventional forward-firing speakers. If I were living with the Polk system, I'd leave the RT f/x surrounds set on dipole.

The PSW150 subwoofer had impressive weight and control. There was a bit more audible distortion at high levels than with the Boston or Paradigm subs, but the Polk blended extremely well with the front speakers and sounded appropriately tight when called on to reproduce musical bass lines like Noel Redding's Fender Jazz all over MCA's gloriously remas-



tered CD reissue of Jimi Hendrix's *Axis: Bold as Love*. All in all, the Polk system gave a good account of itself, especially considering that at \$1,777 it costs almost \$400 less than the Boston Acoustics and more than \$100 less than the Paradigm.

Journey's End

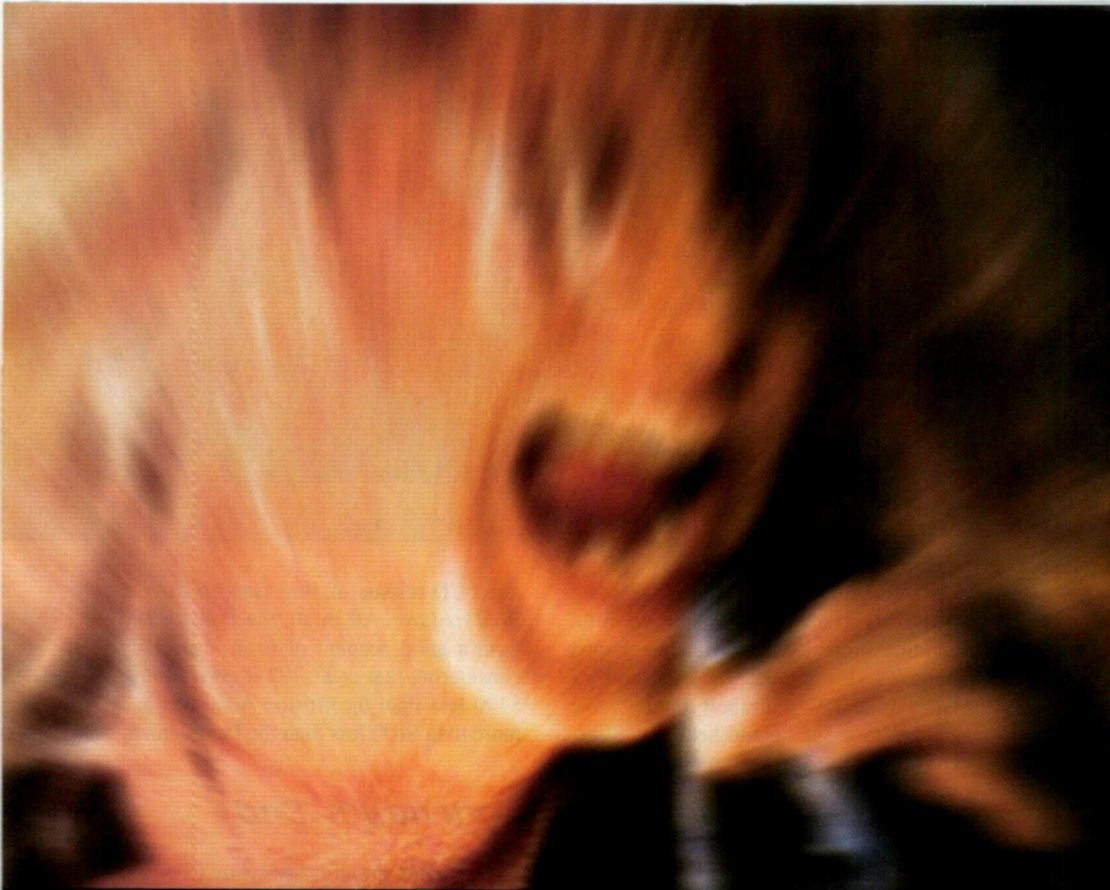
I knew going into this review that I'd hear three very different takes on the best way to spend about \$2,000 on home-theater speakers, and my listening notes bore that out. If you're primarily interested in high-volume movie excitement but never thought you'd be able to afford a THX system, the Boston Acoustics VR system delivers a good simulation of that sound at a fraction of the price. Large, well-furnished living rooms will welcome the crisp top end of the Polk RT system, and its comparatively low price is a bonus. For the rest of us, \$2,000 is best spent on a quintet of Paradigm's outstanding LCR-350 satellites and a PDR-12 subwoofer. Soulfully revealing on music, impeccably dynamic on movies, the Paradigm package is, quite literally, too grand for two grand. □

Polk Audio

Manufacturer's Specifications

	RT400 main	CS225 center	RT f/x surround	PSW150 subwoofer
Frequency response (±3 dB)	40 Hz to 25 kHz	70 Hz to 25 kHz	40 Hz to 25 kHz	20 to 150 Hz
Sensitivity (SPL/W/m)	89 dB	89 dB	89 dB	n/a
Nominal impedance	8 ohms	8 ohms	8 ohms	n/a
Power handling	150 watts	100 watts	100 watts	built-in 200-watt amp
Tweeter	1-inch soft dome	1-inch soft dome	two 1-inch soft domes	—
Woofer	7½-inch cone	two 4½-inch cones	5¼-inch cone	10-inch cone
Enclosure	ported	sealed	ported	ported
Size (HxWxD, inches)	36½ x 9 x 10¼	6 x 18 x 6	10 x 8½ x 6¾	18 x 12¼ x 20
Weight	35 pounds	7 pounds	17 pounds	48 pounds
Finish	gray	black	black or white	black
Price (total = \$1,777)	\$460 a pair	\$220	\$449 a pair	\$649

Polk Audio, 5601 Metro Dr., Baltimore, MD 21215; phone, 800-377-7655; Web, www.polkaudio.com

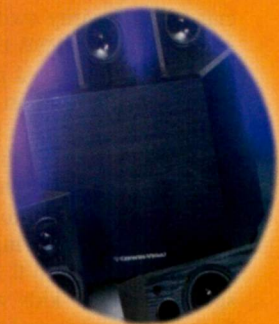


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MATADOR

BEST OF THE MONTH

Liz Phair/*whitechocolatespaceegg*

Liz Phair utters the F-word just once on her third album, and in a non-sexual context at that — so anyone who got into her music for the cheap thrills alone will have to look elsewhere. But those are the only people likely to be disappointed by the wildly inventive *whitechocolatespaceegg* (Matador, 51 min), which more than justifies the false alarms, rerecordings, and missed deadlines that reportedly led up to its release. Any failures of nerve that Phair may have gone through

don't show up here. With its wide sonic and stylistic jumps, the album is, above all, the work of a confident songwriter turned loose.

Phair makes a clean break from her tag as the Queen of Low-Fi Pop. The production here — by a rotating team that includes Scott Litt, long-time collaborator Brad Wood, and Phair herself — is positively slick, with a mile-high drum sound on the rock tracks and shimmering guitar tones on the ballads. But the sound only serves to accent her melodic quirks. After a misstep with 1994's

Whip-smart, this set restores the anything-goes approach to arrangement heard on Phair's 1993 debut album, *Exile in Guyville*. The acoustic songs are as deeply layered as the big pop numbers, and the heavy rockers always include an unsettling chord change or two. And you can expect indelible hooks everywhere, even in an apparent throwaway like the rockabilly "Baby Got Going."

Also gone, for the most part, are the sexually frank lyrics that once raised eyebrows while causing the subtler aspects of Phair's writing to be overlooked. The topic of sex barely comes up here and is treated metaphorically when it does — although she turns in her most straightforward love song in "Fantasize." Still, Phair's recent marriage and motherhood haven't caused her to go soft. The album has more than its share of scathing putdowns ("Johnny Feelgood," "Big Tall Man") and wry commentaries ("Shitloads of Money"), and she doesn't let herself off the hook: the charming, country-ish single "Polyester Bride" catches its newly famous singer at her hometown bar, fishing for free drinks. The looks at family life range from bitterly funny ("What Makes You Happy") to just bitter; *whitechocolatespaceegg* is no typical domestic-bliss album. And Phair's voice remains one of the most attractive in pop, especially for those attracted to intelligence. *Brett Milano*

BILLY BRAGG & WILCO *Mermaid Avenue*

(Elektra, 50 min)

★★★★

What an inspired teaming: leftist folkie Billy Bragg, roots-rockers Wilco, and Woody Guthrie, who provided lyrics via his daughter Nora. That is to say, Nora had in her possession the words for hundreds of unrecorded songs whose music went to the grave with the folk-music patriarch. Thirty years later, some of those words have been dressed up with music tailored to them by Bragg and/or Jeff Tweedy of Wilco (and, occasionally, his bandmates). The result, *Mermaid Avenue*, is a warm, organic, and uplifting set that brings an overdue relevance to the folk idiom in the Nineties.

Bragg and Wilco fit together like Bob Dylan and the Band, with the prairie-fields

STAR SYSTEM

Stellar ★★★★★

Excellent ★★★★

Good ★★★

Fair ★★

Poor ★

concert versions of material like "Dancing with the Moonlit Knight" and "Firth of Fifth," recorded at London's Rainbow Theatre in October 1973. Plus there are rarities from studio singles: "Twilight Alehouse," "Happy the Man," and an alternate "Watcher of the Skies." *Add two stars.*

One more thing: Index points are provided for the seven parts of "Supper's Ready" (let's hear it for indexing, a perfectly sensible CD feature that has been neglected to near death), but the subtitles aren't listed anywhere. Dumb! *Subtract half a star.*

Thus, the final rating of just 3½ stars, which is still better than good — and good enough for the faithful to buy this set immediately. That's right: forget the booklet, forget the fourth CD. The remaining music is *that* good. *Ken Richardson*

SCRAWL Nature Film
(Elektra, 45 min)

★★★★

Because Scrawl started back in 1985 as a rough all-female outfit (the band has since acquired a male drummer), it's often cited as a precursor to the Lilith trend/hype.



MICHAEL McLAUGHLIN/ELEKTRA

Scrawl: bedding down for good?

But Scrawl's attractions were always more modest: guitar-driven pop with coffeehouse harmony, confessional lyrics, and a lack of attitude. And unlike many indie bands, it wasn't spoiled by a major-label deal: 1996's Steve Albini-helmed *Travel On, Rider* was its creative breakthrough, where tighter playing and songwriting finesse made for a disc both quietly moving and noisily cathartic.

For the follow-up, *Nature Film*, Scrawl has taken the curious step of redoing six songs from its indie records and adding six new tunes and one cover ("Public Image," more wounded and less snotty than John Lydon's version). The oldies are worth another go-round (especially "Charles," the cult-classic gender reversal of Kiss's "Beth"), and the new versions are punchier, but most fans will already have the songs. Surprisingly, the new material (especially "100 Car Pile-up") harks back to the band's punk roots. But two folkish numbers, "11:59 (It's January)" (originally on an obscure single) and the new "Guess I'll Wait," prove that gorgeous melancholy is still Scrawl's specialty. The latter, about unfulfilled hopes, ends an album that sounds uncomfortably like a parting gesture. *Brett Milano*

HEATHER MYLES
Highways and Honky Tonks
(Rounder, 35 min)

★★★★

Finally, a woman doing country! *Real* country! In fact, *Highways and Honky Tonks* is so authentically twangy that for the first couple of cuts, you have to ask, "Is Heather Myles putting us on?" You marvel at a woman doing a cover of Charley Pride's "Kiss an Angel Good Morning" without the retro trendiness. And you wonder where she found a guy who does such a good Merle Haggard impersonation in "No One Is Gonna Love You Better" — until you see that she managed to corral the master himself. After that, you just sit back and enjoy a program that ranges from Buddy Holly to stripped-down South of the Border.

Listening to "Playin' Every Honky Tonk in Town" is what it must have been like to sit in the Palomino Club 15 years ago, the

smell of stale beer and sweet romance in the air. The band here seems not to have looked up from its instruments since 1965. Of course, if Myles had been around then, she wouldn't have sounded this hard-bitten, because "girl singers" couldn't get on stage unless they played the gingham-clad, submissive sweetheart. Think Wanda Jackson and then get gritty. Above all, in this age of Shania Twain, just get it. *Alanna Nash*

JAZZ

BILL LASWELL Panthalassa:
The Music of Miles Davis 1969-1974
(Columbia, 60 min)

★★★★

HENRY KAISER & WADADA LEO SMITH
Yo Miles!
(Shanachie, two CDs, 160 min)

★★★★

WORLD SAXOPHONE QUARTET
Selim Sivad: A Tribute to Miles Davis
(Justin Time, 53 min)

★★★★

MARK LEDFORD Miles 2 Go
(Verve/Forecast, 61 min)

★★★★

The spirit of Miles Davis continues to beam down, the latest development being a renewed interest in the period when his scorched-earth approach to fusion singed more than one critical sensibility. But listening to Bill Laswell's *Panthalassa*, billed as a "reconstruction and mix translation," I'm struck by how listener-friendly the music is with no sacrifice of improvisational acumen. Adding some previously unheard material and doing a remix that usually involves bringing up the bass and drums, Laswell has devised a suite from music meant for *In A Silent Way*, *On the Corner*, and *Get Up with It*. It's homage-type tampering, and if you're familiar with the material, you can appreciate his arrangements.

Yo Miles!, featuring a group led by guitarist Henry Kaiser and trumpeter Wadada Leo Smith, captures the rawness and the unruly sprawl of the original stuff. With 2½ hours stretched over two CDs, the Kaiser-Smith band is able to replicate the epic trance element so essential to Miles's fusion. Smith is a revelation here, adopting an appropriately aggressive stance. And Kaiser and fellow guitarist Nels Cline are scathing in protracted cuts like "Themes from Jack Johnson" and "Calypso Frelimo."

Another kind of interpretive sprawl is on the World Saxophone Quartet's *Selim Sivad*. The material leans toward covers of 1960s acoustic Miles with the quartet doing its mellifluously edgy thing, this time over a thick bedding of African percussion and abetted by drummer/pianist Jack DeJohnette. The slower cuts are the most impressive: John Purcell's arrangements of "Selim"

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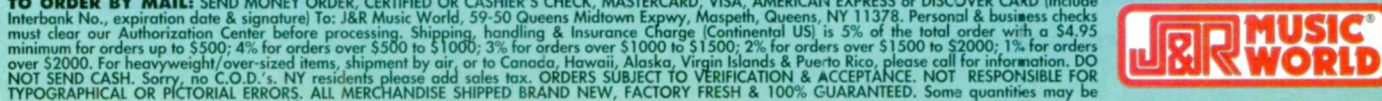


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RINGO STARR *Vertical Man*

(Mercury, 52 min) ★★ ★

His friends turn out in droves, from Paul McCartney and George Harrison to Ozzy Osbourne. Still, *Vertical Man* is stamped with Ringo's winning personality: he's the sole drummer on nearly every track, he had a hand in writing all but two songs, and the album is built around his appealingly avuncular vocals. And he takes some chances: the title track has the surreal, lumbering gait of "I Am the Walrus," and "Mindfield" references Merseybeat, psychedelia, Indian music, and hip-hop. Hats off to Ringo for an album with oodles of charm. *P.P.*

SARA HICKMAN

Two Kinds of Laughter

(Shanachie, 50 min) ★★ ★

Hickman is produced by King Crimson's Adrian Belew, who surrounds her guitar work with a variety of instruments, all of which he plays himself. While the Latin forays ("E Cosi Desio Me Mena" and "Comets over Costa Rica") veer from languid to invigorating, Hickman hits her stride in the jazzy title track, the sophisticated ballad "Eight," and the rocking blues "Look at It This Way." *A.N.*

SHIRLEY HORN *I Remember Miles*

(Verve, 53 min) ★★ ★ ★

Horn's tribute to a friend pleases me immensely. Her vocals show none of the frailties of the past, and her piano is authoritative. Contributing much are Toots Thielemans's harmonica in "Summertime," Miles Davis alumni Ron Carter and Al Foster on several tracks, and trumpeter Roy Hargrove. My favorite track is a beautiful ballad, "This Hotel," that Miles never recorded; accompanied only by her piano, Horn renders any further recording of the song unnecessary. *C.A.*

EDDIE GOMEZ *Dedication*

(Evidence, 52 min) ★★ ★

The bassist is joined by drummer Jimmy Cobb and pianist Stefan Karlsson, whose lyrical reading of "When You Wish Upon a Star" is a highlight. This is an equal-opportunity trio that sums up the wealth of its leader's experience and underlines the consistent quality of his work. Jeremy Steig's flutter-style flute is heard to great advantage in Miles Davis's "Nardis" and Gomez's title track. *C.A.*

and "Blue in Green" capture the Milesian nonsentimental plaintiveness.

Moving from the avant-garde to the world of pop, Mark Ledford's *Miles 2 Go* is better than it looks on paper. Ledford sings in an anonymously soulful manner, and while his four originals are negligible, his Miles covers — on which he sings and plays trumpet and guitar — are surprisingly fresh. Hearing "Blue in Green" tricked up with hip-hop beats may not float your boat, but the set has an ebullience that would be curmudgeonly to deny. *Richard C. Walls*

LENA HORNE *Being Myself*

(Blue Note, 39 min)

★ ★ ★ ★

Reviewing a Lena Horne album in these pages in 1969, I described her as having a "Dorian Gray agelessness." That still stands 30 years later. I've had reservations about some of Horne's more recent performances; the voice, I thought, was going. It's certainly back on *Being Myself*, which finds her in fine form. There are guests, but the basic accompaniment by her regulars — keyboardist Mike Renzi, guitarist Rodney Jones, bassist Benjamin Brown, and drummer Akira Tana — is all this veteran singer really needs. Still, it's a nice touch to have strings. Also, Milt Jackson's vibes and Bobby Forrester's organ lend a soft cushion to Horne's laid-back rendition of "Imagination," and Houston Person's robust tenor saxophone is effective in "Some of My Best Friends Are the Blues." Another 30 years? Maybe not, but more CDs? Let's hope so, and let's hope the next round is not as short in playing time. *Chris Albertson*

THE CHICO HAMILTON QUINTET

The Complete Pacific Jazz Recordings

(Mosaic, six CDs, 6 hours, 27 min; mail-order only; phone, 203-327-7111)

★ ★ ★ ★

One of the best pieces of music in *Boogie Nights* isn't a hit from the 1970s. The stately track that Burt Reynolds puts on the turntable toward the beginning is "The Sage" from 1955, performed by the Chico Hamilton Quintet. Although extremely popular with 1950s record buyers, Hamilton's group was dismissed by most East Coast critics as an example of West Coast chamber jazz at its most pastel. The instrumentation included Jim Hall's guitar, Fred Katz's cello, Carson Smith's bass, and Buddy Collette's saxophones, clarinets, and flute. But the key ingredient was Hamilton's drums, which he used for color and only rarely for propulsion. The group's signature was its interweaving of voices and its striking balance of composition and improvisation.

With customary thoroughness, Mosaic traces the quintet's evolution over a four-year period beginning in 1955. The instrumentation stays the same (with occasional

additions), but the personnel changes, with Paul Horn, John Pisano, Hal Gaylor, and Nat Gershman gradually replacing the original members. By the end, the presence of Eric Dolphy hints at larger changes in jazz to which Hamilton would soon acquiesce.

Mosaic has given the original Hamilton group the best sort of retrospective, one that bids us to challenge accepted wisdom. Strictly on its own merits, this is lovely, frequently gripping music. *Francis Davis*

COLLECTION

THE JAZZ SINGERS

(Smithsonian, five CDs, 6 hours)

★ ★ ★ ★

The triumph of *The Jazz Singers* is the way it addresses the thorny truth that jazz singing is not one coherent, easily definable art form, like pottery, but a music that exists primarily as a tangent and subset of other forms: blues, instrumental jazz, and mainstream pop vocals. Appropriately, this five-CD boxed set doesn't lay out the history of jazz singing in a straight-ahead, chronological fashion but rather divides it up according to loosely imposed categories: blues roots, novelty songs, party records, and jazz compositions. Especially rewarding are two meaty sections that explore the relationship of jazz singing to the Great American Songbook, in which the work of the major Broadway composers is "swung" and then "torched." All of the music's major figures and movements are included here and discussed in the 128-page booklet — with a few exceptions. Ray Charles turned down the Smithsonian's request to license one of his performances. Not explained, however, are the absences of Peggy Lee and Tony Bennett. *Will Friedwald*



Lena Horne: still ageless

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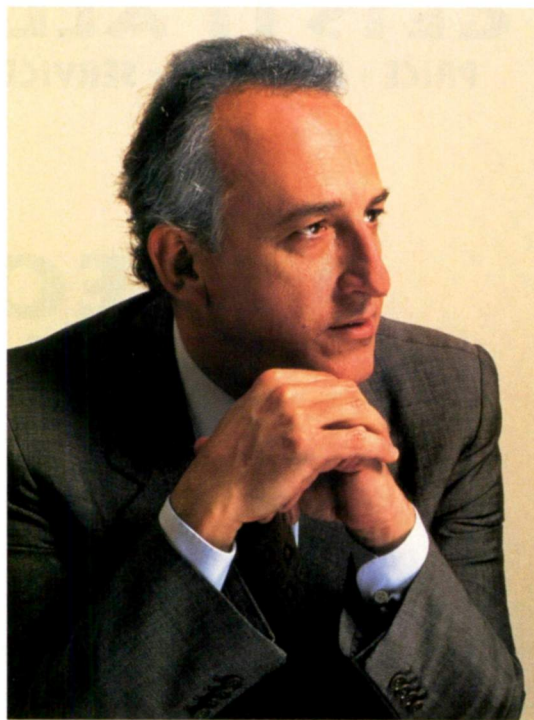


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ation on the performer, all presented on screen. In this case the musical analysis, by the Beethoven authority Barry Cooper, is far more detailed than the printed notes supplied with most CDs, including a glossary of the musical terminology used. The very comprehensive biography, based on Cooper's material, is divided into several sections, including an extensive timeline. The picture gallery shows significant individuals in Beethoven's life, along with brief biographical sketches. Finally, there is background on Pollini. I give all of it high marks for clarity, accuracy, and tasteful presentation. The texts are offered in a choice of languages, and Schott provides a fax/e-mail hotline for help. Five additional CD-pluscore discs are to be issued this year.

Of course, the disc also works in a regular CD player, and it is strongly appealing on aural grounds alone. Pollini's aristocratic bearing has never left his playing short on wit or genuine feeling. There is an uncommon sense of real involvement in his response to the elegant vigor of the Sonata No. 11, and indeed to the individual character of each sonata. The Sonata No. 12 is especially appealing for his resistance to the temptation to overindulge either the playfulness of the scherzo or the solemnity of the famous Funeral March, whose uncontrived dignity comes off splendidly. The new "Waldstein" Sonata, No. 21, easily supersedes Pollini's earlier recording in respect to both warmth and all-round flexibility.

The entire recital is such a thoroughgoing joy that listeners may find the recorded applause at the end of each sonata pretty easy to live with. The audience is not heard from at all *during* the performances, and the piano sound is first-rate all the way.

Richard Freed

piece of "audio cinematography" — it's recorded, edited, and structured like a movie.

All the music here was created for a specific occasion or purpose. *Chu lu lu*, a 49-second world-music collage, was an audio "commercial" for the American Center in Paris. *Bajanoom* was commissioned for the 1990 New Music America Festival in Montreal. *Vers les anges* was created for a public radio program. *Gold and Spirit* was commissioned for the Arts Festival accompanying the 1984 Los Angeles Olympics (it contains such rousing cultural cheerleading as "Go Van Gogh," "Ray Man Ray," and "Marcel Duh Champ").

By far the best piece is the title track, subtitled "A Room-Music for Percy Grainger." The main subject is a beautifully recorded sound of tramping through the great outdoors, which works as a kind of rondo theme framing a series of delightful sonic episodes that involve both natural sounds as well as more traditional — and quite haunting — musical and vocal sounds produced by violinist and vocalist Elizabeth Baker.

Eric Salzman

BEST OF THE MONTH Pollini's Beethoven, Plus!

Deutsche Grammophon has chosen to introduce its new "CD-pluscore" series of enhanced CDs, which reveal their extras when played in IBM-format CD-ROM drives, with a disc of three Beethoven piano sonatas that Maurizio Pollini recorded live at Vienna's Musikverein early last year (DG 435 472, 66 min). Happily, the "plus" in this case involves a good deal more than just the scores, which can be viewed on screen (a yellow cursor helps you follow along as the music plays) and printed out in a choice of page sizes.

Like other "CD-pluscore" discs, developed in collaboration with Schott Musik International, this one includes an analysis of the music, a biography of the composer, a picture gallery, and biographical inform-

STAR SYSTEM	
Stellar	★★★★★
Excellent	★★★★
Good	★★★
Fair	★★
Poor	★

ARMIRKHANIAN *Walking Tune*
(Starkland 206, 48 min)

★★★★★

Charles Armirkhanian is a highly imaginative sound poet, text-sound creator, and contrapuntal collagist of the first order. Laurie Anderson, in her notes for the CD, gets it right when she calls *Walking Tune* a



BACH *Heart's Solace*

Taverner Consort and Players, Andrew Parrott cond. (Sony 60155, 66 min)

★★★★★

This CD contains two motets written for the funerals of Leipzig dignitaries, "Jesus, meine Freude" and "Komm, Jesu, Komm," plus the *Mourning Ode*, which was part of the memorial service for the Electress of Saxony. Andrew Parrott, the director of the Taverner Consort, an English early-music ensemble, has reconceived performance of these works in the same way Joshua Rifkin revolutionized the B Minor Mass some 25 years ago. Rifkin argued that most of Bach's "choral" music was meant to be sung by one singer per part, and although his theory is still fiercely debated, Parrott adopts it.

The intertwining, contrapuntal vocal lines emerge here with startling clarity and equality, shorn of the clotted opacity of texture that often bedevils Bach's choral music. Although the soloists use little vibrato, they do not lack in expressivity. The instrumental sonorities are piquant, piercing, and

resolutely unblended. Whether this is the "correct" approach to Bach's vocal music seems irrelevant given the beauty of the performance. *K. Robert Schwarz*

A COPLAND PROFILE

Dallas Symphony, Andrew Litton cond. (Delos 3221, 70 min)

★★★★

Three aspects of Copland are represented in this "Profile" — the populist of ballet and film, the jazz experimenter of the mid-1920s, and the embryonic modernist just breaking out of his shell. The last is represented by the *Symphony for Organ and Orchestra*, composed in 1924, which packs a wonderful punch once you get through the relatively brief opening prelude. The central scherzo has the real Copland drive, punctuated by telling exclamations from organ and orchestral percussion. The increasing dissonance that takes hold in the finale must have driven the Carnegie Hall audience at the work's premiere out of its collective mind. Andrew Litton pilots his players through a resplendent reading, highlighted by the sumptuous sonorities and coloration of the Lay Family organ at Dallas's Meyerson Center under the fingers of Wayne Marshall.

Music for the Theatre (1925) is one of my favorite early Copland pieces, with both sass and atmosphere; the high point is the next to last of its five movements, "Burlesque." We have a good performance here, though it falls short of the in-your-face nerviness of Leonard Bernstein's 1957 recording (now on Sony), maybe in part because that one was miked more closely.

The 1949 suite from *The Red Pony*, in the composer's listener-friendly "cowboy" style, is a pleasant 25 minutes of artful nostalgia. The middle movements — "Dream March," "Circus Music," and "Walk to the Bunkhouse" — are the most memorable of the six. It all adds up to a very attractive program with some gorgeous sound.

David Hall

JANACEK *Glagolitic Mass; Sinfonietta*

Soloists; Arvid Gast, organ; Berlin Radio Choir; Deutsches-Symphonie Orchester, Berlin, Eliahu Inbal cond. (Denon 18049, 64 min)

★★★★

Composed in the wake of all but the last of Janacek's great operas, the *Glagolitic Mass* — the name refers to the antique language of the Slavonic text — has become almost familiar in the West given the dozen or more recordings since the early 1950s. This latest one, made in Berlin's Philharmonie hall under Eliahu Inbal's direction, emphasizes the score's lyrical element rather than its raw passion and urgency, particularly in the opening section and in the *Agnus Dei*. It is a valid interpretation, if not necessarily superior to those

by Czech artists, and the performance is a good one.

Inbal has a radiant soprano in Julia Varady, a fine tenor, Valentin Provat, whose only shortcoming is a tendency toward the lachrymose, and other good soloists. The reading is by no means lacking in drama: the orchestral interlude evoking the crucifixion is hair-curling, and Arvid Gast takes the ferocious organ solo near the end at a terrific clip, driving the music home in no uncertain terms. The sound throughout is splendid, graced by effective depth imaging. The choir seems placed farther back than usual, but at no cost in presence and with a distinct gain in the audibility of complex orchestral details.

The popular *Sinfonietta*, with its blaze of twelve trumpets preceding and following the three sharply characterized central movements, also fares well. The reading compares very decently with the many other versions on disc, and again a sense of space and depth is a major plus. Overall, the sonics come pretty close to a draw with the most sumptuous-sounding versions of these works that I've heard. *David Hall*

MENDELSSOHN *Violin Concerto in E Minor*

SIBELIUS *Violin Concerto*

Sarah Chang; Berlin Philharmonic, Mariss Jansons cond. (EMI 56418, 59 min)

★★★★

The enthusiasm of the audience at the end of Sarah Chang's live concert recording of the Sibelius concerto, while intrusive in home listening, was certainly well earned. This CD is a gem. Both performances not only show how far along young Chang has come but are by any measure exceptional. EMI's exemplary balancing of soloist and orchestra in both works puts these elements equally in the picture, as they are in all too few concerto recordings nowadays.

And make no mistake: these performances are real partnerships, charged with the give and take between soloist and conductor that is even rarer than judicious balancing in a recording. In both the Sibelius and the Mendelssohn there is an impression of real dialogue, which keeps these familiar works sounding fresh and vital without a hint of eccentricity. The solo playing is not

We Got Gershwin

George Gershwin's centennial year is being celebrated on CD with a variety of tributes to the genius of this 20th-century American pop, jazz, and classical musical phenomenon. Sony has rereleased the complete 1951 Columbia Masterworks studio recording of his *Porgy and Bess*. On Deutsche Grammophon's *We Got Gershwin*, André Previn plays piano and David Finck double-bass in jazz renditions of some of the composer's most popular songs. And this month BMG Classics will release an all-Gershwin program with Michael Tilson Thomas leading the San Francisco Symphony and Broadway stars Aldra McDonald and Brian Stokes Mitchell — the same forces to be featured September 30 in a Great Performances telecast on PBS of the gala Gershwin concert opening Carnegie Hall's 108th season.

— Robert Ripps

only assured in the technical sense but un-faillingly tasteful in even the most impassioned passages, which are embraced very wholeheartedly indeed. *Richard Freed*

ROSSINI *Il Turco in Italia*

Bartoli, Pertusi, Corbelli, Vargas, others; Chorus and Orchestra of La Scala, Riccardo Chailly cond. (London 458 924, two CDs, 142 min)

★★★★

Rossini wrote *Il Turco in Italia* for Milan in 1814, less than a year after the Venice premiere of his better known *L'Italiana in Algeri*, with which it is frequently

and unavoidably compared. In Riccardo Chailly's second recording of this amusing comedy, he responds keenly to the opera's vitality. This time he is aided by an even more homogeneous ensemble than the cast at his disposal in his previous recording for CBS. At the center is Cecilia Bartoli's sparkling, mischievous Fiorilla. Full of caprice and coyness, she turns from an alluring siren to a fiery termagant in a few seconds during a duet with her elderly, put-upon husband, Geronio. At times the heavier vibrato invading her tones seems a sign of impending vocal trouble, but her singing

remains virtuosic and is always tellingly inflected.

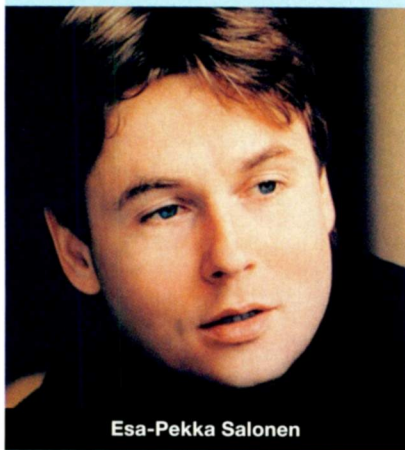
The playful diva enjoys the company of outstanding Rossinians. Michele Pertusi is a rich-toned Selim who delivers his lines with exemplary clarity. As Geronio, Alessandro Corbelli is given an aria ("*Se ho da dirla*," Act II) not heard in previous versions; he excels in this, but in general he exhibits more technique and style than voice. Ramón Vargas displays his excellent, graceful light tenor in a relatively small but very demanding role, while Roberto de Candia's light baritone does well with the meddlesome Poeta. *George Jellinek*

Mahler Update

New recordings of two Mahler symphonies — one by a youngish conductor, Esa-Pekka Salonen, and one by a veteran, Pierre Boulez, who has come to the composer's music late in his career — raise the question of how Mahlerian performance styles have changed since the recordings by conductors who either knew him or grew up steeped in the same tradition. I'd venture that today's younger conductors, such as Salonen, tend to soft-pedal the element of anxiety in Mahler's music and to

closer than any other and has state-of-the-art sound. There's tremendous range in terms of both frequency and dynamics, as well as a fine sense of space, notably in the solo-posthorn episodes of the third movement.

Boulez's DG recording of the Ninth with the Chicago Symphony comes across as Mahler without the tragedy. Instead of a sense of ineffable farewell in the final pages, we get something more like acceptance. Boulez is very deliberate in the opening movement, exercising great care in matters of orchestral coloration and clarity of line, yet there is ample menace to the intensely dramatic climaxes. The sarcasm in the *Ländler* movement is tempered by an almost Gallic concentration on coloristic detail, but in the ferocious *Rondo-Burleske* the rhythms are precise almost to a fault, the attacks razor-sharp. The great adagio finale goes almost five minutes faster than the norm, but the climaxes are telling, and the Chicago strings are at their magnificent best. The very last bars, played at a barely audible pianissimo, can only be described as unearthly. The recording, done in Medinah Temple, is spacious and full-bodied. If you want a Mahler Ninth with compassion but few tears, Boulez may be the interpreter of choice. *David Hall*



Esa-Pekka Salonen

SONY CLASSICAL

make more of its contrapuntal complexity and brilliant orchestration. As for Boulez, some may complain that his Mahler is unidiomatic, but it is certainly thought-provoking.

Despite menacing sounds here and there in its long opening movement, the Third Symphony has always struck me as the most irrepressibly cheerful in the Mahler canon. Of the recorded performances I have heard, my first choice remains Bernstein's 1961 reading (still available on Sony), but Salonen's new one with Los Angeles forces comes

MAHLER

Symphony No. 3

Anna Larson, contralto; Women of the Los Angeles Master Chorale; Paulist Boy Choristers of California; Los Angeles Philharmonic, Esa-Pekka Salonen cond. (Sony 60250, two CDs, 95 min)

★★★★★

Symphony No. 9

Chicago Symphony, Pierre Boulez cond. (Deutsche Grammophon 457 581, 80 min)

★★★★

SCHUMANN Complete Symphonies

Orchestre Revolutionnaire et Romantique, John Eliot Gardiner cond. (DG Archiv 457 591, three CDs, 165 min)

★★★★★

These are accomplished performances indeed, which will not surprise anyone who has heard John Eliot Gardiner and his band's startling, revelatory recording of Berlioz's *Symphonie fantastique*. But Schumann was no Berlioz, and when modern orchestras play his later symphonies, they almost always come off sounding like clotted cream. Late in his short life, with little skill as a conductor, Schumann became music director of the second-rate orchestra in Düsseldorf, and in orchestration he seems to have adopted the motto, "double to avoid trouble." If one instrument screwed up, another would always be carrying the same line. But by thickening the stew, he made it almost inedible.

Even Gardiner can't change that unfortunate reality. I adore the "Rhenish" Symphony (No. 3), but it's wearying that every instrument seems to be playing all the time — few of them ever have solos. And the hatchet job Schumann did on his Fourth Symphony is only more evident from the two versions here, not less. A deftly scored and structurally unprecedented work in its original version (1841), in its revised version (1851) the Fourth became padded and murky. Neither the "Rhenish" nor the revised Fourth have ever sounded clearer than in these readings, but the problems certainly do not disappear.

The younger, less self-conscious Schumann, however, is well served by Gardiner. Just listen to the radiant, daring, and, yes, transparent original version of the Fourth, sounding here like a clarion call of German Romanticism. The set also includes a rarity, the unfinished "Zwickau" Symphony of Schumann's youth, as well as the Overture, Scherzo, and Finale (1841) and a riotously virtuosic performance of the *Konzertstück* for Four Horns and Orchestra. Indeed, the orchestra plays at its usual hair-raising level throughout. This is hardly the last word on Schumann's symphonies, but it may be

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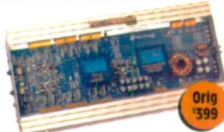
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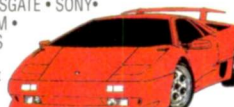
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the last word on their period-instrument performance. *K. Robert Schwarz*

STRAVINSKY *Scherzo fantastique; Apollo; Firebird Suite (1945)*

Royal Concertgebouw Orchestra, Riccardo Chailly cond. (*London 458 142, 71 min*)

★★★★★

Riccardo Chailly's stunning recording of Stravinsky's very early *Scherzo fantastique* appeared only four years ago

with his handsome recording of Rimsky-Korsakov's *Scheherazade*, and it now introduces an all-Stravinsky program that is a winner clean through. The composer's 1945 suite from *The Firebird* is scored for a somewhat smaller orchestra than the standard 1919 suite, but it contains enough additional music to serve for two or three staged productions of the ballet itself. While I've tended to prefer either the sumptuous and concise 1919 suite or the complete score,

Chailly's affectionate way with the 1945 suite, combined with London's most luminous and wide-open sonic frame, could change my mind.

Framed between these two colorful items is the sharply contrasting *Apollon musagète* (which Stravinsky eventually retitled simply *Apollo*), definitely not a splashy piece but charged with a different sort of warmth in its more intimate scoring for strings alone. Played by the Royal Concertgebouw strings, it fairly glows, and Chailly's unerring interpretive instincts provide the most exquisite balance of strength and tenderness while appearing to allow everything to come together through its own magical grace, without the slightest nudge. *Richard Freed*

VIVALDI *Violin Sonatas, Op. 1, Nos. 7-12*

L'arte dell'arco; Christopher Hogwood, keyboards (*Deutsche Harmonia Mundi 77350, 54 min*)

★★★★★

Christopher Hogwood is once again in every enlivening company in this absolutely stunning presentation of the last six works from Vivaldi's Op. 1, a set of twelve sonatas for two violins and continuo. One of the factors that makes it so is the bright sound of the ensemble. Period-instrument performances over the last several decades have generally used the old tuning of A = 410-425 Hz instead of the modern standard of A = 440 Hz. *L'arte dell'arco's* players, however, tune to 442 Hz, which is identified in the annotation as "Venetian pitch" and is claimed to be what Vivaldi himself expected when he composed these works. It certainly does enhance the vitality of the music, and the playing itself is highly charged, not only in the faster music but in respect to the depth and expressiveness of the slower movements as well.

The superbly recorded sound is bright, lively, and exceptionally rich. The continuo comprises a cello, a theorbo, and either harpsichord or chamber organ in five of the sonatas, a cello alone in No. 11. The full complement, with harpsichord, makes the concluding sonata, a single movement of variations on the popular song *La Folia*, a truly climactic finale to the set. In every musical and sonic respect this disc is certifiably irresistible. *Richard Freed*

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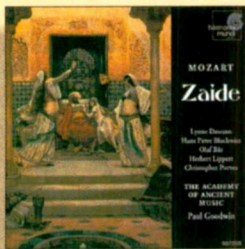
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Concerti a due cori Nos. 1-3
Tafelmusik, Jeanne Lamon cond. (Sony
63073, 66 min) ★★★★★

Lamon and her crack period-instrument ensemble illumine the *Royal Fireworks Music* with Handelian vigor — the players' enthusiasm is evident in every phrase. The three marvelous *Concerti a due cori*, for double wind ensembles plus strings, though they show the same exuberance, lack some warmth, but overall the disc is a delight, with stunning sonics. *R.F.*



MOZART *Zaide*

Dawson, Blochwitz, Bär, others;
Academy of Ancient Music,
Paul Goodwin cond. (Harmonia Mundi
907205, 75 min) ★★★★★

Dramatically, this love story set in a harem has little to recommend it. Left unfinished, *Zaide* is known mainly for "Ruhe sanft," one of the most beautiful melodies Mozart ever composed. In this fine recording it receives a ravishing performance from soprano Lynne Dawson. The Academy of Ancient Music sounds more like a modern orchestra — less ancient, if you will — under its new musical director, Paul Goodwin, than under its founder, Christopher Hogwood. *J.J.*

SCHUMANN *Dichterliebe*; *Liederkreis, Op. 24*

Matthias Goerne, baritone; Vladimir
Ashkenazy, piano (London 458 265,
50 min)

★★★★★
Goerne is blessed with a warm, ringing voice, ample in range, and with a technique that affords him a sensitive control of dynamics. In this recital of Schumann's settings of Heine poems, he enters wholeheartedly into the bitterness, anger, and thwarted hopes expressed in the lyrics. Ashkenazy's exciting pianism sometimes dominates, even to the point of blurring the singer's interpretive nuances. Excellent sound, good annotation. *G.J.*

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Opera on DVD: Act I

Image Entertainment has released the first operas on DVD, among them Mozart's *Don Giovanni* (4356) and Rossini's *William Tell* (4357). These two are reissues of La Scala productions that have already appeared on VHS and laserdisc, and it's clear that the DVD medium has at least one tremendous advantage over laserdisc: long uninterrupted playing time. *Don Giovanni* gains immensely in dramatic continuity when the entire opera, and not just each individual act, can be experienced in one go. You can't get that on CD. It's also easier to cue up a favorite aria — aided by rudimentary on-screen menus — without disc sides to select.

When it comes to the DVD's other potential advantages for recorded opera, they remain potential. Unlike movie DVDs, which usually let you select among multiple subtitle languages, both these DVDs have the same English subtitles as their previous video releases, and you can't suppress the subtitles on DVD anymore than you could on videotape or laserdisc. Image has also totally neglected the DVD format's capability to replace traditional liner notes with vivid on-screen presentations. Movies on



DVD often include production notes, actor biographies, and other background materials. With *Don Giovanni* you get nothing, not even the composer's dates or the location and date of the opera's premiere, much less the kind of liner notes or libretto that any self-respecting CD opera set provides. The *William Tell* DVD at least provides some of this information in printed notes. Most important, the soundtracks in both cases are straight PCM stereo, not multichannel Dolby Digital, which has the potential to convey a vivid you-are-there theatrical ambience in recordings of new productions.

As opera-on-video experiences, these two productions have always been somewhat substandard. Particularly irritating is video director Carlo Battistoni's distracting penchant for switching to conductor Riccardo Muti whenever he runs out of things to show in *Don Giovanni*. And who wants to watch on a TV screen a production of Rossini's epic *William Tell* in which the backdrops are themselves flat projections, often shaky ones to boot? When it comes to opera on DVD, we ain't seen nothin' yet.

David Ranada

beautiful soprano voice. (But do we really need to have the point driven home by that cloying CD title?) A few of the numbers come from Fleming's opera roles — including the Gavotte from Massenet's *Manon* and a fabulous rendition of the Jewel Song from *Faust* — but most of the disc is a grab-bag of wildly diverse styles. She takes such chestnuts as Canteloube's *Bailero* (from the *Chants d'Auvergne*) and Charpentier's "Depuis le jour" (from *Louise*) and infuses them with glorious color and warmth.

If the collection has a fault, it's a preponderance of moping, melancholic songs, however splendidly performed. After a radiant performance of "Chi il bel sogno di Doretta," from Puccini's *La Rondine*, the middle of the set becomes a bit of a slog — Marietta's lugubrious song from Korngold's *Die tote Stadt*, the stately, monotonous "In trutina" from Orff's *Carmina Burana*, the chilly magnificence of Richard Strauss's *Morgen!*, and Rachmaninoff's languorous *Vocalise* — until we finally arrive at a clutch of tunes from operettas, including an eerie melismatic number in a flamenco mood by a contem-

porary Spanish composer named José Maria Cano. Choose any track here, and you will turn up a tasteful, thoughtful performance, but the CD is best listened to one morsel at a time.

Jamie James



QUARTETTO GELATO *Aria fresca* (Marquis/Allegro Imports 81602, 64 min)

★★★★

The name Quartetto Gelato means Ice Cream Quartet in Italian, and *Aria fresca* means "fresh air," which is what this CD offers: new versions of old tenor arias, like "La donna è mobile" and "Salut demeure chaste et pure," arranged for accordion, oboe, and strings, large suites from *Rosenkavalier*

and *Turandot* culminating in tenor arias, a rather rambling *gran concerto* (with variations) on themes from *Vespro Siciliano*, as well as some nonoperatic dances scored and played in café-orchestra style. My favorite is the *Tango Solitario* in the style of Astor Piazzolla by accordionist (and violist) Claudio Vena, the one (mostly) original piece on the CD. Tenor Peter de Soto, who also plays the violin and mandolin, is the quite credible Pavarotti stand-in. The other musicians, all doubling on various instruments, are deft. In a couple of places, the Toronto Symphony under Joaquin Valdepeñas provides a rather ponderous backup that would seem to contradict the CD's lighthearted concept.

This all-Canadian production, reviving the old-fashioned idea of popular operatic arrangements, is first-class. The liner notes are hilarious, but the actual musical content is serious; this is entertainment music with quite a bit of heft. In fact, Quartetto Gelato makes me think of an early-music group — without the early music.

Eric Salzman

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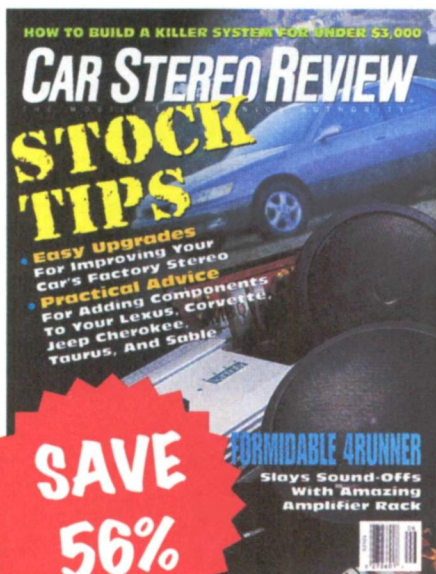
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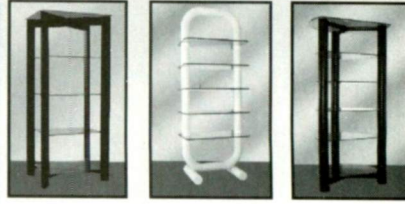
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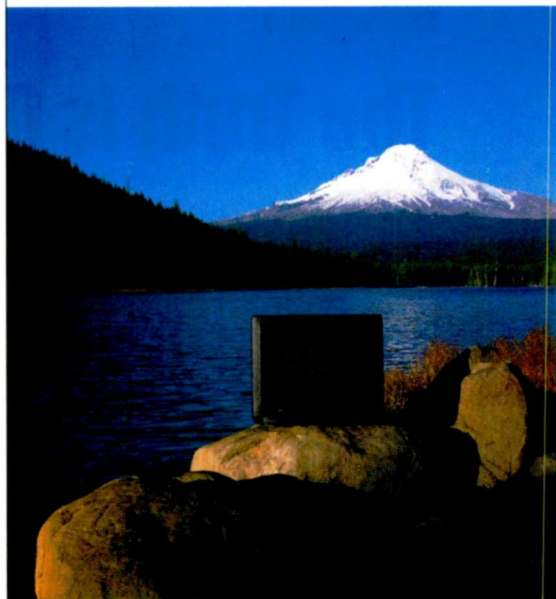
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THE HIGH END COREY GREENBERG

The Truth Is Oot There

READER, BE WARNED! There walk among us aliens from another world, single-mindedly bent on replacing every one of us — man, woman, and child. They look like us, dress like us, even pray alongside us at our places of worship.

I am, of course, talking about Canadian loudspeaker designers.

America and England may have spent the latter half of the 20th century vying for bragging rights to the world's best-sounding speakers, but the last five years have been all about Canada. The ripples of Dr. Floyd Toole's groundbreaking work on lab-controlled listening tests at Ottawa's National Research Council in the 1980s can be found today in the rapid dominance of such NRC-inspired Canadian speaker lines as Energy, Paradigm, and PSB. These days, it seems, many of the world's best-sounding speakers are being designed by guys whose breath smells suspiciously of Molson and who pronounce the word "out" as "oot."

Make no mistake — the aliens have definitely landed. I just returned from a tour of Harman International's new state-of-the-art speaker laboratory in Northridge, California, and everywhere I turned at this proudly American audio manufacturer, I ran into a Canadian smiling and pointing a calibrated microphone at a shuddering woofer. In much the same way as the Allies divvied up all the best German physicists after the war, Harman has imported some of Canada's best loudspeaker minds to jump-start its JBL and high-end Infinity divisions. Toole himself was the first alien abductee, back in 1991, and he's since brought aboard many of his ex-NRC assistants such as Sean Olive and Allan Devantier, Infinity's current Director of Engineering.

It's not unusual for aliens to erect a private sanctuary on their conquered soil where they can feel free to participate in native rituals. So it makes perfect sense that in launching the new Harman Consumer Group Acoustical Engineering Lab, Dr. Toole has built an NRC-inspired "home away from home" where the Harmanized Canucks can continue to practice their special blend of subjective- and objective-based speaker design.

To understand why Harman's new listening lab is so important, it helps to look

at the two traditional and opposing camps of speaker design — the "objective" and the "subjective." Think of them as the labcoats and the hippies. The objective designer — usually a stark-faced, degreed engineer with a low tolerance for long hair or fun — locks his prototype speaker into an airless, soundproofed tomb and measures the bejesus out of it till it reads "flat," actual listening be damned. The objective school has turned out many speakers whose measured performance is exemplary but whose sound is terrifyingly lousy.

At the other end of the spectrum lies the subjective designer, usually a fun-loving, long-haired guy with a low tolerance for degrees or engineers. His product development consists of simply listening to music on a prototype speaker, diddling with this driver or that crossover circuit a

To call Harman's Listening Lab the best speaker-evaluation setup I've ever heard is selling it short.

bit, then listening and diddling some more until, a few months later, the speaker sounds "good," measured accuracy be damned. This school has turned out some very musical-sounding speakers whose measured performance is so terrifyingly lousy that high-end critics are forced to laugh it off as being somehow not worth worrying about.

To be fair, most of the speaker manufacturers I've visited over the years mix in a token page of the enemy's playbook. But at the end of the day, the labcoats don't really listen, the hippies don't really measure, and neither side can understand why their speakers don't seem to get any better as the years go by.

That's the genius of the NRC and now Harman's Listening Lab: by using not just measurements but also rigorously controlled listening tests with both audiophiles and civilian listeners, engineers can better correlate measured performance with subjective sound quality and push their designs in directions that listeners

repeatedly prefer. The approach has paid off for the NRC-aligned Canadian speaker companies, and Harman hopes to repeat that success in the U.S.

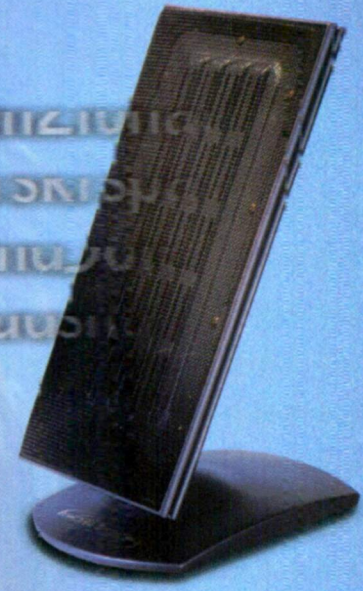
Twenty engineers work in the 10,000-square-foot Listening Lab, which will be used for all of Harman's consumer speaker brands. Four computer-controlled, acoustically variable listening rooms, ranging in size from 2,000 to 4,500 square feet, are where trained listeners are herded and then handed laptop PCs to record their opinions on prototype speakers. There's more state-of-the-art measurement gear crammed into this facility than at any ten other American speaker manufacturers combined, but the coolest thing in the whole building by far is the high-speed robotic speaker-positioning system in each of the listening rooms.

You should see this thing in action! The aliens put a bunch of different pairs of speakers on movable pallets behind an acoustically transparent black screen, and then the PC-controlled music (CD-quality PCM audio stored on a hard drive) stops

for less than 2 seconds as the system silently swipes the pair you've been listening to out of the way and swings the new pair into place just as the same bit of music starts up again. To call this the best speaker-evaluation setup I've ever heard is selling it short — this rig results in such outrageously better and more repeatable comparisons that the only way Harman won't get better-sounding speakers out of it will be to restrict the listening panels to shell-shocked goats and Jenny Jones.

In fact, the Listening Lab has already borne fruit. In a day spent listening to JBL and Infinity flagship models, the most impressive demo I heard was of JBL's new HLS610 two-way minispeakers. Despite their size, the pair I heard sounded bigger and better than most of the megabuck high-end speakers I heard this past January at the Consumer Electronics Show. The cost? Just \$300 a pair. And that's what forging a new leadership in loudspeaker research and design is all about. □

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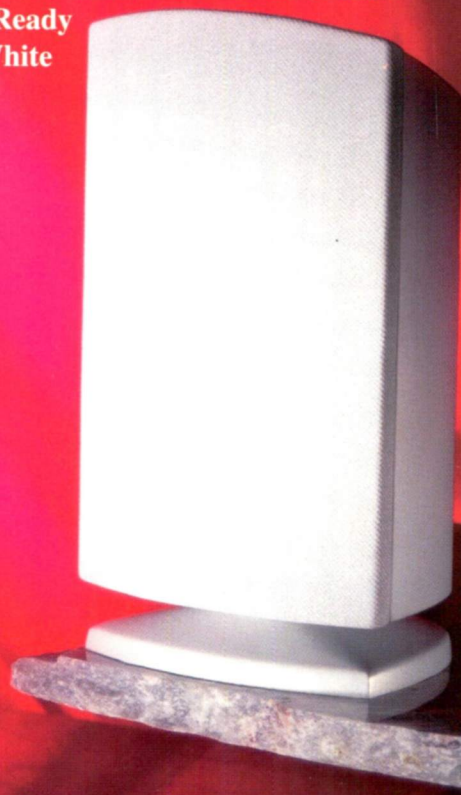
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