

Virtual Surround: Can Two Speakers Sound Like Five?

THE WORLD'S #1 A/V MAGAZINE

StereoReview®

BUYER'S GUIDE TO DVD Players

Everything You Need to Know Before You Hit the Stores

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PIONEER'S BEST DVD PLAYER

HARMAN KARDON'S SEXY SHELF SYS'.....

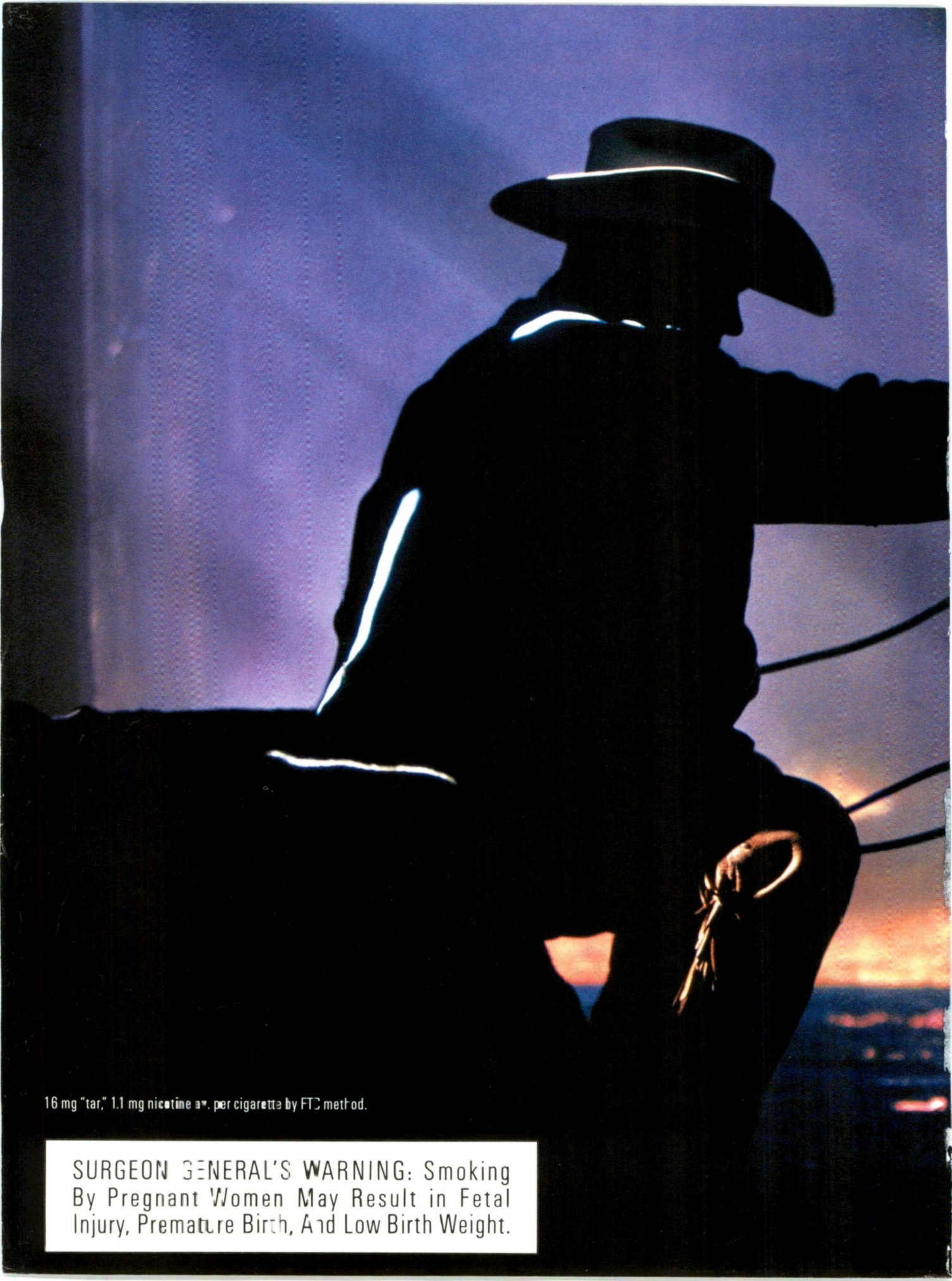


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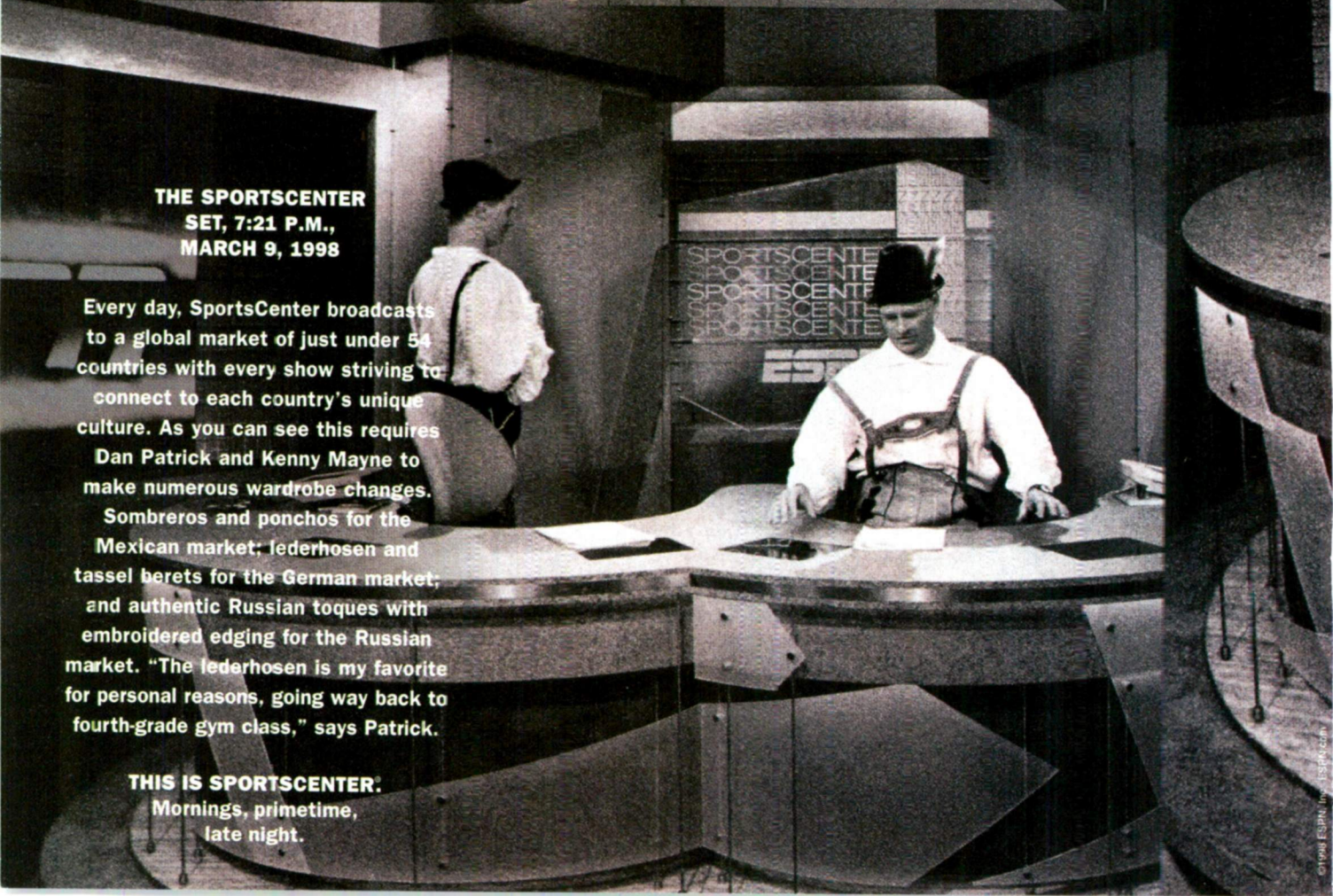
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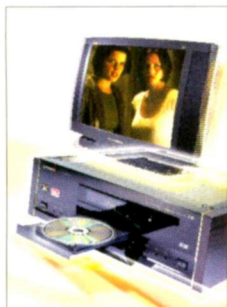
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Stereo Review



ON THE COVER

See page 33 for our test report on Pioneer's Elite DV-09 DVD player. On the 27-inch Philips Magnavox TV set is Neve Campbell and Courtney Cox in a scene from *Scream 2* (courtesy Buena Vista).

Digital Imaging by
Chris Gould

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bulletin

BY BRIAN FENTON & WILLIAM LIVINGSTONE

divx launched

After a couple of false starts, DVD players supporting the pay-per-play Divx format hit store shelves during the second week of June in two test markets, Richmond and San Francisco. The Zenith Inteq DVX2100 player was priced at \$499. A total of 41 titles were expected to be available by the end of June. Of these, 15 were not yet available in the "open" DVD format, including Disney's *Flubber*, Paramount's *Star Trek: First Contact*, and a few from Fox (*The Full Monty*, *Speed 2*, *Volcano*), which has yet to commit to releasing movies on DVD. Look for a full review of the Divx system in next month's *Stereo Review*.

dtv roadblock?

Digital TV is going to roll out November 1, right? Not without some bumps along the way. As we went to press, equipment and service providers had yet to reach a consensus with Hollywood production studios on copy protection. An industry group has adopted a FireWire-compatible encryption system called M-6, but some Hollywood studios are concerned that M-6 isn't strong enough and that the high-quality digital signals will invite the pirating of copyrighted material. Even though the November 1 debut is set in stone, it's possible that the lack of a full consensus on copy protection will keep the format from launching with the most attractive content. Even worse, there's no guarantee that first-generation sets will be compatible with the encryption scheme that's finally agreed on.

concertgoers' rights

When a concertgoer in Copenhagen, Denmark, complained about the poor sound at a concert by the soprano Kiri Te Kanawa, the country's National

LICENSED TO BE A PIRATE?

What music lover hasn't always wanted to be a DJ on the radio, broadcasting his favorite music for everyone to hear? Maybe all of us will get a chance. The FCC has accepted three Petitions for Rule Making that would create a low-power radio broadcasting service. Much to the horror of the radio industry, which fears interference from low-power stations, FCC chairman William Kennard did not reject the proposal outright but instead indicated his support for it. The proposals are generally intended to increase the diversity of ownership, increase listening choices, and provide affordable radio advertising for small businesses even in large markets. No proposal condones pirate (unlicensed) operators, although one specifically proposes amnesty for pirates so that they would be eligible to receive low-power licenses. The official FCC Web site notes that "the acceptance for filing of this Petition for Rule Making does NOT imply any approval for low-power operations"

Consumer Agency ruled that the sound had been unreasonably deficient and required the promoter to refund the price of two tickets. The case is thought to be the first of its kind anywhere. *Billboard* quoted a spokesperson for the agency: "A consumer must be able to hear the music and lyrics when they come out of the speakers. That was not the case here."

the domain shuffle

More than 5,000 radio stations have a presence on the Internet, most in the .com domain. However, BRS Media has entered a partnership with the Federated States of Micronesia to take advantage of the country's .fm Internet country code. BRS Media will license and market the .fm domain in the U.S. and is reportedly talking with Armenia about doing the same for that country's .am domain. In case you're wondering, the .tv domain belongs to Tuvalu.



life of brian

A new edition of the autobiography of Brian Epstein (1934-1967) is one of many current projects to honor the man who discovered and guided the Beatles. Originally issued in 1964, *A Cellarful of Noise* has been out of print for years. Byron Preiss Multimedia Books is republishing it in paperback for \$9.95. In the works is a two-hour BBC documentary on Epstein's life, scheduled for American TV later this year, and a campaign is under way to have him inducted into the Rock and Roll Hall of Fame. Visit the Brian Epstein Web site, www.martinlewis.com/mbe, or write to MBE!, P.O. Box 461378, Los Angeles, CA 90046.

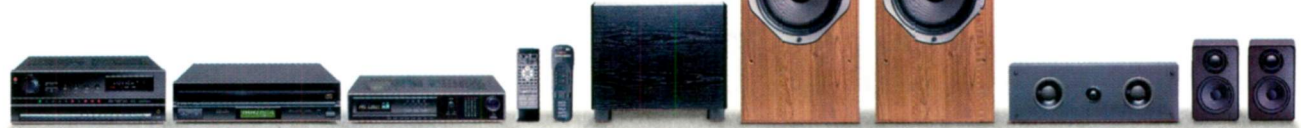
dss does dolby

On July 1, DirecTV was scheduled to start delivering limited programming (all Direct Ticket pay-per-view letterbox features) in 5.1-channel Dolby Digital surround sound. To receive the surround sound, viewers will need an RCA DS5451RB third-generation DSS receiver (\$449) and a Dolby Digital decoder. Movies scheduled in July include *Gattaca*, *Starship Troopers*, *Scream 2*, *Tomorrow Never Dies*, and *The Rainmaker*.

overrated

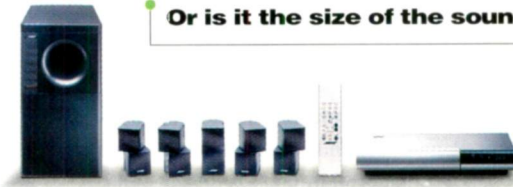
The *Utne Reader* has published a list of "150 Mind-Altering Masterpieces." The musical selections range from Bach and Mozart to Billie Holiday, Bob Dylan, and the Clash. Among ten "Overrated Icons" Jon Spayde listed the Doors, explaining, "This is the band that gave us the line 'Like a dog without a bone / An actor out on loan.' Upside: Writing dumb songs diverted film-school-dropout Jim Morrison from making dumb movies."

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



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TRACK ONE

BOB ANKOSKO

Should You Go DVD?

IF YOU HAVEN'T ALREADY made room in your equipment rack for a DVD player, chances are you're thinking about it. And whether you read this magazine on a regular basis or just picked it up, I'd be willing to bet that your thoughts are more than fleeting. Now, if you ask me, I'll tell you to grab your wallet and head for the nearest electronics store. As far as I'm concerned, DVD is the coolest product since the CD. (All right, digital camcorders are pretty cool, too.)

But don't just take my word for it. Scope out our "Hot DVDs" on page 24. Then turn to page 53 for the second installment in our "Shopping Made Simple" series, "A Guide to DVD Players." Dan Kumin takes you on a tour of the format, describing its key features and explaining how to use the accompanying table listing every current DVD player. Discontinued first-generation players are not listed, but they may still be in stock at some stores — and at attractive prices.

Next, check out our test reports for expert appraisals of the latest players. Since DVD hit the scene in the spring of 1997, we've tested 15 players from 8 top electronics companies, including Toshiba, Sony, Panasonic, and RCA. This issue our resident DVD guru, David Ranada, puts Pioneer's super-high-end DV-09 machine through its paces (page 33). Next month we'll give you the lowdown on three more second-generation players — and the first Divx player.

If you're worrying about Divx — the pay-per-play offshoot of DVD now being test-marketed and slated to go national late this summer — relax. With Paramount's recent announcement that it will also support "open" DVD, it now appears that the number of movies that will be available only in the Divx format is shrinking. (Remember, Divx discs don't play on regular DVD players.) Except for Fox, every major Hollywood studio has now committed to putting out movies on DVD. And it's only a matter of time before Fox, too, hears the cash register ringing — given that more than 4 million DVDs have been sold to date, it's surprising that the studio hasn't jumped in yet (think politics). The other reason not to worry about Divx is that it's a stripped-down version of DVD that doesn't offer all the features that readers of this magazine will want: no widescreen versions of your favorite movies, and none of the supplemental material that makes DVDs so special to collectors.

Still not sure DVD is for you? Track down someone who owns a DVD player and ask the really hard questions, like "Will DVD lead to unexpected visits from my in-laws?" Hit the Web and do a little homework. Be sure to check out the DVD Video Group's site at www.dvdvideogroup.com for an up-to-date list of available titles, a preview of what's coming down the pike, and, if you're one of those analytical types, industry news and sales figures. Or post your DVD questions on the message boards at our America Online (AOL) site (keyword: stereo) and see what they're saying about DVD in cyberspace.

Finally, by all means get yourself a DVD demo! If you don't have a friend or a friend of a friend who owns a player, go to a decent electronics store — that is, one with a couple of bona fide home-theater demo rooms. Tell 'em Bob sent you.

Bob Ankosko, Editor in Chief

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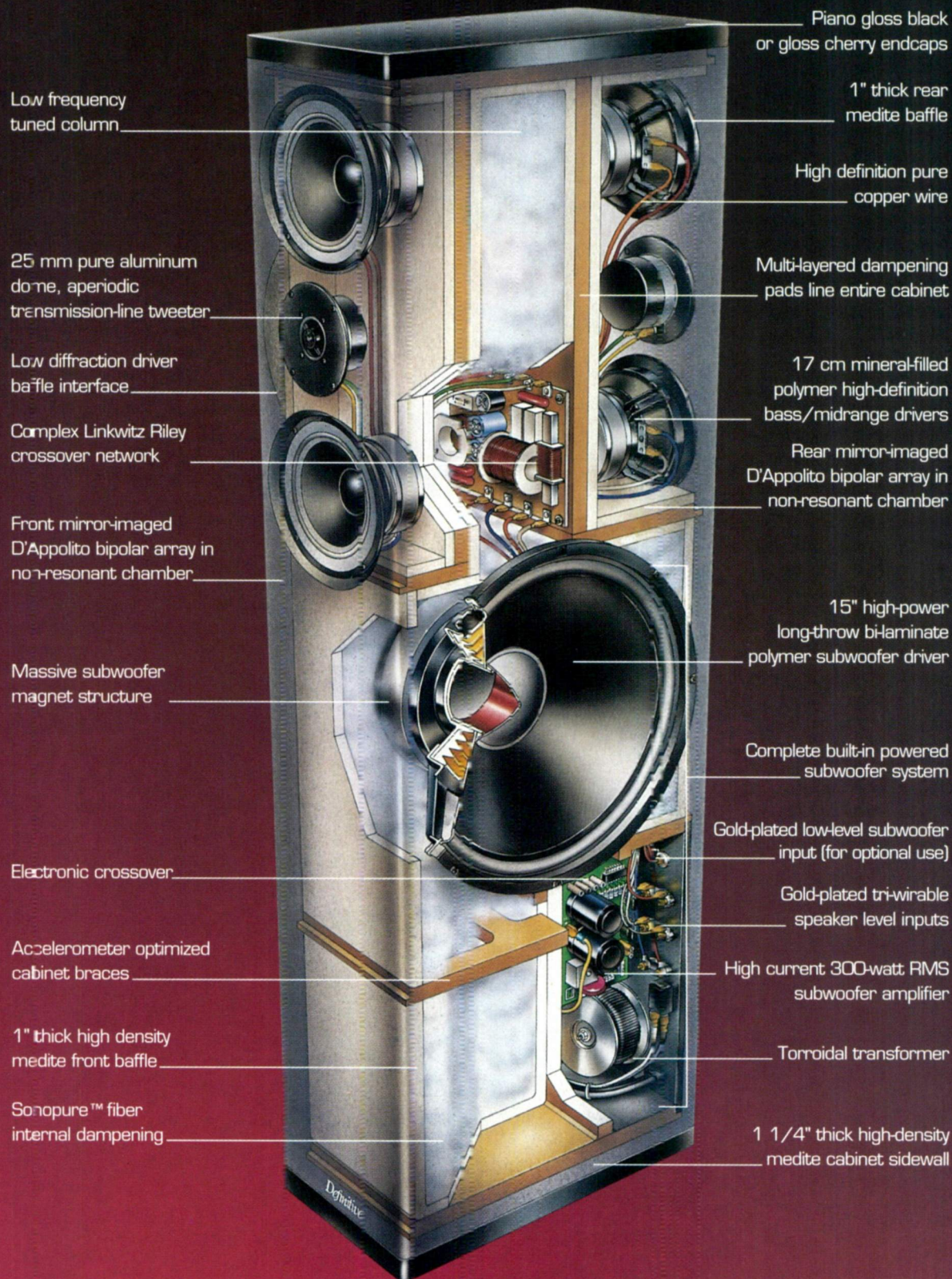
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audio democracy

I can't believe Ken Pohlmann (June "Signals"): "The so-called purists still embrace vinyl records and vacuum tubes, but their condemnations of the newest technology merely reveals their prejudices, and verifies that they are more concerned with preserving their elitism than musical fidelity."

Wrong! It reveals a preference for a rich, lifelike sound. Anyone who has ever heard a properly set up, high-quality tube and vinyl system can tell that it beats digital sound. It has nothing to do with elitism! Sure, records and tubes are a pain in the butt — they require time and maintenance. A CD is convenient — just drop it in the drawer and hit play. But the best sound is still analog.

Last weekend I was listening to a Woodside tube amp and preamp with a Linn LP-12 turntable at a local audio dealer. I could have listened to that system all day. It was musical, relaxing, and very enjoyable, just the way live music would be. **Todd Reitz**

Edwardsburg, MI

Ken Pohlmann replies: I am a professor of music, and I am fortunate to be surrounded by live musicmaking all day long. I know what live music sounds like, and I can emphatically assure you that analog equipment is far inferior to digital. Its so-called "warmth" is a distorting veil across the music. In a listening test comparing live musicians with CD and LP recordings of the same music, the LP does not sound more lifelike; for starters, with a 70-dB dynamic range, LPs sound damn noisy.

Regarding the attitude of "audio purists," their elitist tendencies are unfortunately often very real. When the average American family of four has an annual income of \$24,000, and you just spent more than ten grand for a stereo tube amplifier, I guess it's hard to be humble.

setting surround levels

David Ranada's "How to Set Surround System Levels" (June) was interesting but not persuasive. One very basic point was not covered: the potential imbalance in a listener's hearing. As people hear with their ears, and not with sound-level meters, I think that the most practical and efficient way to set levels is with our own ears. **S. Kopel**

Givatayim, Israel

David Ranada replies: If your ears are unbalanced, you'll also hear unbalanced sound in a movie theater set up to balanced specifications. The premise of my article was the recreation of the original recording conditions, and given that, the setup method described is valid. You're

free to set the controls where you like. Just don't complain if the surrounds are sometimes too loud or too soft, or if you can't hear the dialogue.

For the last year, ever since I bought my Dolby Digital system, I've been trying to borrow a sound-level meter to set the system up properly. I knew it should be done, but I had no idea just how much improvement it would make — or that a level meter could be purchased at such a reasonable price. After reading David Ranada's "How to Set Surround System Levels," I immediately went to Radio Shack and bought a meter. I set up my system according to his article, and the results are worth many times what the meter cost!

One question, though: should the level of a subwoofer be set the same way as all the other speakers? Set to the same level as the other five, it "sounded" just a bit too low, so I boosted it. Since we all tend to overdo level settings "by ear," I would like to know the correct way to do it. **Steve Kawalec**

St. Clair Shores, MI

David Ranada replies: You can use the subwoofer-balancing tone on the Delos Surround Spectacular CD (DE 3179), with your meter set to C-weighting. The hardest part, though, is getting the blend between the sub and the other speakers right. That usually involves more than just level adjustment. It may require moving speakers around and tweaking the subwoofer's "phase" control, if it has one.

DVD drive

I am thinking of buying a computer with a DVD-ROM drive. Will I still need a DVD-Video player for hi-fi playback of DVDs and CDs, or will the DVD drive suffice?

Robert LeClair

Gresham, OR

Whether the DVD-ROM drive in your new computer will deliver high-fidelity analog audio, in either two channels or 5.1, depends on the quality of the drive, the quality of the computer's sound card, and the overall quality of the computer and associated sound system. Then there's the issue of where your computer is located vis-à-vis your home-theater setup. There's no simple answer.

radio static

Daniel Kumin's response to reader Ken Massey about the mediocre to poor radio reception in three receivers he tested (June "Letters") contributes to the problem rather than solving it. If reviewers would take the

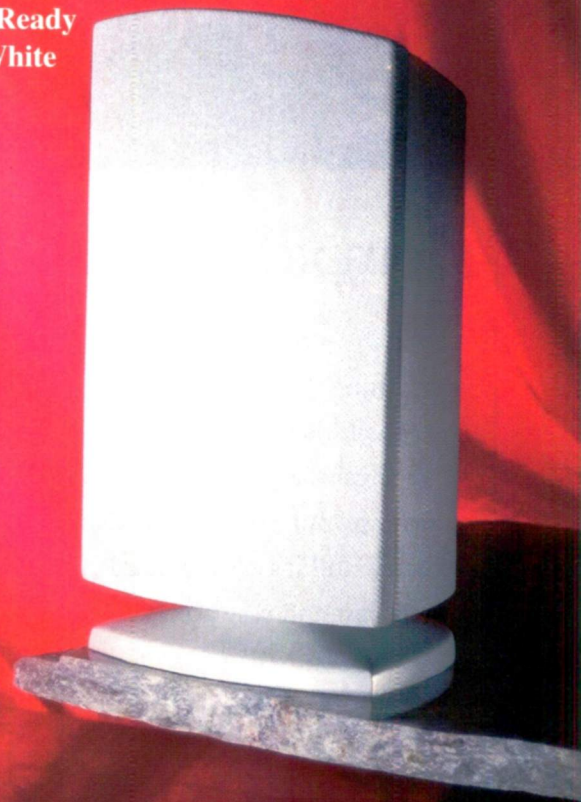
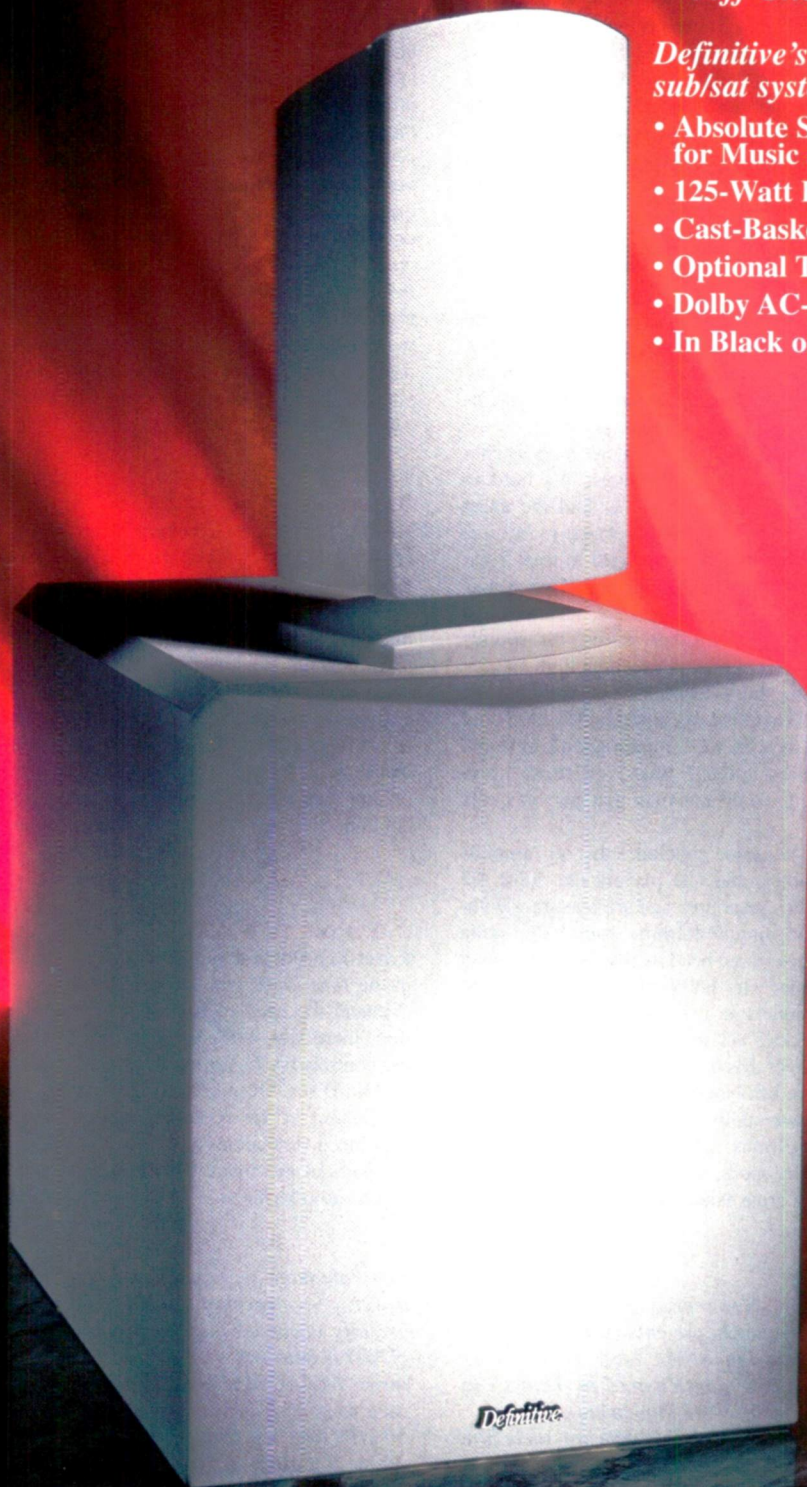
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 IN- Classic Stereo; Ft. Wayne, Mishawaka • Kings Great Buys;
 Evansville • Ovalion Audio; Clarksville, Indianapolis, Lafayette.
 KS- Accent Sound; Overland Park • Advance Audio; Wichita •
 Audio Junction; Junction City, Manhattan.
 KY- Ovation Audio; Lexington, Louisville.
 LA- Altman Audio; Metairie • Mike's Audio; Baton Rouge •
 Wright's Sound Gallery; Shreveport.
 MA- Goodwinds Audio; Boston • Shrewsbury • Nantucket Sound • Hyannis •
 Northampton Audio; Northampton • Pittsfield Radio; Pittsfield.
 MD- Gramophone; Baltimore, Ellicott City • Myer-Emco; Gaithersburg,
 Beltsville, Rockville • Sight & Sounds; Easton • Soundscape; Baltimore.
 ME- Cookin'; Portland.
 MI- Contemporary Audio; Okemos • Pecar's; 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; Sta.ville • 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 •
 Sight and Sound; Greenville • 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 • Hal's Stereo;
 Trenton • 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- 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 World; Stillwater,
 Shawnee • Ultimate Electronics; Tulsa.
 OR- Bradford's HiFi; Eugene • Chelsea A/V; Portland, Beaverton •
 Kelly's Home Ctr.; Salem • Magnolia HiFi; (Portland,) Beaverton,
 Clackamas • Stereo Plant; Bend.
 PA- Audio Junction; Pittsburgh • Gary's Elect.; State College •
 GNT Stereo; Lancaster • Hart Elect.; Blakely • Hi-Fi Video; 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 • Stakes Bros.;
 Logan • Ultimate Elect.; Layton, Murray, Orem, Salt Lake City.
 VA- Myer-Emco; Falls Church, Tyson's Corner, Fairfax • Audio Connection;
 Virginia Beach • AudioTronics; Roanoke • Home Media Store; Richmond.
 WA- Bunch-Finegan; Kennewick • Magnolia HiFi; Seattle & Suburbs,
 Tacoma, Silverdale, Spokane • Pacific Sight & Sound; Wenatchee.
 WI- Absolute Sound & Vision; Sheboygan • 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;
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 B.C. • Sound Gallery; Newfoundland • Sound Room; Vancouver •
 StereoLand; Windsor • Treble Claf; Ottawa.
 Mexico- Contact Grupo Volumen; Mexico City.

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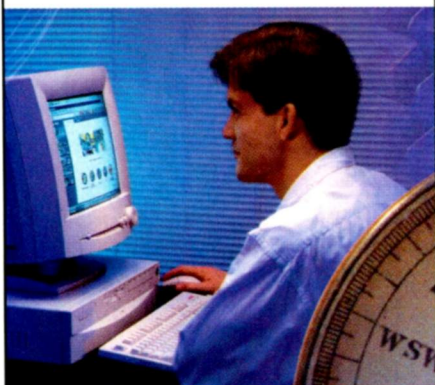
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audio equipment companies to task, perhaps things would stand a better chance of improving. Manufacturers make their design decisions based only on money, not consumer demand. It may not be expensive to improve a receiver's radio reception, but the company logic is: \$4.20 apiece for the improvement times a production run of 100,000 equals \$420,000 less profit — which means, forget it.

AM stereo is another classic example. Stations won't upgrade because there are few receivers. There are few receivers because there are few AM stereo stations. Neither side budges, and who loses? — the listening public. It's not that we don't care about radio. It's the financially based design decisions by the industry that have forced mediocrity on us all.

**William Allen
Tucson, AZ**

tweaked out

Tom Nousaine's "To tweak, or not to tweak?" (June) really does grave injustice to the consumer. Although I could cite many points that are either flawed or inconclusive, two come to mind immediately:

First, on the listening panel, one listener is quoted as saying, "Damn, it's hard to keep the image still and to find the exact sweet spot . . . Can't I go home to my surround system?" I find it hard to trust a listener who thinks music played on a surround-sound system is more accurate than two-channel. Another states, "it sounds high-priced to me . . . excellent high end . . . handling high-current bass spikes very well." What kind of description is that? And since when do we compare good/bad sound with bass spikes? Based on those comments, I would not trust that person's ears either.

Mr. Nousaine concludes that all "amplifiers, cables, and CD players that have flat frequency responses and are operating within their intended limits sound the same when compared head to head." If they sound the same, why bother with reporting about the products at all? My seven-year-old CD player does *not* sound the same as my new CD player. Even I can tell the difference.

Since Mr. Nousaine compared owning an expensive audio system with owning a luxury car, I must ask: if two cars have the exact same specs, performance, and features, do they drive exactly alike? Thought so.

**Michael Ishii
Torrance, CA**

Tom Nousaine replies: All but one panelist was a hard-core enthusiast with extensive experience. Mr. Ishii doesn't trust them, but he doesn't need to. That's why bias controls were implemented.

Mr. Ishii probably has no idea how much better multichannel sound can be

than two-channel, especially in spatial rendition. As for his anecdotal claim that CD players sound different: The output level of CD players can vary quite a bit. Just plugging a new one into your system will change the volume levels unless the master volume control is adjusted. Once you compensate for that kind of bias, such anecdotal accounts evaporate.

If two cars had exactly the same performance, they would drive identically, but that never happens because cars are mostly mechanical. Speakers are electro-mechanical devices and thus seldom have identical acoustical performance, but CD players and amplifiers are almost completely electronic, and the performance of good ones should be identical. When we know that a component is going to sound great when we get it home, we can concentrate on other factors, like features, ease of use, cost, and appearance. Electronic audio components are a lot like watches. Thirty years ago you'd choose a watch based on how accurately it kept time. Now they all keep perfect time, and you buy the one that goes best with your outfit. To me, that's progress.

those aisles of white

Hooray for Corey Greenberg! His "Aisles of White" (June, "The High End") addressed an issue that has puzzled me immensely. It is extremely difficult for me to find soul or R&B music on videotape, next to impossible on laserdisc, and it would seem to require a miracle of Red Sea proportions to get any on DVD. As a long-time subscriber, a home-theater devotee, and a black male, I had a big Cheshire Cat grin on my face after reading Mr. Greenberg's column.

**Eric Joiner
Garland, TX**

more on minidisc

I read Ken Pohlmann's "MiniDisc, Take 2" in the June issue with surprise. While I understand the need to be fair in representation, there was not even a passing nod to the controversy regarding the sound quality of MiniDiscs. Despite assertions about improvement in the ATRAC coder, I'm not convinced that removing so-called inaudible parts of the signal doesn't deprive it of depth and robustness.

**Charles Gelfand
Owosso, MI**

Ken Pohlmann replies: There is no "controversy" concerning MiniDisc. It is universally accepted that the sound quality of MD is below that of CD. With complex tones, ATRAC may not allocate sufficient data to completely encode content above 16 kHz, and in a controlled listening environment that is where you might hear

some difference. When signals have little or no content above 16 kHz, MD is sonically competitive with CD, as I noted in the article. If you want the best sound quality, stick with CD; if you want convenience and features, try MD.

When Ken Pohlmann discussed reasons for the MiniDisc's lack of commercial success in this country, he left out the most obvious one: hardly anyone needs it. Although MD is a "sexy" technology, I'll probably never buy it for the same reason I haven't used my cassette recorder in longer than I can recall: I don't need to. In the days of vinyl, records were not portable. To hear your music on the road, you had to tape it. Today, good portable CD players are inexpensive, and CD players are standard equipment in most autosound systems. No one needs to record their music collections anymore; they simply take the discs with them.

In order to take ten MDs with me on a trip, I would have to spend (waste) nearly ten hours supervising the recording process. I would also have to buy additional equipment as well as blank media. Why would anyone spend time and money to achieve less audio quality for a marginal increase in portability?

Jon Rosen
N. Plainfield, NJ

CD recording

Move over MiniDisc . . . here comes recordable/rewritable CD. I bought a Philips CDR870 recorder based on your review (January), and it blows MD out of the water. I host a syndicated radio program, and MDs simply can't provide the pure sound required by FM — it's close, but no cigar. This Philips deck gives me that sound, and with its rewritable capability, I finally got rid of my \$3,000 on-air computer for recording voice cuts, announcements, and so on. The CDR870 can execute the same tasks in less time at a fraction of the cost. Oh, yeah, I'm making CD copies of all my albums, too. Thanks, Philips! **Keith Leach**
White Springs, FL

"Pure sound" for FM? We wish!

correction

The list prices of the Altra Galaxy A/V furniture in July "New Products" changed just after the issue went to press. The GXTV television stand is now \$126, and the GXA audio cabinet is \$169. □

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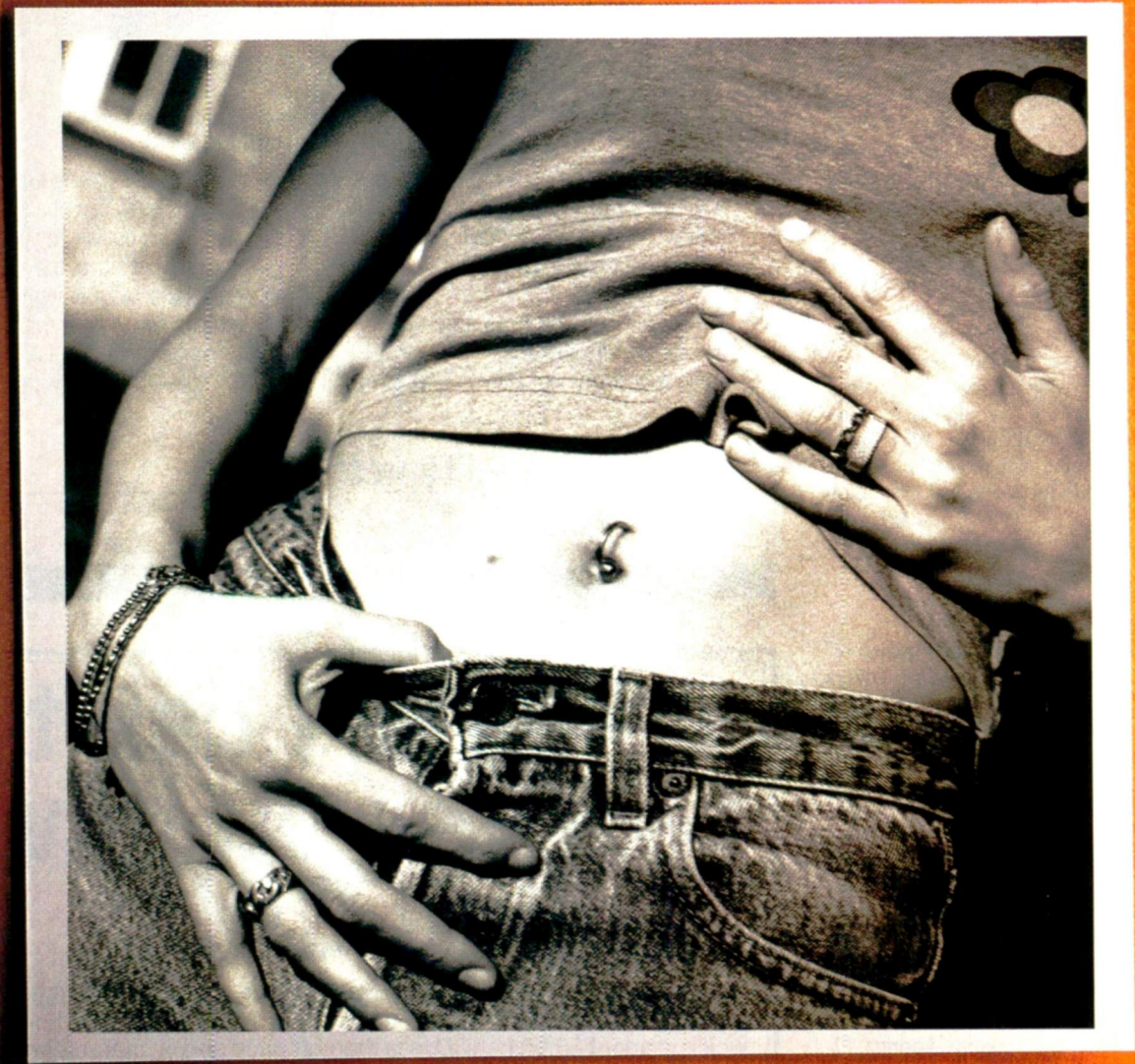
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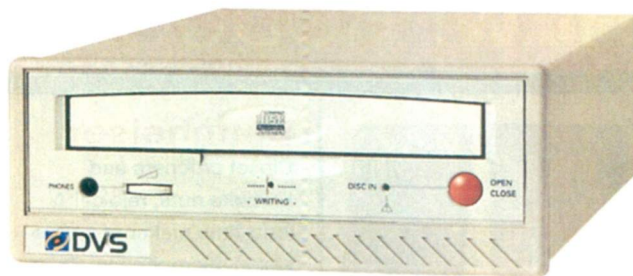


NEW PRODUCTS



Platinum Audio Multi-Platinum multichannel: Platinum Audio hits the home-theater scene with the PT-306 (left and rear, \$599 a pair), which doubles as a center speaker, and the 39½-inch-tall PT-808 tower (\$799 a pair). Both use 1-inch titanium-dome tweeters and dual 6½-inch woofers. Finish options are semigloss rosewood vinyl or satin black. Platinum Audio, Dept. SR, 250 Commercial St., Unit 4002, Manchester, NH 03101; phone, 603-647-7586; Web, www.platinumaudio.com.

Toshiba Upgrade the video side of your home theater with Toshiba's SD7108, billed as the first DVD player to feature a ColorStream PRO progressive-scan video output for filmlike image resolution, flicker-free pictures, and improved brightness. It includes built-in Dolby Digital decoding, a DTS-compatible output, 10-bit video digital-to-analog converters, and 96 kHz/24-bit PCM audio processing. Price: \$1,200. Toshiba, Dept. SR, 82 Totowa Rd., Wayne, NJ 07470; phone, 800-631-3811; Web, www.toshiba.com/tacp.

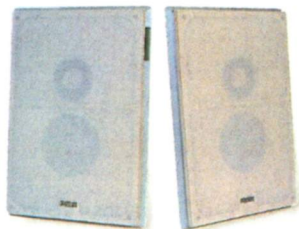


Digital Video Systems Compose your own CDs with the Maestro CD-RW 2X6p. The external CD-Rewritable drive from Digital Video Systems plugs into the parallel port of any PC running Windows 95 or Windows NT 4.0. Using Adaptec DirectCD packet-writing software, the Maestro stores digital audio, video, photos, and other data at 2X speed on both CD-R and CD-RW (rewritable) discs. It can write a single track or an entire disc at a time. The Maestro drive can also play audio CDs and access CD-ROMs at 6X speed. It comes with Adaptec's CD Creator mastering software, connections for sound cards and headphones, and one CD-RW disc. Price: \$469. Digital Video Systems, Dept. SR, 160 Knowles Dr., Los Gatos, CA 95032; phone, 800-446-8823; Web, www.dvssystem.com.



Technics While most companies are building digital surround decoding into their receivers, Technics offers a separates approach with its SF-DX720 package, which teams the SA-AX720 Dolby Pro Logic receiver (top) with the SH-AC500D Dolby Digital/DTS surround processor. The receiver, rated to deliver 100 watts each to six channels into 6 ohms, has three video inputs, four analog audio inputs, plus the six-channel processor input. The SH-AC500D features a center/surround-channel delay-time control, switchable dynamic-range compressor, and two optical and two coaxial digital inputs. Price: \$500. Panasonic, Dept. SR, One Panasonic Way, Secaucus, NJ 07094; phone, 800-211-7262; Web, www.panasonic.com.

NEW PRODUCTS



Fostex

Believing that speakers are better heard than seen, Fostex offers the SH501F, a flat-panel model with a neutral beige grille cloth that hangs on a wall "virtually unnoticed." The two-way bass-reflex speaker, which is just 1 3/8 inches thick and 20 1/2 inches tall, has a 1-inch dome tweeter and a 5-inch cone woofer. Price: \$499 a pair. Fostex, Dept. SR, 15431 Blackburn Ave., Norwalk, CA 90650; phone, 562-921-1112; Web, www.fostex.com.

Sennheiser

Closet crooners and Karaoke nuts, rejoice! A long-time maker of professional microphones, Sennheiser is offering its first mass-market model, the E815-S. The 7-inch-long mike has a 600-ohm nominal impedance, a cardioid pick-up pattern to reject rearward sounds, and an on/off switch. A 10-foot cable and a miniplug adapter are included. Price: \$109. Sennheiser, Dept. SR, 1 Enterprise Dr., Old Lyme, CT 06371; phone, 860-434-9190; Web, www.sennheiserusa.com.

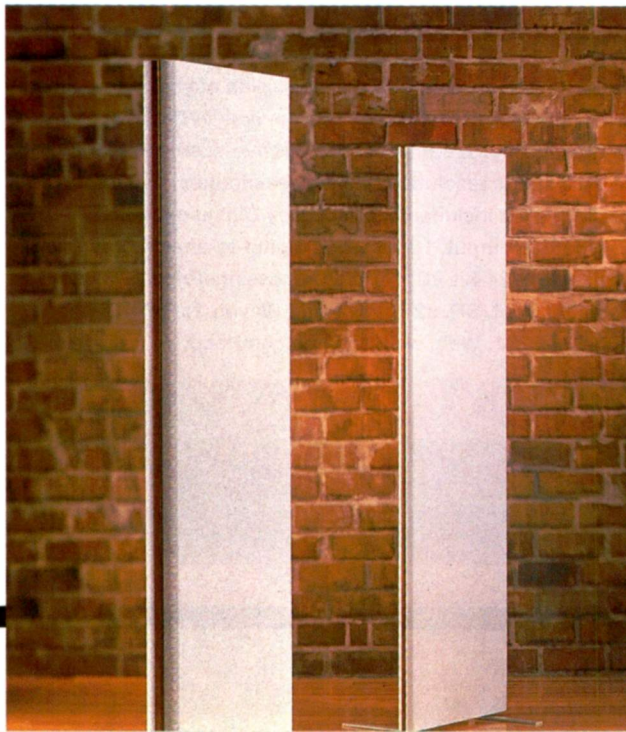


Russound Rock the house — the entire house — with Russound's PR-4Z four-zone preamplifier, which combines four stereo preamps on one chassis and can control three audio-only sources and three A/V sources. Russound's patented Source Lock mode enables the PR-4Z to feed the Zone 1 source to the other three zones, and the Source Link mode lets users change that source from any other room. Preferred settings for volume, bass, and other parameters can be individually stored in memory for each zone. The PR-4Z (\$1,850) is designed to be used with Russound's AP-48 56-watt x 8 power amplifier (not shown, \$995). Russound, Dept. SR, 5 Forbes Rd., Newmarket NH 03857; phone, 603-638-8055; Web, www.russound.com.

Magnepan A thin speaker that doesn't produce thin sound, the Magneplanar MG1.6/QR features Magnepan's patented quasi-ribbon driver, which is said to deliver "low distortion and seamless clarity" for a fraction of the cost of a true ribbon speaker. The MG1.6/QR's frequency response is given as 40 Hz to 22 kHz ±3 dB, its sensitivity as 86 dB, nominal impedance as 4 ohms, and power handling as 250 watts maximum. The speaker, which is 64 inches tall, 19 inches wide, and only 2 inches thick, is available with natural, black, or dark cherry hardwood trim. Price: \$1,475 a pair. Magnepan, Dept. SR, 1645 Ninth St., White Bear Lake, MN 55110; phone, 800-474-1646; Web, www.magnepan.com.



ProScan Beat skyrocketing movie-ticket prices by bringing the movies home with the PS8610P DVD player from ProScan. A Dolby Digital decoder is built into the player, and coaxial and optical digital outputs are provided to pass through DTS-encoded signals. The player has two sets of gold-plated standard A/V outputs and single S-video and component-video outputs. A virtual surround mode simulates multispeaker playback with just two speakers. A universal remote control is included. Price: \$699. ProScan, Thomson Consumer Electronics, Dept. SR, 10330 North Meridian St., Indianapolis, IN 46290; phone, 800-776-7226.





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B&W As progeny of the flamboyant, seashell-shaped, \$40,000-a-pair Nautilus and replacement for the classic Matrix 801, B&W's new flagship Nautilus 801 speaker has a couple of tough acts to follow. At "only" \$11,000 a pair, the 44-inch-tall Nautilus 801 has a 15-inch paper-Kevlar cone woofer in the curved main enclosure, topped by a spherical enclosure for the 6-inch woven-Kevlar cone midrange and a "boxless" 1-inch aluminum-dome tweeter. Frequency response is given as 29 Hz to 22 kHz \pm 3 dB, sensitivity as 91 dB, and maximum

power handling as 1,000 watts. The Nautilus 801 is available finished in black ash, natural cherry, or red cherry wood veneer. B&W, Dept. SR, 54 Concord St., North Reading, MA 01865; phone, 978-664-2870; Web, www.bwspeakers.com.



Magnadyne Whether you're cruising in a Benz or a new VW Beetle, Magnadyne has upgrade speakers for it. Its Linear Series includes the 6 x 9-inch three-way LS693GS (\$100 a pair), the 6½-inch two-way LS602G (\$90 a pair), the 5¼-inch two-way LS502GS (\$85 a pair), and the 4-inch two-way LS402GS (\$80 a pair). All four feature 1¾-inch swiveling dome tweeters with neodymium magnets and are packaged with speaker wire and mounting hardware. Magnadyne, Dept. SR, 1111 W. Victoria St., Compton, CA 90220; phone, 310-884-7777; web, www.magnadyne.com.

Panasonic

Taking a jog won't mean jogging your CDs with Panasonic's SL-SW505J Shock-Wave portable CD player. It features both a 40-second memory buffer and a patented anti-shock memory system for skip-free listening. There's a bass-boost control and 24-track programming. The Shockwave is said to play for up to 20 hours on two AA batteries. Price: \$180. Panasonic, Dept. SR, One Panasonic Way, Secaucus, NJ 07094; phone, 800-211-7262; Web, www.panasonic.com.

Maverick

Is your stereo system drowning in a sea of CDs? Maverick Ventures's Hang 10 modular storage strip can help. It attaches to any wall or cabinet and can hold ten discs. Price: \$2.99. Maverick Ventures, Dept. SR, St. Louis, MO 63017; phone, 800-467-4656; Web, members.aol.com/hang10cd.



BackSaver

They say music is the doctor, but now it's also the masseuse. The Somatron massage recliner from BackSaver soothes aching backs using built-in speakers that translate music into continually changing vibrations. The theory is that the monotony of conventional vibration massagers increases fatigue. Speakers for listening are provided at ear level. The Somatron comes in black leather with frames in black metal or a choice of wood finishes. Price: \$1,460. BackSaver Products, Dept. SR, 53 Jeffrey Ave., Holliston, MA 01746; phone, 800-251-2225; Web, www.backsaver.com.





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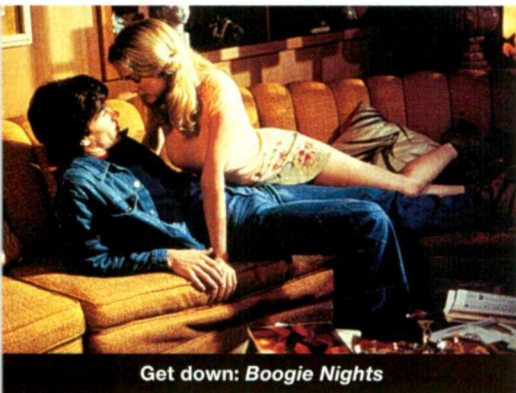
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BOOGIE NIGHTS

Director/writer Paul Thomas Anderson's 1997 serio-comic look at the porno-film industry of the 1970s comes to DVD rich in color and highly detailed, and the audio does full justice to both dialogue and the pulsing rock selections that permeate the soundtrack. Because this title is part of New Line's Platinum Series, there are plenty of extras, most notably Anderson's commentary track, where he displays an encyclope-



Get down: *Boogie Nights*

dic knowledge of both porno and mainstream films. His locker-room comments may be offensive to some (and should be considered R-rated, if not NC-17) but are nonetheless often fascinating and enlightening. Deleted scenes are provided, as are two sets of biographies: serious ones for the actors and tongue-in-cheek inventions for the characters they play, a neat idea for a film that often presents movies within the movie. Although some of the fully animated menus are easier to look at than to use, overall *Boogie Nights* really rocks on DVD.

One-sided dual-layer; English and French, Dolby Digital 5.1; English, French, and Spanish subtitles; letterbox (2.35:1); 155 min (feature). New Line Home Video, \$24.98.

KENNY LOGGINS: OUTSIDE — FROM THE REDWOODS

This 1993 concert is a real celebration of life, from the quiet simplicity of "Return to Pooh Corner" to the rousing version of "I'm Alright." Loggins surrounds himself with a large band of virtuoso players who can unleash solos or just play their en-

semble parts impeccably. Special guests Michael McDonald, Will Ackerman, and Shanice contribute to the overall spirit — as do the mighty redwood trees enclosing the Shakespeare Festival Glen of the University of California at Santa Cruz. The camera work is intimate but seldom fussy, and the 5.1-channel mix is robust yet open, with unusually realistic vocals. The alternate soundtrack in PCM stereo may be great for listening without the picture, but the video seems to demand the extra dimensionality 5.1 sound provides the instruments as well as the wraparound audience. The video transfer is one of the best I've seen for a longform music video. Study the detail in the closeups of Loggins as he sings "Forever." It doesn't get much better than this.

One-sided; Dolby Digital 5.1 and PCM stereo; English subtitles; 80 min. Columbia Music Video, \$24.98.

TO KILL A MOCKINGBIRD

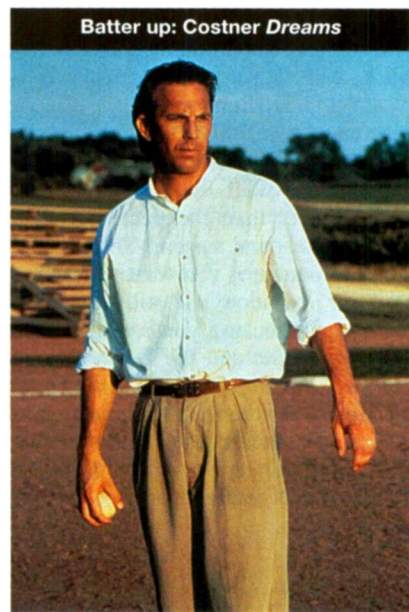
The remarkable movie version of Harper Lee's Pulitzer Prize-winning novel fully captures the mood and characters of a small Southern town during the Depression, and it features Gregory Peck in his favorite role, which won him the Academy Award for Best Actor of 1962. Universal's Collector's Edition DVD, the first optically read version to be properly letterboxed, is everything we could hope for. The picture is one of the few black-and-white prints to measure up to the high standard set recently by MPI's transfer of *A Hard Day's Night*. Whether the scene is in full sunlight or near total darkness, the contrast is just right, the detail impressive. The audio transfer is one of the best of a monaural movie from the early 1960s, and Elmer Bernstein's poignant, Oscar-nominated score is heard to great effect. There are production notes, biographies, a theatrical trailer, and a running commentary by director Robert Mulligan and producer Alan Pakula. *Fearful Symmetry*, a 90-minute documentary on the making of the film, is actually a small movie itself, expertly directed and edited. *To Kill a Mockingbird* is a must for any DVD library.

One-sided dual-layer; English and French, Dolby Digital 2-channel mono; closed-captioned; Spanish subtitles; letterbox (1.85:1); 130 min (feature). Universal Home Video, \$34.98.

FIELD OF DREAMS

Already an American classic, the 1989 Kevin Costner vehicle *Field of Dreams* is about healing, redemption, and making peace with the past. But at an emotional point in the movie, James Earl Jones, portraying Terence Mann, says: "... and baseball has marked the time. This field, this game, is a part of our past... it reminds us of all that once was good, and could be again." So much for those who say the movie isn't about baseball. The DVD transfer has a magnificent picture. It also has Dolby Digital two-channel matrix surround sound that is wide and transparent, demonstrating that 5.1 channels aren't always needed for a successful DVD soundtrack. The ancillary material of Universal's Collector's Edition is exceptional. A documentary on the film includes information on the real characters who appear alongside the fictional ones. You also get commentary by director/writer Phil Alden Robinson and director of photography John Lindley, a shooting script, and articles on "Doc" Graham (the Burt Lancaster character). And if you go to the documentary's spoken-language menu, you'll find the James Horner soundtrack, which puts to shame the recording previously issued on a Novus CD.

One-sided dual-layer; English and French, Dolby Digital 2-channel matrix surround; closed-captioned; Spanish subtitles; letterbox (1.85:1); 106 min (feature). Universal Home Video, \$34.98.



Batter up: Costner *Dreams*



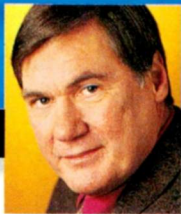
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AUDIO Q&A

IAN G. MASTERS

blow by blow

Q. When I took my power amplifier in for repairs, the service center said that some of the resistors in the protection circuitry were so badly fried that the color coding indicating their values couldn't be read. The manufacturer is out of business and the technicians couldn't find a service manual, so they bypassed the protection circuits and disabled the Speaker 2 outputs in the process. Now I have my two sets of speakers connected to the Speaker 1 outputs, protected with 3-ampere fast-acting fuses. But even if I turn the volume all the way down, both fuses sometimes blow when I turn the amp on. Could I use bigger fuses? And why disable the Speaker 2 outputs?

Peter Freund
Midlothian, VA

A. My guess is that they did it to discourage you from hooking up two pairs of speakers! You already destroyed the protection circuits once by doing so. And blowing fuses at turn-on definitely suggests

that something's amiss. Using bigger fuses would only make things worse.

If you want to run both pairs of speakers simultaneously, I'd suggest amplifying them separately.

it's the speakers . . .

Q. My audio system consists of a stereo receiver, a dubbing cassette deck, a portable CD player, and a pair of two-way speakers mounted in home-built sealed enclosures. My budget is very limited, but other than replacing the receiver, which is brand-new, what is the best thing I could do to achieve better sound?

Jack Coffman
Livingston, TN

A. Replace your speakers. Changing the receiver or the CD player would alter your sound to a minuscule degree, if at all, and even improved cassette performance would make a fairly subtle difference. The overall character of any system is almost totally determined by the speakers. If they

don't sound good, nothing you do elsewhere in the chain will make up for that.

Home-brew speakers in particular are usually inferior to commercial designs. Putting together a speaker is a careful balancing act involving the drivers, the crossover network, the enclosure, and the way they all go together. Very few of us, however enthusiastic, have the experience to do it right or the test equipment to make sure we have. Good-sounding speakers need not be expensive, and some great bargains can be had both new and used.

phantom voices

Q. When I listen to CDs on my surround-sound system in two-channel mode, I notice the sound of a talk-radio station coming from the center speaker — and the station isn't even the one selected on the tuner. It happens only at night, and while the talk isn't very loud, it is aggravating. What's going on?

Brian M. Andersen
Brockton, MA

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WE SIMPLY SOUND BETTER.

A. It sounds like a straightforward case of radio-frequency interference (RFI). The radio station's signal is reaching your home with sufficient strength that it is inducing a current in the wires or other circuitry connected to the center speaker. Since you hear it only when your receiver is on, I suspect that something in the receiver is detecting the signal and acting much like a crystal radio. Since you hear it only at night, the culprit is probably an AM station some distance away whose signal is too weak during daylight hours.

Correcting the problem can be tricky and may require considerable experimentation. It might be as simple as grounding your receiver; the best way is to run a wire from any point on the chassis to a cold-water pipe. If the receiver has a phono input, there's probably a ground connection associated with it, and that's the ideal place to connect the wire.

Simply moving the speaker cable may help, as will making sure that all connections are secure. It could be that the length of the speaker cable happens to be a simple fraction of the radio station's wavelength, in which case making the cable a bit longer or shorter may solve the problem.

You might also want to make sure that no connectors or switch contacts in your system are oxidized. Unhook all of the components one at a time and rub all the plugs and jacks with a pencil eraser. In addition, operate every mechanical switch in your receiver vigorously several times to clear oxide from those contacts, too.

three-way into "subwoofer"

Q. My minicomponent system has a line output for a powered subwoofer. I have a spare three-way speaker that has excellent bass. Is there any way I could use it as a passive subwoofer by adding an external amplifier?

Joseph Rosario
Brooklyn, NY

A. It'll never be a true subwoofer, but it should be easy enough to recycle your spare speaker and improve your system's bass response. Almost any add-on amplifier should do; because you will be using only one channel, it can put out somewhat more than its rated stereo power. First, check if your spare speaker is bi-wirable. If it is, simply remove the metal straps that tie the low- and high-frequency drivers together and hook the amplifier up to the woofer only. If there is only one set

of terminals on the speaker, the subwoofer output on your system may be associated with a low-pass filter that blocks the mid-range and treble (the manual may tell you), in which case you can just feed the speaker directly from the amp. Some judicious twiddling of the amplifier's tone controls might tune up the sound a bit. If it's really a full-range output simply labeled "subwoofer," you might have to get inside the speaker enclosure and disconnect the midrange and treble drivers, but I'd consider that a last resort.

belt replacement

Q. I recently came into possession of several hundred big-band LPs that I'd like to record on cassette. I bought a turntable a few years ago but never used it. Now its belt is rotten and unusable. The manufacturer has been no help, and a local dealer told me I should get a belt from a vacuum-cleaner company. Is that practical? And, since I can't get the platter off, how would I install a new belt anyway?

Don LaBo
Trenton, MI

A. First check the classified ads in the back of *Stereo Review* and other audio magazines for companies that sell replacement parts for turntables. If they can't help, the vacuum-cleaner idea seems promising, and I'd also try a VCR repair facility — early video machines were mazes of belts of every size and configuration. I've even seen rubber gaskets used to seal swimming-pool traps that could probably double as turntable belts. It doesn't really matter what the belt was originally designed to do as long as it's smooth and of an appropriate size. Too loose and it will fall off; too tight and it will soon break, as well as transmit motor noise to the platter that could be audible as rumble.

Your turntable platter might be held on by a C clip, which you have to pry loose before you can lift the platter off. But any competent A/V service center should be able to install the new belt for you once you have it. A technician at a VCR repair facility could probably do it for you with his eyes closed.

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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Get with the Program

TWO ISSUES BACK I wrote an article describing how to use a sound-level meter to balance the levels of the various main speakers in a home-theater system ("How to Set Surround System Levels"). The need for balanced speaker levels stems from a desire, which is not universally shared, to reproduce the program material — movie soundtracks — under the same conditions under which they were made on a studio's dubbing stage. But producers of movie soundtracks don't stop at balanced speaker outputs. They're just the tip of a titanic iceberg when it comes to production standards. There's a lot more you can do at home to recreate dubbing-stage conditions.

Not perhaps the most obvious, but certainly the most crucial, step toward studio-like home-theater sound is the somewhat controversial measure of playing back soundtracks so that the volume at your ears matches that on the movie studio's dubbing stage and in the best seats in a correctly set up movie theater. Standard movie-industry operating practice is for a single main speaker (one of the three fronts or the two surrounds) in a dubbing stage or movie theater to produce at the prime listening position(s) a sound-pressure level (SPL) of 83 to 85 dB when playing a test signal whose level is -20 dB referred to digital full scale (dBFS), meaning 20 dB below a digital medium's maximum possible level. (The 83- to 85-dB range in the recommendation reflects a debate on how the sound level is to be measured, but this 2-dB spread is relatively inconsequential at home.)

Matching this spec is extremely easy, especially if you've already balanced the speaker levels. All you need is a sound-level meter and a correctly calibrated test disc. The Radio Shack #33-2050 you should have already purchased on my earlier recommendation will do as a meter, and the last four tracks on the second CD of the Delos *Surround Spectacular* set (DE 3179) will supply correctly calibrated test tones. Unless you have a THX surround processor, do *not* rely on the test tones produced by your surround processor for playback-level calibration, as they are intended primarily for balancing.

The procedure:

1. Switch your system into Dolby Pro

Logic mode. This procedure should be done separately with Dolby Pro Logic and Dolby Digital test tones. The latter are available on the Delos *DVD Spectacular* (DV 7001).

2. Play one of the last four tracks (46-49) on the Delos test CD. It shouldn't really matter which one you play if you've already balanced the speaker levels, but I always use one of the front-channel tracks (46-48).

3. Hold the meter (set to C-weighting and "slow" response) at arm's length at the position of your head while listening.

4. Adjust the system's master volume so that the level of the test tone reads from 83 to 85 dB SPL. (Note: this sounds annoyingly loud with a test tone, but it is not unsafe in short durations.)

5. If you have a THX-certified surround processor, or if such a device is built into

your A/V amplifier or receiver, use its test tones and set the volume control to produce 75 dB SPL. Also use this reference level with the Delos DVD's Title 11. In a typical listening room and with an all-THX system (surround decoder, amplifier, speakers), the master volume should be close to 0 dB, which is no coincidence.

6. Memorize the master volume setting, or tape down the volume control so it can't change.

7. Without changing volume, cue up your favorite laserdisc or DVD, sit back, and be prepared to be blown away.

I use those words deliberately. This procedure is controversial because if you follow it, you're very likely to think that your system is too loud, perhaps *much* too loud during action sequences.

It's one of the great mysteries of audio why sound levels we tolerate in a theater or a live concert often seem unbearably overpowering at home. It probably has to do with the differences in room size and shape between a movie dubbing stage and

a home listening room. Even a small dubbing stage is enormous compared to a living room. Its ceiling is also much higher than the typical home ceiling height, and studies of concert-hall acoustics tell us that the kind of loud reflections coming from above that you get at home are undesirable.

The bottom line? Set the volume wherever you want — there are no SPL police. But at least you'll know where it *should* be set for theater-like accuracy, and how your perceptions might be altered by a different playback level. Absolute playback level influences lots of other important things, including perceived frequency balance, the sonic prominence of the surrounds, and the audibility of distortion, noise, and dialogue.

There's still more to do if you want theater-like sound quality at home, but not all of the steps will be feasible in all domestic situations. Far less controversial than absolute playback level is the requirement for flatness in your speaker system's frequency response. Dubbing stages

One of the great mysteries of audio is why sound levels we tolerate in a theater often seem overpowering at home.

are set up to produce relatively flat frequency response at the prime listening positions, a process that includes proper speaker selection and placement as well as equalization. In the movie industry, it's essential for dubbing stages to be similar sonically, or even equivalent, given that various soundtrack elements (music, effects, dialogue) may be produced in studios on different continents.

Want to go still further? You can lower your listening room's background noise level or adjust the angles of the speakers relative to your prime listening position. When it comes to the picture, there are specs on the ambient light level, the color of ambient light, the color of the area immediately surrounding the screen, the distance you sit from the screen, and the height of the screen above the floor. And that's just for starters. But since this is also the start of our new "Home Theater" column, I can promise that many of these subjects will eventually be covered. For now, turn it up and let 'er rip. □

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Contents Under Pressure

LET ME BEGIN by saying that I will always champion the rights of the individual over organized authority. On the other hand, I was raised in a household where the only thing more important than the Bill of Rights was the Ten Commandments. And one of them, as I recall, has very specific advice concerning stealing. So now I have a problem to resolve.

Back in the old days, property ownership was an easy thing to grasp. Either you owned a physical item or you didn't. Then something called *intellectual* property came along. It was entirely possible to own a physical thing like a book, yet *not* own the collection of words itself. If you bought the book and printed copies of it, you were in violation of the author's copyright. For a time, intellectual property was pretty easy to protect. For example, few people had the resources to print their own copies of books. Then technology started changing everything. Photocopy machines made it easy for people to copy books and other printed materials. With a scanner, a desktop computer, and a color printer, it similarly became easy to make your own \$20 bills. That's why the government has responded by introducing new, harder-to-copy paper currency.

Technology also affected the rights of music owners. Formerly, it was never practical to set up a mastering lathe and make your own copies of LPs. Today, with a PC, a CD-R drive, and 99¢ blanks, you can make CD copies at 10× speed. Clearly, the advent of new technology has necessitated a fresh look at such growing problems, and thus the debate on intellectual property and copying has intensified.

Although my views on the subject are growing more focused every day, I was formerly quite irresolute on the subject of copying, in part because I've always pointed my moral compass in the direction of every new technological breakthrough. I assumed that if technology permitted something, it must be okay. Along those lines, I supported every new recording technology, and even developed some new ones of my own. Like a scientist working on an atomic bomb, intent on the abstract goal and never contemplating the consequences, I wasn't worried about real-world ramifications.

My view of copying started changing

when I wrote several books. It *really* changed when I wandered into the library one day and saw a guy nonchalantly photocopying chapter after chapter of one of my books. I stopped him somewhere in Chapter 7 and challenged his ethics, and he indignantly replied that photocopy machines were there for that purpose, and besides, it saved him \$5 on the price of the book. I told him that I had worked hard to write that book, and now, as far as I was concerned, he was stealing my work. The discussion continued for a while, eventually attracting the interest of a librarian. Probably suspecting that we were carrying concealed weapons, she announced that the library was closed. I assume that the guy came back the next day and finished copying the book.

My view of copying has also been shaped by my work as a professor of mu-

“personal use” or “fair use” is permitted, are now undergoing critical review as Congress attempts to bring the U.S. into compliance with the World Intellectual Property Organization Treaty. The Senate's Digital Millennium Copyright Act (S. 2037) and the House of Representatives' counterpart bill (H.R. 2652), which passed their respective chambers in May, try to define copy protection in the digital age.

With today's computer environment and the Internet, it is a trivial matter to transfer intellectual property, including music, to literally millions of users, cutting the owner out of the deal entirely. The technologies that make that possible are not inherently at fault, but their progress has outpaced our ability to regulate them. Clearly, as currently employed, they pose great dangers to intellectual property, such as digitally coded music and films, that are easily subjected to abuse. As new technologies extend the possibilities of theft, anyone concerned with protecting creative work (and that includes anyone who enjoys listening to or watch-

On behalf of all musicians, I can tell you that when you copy a CD you haven't paid for, you're stealing.

sic at the University of Miami. My students are primarily music majors, and their future careers depend on their ability to produce creative works, and then to earn enough money from them so they can continue to create. Pat Methany, Bruce Hornsby, Jon Secada, and Gloria Estefan all studied at my institution, and I can personally testify that they, along with most other musicians, work damn hard to make a living. When they sell an album, they make a buck or two off the sale. That's what supports their ability to create more music. If someone copies the album, they make absolutely nothing. Now, if you're like most honest citizens, you would never consider shoplifting a CD. But the idea of copying a CD to save buying it seems perfectly okay, right? Wrong. On behalf of all the musicians I've taught, I can tell you that when you copy a CD you haven't paid for, you're stealing. The exact criminal penalties for violating a copyright, and the special circumstances under which copying for

ing it) will likely agree that a new perspective, and new controls, are called for.

We need to find some middle ground so that new technologies can be used to disseminate creative works without negating the creator's ownership of them. Furthermore, if an enlightened compromise isn't possible, then we must err on the side of the creator. The simple fact is that artists need more protection than technologies. In a hypothetical example, consider a world devoid of technology; we would see a proliferation of live music-making and a renaissance of new art. But a world devoid of artists would be stark and mute. The point is this: We don't really listen to our stereo systems or watch our TVs — we listen to music and watch movies. It's the content that matters, nothing else. As the debate on intellectual property rights vs. consumer copying intensifies, I hope you'll keep that in mind. We need future generations of creative, motivated artists much more than yet another line of putty-colored boxes. □

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Pioneer Elite DV-09 DVD Player

DAVID RANADA, TECHNICAL EDITOR

“Wow! It’s gorgeous.” So exclaimed one of the computer technicians at our publishing company as he watched me unpack the DV-09 I had just received from Pioneer. And gorgeous it is, if you like large and heavy components with copper bottoms, polished wood sides, and black-lacquer fronts. Moreover, the DV-09’s rather aristocratic countenance is accompanied by some equally refined behavior and performance.

Just trying to insert a disc will show you what I mean: Press the drawer-open button, and the flat panel beneath the display window flips down, slowly. Then the drawer comes out, slowly. The whole process takes around 6½ seconds, which can seem an eternity. But the smooth, unhurried movement of the mechanism does convey a certain haughty grandeur.

Definitely less discriminating is the player’s enormous array of features. It has everything, it seems. The jog/shuttle control on the remote allows frame stepping in both directions as well as several slow-motion speeds (four forward, two backward). There are all the

repeat, programmed, and random playback modes you’ll ever need and all the multilingual, multi-angle, and multi-aspect-ratio controls that other players have. The DV-09 can memorize the aspect-ratio, subtitle-language, and soundtrack-language settings for frequently played discs. And it can remember where you left off viewing a DVD and start up from that point when you next power up the player. (Why can’t this work with CDs too?) There’s a parental-control setting for locking out “undesirable” program material and a graphical user interface that can supply an on-screen title-selection menu even for those DVDs that don’t have such menus recorded on disc.

FAST FACTS

DIMENSIONS 18¼ inches wide, 5¾ inches high, 14½ inches deep

WEIGHT 34¾ pounds

PRICE \$2,000

MANUFACTURER Pioneer, Dept. SR, P.O. Box 1540, Long Beach, CA 90801; phone, 800-746-6337; Web www.pioneerelectronics.com

Videophiles will appreciate the DV-09’s ability to adjust brightness, color intensity, noise reduction (three types), black level (two settings), and something called Y/C timing, which is said to correct for any misalignment of the color with the rest of the video signal that may occur during software production. All settings can be saved in one of three picture-adjustment memories.

Audiophiles may appreciate the player’s ability to play (through its analog output) discs recorded with a sampling rate of 96 kHz and a data resolution of 24 bits using the full 48-kHz bandwidth implied by the 96/24 recording scheme. I say “may” because it has yet to be scientifically demonstrated that extending the audio bandwidth an octave produces a noticeable difference with music.

Analog audio signals, 48 kHz or not, are output from two sets of stereo jacks on the rear panel, which also has one Toslink optical digital output and two coaxial digital outputs. The optical and one coaxial output feed PCM, Dolby Digital, or DTS digital signals depending on the type of disc being played. Two sets of composite/S-video output connections are supplied, complementing the audio outputs. There is also a single set of component-video jacks.

The DV-09 comes with a remote control, one stereo audio cable, and one composite-video cable. Considering its price, I’d have thought that an S-video cable could have been thrown in, if only to encourage the use of S-video connections, which provide a substantial

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6/23	Washington DC	Nissan Pavilion
6/24	Pittsburgh	I.C. Light
6/25	Holmdel	PNC Arts Center
6/27	Camden	Entertainment Center
6/28	Scranton	Montage Mountain
6/30	Boston	Harbor Lights
7/1	Wallingford	Oakdale Theater
7/2	New York	Jones Beach
7/4	Rochester	Finger Lakes
7/5	Detroit	Pine Knob
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8/7	Tampa	Ruth Eckerd/TPAC
8/8	Miami	Coral Sky Amphitheatre

improvement in video quality over standard composite-video hookups.

The DV-09 is the first DVD player to receive THX certification. Among other things, that means that it meets Lucasfilm's rigorous standards for both audio and video performance as revealed by a host of different test signals. While I couldn't duplicate all of the THX tests, the results of the video tests I could perform show that the DVD-09's video performance is outstanding, on the whole equal to the best DVD players I've tested.

On screen the picture quality was excellent, conclusively demonstrating the DVD system's visual superiority over other video media in such diverse programs as *Boogie Nights*, *The Fifth Element*, and *A Hard Day's Night*. But split-screen comparisons of the DV-09 with a far less expensive player having similarly excellent measured video performance did not turn up any obvious — or even subtle — differences in playback of normal program material, provided I used its standard picture settings. I couldn't even see a difference in test patterns except in video-resolution tests. The noise-reduction features offered mostly subtle improvements. I never found them of benefit on a smaller monitor (40 inches or less). If you have a very large projection set, you may find them more useful.

The DV-90's measured audio performance playing standard CDs was excellent, but not the best I've come across among DVD players. The numbers show that the player suffers from

very mild noise modulation (the level of its background noise changes with signal level). This shows up most clearly in our new noise-modulation test, where a "perfect" score is 0 dB.

But I'm splitting hairs here. You only need to worry about a DVD player's analog audio performance if you don't intend to use its digital outputs or plan to do a lot of headphone listening.

I was hoping to do some measurements of the DV-09 using the Chesky Records demo/test DVD (CHDVD 171), which has music and test signals recorded at 96 kHz. Unfortunately, the disc cannot be used to accurately test 96/24 performance because its test signals are undithered, which means that all of them contain distortion. Listening to its music tracks led to no sonically revelatory experiences, though they are of uniformly good quality. Spectrum analysis showed that the average amount of signal they contain above 20 kHz is minuscule, some 50 to 60 dB lower than the peak contents.

I found the DV-09 easy to set up and use. My only ergonomic complaint is that the remote's track-skip buttons are too far away from the other primary disc controls and placed among too many buttons of similar size and shape.

On the whole, Pioneer's DV-09 performed extremely well, especially in terms of picture quality. Whether any other aspects of its behavior or construction justify its steep price is something only the depth of your pockets can decide. Nonetheless, to at least one computer tech it looks gorgeous. □

MEASUREMENTS

CD AUDIO PERFORMANCE

Except where noted, all test signals were dithered, which limits measured performance for noise level and distortion. See text for results of 96/24 tests.

Maximum output level
(1 kHz, 0 dBFS*)2 volts

Frequency response
20 Hz to 20 kHz +0, -0.14 dB

Noise level
(A-wtd, re -20-dBFS* input).....-73.3 dB

Excess noise (without/with signal)
16-bit (EN16)4.0/0.5 dB
quasi-20-bit (EN20, see text).....7.0/5.9 dB

Distortion (THD+N, 1 kHz)
at 0 dBFS*0.028%
at -20 dBFS*0.019%

Linearity error (at 499 Hz)
at -90 dBFS*-0.5 dB
at -100 dBFS*+3.7 dB

Noise modulation (see text)3.3 dB

Defect tracking
(Pierre Verany test disc)500 µm

DVD VIDEO PERFORMANCE

Setup level (black level normal).....7.5 IRE**

100%-white-level error.....0 IRE**

Horizontal luminance frequency response
at 4 MHz.....-0 dB
at 5 MHz.....-1.5 dB
at 6 MHz.....-1.9 dB

Equivalent on-screen horizontal resolution>480 lines

* decibels referred to digital full-scale

** an IRE is a standardized unit of contrast

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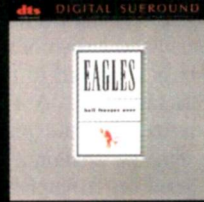
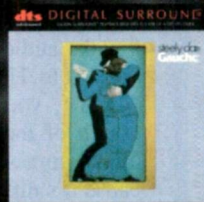
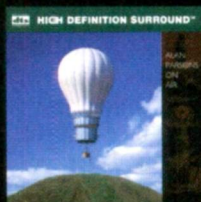
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Onkyo ED-301 Dolby Digital Surround Processor

KEN C. POHLMANN, HAMMER LABORATORIES

Does your A/V receiver lack Dolby Digital (DD) decoding? That's nothing to be ashamed of — Dolby Pro Logic (DPL) was the surround processor of choice for many years. But what do you do now? You could buy a whole new receiver, or a DVD player with on-board DD decoding, or you could buy an outboard surround processor like the Onkyo ED-301, which decodes both DD and DPL soundtracks.

If you could patent the look and feel of an A/V receiver, the ED-301 would be guilty of infringement. Its front panel looks like a stripped-down receiver and sports the kind of controls you'd expect on a surround processor. You'll find buttons for selecting analog or digital lines for Inputs 1 or 2. A Speaker button, used in conjunction with a pair of Parameter-Controller buttons, lets you optimize the processor for your setup, choosing "large" or "small" settings for the center and surround speakers, and subwoofer on/off, so that deep bass is routed to the speakers best able to handle it. A Distance button (also used with the parameter controllers) sets the distance from your listening position to each speaker. Similarly, a Level button adjusts the volume of each speaker. To ease the task, a test-tone button sequentially shoots band-limited pink noise through each speaker.

You'll also find a listening-mode switch to select surround or stereo playback. A Cinema Re-EQ button engages a front-channel equalization curve that rolls off high frequencies to improve home playback of movie soundtracks. A Midnight Theater button compresses dynamic range so you can feel the action even at low volumes — it works only with DD soundtracks, however. Another button attenuates the level of the Dolby Digital LFE (low-frequency-effects) channel by 10 dB to tame overemphasized bass.

The ED-301 also has a multichannel input switch that selects the multichannel input for connecting an external (DTS?) decoder. A pair of volume buttons performs as advertised, and a dimmer button lets you adjust the brightness of the blue fluorescent display. Unlike today's A/V receivers, the ED-

301 does not display menus on screen on your TV.

The rear panel has a modest array of inputs and outputs, most of them handled by RCA jacks. Input 1 accepts signals from a pair of analog stereo jacks, composite- and S-video jacks, and an optical digital connector; Input 2 is the same except that it has a coaxial digital connector. There are composite- and S-video output jacks, and a pair of analog audio jacks for the stereo output. A set of six RCA jacks accepts multichannel input (left, center, and right front channels, left and right surrounds, and subwoofer), and another set handles the multichannel output. In addition, the same multichannel output appears on a computer-style DB-25 connector for use with some Onkyo receivers.

I evaluated the ED-301 in a bare-bones system comprising a Sony DVP-S300 DVD player, three stereo power amplifiers, and a six-speaker setup with a powered subwoofer. The powered sub hung onto the ED-301's line-level sub output. Once everything was wired up, I settled down for the all-too-familiar chore of balancing the system.

I instinctively reached for the remote, then remembered that the ED-301 has none. Now, 54 percent of all Americans are overweight, but I'm not one of them. If I want to sit on my duff while I make audio adjustments, I should be entitled to. However, to set levels on the ED-301, you have to be within arm's length of the front panel or enlist the aid of an assistant. I did the latter, because it's difficult to get the levels right unless you're sitting in the listening position. The lack of a remote is a real drag during setup and ongoing use.

Once I got over the shock of not hav-

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DIMENSIONS 17 $\frac{1}{8}$ inches wide,

3 $\frac{1}{2}$ inches high, 11 $\frac{1}{8}$ inches deep

WEIGHT 9 $\frac{1}{4}$ pounds

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testreport

ing a remote, I romped through a number of movie scenes and finally settled down with *L.A. Confidential*. This big-budget film noir is cleanly recorded, with crisp dialogue and high-impact effects (including about a million rounds of gunfire). The ED-301 handled everything with aplomb. Images were firmly placed in their proper channels, with a real weight and presence to the DD surround sound. For example, I'm often bothered by off-screen dialogue. Unless it is panned exactly right, the voice seems disembodied and completely artificial. The Onkyo processor seemed to solve this problem, giving realistic perspective to such sonic images. In general, it did its job without introducing unwanted noises of its own. Moreover, I did not detect any data-compression artifacts, such as blurry transient response or harsh horns or strings in the musical portions of the film soundtrack.

I was also happy with the Midnight Theater mode, which did a good job of putting some oomph into low-level listening. The Cinema Re-EQ mode was quite effective at mellowing bright mixes, but it would be nice to have more comprehensive equalization controls. I would have liked more control over the subwoofer setup, too, like a variable cutoff frequency (and even slope) for the low-pass filter. The processor's DPL decoding is done in the digital domain, and I was moderately happy with it — not that there was anything wrong with the decoding, but listening to Pro Logic is a real letdown after Dolby Digital.

I also auditioned the ED-301 with some music, including a few surround-encoded discs as well as good, old-fashioned CDs. I was pleased with the outcome. If anything, the processor is even more satisfactory in this role, because you don't need any special processing to convey the signal — just nice, quiet circuits. The D/A (digital-to-analog) converters probably aren't the world's best, but they are fine for general-purpose listening. The ED-301 lacks any synthesized ambience modes (Concert Hall, Jazz Club, and so on), but I rarely use these and did not miss them. Bottom line: the ED-301 provides the primary multichannel and stereo processing and control features you'd expect on a budget A/V receiver, and it accomplishes that processing with fidelity at least as good, judging from the bench tests.

Although many components contain a 5.1-channel Dolby Digital decoder,

there are still a good many "5.1-channel-ready" components and systems out there. If you have a DD-less A/V receiver with discrete six-channel inputs, the ED-301 will drop right into your signal chain. If you need extra bells and whistles (or really want a remote control), it might be more cost effective to buy an entirely new, full-function A/V receiver. But if all you need is the essential DD surround-sound processing, the ED-301 will provide it in full measure. □

MEASUREMENTS

DOLBY DIGITAL (AC-3) PERFORMANCE

All data obtained from Dolby Labs' AC-3 test DVD. All data obtained using dithered test signals, which set limits on measured distortion and noise. All channel-level controls and LFE attenuation set to 0. Midnight Theater mode off. All speakers set to "large" unless noted otherwise. Reference input level is -20 dBFS*; reference output level is 319 mV. All are worst-case figures.

Distortion

(THD+N, 1 kHz, -20 dBFS*)0.029%

Noise (A-wtd)-77.1 dB

Excess noise (with signal)

16-bit (EN16)2.6 dB

Frequency response

20 Hz to 20 kHz +0, -0.43 dB

Channel imbalance0.21 dB spread

Subwoofer output

frequency response

(-3 dB at 64 Hz)24 dB/octave rolloff

High-pass-filter frequency response

(-3 dB at 75 Hz)12 dB/octave rolloff

Maximum unclipped

subwoofer output

(all speakers set to "small")4.4 volts

Subwoofer output distortion0.003%

STEREO PERFORMANCE, DIGITAL INPUT

All data obtained using dithered test signals, which set limits on measured distortion and noise. Reference levels are 200 mV output for a -20-dBFS* input.

Linearity error (at -90 dBFS*)+0.5 dB

Noise (A-wtd)-73.7 dB

Noise modulation0.4 dB

Excess noise (without/with signal)

16-bit (EN16)2.2/2.7 dB

quasi-20-bit (EN20)18.3/18.6 dB

Distortion (THD+N, 1 kHz)

at 0 dBFS*0.0038%

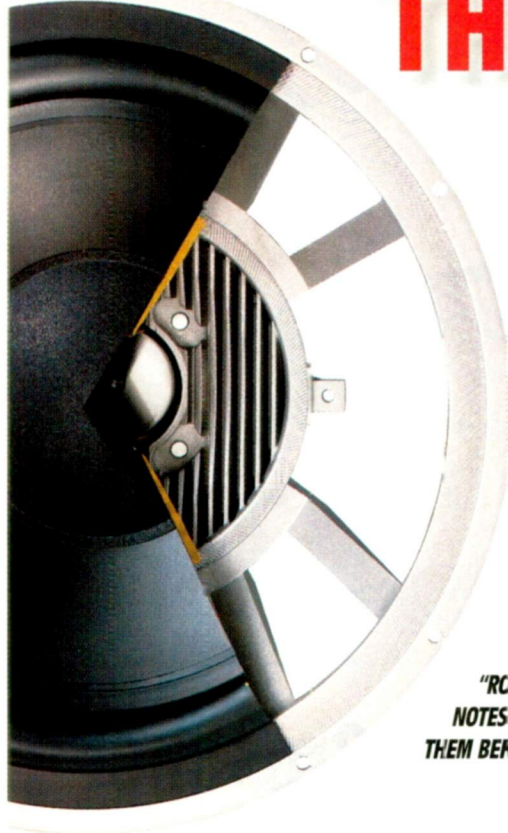
at -20 dBFS*0.025%

Frequency response

20 Hz to 20 kHz +0, -0.4 dB

* decibels referred to digital full-scale

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Entec Number Cruncher D/A Converters

KEN C. POHLMANN, HAMMER LABORATORIES

Because of the weaknesses that are inherent in analog circuit design, there are wide variations in the quality of the audio signal path. The choice of circuit components (transistors and so on), the layout of the circuit board, the cleanliness of the power supply, and many other factors conspire to create very bad signal paths, very good signal paths, and everything in between. In comparison, digital signal paths are much more egalitarian. Although some digital circuits are fast and others are slow, the inherent robustness of binary data means that it is possible to create highly reliable digital audio signal paths and relatively difficult to build poor ones.

Analog-to-digital (A/D) and digital-to-analog (D/A) converters are, as their names suggest, neither fish nor fowl. They are hybrid circuits that embody both the weaknesses of analog circuitry and the strengths of digital circuitry. Thus, on one hand, there is a distinct difference in quality between good and

bad converters, but on the other hand, the difference is relatively small. This is even more true now than in the past as converter technology has evolved, using 1-bit or delta-sigma techniques to make converters progressively more accurate and digital-like.

Still, if the music signal is revealing enough, and your ear is sharp enough, you can hear differences among converters. Moreover, the signal path that follows a D/A converter, specifically an

analog low-pass filter, can have an audible effect. The old-style "brick-wall" filters are long gone, but even today's gentler-sloped filters can have a mild effect on the signal, if only by adding a slight amount of noise.

As if to specifically test the ears of listeners (and long-suffering audio reviewers), Entech — a new division of San Francisco's Monster Cable — has introduced two outboard D/A converters with slightly different designs. The Number Cruncher (NC) 203.2 (\$300) and its companion NC 205.2 (\$450) seem to ask two questions: 1) Are we better than other converters? 2) Can you tell us apart?

The Entech design philosophy is to eschew "good enough" solutions and strive for something better. In this case, although these Entech converters *could* be used in conjunction with a stand-alone CD transport (a dying breed), they are intended mainly to replace the converters built into every CD, DVD, and laserdisc player and every MD and DAT recorder.

To use one of these Entech converters, your digital source component must have an SPDIF digital output. Although SPDIF outputs are found on many existing components, it's worth noting that there is a move afoot to replace that protocol with something more appropriate for 5.1-channel and computer-based audio. For now, however, the SPDIF protocol is still widely used. Finally, it's perhaps worth noting that these converters operate only on CD-standard PCM signals and will not, for example, pass or decode Dolby Digital (AC-3) bitstreams.

Both Number Crunchers are housed in rounded, anodized-aluminum chassis — at first glance they could be mistaken for car power amplifiers. Six rubber strips along the top of each chassis provide a welcome bit of styling. A small but useful touch: the rubber feet are angled so that one unit can be stacked on top of another. The NC 205.2's chassis is somewhat longer than the NC 203.2's.

The controls and connections are quite simple. Both models have a Toslink fiber-optic digital input; the NC 203.2 also has one coaxial digital input, and the NC 205.2 has two of them. In the case of the NC 203.2, the input is selected by a pushbutton on the rear of the chassis. The NC 205.2's input selector is on the front, with an accompanying set of three indicator lights. The NC 205.2 also has a front-panel "phase" pushbutton to select normal or inverted

FAST FACTS

DIMENSIONS 6 $\frac{1}{8}$ inches wide, 2 $\frac{5}{8}$ inches high, 4 inches deep (NC 203.2) or 8 $\frac{1}{4}$ inches deep (NC 205.2)
WEIGHT NC 203.2, 3 pounds; NC 205.2, 5 pounds
PRICE NC 203.2, \$300; NC 205.2, \$450
MANUFACTURER Entech, Dept. SR, 455 Valley Dr., Brisbane, CA 94005; phone, 415-840-2000; Web, www.monstercable.com

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output polarity. Both models have a front-panel LED to indicate when they are receiving audio data, and each has a single set of left/right RCA-jack analog outputs. The power supply in each case is an external module that connects to a socket on the rear of the chassis. This approach lowers cost and moves the power supply's potential interference away from the converters.

Of course, in buying an outboard D/A converter, there are two crucial considerations: the type of SPDIF digital audio data-receiver chip and the D/A converter chip itself. In this case, both Entech Number Crunchers employ a Crystal Semiconductor CS8412 data-receiver chip and a Crystal CS4329 delta-sigma D/A converter chip with claimed 20-bit resolution — excellent chips that are widely used in many high-end CD players (although some use the higher-performance CS4390 D/A chip). Although their critical chip sets are identical, the two converters have some small differences in the design of their audio paths. The NC 203.2

has five independent voltage regulators to help separate the power rails of the analog and digital circuits, while the NC 205.2 has six of them. The NC 203.2 uses a three-pole active analog filter on its output, the NC 205.2 a five-pole filter.

Of course, you can stare at chip numbers from now until doomsday, but the only way to determine the quality of an audio component is to listen to it. For my first test, I pitted the Entech converters against an old CD player with a multibit converter that has long since been superseded by superior sigma-delta designs. I used the CD player's transport in all cases and wired my system so that I could switch between the player's internal converter and one of the Entech converters.

I played a variety of CDs and could hear little if any difference in loud, noisy musical passages. For example, while rocking out with Aerosmith's *Nine Lives* album (the epitome of loud and noisy), both the old player and the Entech converters sounded the same. That isn't surprising considering that CD's nonexistent dynamic range and the massive distortion of the musical instruments. Then I switched to more subtle material, especially passages with noticeable ambience or cleanly recorded transient signals — for example, Steely Dan's *Gaucho* album, a classic example of fine recording technique. With these very clean signals I felt that I could hear the superiority of the Entech converters over the ones in the player. Specifically, I detected a more open, transparent sound and better imaging with the Entechs. This was further borne out when I tried the same comparison with low-level test tones specifically designed to detect subtle nonlinearities. With these, the Entech Number Crunchers provided a level of transparency that some older converters are incapable of.

It was not a radical difference, but if you're a careful listener, I suspect that the improvement will be audible to you. Moreover, even if the difference isn't obvious at first, it's entirely possible that the subtle improvement will manifest itself over time in reduced listening fatigue. Of course, not all old players had mediocre converters; the improvement from using one of these Entech converters might be even more subtle, or nonexistent, depending on the quality of the converter in the component you're trying to upgrade.

Satisfied that the Entech converters

sounded quite good and represented an improvement over some inferior converters, I then compared one Number Cruncher against the other, using a Sony DVP-S300 DVD player as the transport. Because of the great similarity of their audio signal paths, I did not expect that the NC 203.2 and 205.2 would yield radically different audio performance, but I hoped to hear some difference, no matter how subtle. I spent a good deal of time listening to each one for extended periods and also switching rapidly from one to the other. To help reduce a natural subjective bias toward the more expensive converter, I asked an assistant to do the switching so that I wouldn't know which converter I was hearing. To make a very long story short, I couldn't hear any consistent difference. Both models were equally pleasing to my ears.

Somewhat disappointed that I had been unable to hear any difference between these converters, I checked their performance in the lab to see what I had been missing. As it turned out, I missed very little. The bench-test numbers were quite similar; indeed, both converters' measurements were spectacular. The low excess-noise figures for both models are particularly noteworthy. Given the similarity in measured performance, I didn't feel too bad that I had been unable to detect the minuscule differences between the two converters when listening to music. Hey — I'm only human.

There is no question that the Entech Number Crunchers are both excellent D/A converters, each offering an extremely clean signal path that challenges the limits of human audibility. There is still the question, however, of whether you need one. If, say, you've got an old CD player with an inferior D/A converter, or you have a perfectly good CD player but there's some defect in the output stage, one of these Entech converters would be a great investment. As to which model to buy, I think their audio paths are equally excellent with music signals. The NC 205.2 was slightly better overall in the excess-noise tests (among the best we've seen), and it has an additional input, which is handy if you have several digital source components. In any case, the Entech Number Crunchers are welcome additions to the audio marketplace. They enable owners of older or lower-grade digital equipment to upgrade to some of the best stereo digital-to-analog conversion available. □

MEASUREMENTS

Except where noted, all test signals were dithered, which limits measured performance for noise level and distortion, and all were two-channel stereo.

NUMBER CRUNCHER 203.2

Maximum output 2.66 volts

Frequency response
20 Hz to 20 kHz +0, -0.26 dB

Noise (A-wtd, re -20 dBFS*) . . . -75.2 dB

Excess noise (without/with signal)
16-bit (EN16) 0.64/0.39 dB
quasi-20-bit (EN20) 11.1/11.1 dB

Distortion (THD+N, 1 kHz)
at 0 dBFS* 0.0022%
at -20 dBFS* 0.018%

Linearity error (at -90 dBFS*) . . +0.04 dB

NUMBER CRUNCHER 205.2

Maximum output 2.62 volts

Frequency response
20 Hz to 20 kHz +0, -0.28 dB

Noise (A-wtd, re -20 dBFS*) . . . -75.3 dB

Excess noise (without/with signal)
16-bit (EN16) 0.2/0.2 dB
quasi-20-bit (EN20) 10.9/10.7 dB

Distortion (THD+N, re 1 kHz)
at 0 dBFS* 0.0026%
at -20 dBFS* 0.0023%

Linearity error (at -90 dBFS*) 0 dB

* decibels referred to digital full-scale

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NHT SuperOne/SuperTwo Speaker System

DAVID RANADA, TECHNICAL EDITOR

Building on the sonic and commercial success of its small SuperOne speaker, NHT has introduced the SuperTwo, which can be thought of as a SuperOne with a built-in, downward-firing "subwoofer." Both models can be used together in a home-theater setup, with a pair of SuperTwos at the front left and right, and three SuperOnes doing double duty as center and surround speakers. I evaluated the SuperTwo operating as a two-channel stereo speaker as well as in a five-speaker SuperOne/Two surround system as shown above.

The "subwoofer" of the SuperTwo is a 6½-inch driver mounted on the bottom of the vented enclosure. The driver is said to be capable of a 14-millimeter (0.55-inch) peak-to-peak excursion, justifying NHT's "long-throw" appellation. This is a passive "subwoofer," with no internal power amplifier, and it

cannot be separately driven since there is only one set of binding-post inputs. So the SuperTwo is actually just a full-range tower speaker — albeit one that

FAST FACTS

DIMENSIONS SuperTwo, 39 inches high, 7¼ inches wide, 10 inches deep; SuperOne, 11½ inches high, 7¼ inches wide, 8½ inches deep

WEIGHT SuperTwo, 39 pounds; SuperOne, 10 pounds

FINISH SuperTwo, high-gloss black laminate; SuperOne, high-gloss black or white laminate

PRICES SuperTwo, \$750 a pair; SuperOne, \$175 each

MANUFACTURER Now Hear This, Dept. SR, 535 Getty Court, Benicia, CA 94510; phone, 800-648-9993; Web, www.nhthifi.com

can indeed, as claimed in the manual, produce substantial output at 35 Hz.

Screw-on spiked feet are supplied with each SuperTwo pair. The spikes *must* be used because they elevate the speaker about half an inch off the floor so that sound coming from the bottom driver isn't muffled. If you have a carpeted listening area, make sure the depth of the carpet won't completely cut off the bottom driver's output (only a small clearance is necessary).

At 120 Hz, the SuperTwo's "subwoofer" crosses over to a 6½-inch "midwoofer" located on the front of the cabinet behind the grille. The midwoofer, in turn, crosses over at 2.2 kHz to a 1-inch, fluid-cooled, soft-dome tweeter. These two "upper" drivers are magnetically shielded, permitting you to locate the speaker close to a video monitor without disturbing the picture. Rated impedance is 8 ohms, or 3.8 ohms minimum. Sensitivity is given as 87 dB sound-pressure level (SPL) at 1 meter with a 2.8-volt input.

The SuperOne has the same two magnetically shielded drivers and 2.2-kHz crossover as the top half of the SuperTwo, but the lower 6½-inch driver is just called a "woofer" and operates in an acoustic-suspension enclosure. As it was originally designed as a "normal" stereo speaker, the radiation pattern of the SuperOne is also "normal," with neither the limited vertical directivity of some center-channel speakers nor the dipolar emission of many surrounds.

While the rated impedance of the SuperOne is the same as the SuperTwo's (8 ohms), its minimum impedance is higher (6 ohms) and its rated sensitivity 1 dB lower (86 dB). My measurements confirmed the ratings for both models. The rear of the SuperOne enclosure has screw holes for NHT's optional One-Bracket wall-mounting device (\$90 a pair).

NHT recommends that "the distance between the listener and the center of the speaker plane [be] 1.5 times the distance between the two [SuperTwo] speakers" (a diagram is provided). The company also recommends placing each SuperTwo at least 8 inches away from the wall behind it and at least 2 feet from the side wall.

These requirements are approximated by our normal listening setup, which partly explains why I obtained quite excellent sound quality from the SuperTwos with little of the usual trial-and-error repositioning. But what little speaker moving I had to do was made

more tedious by the spikes' tendency to tear up our room's carpeting — use the supplied antiscratch "spike caps."

The SuperTwo's sonic excellence was immediately evident with cleanly recorded vocal material such as opera, classical song recitals, and jazz vocals as well as movie-soundtrack dialogue. Unless they were poorly recorded or overprocessed to begin with (as is all too common), vocals played through the SuperTwos had a noticeable lack of coloration compared with other speakers I've reviewed lately. During com-



The NHT SuperTwo's spiked feet elevate it enough for the bottom-mounted "subwoofer" to operate correctly.

parative listening to several recordings of Schumann's *Dichterliebe* song cycle, I could safely attribute any nasality or sibilance I heard to the singers, not the SuperTwos.

Similarly, I had the opportunity to compare the SuperTwos' reproduction of Simon Rattle's live recording of Mahler's Seventh Symphony (on EMI) with my memory of a live performance of the same work by the same performers that I heard the night before in Lincoln Center's Avery Fisher Hall. (Now that's live vs. recorded!) Played through the SuperTwos, the recording proved to be a stunning souvenir of what I had heard in the hall, and it provided as much stage depth and bass impact as the live experience.

Let me back up a bit. At first hearing in our listening room, the NHT SuperTwo speakers sounded a bit bass-shy on wide-range material compared with others I've evaluated. They might also seem so in your own listening room, a

difficulty easily curable with a conventional bass control. But the sonic balance of the SuperOnes also sounded much like that of my reference Etymotic Research ear-plug/headphones, which I know produce a very flat bass response in my ears. And the Mahler symphony live-vs.-recorded comparison would not have come out so well if the speakers were truly bass-deficient.

I've concluded that the fault was with the other speakers. Not only do the SuperTwos have all that it takes to reproduce pipe-organ music at live levels, as well as all manner of low-frequency soundtrack pandemonium (such as the landing of the pyramid in *Stargate*), but they measured unusually flat.

A one-third-octave spectrum analysis at the listening position produced a response flat to within ± 3.5 dB from 50 Hz to 20 kHz, a measurement that includes the influence of our room. Our quasi-anechoic listening-window measurement was flat to within ± 2 dB from 20 kHz down to our present measurement limit of 1 kHz. The absence of the typical deep "crossover dip" between 1 and 3 kHz was significant. The SuperOnes also cleanly reproduced our bass tone bursts down to 63 Hz at a drive level equivalent to 100 dB SPL, which is quite good considering the size of the speaker. Sine waves were useably audible down to 35 Hz.

In the five-speaker surround setup, I adjusted the system to roll off the SuperOnes' response below 100 Hz and redirect the bass to the SuperTwos. The close sonic match between the SuperOne and SuperTwo paid dividends in the accuracy and stability of front-channel (left, center, right) imaging with all surround-encoded material. The SuperOne was less successful as a surround speaker, however. Its monopolar radiation caused it to image too well, and it lacked the kind of diffuse radiation necessary for smooth sonic envelopment with surround material, although switching in THX decorrelation helped. While the SuperOne is a very good small speaker, I would recommend dipole surrounds instead for a home theater.

Considering its overall sonic neutrality, reasonable price, and handsome styling, the NHT SuperTwo is an excellent speaker for all types of music and listening rooms. Team a pair with a SuperOne in the center and a pair of dipole surrounds, and you'd enjoy a very fine home-theater sound. This is a speaker for all tastes. □

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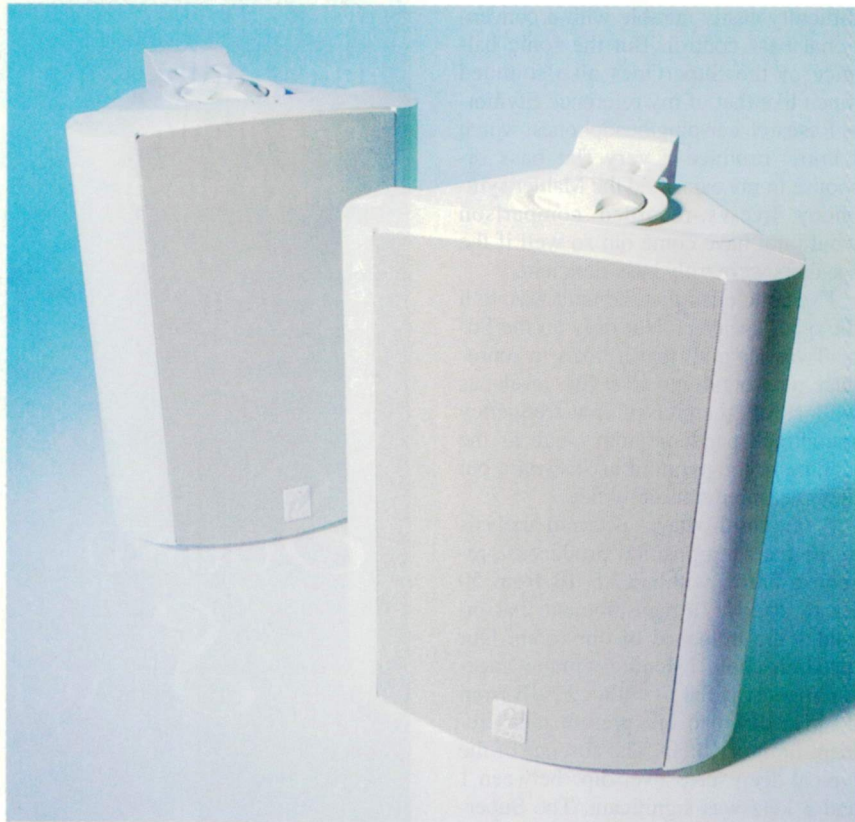
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Niles OS-20 Indoor/Outdoor Speaker

TOM NOUSAINE, TN COMMUNICATIONS

Life for an outdoor speaker can be pretty brutal. That's why real "patio" speakers are engineered so they can stay outside year round. The materials and adhesives used in their construction must be able to withstand Alaskan winters as well as Death Valley summers. The speakers must also be able to handle wild temperature swings and heavy exposure to direct sunlight with its ultraviolet (UV) rays, wind-blown dust, and water from rain and sprinkler systems.

And let's not forget that the sound produced by patio speakers is easily marred by echoes from nearby buildings or aluminum siding and other obstructions. Then there's background noise from wind, chirping birds, frolicking kids, barking dogs, and rustling leaves, which all but obliterate subtle details in the music. And without a room to contain the sound, the bass is usually pretty weak.

Given all that, creating an outdoor speaker that sounds good is a tall order. Niles Audio's OS-20 has all the earmarks of a speaker designed for high-quality sound and reliable performance indoors or out. It has a weather-resistant 1-inch dome tweeter and a 6½-inch woofer, a rugged plastic enclosure with gold-plated binding posts, and a rust-proof grille and mounting bracket.

FAST FACTS

DIMENSIONS 9⁷/₈ inches wide, 13 inches high, 9 inches deep (including bracket)
WEIGHT 8¹/₂ pounds (including bracket)
FINISH paintable off-white or black
PRICE \$500 a pair
MANUFACTURER Niles Audio, Dept. SR, P.O. Box 160818, Miami, FL 33116; phone, 800-289-4434; Web, www.nilesaudio.com

Niles claims that the enclosure is shatterproof and that the speaker is immune to damage from salt water, corrosion, UV, and temperature swings from -50 to +200°F. The OS-20 is covered by a two-year limited warranty, and it comes in an off-white or black finish that can be painted to match any decor.

On the test bench, the OS-20's performance was in line with what I've come to expect from good two-way speakers of its size, with a frequency response of 92 to 20 kHz ±5 dB. At 30 degrees off-axis output plunged above 12 kHz, but the overall response from 92 to 14 kHz flattened to ±3 dB. At 60 degrees off-axis the response roughened considerably, with the tweeter pretty much gone by 10 kHz. Sensitivity measured at 1 meter with a 1-watt input was 89 dB sound-pressure level (SPL), 2 dB less than the manufacturer's rating, and my impedance measurements verified the OS-20's nominal 8-ohm rating.

Now for the fun part: measuring the OS-20 under the kind of conditions it will encounter in outdoor use. Using the supplied mounting brackets, I installed the pair as recommended in the manual, 7½ feet apart at an elevation of 3½ feet on a long, vinyl-sided outside wall. After measuring and listening to the speakers in that position, with myself or the microphone centered 10 feet away, I reinstalled them at a 6-foot elevation and repeated the measurements.

Installed on the wall, the OS-20's response at either 3½ or 6 feet elevation was down 3 dB at 41 Hz and varied ±7 dB from 41 Hz to 17 kHz. I also mounted the speakers 3½ feet high on stands at the edge of a hillside patio, with a straight drop-off behind them. In that free-standing position the low-frequency response was less robust, with a -3-dB point of 73 Hz, and except for a "floor-bounce" notch at 190 Hz, overall the response was smoother at ±5 dB from 73 to 17 kHz.

With their backs to the wall, the pair of OS-20s cranked out a healthy 104 dB SPL when fed a dose of the Glenn Miller Orchestra playing "Little Brown Jug." The charging bass and screaming horns of that GRP recording were rendered with style before the woofers signaled overload and the horns turned raspy. That should be loud and clean enough for most parties. The OS-20s handled the overload with reasonable grace, though the woofers tended to emit "plopping" noises as they approached their limits.

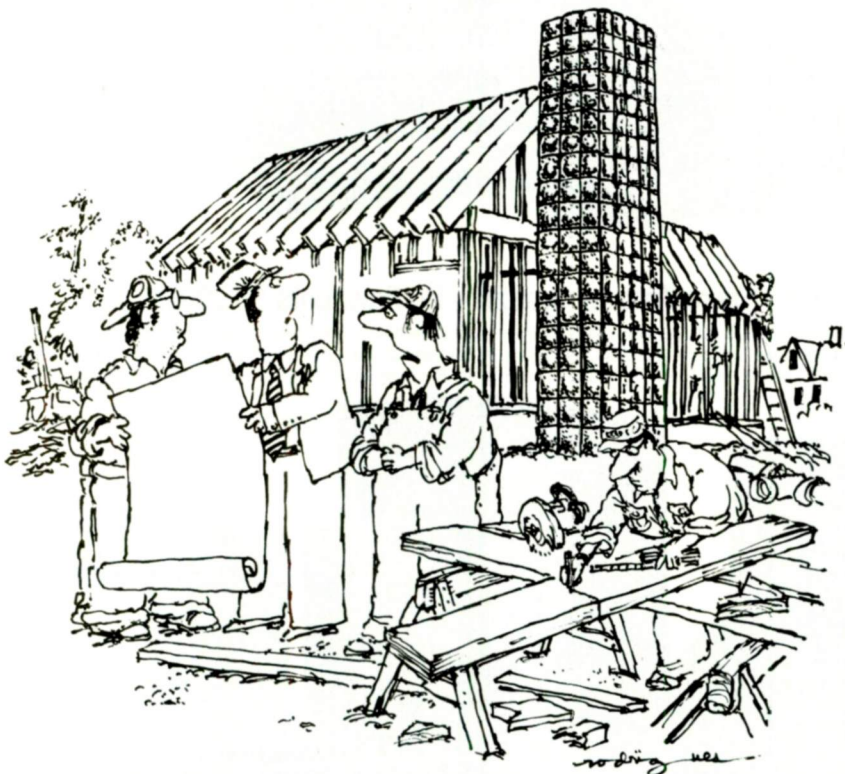
Mounted on the stands, the speakers didn't play quite as loud, and there was some mild coloration on both male and female vocals. Jennifer Warnes sounded like she had a slight cold on Leonard Cohen's "Famous Blue Raincoat" from her album of the same name (Private Music). The effect was pleasant but not exactly what's on the recording. Bass was a bit on the thin side, but hey — we're talking outdoors here, with no room "gain" to enhance the low end. Actually, the bass was quite good for an outdoor speaker. It won't shake you off the deck, but there's enough energy to be satisfying. Placing the OS-20s against the wall improved the bass but exacerbated the vocal coloration, especially at the 3½-foot elevation.

Imaging in the patio-edge location was problematic. With no back wall and only one reflecting surface (the ground in front), I had some difficulty finding the sweet spot. You don't really appreciate how much wall reflections help center a stereo image and provide localization cues until you listen to a pair of speakers outdoors. On the other hand, there was a dramatically enhanced sense of depth. The width of the soundstage, however, was confined to the outside edges of the speakers.

Placing the speakers against the wall, at either height, widened the soundstage considerably, while reducing its depth somewhat. Imaging was more stable — in fact, it was excellent by two-channel standards.

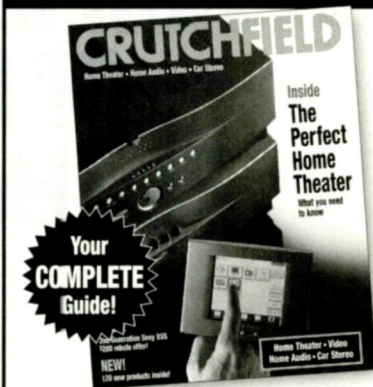
I didn't subject the OS-20 to an accelerated-life environmental test, but I did leave one of the pair outside for a long weekend. It sat through two days of blistering sunshine, regular three-times-a-day doses from my sprinkler system, and a thunderstorm for the better part of a day and a night. I also accidentally dropped the same speaker over the edge of my patio — it bounced off two retaining walls and rolled 20 feet down a steep hillside.

Following all that wicked abuse, the speaker still played perfectly. The enclosure had no trace of damage, although there were a couple of dents in the grille, which I managed to straighten out with a small hammer (sorry, guys!). When I opened up the cabinet, the OS-20 was clean and dry inside, with no trace of damage or deterioration. Obviously, Niles has succeeded in designing a speaker that can cope with weather and rough handling, and in doing so deliver surprisingly good sound in the great outdoors. □



"I found out where that extra \$24,000 went, Mr. Gershon. The chimney and two fireplaces were made outta those outdoor speakers that look like rocks."

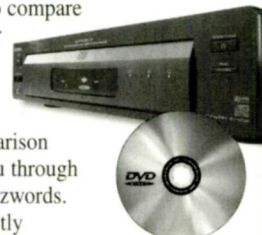
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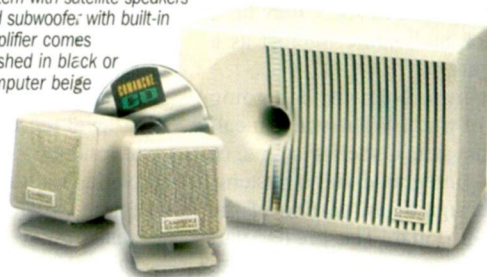
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Harman Kardon Festival 60 Minisystem

DANIEL KUMIN, START LABORATORIES

Integrated minisystems are little more than glorified boom boxes without the handle and the battery pack, right? And as such, they hold about as much audiophile interest as a CB radio, right?

Like most hyperbole, the foregoing has a kernel of truth. Whatever you call them — minisystems, shelf systems, or all-in-ones — integrated audio systems account for a significant portion of the American hi-fi dollar. The greater part of this bounty is spent on models whose designs are driven more by gee-whiz features and flashy displays than by a quest for musical transparency, power, or depth. However, from time to time exceptions appear, and Harman Kardon's new, U.S.-made Festival 60 is the latest in a notable series from this brand.

On paper the festive stack of HO-scale components seems conventional enough: a CD changer, a preamp/tuner, and a power amp paired with a couple of small speakers. No big deal. But next to most of the gear on minisystem shelves in electronics stores, the Festival 60 stands out like a red Porsche in a lot full of minivans. And with a price tag of \$1,399, it should.

The eye is immediately drawn to the system's handsomely sculpted controller, as Harman Kardon calls it, whose curved front panel has a nice big display window. The preamp has three audio inputs, each with a corresponding composite-video input, a stereo pair of line-level record outputs marked Aux 1 Out, and two video outputs. The tuner provides Radio Data System (RDS) text displays, where supported by FM broadcasters.

Directly below the preamp/tuner is a "6+1-disc" CD changer with an open/

close button and a loading drawer on the front, and that's it. The drawer feeds the six-disc internal stocking mechanism (the MusicBank design Nakamichi developed) and serves as a single-disc tray when the stocker is full.

Anchoring the Festival 60 electronics stack is the power amp, which is rated to deliver 35 watts per channel and has only a power-on indicator on its front panel. Around back are binding-post speaker connectors and a pair of RCA jacks for line output to a powered subwoofer. Except for the amp's metal cover and side-mounted cooling grates, each component is encased in textured gray plastic.

The two 13-inch-tall speakers each have a 1-inch dome tweeter and a "6-inch" woofer whose actual diameter is about 5 inches. A perforated-metal grille protects the drivers. On the back of each speaker is a small, flared port and a nice pair of heavy-duty binding posts. The presence of rubber feet and the absence of wall- or stand-mounting hardware suggest that the speakers were designed for shelf placement. But since their rear-firing ports require placing them at least 6 inches from any wall, the Festival 60 is best regarded as a shelf system in name only.

Setting up the Festival 60 was as easy as it gets. The three electronic components are tethered by a single ribbon cable with a computer-style multipin connector on either end and one in the middle. Each plug is keyed for goof-proof hookup. With the "supercable" in place, I ran the supplied wire from the power amp to the speakers and clipped the supplied AM and FM antennas in place.

The preamp's control panel is practically self-prompting. The volume knob and the transport keys are at the right, and the source, tone, and balance keys at the left, with the display between them. On the bottom of the panel are ten "soft" keys that change function according to the selected source and command mode. When a key is active, a green LED in its center lights up, and its current function is shown in the display window. The Festival 60 is so intuitively organized that you'll be able to operate most of its functions within 15 minutes of unpacking it — without looking at the owner's manual (which is well thought out in case you do need to look at it).

The remote control handles all the important functions with just 15 keys and a big master-volume rocker. For

FAST FACTS

DIMENSIONS electronics, 10¼ inches wide, 13½ inches high (stacked), 11 inches deep; speakers, 10¼ inches high, 6⅞ inches wide, 13½ inches deep

WEIGHT electronics, 26½ pounds total; speakers, 11 pounds each

FINISH gray

PRICE \$1,399

MANUFACTURER Harman Kardon, Dept. SR, 250 Crossways Park Dr., Woodbury, NY 11797; phone, 800-645-7484; Web, www.harman.com

example, in tuner mode the seven keys below the volume rocker perform seek or manual tuning while the arrow keys below the Tuner, CD, and Aux input selectors advance through the station presets. There are no numeric keys for direct access to presets, loaded discs, or CD tracks on either the remote or the front panel — but who in real life actually remembers that preset No. 22 is WGLU? My one complaint about this inventive remote is that its layout is incontrovertibly righthanded, making it a little awkward for us lefties.

Fortunately, in its eagerness to be ergonomically superior, Harman Kardon didn't lose sight of sound quality. In my near-field setup, with the speakers positioned at ear height and pulled out about 2 feet from the wall, the Festival 60 sounded very good indeed — almost as good as it looks. Sound from CDs was detailed and well defined. While the backgrounds on my best recordings were not as dead-silent as they are when played on top-quality component CD players, the sonics were legitimately hi-fi in every other respect.

The system was able to play satisfyingly low (down to 45 Hz or so), with plenty of presence. Even on bass-rich material, there were enough clean reserves to surpass what I'd expect from a minisystem. That said, the Festival 60 cannot play music in a normal-size room at anything approaching concert levels, although it does just about everything else well.

The system's overall balance was slightly warm, with a "deep and distant" cast to full-orchestra timbres. This was evident with an excerpt from Ravel's *Daphnis and Chloe* from the indispensable *Engineer's Choice* CD on Delos (DE 3512). The Festival 60 sounded open and free of "chesty," "cupped," or nasal tints on well-recorded vocals, such as Amanda McBroom's syrupy contralto in *Amanda* (Sheffield Lab 10066). The system passed my touchiest vocal tests with high marks, matching my everyday speakers in all respects throughout the vocal range.

Above the bass region, the Festival 60 was a near match for my usual reference speakers save for slightly softer, less sharply detailed reproduction of the top octaves. Putting the speakers on stands and pulling them out about 4 feet into the room reduced the softness a touch and also diminished the bottom-end warmth slightly.

A quick frequency-response test revealed some active equalization at the

amp's speaker outputs. Response at 65 Hz was boosted by precisely 3 dB, and it rolled off at 12 dB per octave below that point. I also saw a very gentle roll-off over the top octaves, reaching -1.5 dB at 20 kHz. This was without the Bass Plus switch engaged, which added 9 dB more boost at 65 Hz and 6 dB of boost at 20 kHz. Of course, there are also conventional tone controls, which allow about 9 dB of boost or cut. Response from the line outputs was virtually flat.

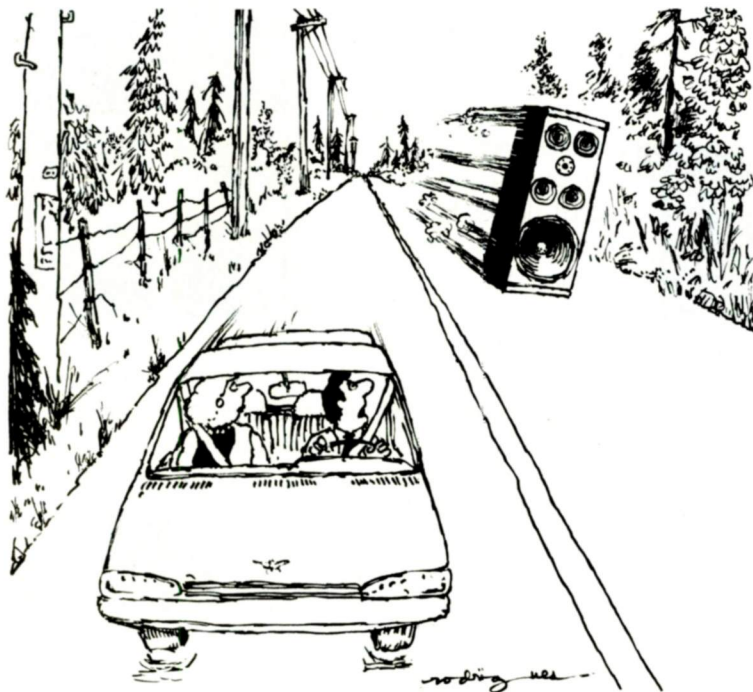
The Festival 60's tuner uses three of the many available RDS text and data modes: displaying a station's call letters and program type (CLS ROCK, JAZZ, NEWS, and so on), seek-tuning of RDS stations only (all or by program type), and scrolling extended text such as song titles, station promos, and commercial messages across the controller's dot-matrix display.

I was somewhat disappointed in the Festival 60's long-distance FM reception. Sound quality with strong local signals was first-rate, but with weaker or very distant stations it was no better than I'd expect from an entry-level receiver — which means that the college station you want to listen to better be located around the block, or you'll need to mount a big directional antenna high on the roof. AM reception of both strong and weak stations was typical of the tuners you find in today's receivers,

which is to say dismal. One big plus, though: the Festival 60's 20 presets are easy to select from the front panel and with the remote, and they're even easier to store — hold down the indicated key until PRESET DONE appears in the display.

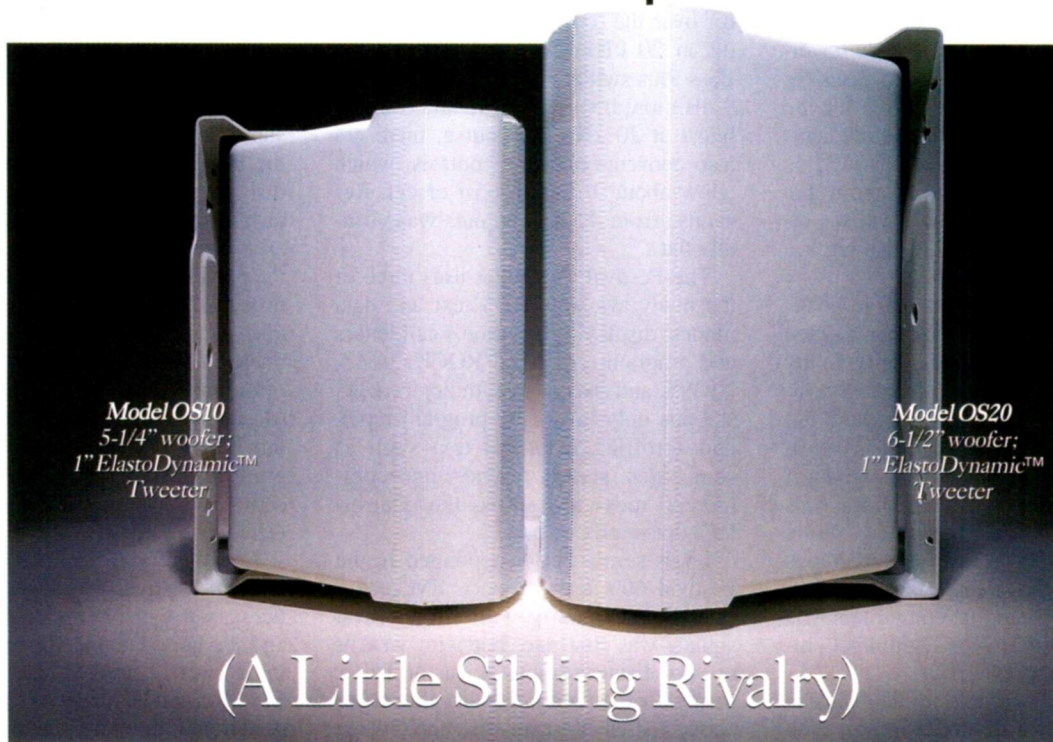
The CD changer's ease of use was super — the stocker mechanism gives it the flexibility of a conventional single-disc player. Disc-swapping was rapid, always less than 10 seconds and usually around 6 seconds. Curiously, though, the player would sometimes take a long time to skip between tracks on the same disc — up to 13 seconds on more than one occasion. The Festival 60 does not offer random-access track programming (does anyone actually ever use this feature?), but it does permit you to program a custom disc sequence, and it can play tracks at random from all selected discs.

And there you have it. The Harman Kardon Festival 60 is perfect for offices, bedrooms, dens, or dorm rooms, and it's good enough for serious listening as well. I have to say, though, that \$1,400 could buy a set of separate components with more accurate, louder, and deeper sound and better fringe FM reception. But that hardly seems the point. You'll want to buy the Festival 60 because it's excellent sounding, cool, handsome, compact, stylish, cool, and very easy to use. Did I mention cool? □



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A Guide to DVD Players

What you need to know before you hit the stores

You don't have a DVD player yet? If you're not thinking about getting one now, you probably will be soon. Although first-year sales were slightly less than many had hoped for, the virtues of the new, fully digital A/V medium are powerful enough to induce salivation in any serious home-theater fan. All appearances are that DVD is here to stay.

First, DVD delivers video quality that's demonstrably superior to anything that's come before — movies are visibly more filmlike. Equally important, the new format comfortably carries 5.1-channel digital surround sound that can equal what you'll hear in the best cinemas. Third, the street prices of DVD movies are well below those of all but loss-leader laser-disc releases, meaning that frugal collectors can build a li-

brary for \$20 to \$25 a title. Finally, DVD delivers a host of special functions and features that warrant any audio/video-ophile's attention (see "57 Features" on the next page).

DVD's first generation consisted of only a handful of players. Its second flowering has swelled the ranks to three dozen models that cover a wide fiscal landscape, ranging from street prices under \$400 to ten times as much. The accompanying table is a comprehensive listing of current models, though the dynamic nature of the consumer-electronics field all but guarantees that one or two newer models will have appeared by the time we can get these pages into your hands.

I would, however, be remiss if I failed to report on a couple of developments that may give some buyers reason to pause. First is Divx. This pay-per-view DVD variant, dreamt up by

by **Daniel Kumin**

the corporate parent of the Circuit City superstore chain, has already been widely covered in these (and other) pages. Divx players from Zenith and limited-play \$5 Divx movies should be on sale in two test markets when you read this. Sometime later this year, a Divx player from RCA should be available nationwide.

All Divx machines will also play all standard DVDs (and CDs), but no conventional DVD player will accommodate Divx discs. Will Divx prove to be a significant long-term factor in home theater? That depends on who you ask. A growing number of industry watchers think that the Divx format, which is conceptually different from any other A/V format ever put before consumers, is doomed to fail. Others see it as a bold new movie format that's ready to help usher in a new way of delivering entertainment. Nonetheless, I'm awfully glad that I didn't put off getting started with DVD. My modest disc collection is growing steadily, and my home theater's performance with them gives me more satisfaction than ever.

Another uncertainty is the next-generation audio standard. That some kind of DVD-based music disc will exist appears certain, but at press time we could not say categorically what its specs will be (see "The Sound of To-

morrow" on page 64). The most widely embraced version of the incipient format is extensively "scalable," permitting variations in the number of channels, sampling rate, and resolution ("bit-depth"). Will all current DVD-Video players be able to play a DVD-Audio disc? Or at least send it to a downstream surround processor that can decode it? While that would seem to make sense, we won't know until the format is hammered out and some DVD audio discs are produced and can be tested.

Otherwise, beyond the functions common to all current DVD players (see "57 Features" below), their distinguishing characteristics can be effectively categorized under a relative handful of headings in our table, some of which require a bit of explanation.

OPTICAL/COAXIAL DIGITAL OUTPUT

All DVD players deliver a digital audio signal, Dolby Digital from DVDs or PCM from CDs, to a processor or receiver via either an optical connector or an RCA-type coaxial (electrical) jack. Some include both types of output for compatibility and convenience, with the appropriate signal supplied simultaneously to each jack. Which type of output you should look for, if you consider players that don't have both, will depend on what kind of digital *input* your

receiver or processor has. Of course, all DVD players also have regular *analog* audio jacks so that you can play DVDs and CDs through a stereo system or a simple home-theater setup.

COMPONENT-VIDEO OUTPUT

All DVD players supply both composite-video and S-video signals. Some also include a component-video output, which separates the video program into a luminance signal and two color-difference signals, requiring three discrete RCA jacks and cables. The component-video option offers a subtle advantage in video quality but requires a compatible video monitor or TV to take advantage of it. So far, component-video inputs are found on only a small percentage of TVs, though this seems certain to grow steadily.

DOLBY DIGITAL DECODER

While all DVD players will deliver, through their digital audio connectors, a 5.1-channel Dolby Digital signal to a compatible processor or receiver, some of them have a built-in processor that decodes DD soundtracks. Such players supply six analog audio signals, one for each channel (see "Just the Facts" on page 57), to a "5.1-ready" A/V receiver or processor with a corresponding set of six inputs.

57 Features

Quite a few universal features are not mentioned in our table. I'll touch on the most important ones here. First, all DVD players function quite well as CD players, though in many cases disc and track access are a bit slower than in a dedicated CD player. Next, all can deliver video to a monitor in either the TV-shaped pan-and-scan format (4:3 aspect ratio), which is carried by every DVD, or in the full-resolution wide-screen (anamorphic) format that's an option in many DVD movies. All can freeze a video frame with near-perfect image integrity, and all offer at least one or two choices for stop-frame motion (the closest DVD currently comes to real slo-mo) and fast-search; the table lists the available speeds as multiples or fractions of normal speed.

All players provide on-screen menus for setup options and also display the cursor-navigated, remote-controlled interactive menus featured on most video DVDs. These menus often let you skip to or search for titles and chapters (scenes) directly, by selecting from a list. All DVD players can find chapters/scenes by number, the way CD players find tracks. Equally CD-like,

most DVD players let users program the play order for scenes. Track programming, random-play, and track/disc repeat for CDs are also universal, or nearly so. And all DVD players can select alternative soundtracks where available (almost always for movies); these usually include one or two foreign-language dialogue tracks in addition to the main 5.1-channel soundtrack.

All players can display subtitles if a disc carries them (nearly all DVD movies do) and will let you select a subtitle language from the choices provided — up to 32 languages can be offered, but on discs sold here the number is usually from one to three. Compatibility with the DVD format's multiple-camera-angle option, which lets you choose among several alternate views of a scene, is another almost universal feature. Thus far, however, the option has been implemented on only a few films of the, er, adult persuasion. (This feature has all the earmarks of one destined to become a historical footnote.) Finally, all DVD players incorporate a "parental control" option that lets you demand entry of a numerical password on the remote control to enable playback of discs rated above a certain age level.

— D.K.

MANUFACTURER	MODEL	PRICE ¹	OPTICAL DIGITAL OUTPUT	COAXIAL DIGITAL OUTPUT	COMPONENT-VIDEO OUTPUT	DOLBY DIGITAL DECODER	DTS-COMPATIBLE ²	PLAYS CD-R DISCS ³	RESOLUTION WITH 96/24 DISCS ⁴	FORWARD/REVERSE SEARCH	SLOW FORWARD	SLOW REVERSE	SPECIAL FEATURES
Denon 222 New Rd. Parsippany, NJ 07054 973-575-7810 www.del.denon.com	DVD-3000	\$899	✓	✓	✓	✓	✓	—	96/24	2X, 10X, 30X, 80X, 100X	1/2, 1/3, 1/4, 1/8, 1/16	1/2, 1/3, 1/4, 1/8, 1/16	Graphical user interface. Three selectable picture modes. Virtual surround. Two S-video and two component-video outputs.
Faroudja Labs 750 Palomar Ave. Sunnyvale, CA 94086 408-735-1492 www.faroudja.com	DV-1000	\$5,495	✓ (ST glass)	✓	✓	—	—	—	48/20	2X, 8X	1/2, 1/8	1/2, 1/8	Proprietary video processor. RGB-video. AES/EBU digital outputs. RS-232 serial control port.
JVC 41 Slater Dr. Elmwood Park, NJ 07407 800-252-5722 www.jvc.com	XVD-2000	\$1,000	✓	✓	—	✓	—	—	96/24	12X to 45X	1/2, 1/3, 1/4, 1/8, 1/16, 1/32	1/2, 1/3, 1/4, 1/8, 1/16, 1/32	Multibrand remote control. Graphical user interface.
Marantz 440 Medinah Rd. Roselle, IL 60172 630-307-3100 www.marantzamerica.com	DVD-890	\$700	✓	✓	✓	—	✓	✓	48/20	2X, 8X	1/2, 1/4, 1/8, 1/16	1/2	Plays video CDs.
Meridian 3800 Camp Creek Pkwy. Building 2400, Suite 122 Atlanta, GA 30331 404-344-7111 www.meridian-audio.com	586	\$3,495	✓	✓	✓	—	—	—	48/20	2X, 8X, 30X	1/2, 1/8, 1/30	1/2, 1/8, 1/30	Low-jitter processing. Anti-vibration mechanism.
Mitsubishi 6100 Atlantic Blvd. Norcross, GA 30071-1305 800-332-2119 www.mitsubishi-tv.com	DD-2000	\$799	—	✓	✓	—	—	—	96/20	2X, 8X, 30X	1/2, 1/8, 1/16	1/2, 1/8, 1/16	Can be operated by Mitsubishi TV remote controls.
Onkyo 200 Williams Dr. Ramsey, NJ 07446 201-825-7950 www.onkyo.co.jp.	DVD-S501	\$799	✓	✓	✓	—	—	—	96/20	2X, 8X, 30X	1/2, 1/8, 1/16	1/2, 1/8, 1/16	4X video zoom. Cinema Scan jog/shuttle control.
Panasonic 1 Panasonic Way Secaucus, NJ 07094 201-348-7000 www.panasonic.com/ pcec	DVD-L10 PalmTheater	\$1,400	✓	—	—	—	—	—	96/24	2X, 10X, 30X, 80X, 100X	1/2, 1/3, 1/4, 1/8, 1/16	1/2, 1/3, 1/4, 1/8, 1/16	Portable. 5 3/4-inch-wide LCD screen.
	DVD-K510	\$850	✓	—	—	—	✓	—	96/24	2X, 10X, 30X, 80X, 100X	1/2, 1/3, 1/4, 1/8, 1/16	1/2, 1/3, 1/4, 1/8, 1/16	Karaoke. Universal joystick remote control. Front-panel shuttle control.
	DVD-A310	\$700	✓	✓	✓	✓	✓	—	96/24	2X, 10X, 30X, 80X, 100X	1/2, 1/3, 1/4, 1/8, 1/16	1/2, 1/3, 1/4, 1/8, 1/16	Virtual surround sound. Bass management. Universal joystick/shuttle remote control.
	DVD-A110	\$450	✓	✓	—	—	✓	—	96/24	2X, 10X, 30X, 80X, 100X	1/2, 1/3, 1/4, 1/8, 1/16	1/2, 1/3, 1/4, 1/8, 1/16	Virtual surround sound. Dual A/V outputs. Headphone jack.
	DVD-A105	\$450	✓	✓	—	—	—	—	96/24	2X, 10X, 30X, 80X, 100X	1/2, 1/3, 1/4, 1/8, 1/16	1/2, 1/3, 1/4, 1/8, 1/16	Virtual surround sound.
Philips Magnavox 64 Perimeter Center E. Atlanta, GA 30346 770-821-2400 www.philipsmagnavox.com	DVD420AT	\$549	—	✓	—	—	—	✓	96/20	2X, 8X	1/2, 1/8	1/2, 1/8	Universal jog/shuttle remote control. Digital video zoom. Remote-control locator.
	DVD400AT	\$399	—	✓	—	—	—	✓	96/20	2X, 8X	1/2, 1/8	1/2, 1/8	Digital video zoom.

¹ Manufacturers' quoted prices.
² For connection to TVs and video monitors with component-video inputs.
³ Supplies six-channel analog output via RCA jacks.
⁴ Can read DTS bitstream from DVDs and pass through unaltered to an external DTS decoder.
⁵ Plays compact discs recorded on a write-once CD-R recorder.
⁶ Can read DVDs encoded with 96-kHz/24-bit stereo audio with full resolution (96/24), truncated to 20-bit resolution (96/20), or downsampled to 48 kHz and truncated to 20-bit resolution (48/20).

cut out this table for easy reference

MANUFACTURER	MODEL	PRICE	OPTICAL DIGITAL OUTPUT	COAXIAL DIGITAL OUTPUT	COMPONENT VIDEO OUTPUT	DOLBY DIGITAL DECODER	DTS-COMPATIBLE	PLAYS CD-R DISCS	RESOLUTION WITH 96/24 DISCS	FORWARD/REVERSE SEARCH	SLOW FORWARD	SLOW REVERSE	SPECIAL FEATURES
Pioneer P.O. Box 1540 Long Beach, CA 90801 800-746-6337 www.pioneerelectronics.com	Elite DV-09	\$2,000	✓	✓	✓	—	✓	—	96/24	2X, 10X	1/2, 1/4, 1/8, 1/16	1/6	THX -certified. Bit-rate meter. Graphical user interface (GUI).
	Elite DVL-91 (combi)	\$1,800	✓	✓	✓	✓	✓	✓	96/20	2X, 10X	1/2, 1/4, 1/8, 1/16	1/6	DVD/laserdisc combi-player. Virtual surround sound. "Heads-up" remote. DVD-preferences memory.
	DVL-909 (combi)	\$1,099	✓	✓	✓	—	—	✓	96/20	2X, 10X	1/2, 1/4, 1/8, 1/16	1/6	DVD/laserdisc combi-player with AC-3-RF digital output. Virtual surround sound. GUI. Plays DTS laserdiscs.
	DV-606D	\$599	✓	✓	✓	✓	✓	—	96/24	2X, 10X	1/2, 1/4, 1/8, 1/16	1/6	Virtual surround sound. GUI.
	DV-505	\$399	✓	✓	—	—	—	—	96/20	2X, 10X	1/2, 1/4, 1/8, 1/16	1/6	Virtual surround sound. GUI.
RCA/ProScan Thomson Consumer Electronics 10330 N. Meridian St. Indianapolis, IN 46290 317-587-3000 www.rca-electronics.com	ProScan PS8610P	\$749	✓	✓	✓	✓	✓	—	96/24	2X, 10X, 40X, 80X, 100X	1/2, 1/3, 1/4, 1/8, 1/16	1/12, 1/16, 1/20, 1/24, 1/32	Back-lit universal remote. Alphanumeric character display.
	RCA RC5510P	\$499	✓	✓	✓	✓	✓	—	96/24	2X, 10X, 40X, 80X, 100X	1/2, 1/3, 1/4, 1/8, 1/16	1/12, 1/16, 1/20, 1/24, 1/32	Supplied remote control preprogrammed for multiple brands of TVs, cable boxes, and DSS receivers
	RCA RC5230Z	\$499	✓	—	—	—	—	—	96/24	3X, 6X, 10X	1/3, 1/6, 1/12	1/3, 1/6, 1/12	Plays Divx pay-per-view discs. RF adapter optional. Front-panel navigation control.
Samsung 105 Challenger Dr. Ridgefield Park, NJ 07760 201-229-4000 www.sosimple.com	DVD927	\$649	✓	✓	✓	✓	—	—	96/24	2X, 4X, 8X	1/2, 1/4, 1/8	1/2, 1/4, 1/8	Level adjustment on analog AC-3 output. Screen saver.
	DVD907	\$549	✓	✓	✓	✓	—	—	96/24	2X, 4X, 8X	1/2, 1/8, 1/16	1/2, 1/8, 1/16	Level adjustment on analog AC-3 output. Screen saver.
	DVD905	\$549	✓	✓	—	✓	—	—	96/24	2X, 4X, 8X	1/2, 1/8, 1/16	1/2, 1/8, 1/16	Universal remote control. RGB video output.
Sony One Sony Dr. Park Ridge, NJ 07656 800-222-7669 www.sel.sony.com	DVP-S7000	\$1,199	✓	✓	✓	—	—	✓	48/20	2X, 10X, 30X	1/5, 1/10	1/5, 1/10	Motorized door. Anti-vibration chassis. Video equalizer. Dual discrete laser pickup. Smooth scan. Video bit-rate meter.
	DVP-S600	\$899	✓	✓	✓	✓	—	✓	96/24	2X, 10X, 30X	1/5, 1/10	1/5, 1/10	Five-disc rotary changer. CD/DVD-Text compatible. Dual discrete pickup. Smooth scan.
	PBD-V30	\$799	✓	—	—	—	—	✓	96/20	10X	1/10	1/10	Portable.
	DVP-S500	\$699	✓	✓	✓	✓	—	✓	96/24	2X, 10X, 30X	1/5, 1/10	1/5, 1/10	Virtual surround. Multibrand preprogrammed remote. Dual discrete pickup. Smooth scan.
	DVP-S300	\$599	✓	✓	—	—	—	✓	96/24	2X, 10X, 30X	1/5, 1/10	1/5, 1/10	Automatically selects 5.1-channel soundtrack. Dual discrete pickup. Smooth scan.
Toshiba 82 Totowa Rd. Wayne, NJ 07470 800-631-3811 www.toshiba.com/tacp	SD7108	\$1,200	✓	✓	✓	✓	✓	✓	96/24	2X, 8X, 30X	1/2, 1/8, 1/16	1/2, 1/8, 1/16	Virtual surround sound. 4X, 25-sector video zoom. Back-lit remote with jog/shuttle. Colorstream-Pro progressive-scan video output.
	SD3108	\$800	✓	✓	✓	✓	✓	✓	96/24	2X, 8X, 30X	1/2, 1/8, 1/16	1/2, 1/8, 1/16	As above without Colorstream-Pro video output.
	SD2108	\$600	—	✓	✓	—	✓	—	96/24	2X, 8X, 30X	1/2, 1/8, 1/16	1/2, 1/8, 1/16	As above without back-lit remote.
	SD2008	\$500	—	✓	—	—	—	—	96/24	2X, 8X, 30X	1/2, 1/8, 1/16	1/2, 1/8, 1/16	As above.
Yamaha 6660 Orangethorpe Ave. Buena Park, CA 90620 800-492-6242 www.yamaha.com	DVD-S700	\$799	✓	✓	✓	✓	—	—	96/24	2X, 10X, 30X, 80X, 100X	1/2, 1/6	1/2, 1/16	Dual composite-video outputs.
Zenith 1000 Milwaukee Ave. Glenview, IL 60025 847-391-7000 www.zenith.com	DVX2100	\$499	✓	✓	—	—	—	—	96/24	2X to 16X	1/2, 1/4, 1/8	—	Plays Divx pay-per-view discs.



DTS-COMPATIBLE

DTS is a different 5.1-channel digital audio format that is competing with Dolby Digital. To hear 5.1-channel surround sound from DTS-encoded DVDs — which at this writing still do not exist (!) — you'll need a DTS-capable outboard decoder; no player in our list has one built in. Not all DVD players can pass along a DTS bitstream, however: the ones that can, according to their manufacturers, have a check mark in the "DTS-Compatible" column in our table (14 of the 36 players listed). To insure compatibility with existing DVD players, all DTS-encoded DVDs are expected also to carry matrixed two-channel soundtracks that can be played back through a stereo receiver or a Dolby Pro Logic receiver or processor. The upshot of "DTS compatibility" in the context of DVD players is that it's meaningless unless the DTS format takes off, and right now when (or whether) that will happen is anybody's guess.

PLAYS CD-R DISCS

Not every DVD player will recognize a CD-Recordable (CD-R) disc. If you own or plan on purchasing a CD recorder, this may be important to you. Some (possibly most) players that won't play a CD-R will nonetheless play CD-Rewritable (CD-RW) discs.

RESOLUTION WITH 96/24 DISCS

The current DVD-Video standard includes an option for *two-channel* digital audio recorded in a format that uses a 96-kHz sampling rate (more than twice that of CD) and a 24-bit "word length," which theoretically offers a substantial (48 dB!) dynamic-range advantage over a standard CD's 16-bit encoding. Many DVD players are said to be able to play discs with this "enhanced" stereo format. Others "downsample" the 96-kHz signal to a lower sampling rate, truncate the audio word length to the 20-bit DVD-Video standard, or both. Only a handful of 96/24 audio discs have as yet appeared, so any conclusions re-

garding the audible advantages of this format are premature at best.

SPECIAL FEATURES

An increasingly common feature that might require explanation is "virtual surround sound" circuitry, which allows two speakers to simulate, to some degree, the ambience and sonic effects offered by a multichannel surround system (see "2 Will Get You 5," page 58).

TRY IT OUT!

Of course, the most important features of any component are impossible to express in a table, or even a thousand words. These include ease of use, quality of fit and finish, how well the owner's manual is organized and written, and a hundred intangibles, the most vital being that inexpressible something that tells you, *this* is the model you want. So get out there and get your hands (but not your DVDs) dirty. Once you've tried one or two DVD players, videotape just won't do it for you anymore. □

Just the Facts

For those buffs grasping for technology's trailing edge, here's a bit of background on the DVD format. DVDs look all but identical to compact discs, and, in fact, any DVD player also plays CDs. Physically, a DVD is formed from two thin discs bonded back to back, which makes it possible to produce double-sided discs, either to put a different program or picture format on each side or to double the playing time.

Despite its CD-like physique, a DVD embodies some profound differences. First, its data "pits" are far smaller and more densely packed than a CD's, so a double-sided DVD contains not merely twice the data of a CD but more than a *dozen* times as much data. The smaller pits demand a smaller, considerably more focused microscopic point of laser light, which means that DVD players must either have two different lasers, one for DVDs and one for CDs, or else a single laser with a high-tech, dual-mode focusing mechanism.

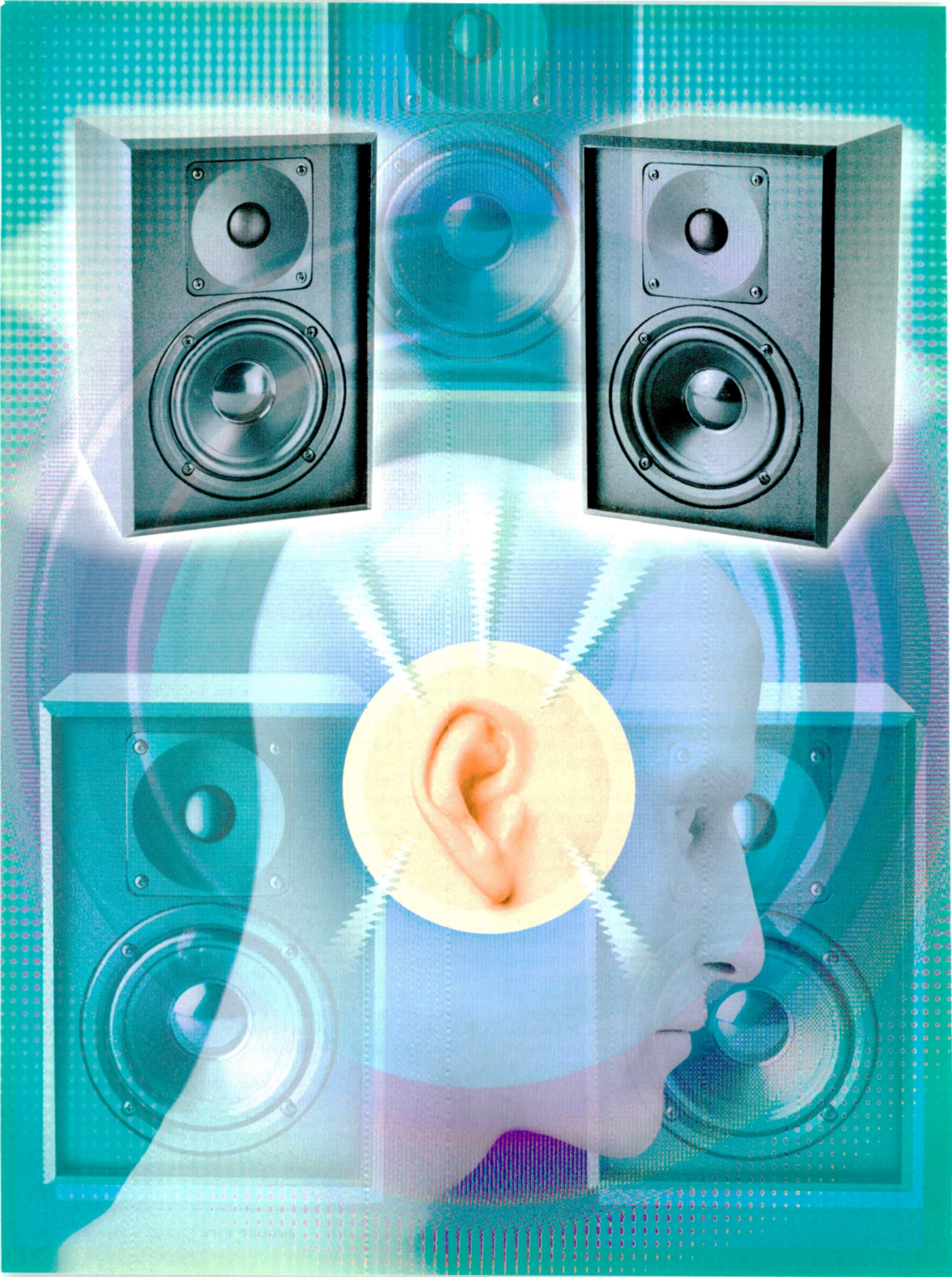
Second, the data stored by these microscopic pits are encoded very differently. CD audio is a "linear" format: what goes in, comes out. In contrast, DVD employs "data-reduction" techniques for both audio and video in order to fit up to 2 hours of high-quality pictures and sound on a single side of a single disc. Without data reduction those 2 hours would need a few dozen discs. The DVD video-coding system, MPEG-2, is an updated variant of the system employed by direct-broadcast digital satellite systems such as DSS; another variant is slated for use in digital television (DTV).

DVD's primary audio format is Dolby Digital, which

has proven itself to be capable of super quality despite its own data reduction. It provides up to six channels of CD-quality surround sound: left, center, and right front, left and right surround, and a specialized low-frequency-effects (LFE) channel (that's the ".1" in "5.1"). Depending on the DVD program's requirements, the Dolby Digital soundtrack can be anything from mono to full-blown 5.1-channel surround. Of course, any DVD player can also supply a two-channel stereo signal at its analog outputs. If the recording is a multichannel surround production, as most DVD movies are, the two-channel soundtrack will be Dolby Surround-encoded for decoding by a Dolby Pro Logic A/V receiver or processor.

Some DVD players have full Dolby Digital decoding built right in, with six line-level analog outputs. These require only a "5.1-ready" A/V receiver (or amplifier) to play surround sound, though some experts feel that DD receivers and outboard surround processors are generally better equipped to handle all decoding and bass-management chores for the system regardless of the source. Also note that since no DVD player sports a digital *input*, a built-in decoder can't be used to decode signals from, say, a DTV set-top box.

Bottom line: DVDs offer video and audio quality substantially superior to that of any consumer format previously seen. And while *any* DVD deck will deliver the goods, the many subtle variations in performance, features, and function leave a good deal of ground open to exploration. — D.K.



2 Will Get You 5

Can virtual surround systems simulate five-channel sound with just two speakers?

BY GORDON BROCKHOUSE

TO DO HOME THEATER RIGHT, you have to be a little obsessed. You need a big-screen TV and a sound system with a surround processor, a healthy power output, and at least five or six speakers. Then you have to place the TV where it will be least affected by ambient light and the speakers where they'll deliver a convincing image and smooth sound. And, of course, home-theater equipment can gobble up a fair chunk of cash as well as living space.

Now several companies are lowering the home-theater ante by building virtual surround-sound processing into a variety of components, including DVD players, A/V receivers, preamp-processors, mini audio systems, and even home computers. The goal of such processing is to simulate an immersive sound field — like that created by a system with four to six speakers — using an ordinary stereo pair of speakers.

A couple of years ago, Dolby Laboratories launched a certification program for Virtual Dolby Surround (which mimics four-channel Dolby Pro Logic) and Virtual Dolby Digital (which mimics 5.1-channel Dolby Digital as well as Pro Logic). Three schemes have received Virtual Dolby Surround certification: JVC's 3D Phonic, Panasonic's Virtual Sonic, and Virtual Listening Systems' Toltec. In addition to Dolby Labs'

own Dolby Virtual Surround, six schemes have received Virtual Dolby Digital certification: Aural's A3D, Central Research Laboratory's Sensaura, Harman's VMAx, QSound Labs' QSurround, Spatializer's N-2-2, and SRS Labs' TruSurround. In addition, Panasonic, Pioneer, and Sony use non-certified virtual surround schemes in some products.

Some of these names are likely to raise a few eyebrows among audiophiles. QSound, for example, is best known for a controversial encoding scheme that lets recording engineers place sounds outside the standard stereo field. And QSound, Spatializer, and SRS make stereo expansion processors that are typically built into boomboxes, TVs, VCRs, and minisystems. While such systems create the illusion of a broader stereo image from two-channel source material, they also tend to sound colored and "phasey." Virtual surround sound is a very different beast. These systems seek to create a convincing surround experience with two speakers from four- or five-channel source material.

Virtual Impressions

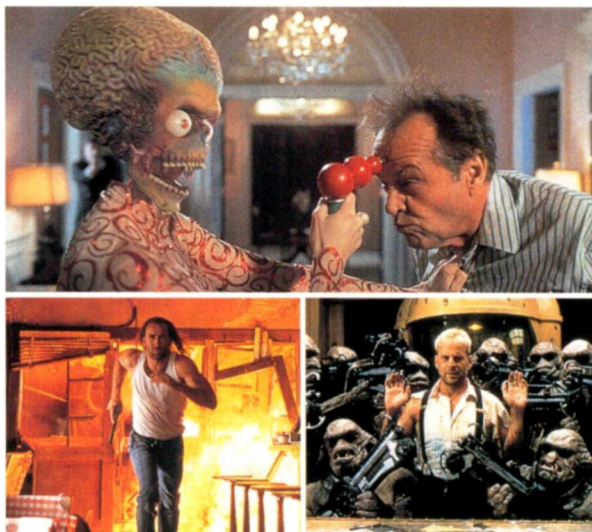
Okay, that's the goal, but what about reality — can these systems make you feel like you're in the concert hall when the Diva sings in *The Fifth Element*? Zoran, a major supplier of digital signal processing (DSP) chips and Dolby Digital decoders, lent me a circuit board containing a DSP chip and a memory chip programmed with six virtual surround processing schemes: A3D, Dolby Virtual Surround, N-2-2, QSurround, TruSurround, and VMAx. I connected the coaxial digital output of my Toshiba SD-3107 DVD player to the digital input of the Zoran board. A rotary switch on the board let me switch between the six surround-simulation schemes. The DSP chip processed the signal and sent a two-channel virtual surround signal to the board's digital output, which I connected to a Marantz AV-550 preamp-tuner. I also listened to three

systems not contained on the Zoran board.

I listened to virtual surround through a pair of PSB Stratus Gold speakers powered by two Marantz MA-500 mono amplifiers. Following the recommendation of the virtual surround system developers, the speakers were pointed straight out into the listening area, rather than being toed in. For comparative listening to 5.1-channel Dolby Digital programs, I added a PSB Stratus C6 center speaker powered by a third Marantz MA-500 and a pair of Stratus Mini surrounds powered by an Adcom GFA-545. First I sat dead center. Then I moved to the side of my couch to see how convincing these systems would be off-axis. Finally, I moved quite far off center.

Program material included four DVD movies with 5.1-channel Dolby Digital soundtracks — *Con Air* (Buena Vista), *The Fifth Element* (Columbia TriStar), *GoldenEye* (MGM/UA), and *Mars Attacks!* (Warner) — plus test signals from the Delos *DVD Spectacular* disc, including pink noise cycling through the five main channels and frequency sweeps on each channel. Using the pink noise and a Radio Shack sound-level meter, I measured the relative output for the five main channels — all reproduced by the same two speakers, remember! As in a real 5.1-channel system, their output should have been equal, but often it was not. I also used the pink noise to listen for timbral variations between the real and virtual (simulated) speakers and noted where in my listening room the virtual speakers seemed to be located. I used the frequency sweeps to see if the locations of the virtual speakers changed with frequency. In some cases they did.

With the movies, I listened for smoothness and accuracy, intelligibility of dialogue, the precision with which sounds



Scenes from *Mars Attacks*, *Con Air*, and *The Fifth Element*, three of the action movies whose 5.1-channel soundtracks were "virtualized" for surround playback over two speakers.

were localized, spaciousness, and side effects such as phase pressure. I watched one entire movie (*Con Air*) just cycling through the six systems on the Zoran board to determine whether virtual surround would become fatiguing over an extended period. It did not.

SRS TruSurround

TruSurround will be used on Sony's new FD Trinitron XBR TVs for virtualizing Dolby Surround material. It is also featured on several new Pioneer DVD players and two Dolby Pro Logic receivers.

TruSurround *can* virtualize 5.1-channel Dolby Digital material, but for some reason Pioneer's DVD players mix 5.1-channel signals down to Dolby Surround and virtualize the matrix-encoded four-channel signal. Thus, these players carry the Virtual Dolby Surround logo. As implemented on the Zoran board, TruSurround virtualizes 5.1-channel material, so that is how I auditioned it.

TruSurround does not perform crosstalk cancellation. It virtualizes surround-channel information strictly through frequency-domain filtering. According to SRS Labs, a restricted sweet spot is acceptable in computer applications, where

the listener is in a fixed position, but for home theater a broader sweet spot is required. The company says its approach is simple so that it can be implemented on smaller, less expensive chips.

With movies I found TruSurround's localization of individual sounds less precise than that of the other virtual surround systems, although it was very good at creating an enveloping surround environment. For example, the background sound in the TV studio scene during *Mars Attacks!* was spread very wide, but individual sounds weren't clearly localized. In the big chase scene in *The Fifth Element*, the sound of bullets ricocheting off

Bruce Willis's cab wasn't as precise as with some of the other systems. I experienced slight phase pressure occasionally, such as during jet takeoffs from St. Petersburg Airport in *GoldenEye*.

Moving one seat over on my main viewing couch, I still got some surround effects, but they were not as convincing as in the center position. When I moved several feet off-axis, the sound became cavernous, and dialogue seemed to come entirely from the nearest speaker.

With test signals and individual voices played separately in each channel, the virtual surround speakers appeared to be far to the side. With pink noise, the virtual center and surround channels were a bit louder in the midrange than the front left and right channels. The surround image from the right speaker, which faces a longer area of my L-shaped room than the left speaker, was only vaguely localized during the frequency sweep. The left-channel image was fine.

Spatializer N-2-2

N-2-2 is featured on three new DVD players from Toshiba and as an \$800 option for Theta Digital's high-end Casablanca surround-sound processor (\$4,300). Spatializer does not process the front left and right channels at all. The company is vague about how N-2-2 works, but it seems to be pursuing goals similar to those of SRS Labs — a wide sweet spot and reduced coloration and listener fatigue — via a different approach. N-2-2 is based on an HRTF data set and employs crosstalk cancellation, which the company says reduces phasiness and fatigue. Some frequency filtering is used to generate virtual surround speakers. However, N-2-2 relies more on interaural time and intensity differences to fool listeners into



Pioneer's VSX-D507S Dolby Pro Logic receiver (\$450) also includes SRS TruSurround.

HOW IT WORKS

We use many different cues to determine the direction from which sounds originate. Besides interaural (ear-to-ear) time and intensity differences, which are the primary cues for stereo imaging, these include head-related transfer function (HRTF) cues. The same sound coming from different directions will be affected differently by our heads, upper bodies, and outer ears on its way to our eardrums. When it reaches the left eardrum, a sound coming from the extreme left will be spectrally different from the same sound coming from the front. And by the time a sound from the extreme left reaches your right eardrum, its high frequencies have been dulled compared with what the left eardrum heard. The ear-brain system correctly interprets these spectral differences as directional variations.

There are HRTF data sets that map the transfer function for sounds originating all around the listener. These data sets are used in computer-based simulation and gaming systems to produce a 3-D sound field using headphones or two front speakers. A given sound is filtered differently for each of a multitude of different locations in the sound field.

Creating virtual surround sound for home theater is comparatively simple. Rather than tens or hundreds of different locations, the algorithm has to "virtualize" only two or three speaker locations. Most of these systems attempt to create an immersive sound field by processing surround-channel signals with a filter that alters amplitude (level) and phase to compensate for the filtering effect of the head and outer ears. The effect of the filter varies with the frequency of the signal. When those processed signals are played through a pair of speakers, surround-channel material will seem to come from the sides or rear.

Some systems also attempt to broaden the soundstage by processing front-channel signals to fool the ear-brain into hearing sounds beyond the left and right speakers. Center-channel information is blended into the two front channels and can be filtered to compensate for its originating from speakers shifted to the side. As with a 5.1-channel system

that has five or six speakers, virtual surround systems use a simple mixing process to simulate between-speakers locations. To virtualize a Dolby Surround signal, some form of stereo synthesis has to be performed on the surround channel, or you end up with a mono surround image.

The sounds produced by the left speaker will, of course, reach the right ear (and vice versa), confusing the whole presentation. This can be abated by crosstalk cancellation — having the right speaker produce sounds that will cancel out undesired left-channel output reaching the right ear, and vice versa. This trick is used in some systems.

Actually, a lot can go wrong with these virtual systems, including:

Overload and compression. Equipment manufacturers don't want virtual surround processing to result in lower signal levels. And trying to cram five channels into two while maintaining signal levels can lead to digital overload, resulting in nasty snapping and buzzing sounds. Compressing the signal reduces the risk of digital clipping, but too much compression makes the surround experience bland.

Coloration. Designers of virtualization algorithms create filters for an idealized average head. As a result, the sound from the virtual speakers may seem colored for some folks. (Britain's jug-eared Prince Charles, for example, would experience virtual surround differently from most of his future subjects. Perhaps that's why England's Central Research Laboratory is making its Sensaura scheme customizable for different head shapes.) If the algorithm is not well designed, coloration may be a problem for many or even all listeners.

Confined seating position. As you move away from the sweet spot — a position midway between the speakers — the virtual surround effect collapses. If the system is well designed, it will collapse gracefully, delivering a presentation similar to regular stereo. If it is not carefully designed, the sound will become unnatural as you move away from a center position, or even if you rotate your head. Generally speaking, the more precisely the system localizes sounds, the smaller the sweet spot.

Smear imaging. Different frequencies can appear to come from different locations.

Phase pressure and fatigue. An overly ambitious or poorly designed virtual surround system can cause a sensation of pressure inside your ears and around your head. This can be fatiguing. — G.B.

hearing sounds to the side. In doing so, it trades off precision in the localization of surround effects.

With movies, Spatializer's N-2-2 did not seem as enveloping as the other systems. Explosions in *Mars Attacks!* and vehicle and jet traffic in the airport scene in *GoldenEye* were less precisely localized than with some other systems. Dialogue seemed a little recessed compared with my five-speaker system but was still intelligible, and background music sounded natural. On the plus side, I experienced no phase pressure.

Some surround effects still seemed to emanate from beyond the stereo speaker plane when I moved one seat off center on my viewing couch. But most of the time it sounded like plain stereo in a moderate off-axis position. A few feet away, dialogue became more recessed.

The virtual surround speakers seemed closer to my head than with the other systems and shifted slightly toward the front. With pink noise, they seemed to have less

midband energy than the other channels and were substantially louder (6 dB) than the fronts. The surround image moved during the frequency sweep.

QSurround

Sharp's CDC-452 minisystem features a Dolby Pro Logic decoder and uses QSurround to virtualize Dolby Surround through two speakers. The CDC-492 is a Dolby Digital system with QSurround-based Virtual Dolby Digital processing.

QSurround is an empirically derived system based on extensive listening tests. Hundreds of subjects listened to processed signals over different types of speakers and noted where sounds seemed to originate. Based on this data, the designers refined QSurround, trying to obtain precise localization while maintaining fidelity. QSurround processes both front and surround channels, but companies can choose to implement it with just the surround channels and use simple mixing for the center channel.

QSurround was the most spacious and enveloping of the systems I auditioned, yet it was fairly precise in the way it localized sounds. The attack scenes in *Mars Attacks!* were utterly enveloping. Traffic noise in the airport scene in *GoldenEye* was realistically portrayed. When there was lots going on in the surround channels, I experienced some phase pressure. Bullets in the chase scene in *The Fifth Element* were localized fairly precisely. QSurround sounded a bit hollow compared with my five-speaker setup but was otherwise quite pleasant.

When I moved one seat over, only minimal surround effects were audible outside the speakers. When I moved several feet off-axis, the surround effect collapsed, but dialogue remained intelligible.

With test signals, the left and right front speakers seemed to be placed far to the sides. The virtual center speaker seemed to have a midrange suckout, but the left/right front speakers and the two virtual surrounds were timbrally consis-

tent. All channels measured within 1 dB of each other. On the frequency sweep, location of the virtual surround speakers varied depending on frequency.

Harman VMAx

Currently, VMAx (Virtual Multi-Axis) from Harman International is used on DVD-ROM-equipped computers from Compaq and Hewlett-Packard, but other applications are planned.

VMAx uses crosstalk cancellation so that a listener in the sweet spot hears only the left speaker in the left ear and the right speaker in the right ear. Binaural processing creates virtual surround speakers at the sides, virtual front speakers at ± 30 degrees, and a virtual center speaker. Harman maintains that all virtual surround systems have a restricted sweet spot.

From the sweet spot, VMAx provided sound that was wide, spacious, and enveloping. Localization of traffic sounds in *GoldenEye* was very precise. The left-front to right-rear movement of a jet passing overhead was conveyed better than with any of the other systems (with the possible exception of Dolby Virtual Surround). Dialogue seemed crisper than with some of the other systems, but during loud passages, such as battle scenes in *Mars Attacks!*, the overall sonic character became a little harsh. When I moved one seat over, the presentation degraded gracefully to stereo. But several feet off-axis the sound became cavernous, and dialogue was muddled.

With test signals, the virtual surrounds were far to the sides and sound from the real speakers was shifted outward. From an off-axis position, the virtual surrounds were in between the main speakers. The virtual center had less low-frequency energy than the other channels, which were



The Cyclone 3D from VLS (\$100) virtualizes Dolby Surround recordings.

timbrally consistent. Output of the five channels was very close except for the virtual center, which was 2 dB lower. The location of the virtual surrounds remained stable during the frequency sweep.

Aureal A3D

Aureal Semiconductor's A3D is used on some computer sound cards to position game sounds around the user. Advent uses A3D in its AC390 multimedia speaker system, which has a Dolby Pro Logic processor, to virtualize Dolby Surround. Yamaha plans to use A3D in a Dolby Digital decoding chip designed for use in receivers, and LSI Logic plans to use it in an A/V decoding chip for DVD players.

Aureal takes a computational approach to virtual surround. The designers generated sounds from the desired position (directly to the sides for the surround channels) and took measurements from microphones placed in listeners' ear canals. They then built a filter that enables a pair of speakers to recreate ear-canal signals that side speakers would have produced.

With movies, A3D combined a very spacious presentation with good localization of effects such as bullets grazing the cab in *The Fifth Element*. Massed orchestral strings were not as accurately reproduced as with the other systems, but the

sound was generally pleasant and smooth. I sometimes experienced mild phase pressure when there was lots of surround-channel activity. When I moved one seat over, the sound became somewhat hollow, and the spatial presentation degraded to stereo. Several feet off-center, dialogue became fainter, and the sound collapsed to the nearest speaker.

With test signals the virtual surround speakers were well off to the side, but their location was vague. With pink noise they seemed to have more lower-mid-range energy than the front channels, and they were considerably louder (6 dB). The right surround image wandered during the frequency sweep.

Dolby Virtual Surround

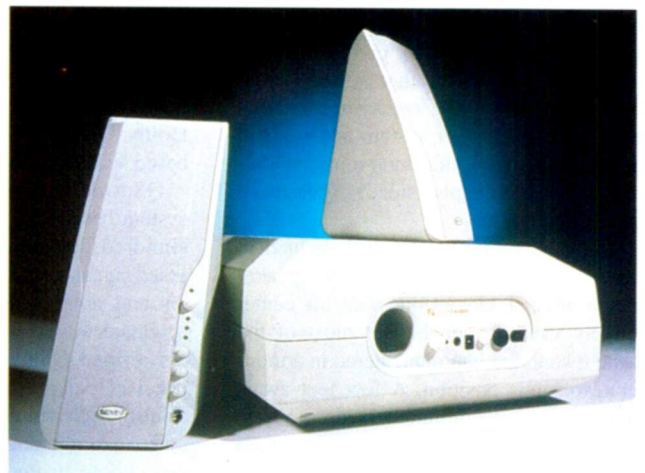
Dolby Labs' own Dolby Virtual Surround, which can process both Dolby Surround and Dolby Digital signals, combines crosstalk cancellation with simple frequency filtering. The scheme is used in Advent's AV590 three-piece powered speaker system, which has built-in decoders for both formats. Boston Acoustics uses the Dolby scheme in its MediaTheater speaker system, which does Pro Logic decoding and virtual processing. Other applications are in the works, according to Dolby.

With movies the presentation was spacious and seamless. Bullet sounds in *The Fifth Element* weren't as precisely localized as with A3D or VMAx, but the jet takeoffs in *GoldenEye* were very convincing. Individual sounds in battle scenes didn't seem as well differentiated as with the other systems.

When I moved off-axis, I experienced some phase pressure, and the sound became a bit cavernous. There were still some surround effects, but most of the action was between the two speakers. When



The Compaq Presario 4880 PC (\$2,299) has a DVD-ROM drive and features Harman's VMAx virtual surround for Dolby Digital.



Advent's AC390 three-piece multimedia speaker system (\$199) includes Aureal A3D processing for Dolby Surround programs.

I moved further to the side, the hollow character became more pronounced. Dialogue became less intelligible, and spatial presentation degenerated to mono.

With test signals the virtual surround speakers seemed to be shifted toward the front. They had less low- and high-frequency energy than the three front channels and were noticeably louder (4 dB). During the frequency sweep, the location of the virtual surrounds was stable.

Sony Virtual Enhanced Surround

Two versions of this feature are found on several Sony A/V receivers and Dolby Digital processors. Using a single pair of front speakers, Virtual Enhanced Surround A purports to create three pairs of virtual surround speakers arrayed in a horseshoe beside and behind the listener. Virtual Enhanced Surround B is supposed to create one pair of virtual surrounds. Sony did not explain how it works.

I listened to this scheme using a Sony SDP-EP9ES Dolby Digital processor. With movies neither mode was as enveloping as my five-speaker setup or the other virtual schemes described earlier. Localization of effects was fair. Massed orchestral strings in background music sounded natural. When there was a lot going on in the surround channels, as in the chase scene in *The Fifth Element*, I experienced some phase pressure. When I shifted one seat over, the sound collapsed to stereo and became a little harsher.

With test signals, the virtual surround speakers in both modes seemed to be halfway between the extreme sides and the front. With pink noise Mode A had a slight high-frequency tilt, and Mode B seemed to have more midrange energy. In both modes output from all five channels was balanced to within about 1 dB. In the frequency sweeps the surround images were vague but didn't wander very much.

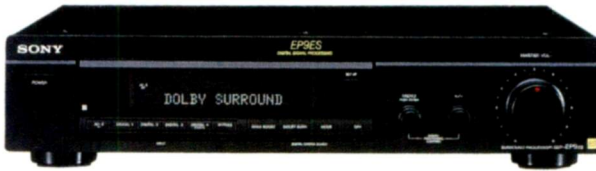
This fall, Sony plans to introduce new ES-series A/V receivers and surround-sound processors that use a 32-bit processor for surround-sound decoding and virtualization rather than the 24-bit processor in the unit I auditioned. Sony says the 32-bit processor will deliver a more precise rendering of the 3-D sound field.

Panasonic Virtual Sonic

Panasonic's system, used in all of its new DVD players, virtualizes 5.1-channel pro-



Panasonic's DVD-A310 DVD player (\$700) includes its Virtual Sonic processing for 5.1-channel Dolby Digital programs.



Sony's SPD-EP9ES Dolby Digital decoder (\$750) features its own Virtual Enhanced Surround processing.

gram material but not Dolby Surround-encoded programs. It calls for very narrow speaker spacing relative to viewing distance, which seems more appropriate for ordinary TV viewing than for movies in a home theater. Panasonic did not explain how the system works.

I listened to a Panasonic DVD-A310 DVD player through the PSB speakers and Marantz amplifiers described earlier as well as with my Toshiba TV's audio system. The presentation through the PSB/Marantz system was actually quite good — spacious, with surround effects fairly well localized — but I experienced some phase pressure when there was lots of surround-channel activity.

With pink noise the virtual surrounds seemed to be located toward the front of the room. They had a slightly elevated midrange and were 2 dB louder than the front channels. The front channels were virtualized as well and shifted outward by a couple of feet. In the frequency sweep the surround images were vague but did not wander much.

VLS Cyclone 3D

This \$100 box from Virtual Listening Systems decodes and virtualizes Dolby Surround material using the company's Toltec processor. You connect the analog output of your source device to its two-channel analog input and connect the output to a two-channel amp. A headphone version is also available.

I listened to the Cyclone 3D through my PSB/Marantz setup using the Dolby Surround soundtrack of *GoldenEye*. The sound was spacious, but effects, such as jet takeoffs and traffic noise in the airport scene, weren't as specifically localized as with true Pro Logic playback. Highs seemed rolled off, and I experienced some phase pressure. With test signals, the virtual surrounds seemed close to my

head, and their output was 2 dB higher than the front channels.

One Listener's Judgment

Ideally, a virtual surround processing scheme should be judged by whole listening panels, not one individual. The problems that I perceived could have been caused by flaws in the virtualization algorithms or simply by differences between my head and ears and a theoretical norm. Using a balanced panel would reduce the uncertainty of an individual assessment.

In most cases, the faults I heard during movie playback (as opposed to test signals) were minor. For the most part, I could shift my weight around and turn my head without experiencing any weird effects. I watched an entire movie without becoming fatigued. With movies, I think anyone sitting in a center position will prefer virtual surround to plain stereo. But virtual surround is useful mainly for solo viewing. Even with systems that claim to have a wide sweet spot, viewers seated a little off-axis won't get much in the way of surround effects.

Not surprisingly, all of these systems sounded compressed compared with my five-speaker setup. Still, in some respects, virtual surround playback can sound *better* than a multispeaker system, particularly if you add a subwoofer to the two main speakers. I often found the virtual presentation more seamless than that of my five-speaker setup, where surround events could be heard coming from the surround speakers, which may be a quirk of the setup. The point is, it's easier to achieve consistent placement with two speakers than with five, meaning that virtual surround sound can be timbrally more consistent than with five actual speakers.

Virtual surround offers real possibilities in any situation where cost and space are important issues: for secondary systems, small living spaces, and so on. But there are other applications. If you do mostly solo viewing, a strong case can be made for devoting your equipment budget to a superior two-speaker setup (or two speakers plus a subwoofer) and virtual surround sound rather than spreading your budget more thinly on a five- or six-speaker setup.

In the end, as with any audio equipment, you'll need to listen and decide for yourself whether the virtual surround modes offered on various components enhance your listening experience. □

THE SOUND OF

What will replace the CD?

by **Rebecca Day**

Are the CD's days numbered? Word in the audio industry is that the time has come to take digital-audio technology to the next level. With the advent of home theater and surround sound, conventional two-channel stereo is beginning to show its age. And there simply isn't enough room on the current CD for an album's worth of high-quality multichannel sound.

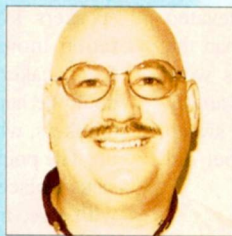
Many major players in the recording and consumer-electronics industries have strong opinions about where digital audio should go as the new millennium draws near, and those opinions have more or less coalesced into two competing proposals. Sony and Philips are advocating the Super Audio CD format, which is

based a new, high-resolution recording technology called Direct Stream Digital (DSD). DSD would replace the Pulse Code Modulation (PCM) technology on which the CD is based. The Super Audio CD's primary advantages are said to be improved sonic quality and backward compatibility with existing CD players.

Warner Music, Toshiba, Pioneer, Panasonic, JVC, and Samsung are pushing the PCM-based DVD-Audio format. DVD-Audio is being promoted as a highly flexible format that allows artists and producers to record at a variety of sampling rates and with digital word lengths ranging from 16 to 24 bits. The format can also take advantage of two layers of data storage, whereas the Super Audio CD commits one of its layers to a conventional CD version of the recording. While the DVD-Audio coalition hasn't ruled out backward compatibility, some have expressed doubts about its practicality.

Since the DVD-Audio group is looking to have software and hardware in U.S. stores by next spring, while Sony plans to

PANELISTS



CHUCK CURRIE

Stereo Review reader

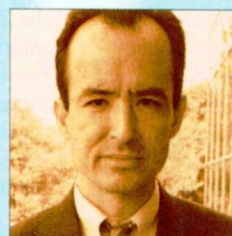
When Chuck's not cookin' as executive chef of Earl Restaurants Ltd. in Vancouver, he's bustin' his chops on the clarinet and saxophone with Sax Noir, the Vancouver Island Symphony, and the Pacific Symphonic Wind Ensemble.



ROBERT A. FINGER

Director of Technology, Product Development, Matsushita Electric Corp. of America (parent of Panasonic and Technics)

Finger served on the Audio Engineering Society's subcommittee on digital audio and the Copy Protection Technical Working Group. He helped develop the security system for DVD-Video and is Matsushita's representative in the industry group developing the DVD-Audio format.



DAVID KAWAKAMI

Director of Corporate Business Development for Sony Electronics

Kawakami, a 20-year Sony veteran, is responsible for coordinating the Sony/Philips Super Audio CD project in the U.S.



ALAN PARSONS

Artist, engineer, and producer

A consultant to EMI Studios Group in London, Parsons is known for his performances with the Alan Parsons Project, his engineering work on Pink Floyd's *Dark Side of the Moon*, and his production of Al Stewart's *Year of the Cat*. He has received numerous Grammy Award nominations, and this summer he is touring the U.S. with the group Yes.

F TOMORROW

It depends on who you ask...

launch Super Audio CD in Japan at the same time (no date has been set for the U.S.), it now looks like consumers will have two formats to choose from in the not-too-distant future. (Sony and Philips are also on the committee that drafted the DVD-Audio standard, so it's still possible — but not likely — that they'll fold their Super Audio CD technology into DVD-Audio before the format is launched.) As with VHS and Betamax, videotape and laserdiscs, it may well be up to the buying public to decide which will become the new audio standard.

Hoping to provide some insight on the debate over what format should come next, we asked nine people with a stake in audio — ranging from the head of Tower

Records to the head of the Recording Industry Association of America to technologists at some large consumer-electronics manufacturers to one fairly average music

lover — to tell us what they think. Their responses reflect the diversity of opinion over what form the next generation of digital sound should take.

DO WE NEED A NEW AUDIO FORMAT?

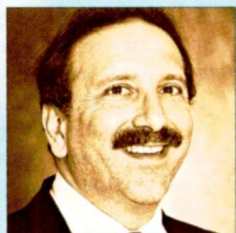
Robert Finger: Yes, we need a new audio format, and now is a good time to introduce it. CD has served the consumer, the electronics industry, and the music world very well, and it will continue to do so for many years into the future. But there is a real need to improve the music-listening experience beyond the capabilities of this older technology, and DVD-

Audio has the storage capacity, available bit rate, convenient size, and manufacturing economies to give everyone what is needed for success. And the consumer will get the added benefit of interactive graphics, links to the Internet, and high-quality video. DVD-Audio is a member of the DVD family, which includes DVD-Video and DVD-ROM, so it is possible to



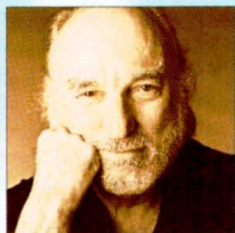
HILARY ROSEN

President and CEO, Recording Industry Association of America, a Washington, D.C.-based trade association. Her current focus is addressing technology and business issues affecting the future production, marketing, and distribution of recorded music.



JORDAN ROST

Senior VP, New Technology, Warner Music Group. Rost represents Warner on the DVD Consortium's Working Group 4, which is responsible for creating official specifications for the DVD-Audio format, as well as on the music industry's International Steering Committee.



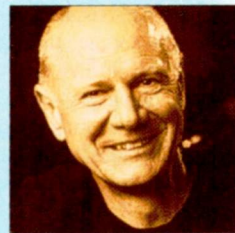
RUSS SOLOMON

Owner and founder, Tower Records, which operates 185 record/video stores worldwide. Solomon has served on the board of directors for the National Association of Recording Merchandisers and the Video Software Dealers Association.



FLOYD TOOLE

Corporate VP, Engineering for Harman International (parent of Harman Kardon, Infinity, JBL, and Lexicon). Toole coordinates all the engineering activities throughout the Harman companies. He has also been actively involved in writing standards for the International Electro-technical Commission, the Audio Engineering Society, and the Canadian Standards Association.



BOB WOODS

President, Telarc International, a multi-Grammy-winning independent recording label whose catalog includes classical, crossover, jazz, and blues releases.

incorporate those kinds of features in a compatible way.

David Kawakami: Ultimately it will be consumers who answer the question. From the perspective of Sony and Philips, the Super Audio Compact Disc proposal emerged as part of a comprehensive effort to find solutions to a number of challenges the music industry faces in archiving, studio production, and distribution. The key technology that resulted from that effort was Direct Stream Digital, or DSD, a new method of digitally encoding music that offers higher quality and more flexibility than the CD's PCM.

The long-term viability of any new format will be determined by its essential sound quality, not by such enhancements as text and graphics, or even video. Sony and Philips believe that DSD is the only technology currently being proposed that takes a large enough step beyond the benefits associated with the current CD to excite the consumer.

Alan Parsons: Mainstream consumers will undoubtedly resist a new format unless they can hear an improvement over CD other than sound quality. Most consumers won't actually appreciate pure sound-quality advances beyond the CD. Improvements that consumers *would* appreciate are surround sound and having a single format for all purposes, including video, computer, and car sound. Recordability would also be a bonus. Manufacturers need the business, so they will encourage new formats they have a stake in. Pro audio people like me — record producers and engineers — are more likely to get excited about mastering formats than consumer formats. Our jobs remain the same regardless of the delivery format.

I find it unbelievable that the so-called "dream" format, DVD, is still forcing us to struggle with data-compression algorithms to allow us to squeeze all the information we now demand onto this little disc. Any improvement in audio or video quality in the future is certain to be more memory-hungry. I would much rather have seen the 12-inch laserdisc developed further with increased capacity using the technology implemented on DVD, and for CD to have coexisted alongside it. Imagine how video games would be with eight times the capacity of a laserdisc!

Chuck Currie: I welcome a new consumer audio format even though I own approximately 3,000 CDs. But I think that any new format should be a recordable one, not just a playback medium, and its editing functions should at least equal those of the MiniDisc. If we had a compact, disc-based, rerecordable, six-channel music format, then we could dispense with MDs, CDs, and all forms of tape.

Floyd Toole: Yes. We're long overdue for an upgrade from two-channel stereo. The current proposals don't go far enough, though. A new format should aim for as many channels as practical, ideally eight or ten. Naturally, however, they should "degrade gracefully" to six [5.1] channels for playback on "basic" systems.

Bob Woods: Telarc's customers have clearly expressed their desire for a higher-quality audio product. The feedback from our Internet site has been extensive, especially with audiophiles wanting to know where we're going.

Jordan Rost: On one hand, people are happy with what they have now. But fol-

lowing that thought, no one "needed" stereo and no one "needed" CD. When so many people are passionate about music — as the rapid upgrade to CD proved — a large number of consumers will certainly appreciate the benefits of a new technology that significantly improves sound quality. A key is that consumers must not be forced to move to the new technology. Some will jump right away at the chance of a significant sound improvement, and others will take their time about upgrading. Even 16 years after the launch of the CD, 20 percent of our business is still in cassettes. It's healthy when people have that kind of choice rather than the industry dictating what they need.

Hilary Rosen: Absolutely. DVD audio will offer significant value for consumers and artists. With a very successful digital consumer audio product already in hand — the CD — the worldwide recording industry is vigorously campaigning for the highest-quality sound standard for the next-generation audio disc. The current audio format for DVD-Video is not acceptable as a new industry standard. We can do better.

Russ Solomon: I just hope nothing gets in the way of the development of DVD-Video. We want the studios to support DVD and put out a lot of titles quickly. If it becomes really successful, you'll see music video take off. Music video has been around for a long time, but it doesn't sell that well, partly because the videos are on VHS tape, and to play one song you have to fast-forward to it. On a DVD you can get to the song you want to hear instantly, *and* get a better picture and better sound. A music video with 5.1-channel sound — now you've got something.

WHAT WOULD BE A NEW MUSIC-PLAYBACK SYSTEM'S GREATEST APPEAL? HIGHER SAMPLING RATES? LONGER DIGITAL WORD LENGTHS? MULTIPLE CHANNELS?

Hilary Rosen: Yes, yes, and yes. The extra disc capacity provided by DVD audio technology will provide higher sampling rates, longer digital word lengths, and high-quality, multiple-channel surround sound. All add up to higher-quality audio that provide consumers with a format superior to the CD. The extra capacity can be used to include features such as text, graphics, video and interactivity, as well as giving artists and producers creative

facilities that just aren't available in the CD format.

Jordan Rost: Multichannel sound will excite the greatest number of people. There will also be a very important audiophile segment that will appreciate the significance of higher sampling rates and longer word lengths. We've had a chance to demonstrate to audio professionals the first DVD-Audio multichannel sound re-

cordings. In the demos, we start off with two-channel, and people are happy with it. Then we switch to multichannel, and it more fully immerses the listener. Then we switch back to two-channel, and all of a sudden what was fine in the beginning seems flat and squished into the front of the room.

It's not just music listening at home that will benefit from DVD-Audio. The idea going forward is that the discs can

have a lot of added-value material such as music-video content. Often we shoot a single release of a pop album, for example, and most people never get to see it because TV music channels have a limited playlist. We could have a still-picture slide show, the artist talking about the disc, or a discography of back titles. Or, on the classical side, we could explain why Beethoven's Fifth is recorded by so many people and give a little bit of history about the composer. The format also allows us to encode a Web address so that you could click from your browser and go to the artist's site to get time-sensitive information like tour dates.

The car, too, will be great for multichannel because it already has a multi-speaker setup. In the future, professionally mixed discrete-channel recordings will really add excitement to driving.

David Kawakami: Higher sampling rates and longer word lengths are important only as they relate to PCM sound quality. The Super Audio CD proposed by Sony and Philips goes beyond PCM and has DSD at its core. It promises to take the quality of sound that can be enjoyed by consumers to a dramatically higher level. And it can deliver it not only in stereo but in multichannel recording as well.

Bob Woods: What excites and appeals to me is what we at Telarc think is the future of digital audio: the Direct Stream Digital (DSD) recording process and the Super Audio CD format proposed by Sony and Philips. We have just begun recording all of our major projects in DSD. The sound quality is phenomenal, with a recording palette that's killer, a frequency response of 0 Hz to 100 kHz, and a dynamic range of 120 dB. The Super Audio CD will be backward-compatible with CD, which will make it a truly friendly product for both consumers and retailers. Everybody wins — what a concept!

Alan Parsons: Only high-end consumers appreciate such parameters as sampling rates and digital word lengths. Try getting Sally from Omaha with her husband and 2.3 children excited about a longer digital word length. Surround sound has been shown to have appeal, but it's still a minority market. I would base any opinion on listening, not specs.

Russ Solomon: If it sounds better, that's its appeal. Will the new format have a really great, desirable sound, the way CD did when it first came out? Who knows? We haven't heard it yet. Does it make

sense to have five-channel sound? It would be slow to catch on because of the number of people who would have to install five-speaker systems. You have a limited number of home-theater households now. Do they install five or six speakers to listen to music? Probably not. I think they're different customers. Again, the question is, is it really better? It likely will be, but there will have to be a lot of tailoring in the way music is recorded, because we're not used to listening to music in a surround-sound environment.

Chuck Currie: Five-channel sound, followed closely by higher sampling rates. I don't need any visual material that would get in the way of enhanced sound quality and recordability. However, assuming we could get an hour's worth of music on such a disc, I'd happily purchase a player that offered images — as long as the sound quality came first.

Floyd Toole: Multiple channels, without a doubt. The enhanced sense of space and involvement possible in multichannel recordings is very compelling. Traditional music — classical and jazz — can be reproduced with a sense of realism never before possible. Contemporary music will have new dimensions to explore, and this new dimension has the potential to revitalize the audio industry.

On the professional side of our industry, new multichannel production tools will be needed and new recording techniques will have to be developed. On the consumer side, customers will have another reason (besides movies) to buy a multichannel audio system. We can expect some problems as the music recording industry learns to combine good taste with multiple channels, but it will be well worth the wait. When it is done right, it is spectacular.

The wider-bandwidth digital signal is the gilding of the lily. We should do it, but we should not be crazy about it.

Bandwidth is precious, and 24 bits at 96 kHz is more than adequate to satisfy human listeners. Careful thought needs to be given to the tradeoff between the number of channels and the digital bandwidth. Not all channels may need the full treatment. Inaudible data-reduction schemes should not be ignored, but they must be thoroughly tested.

Robert Finger: All of the above. Longer audio word lengths allow cleaner original recordings and cleaner transfers to the consumer disc. If you are one of those fortunate folks who can actually hear or appreciate sound above 22.05 kHz (half the 44.1-kHz sampling frequency of CD), you will be pleased with the even higher sampling frequencies possible with DVD-Audio: 48, 88.2, 96, 176.4, and 192 kHz. The last will give a reproducible bandwidth of nearly 100 kHz! Personally, though, I look forward to multichannel music. The high-performance multichannel sound of DVD-Audio should be easily distinguishable and appreciated by almost all consumers. When you hear it, you won't want to go back to two-channel. There will be much to learn on the part of the creative community and the music and equipment retailers about multichannel music. But, unlike increasing the audio word length and sampling frequency, multichannel can ultimately have a meaningful influence on *all* future audio products, including those for car and portable use as well as home listening.

The DVD-Audio format supports a flexible set of sampling frequencies, word lengths, and channel assignments. That may seem complicated, but the DVD player would handle the changes in a way that's transparent to the consumer. The disc would either have a separate two-channel mix or automatically follow the producer's programmed instructions to make an optimized two-channel fold-down that's compatible with your conventional two-channel listening system.

DOES THE NEW AUDIO FORMAT NEED TO BE COMPATIBLE WITH EXISTING CD AND DVD PLAYERS?

David Kawakami: Compatibility with CD players is essential. There are some 600 million CD players in the world. It is a business model that cannot be ignored. Sony and Philips have proposed that Super Audio CDs be produced as "hybrid

discs" that would include a standard CD layer in addition to the new high-density layer. In this way, Super Audio CDs will play not only on a new generation of machines but also on any existing CD player. The possibility of a new format that does

not render the consumer's investment in CD equipment obsolete is not just appealing but compelling.

Alan Parsons: It would seem logical to make a new format compatible with older equipment, but remember that CD wasn't compatible with anything when it appeared. Make it recordable and cheap, [and the issue of compatibility with existing equipment becomes unimportant].

Robert A. Finger: We believe that DVD-Audio discs do not need to be compatible with the existing population of CD players to achieve success in the market. Although there is a huge population of CD players, over time they will be replaced by DVD players that will play both types of discs. This is already underway in the computer industry, where DVD-ROM drives are beginning to replace CD-ROM drives.

It has been suggested that a CD layer be recorded on the outer surface of a DVD to make such a composite disc playable on both CD and DVD equipment. Within the DVD-Audio specification there is no mandatory requirement for producing such a disc, or prohibition against it, and it is largely a marketplace decision. In spite of some strong advocates, many doubt the ultimate feasibility of such a configuration on technical, reliability, and economic grounds.

Russ Solomon: I don't think a DVD audio disc needs to play on an existing CD player, but it is important that it play on

an existing DVD player. To buy a third piece of equipment — CD, DVD, and then DVD audio — is not very appetizing. You're not going to have enough material to play on it. Let's assume there was a DVD audio disc, and you already had a DVD player and you could play it on that. That's an attractive idea, particularly if you've gone the next step and put in the five (or six) speakers for the DVD player.

Floyd Toole: It would be nice, but with the DVD-Audio proposal, it's not possible. A two-channel version of the program *could* be included on a different layer or side for playback on "legacy" equipment. Undoubtedly, future generations of DVD players can be made compatible with all formats, so the problem will eventually go away.

Jordan Rost: Because encryption and "watermarking" technology to verify authorized discs is being developed now to support copy protection, it's not likely that DVD-Audio discs will be compatible with existing DVD-Video players. Future DVD-Video players, however, will most assuredly be DVD-Audio-capable, because the added cost is negligible. That's very important to consumers.

Also, the big player population will come from DVD-ROM devices. Next year, probably half the computers sold will have DVD-ROM drives instead of CD-ROM drives. And the following year, all computers will have them. Not only will the PC industry create a player population, but so will the video industry, and

we'll even see DVD-ROM drives used in cars for navigation. With this DVD compatibility you'll be able to play CDs, DVD-ROMs, maps, and so on in addition to DVD-Audio. We'll be able to make inexpensive portable or audio-only players, so your next portable player could be one that plays DVD-Audio and CD.

Hilary Rosen: As far as the recording industry is concerned, the existing DVD-Video machines and a new audio format would not be compatible because the current audio technology (Dolby Digital) used with movies does not provide the highest-quality multichannel sound possible. The worldwide recording industry is committed to creating a new-generation DVD-based audio disc that will play on current CD players as well as DVD-Video machines — if the technology proves practical — in order to reassure consumers that their CD collections will not become obsolete.

Chuck Currie: The player should be able to play CD's, too, so the consumer can continue to enjoy two-channel discs that may never be reissued in five channels. My belief is that many jazz, country, pop, and rock albums would never be reissued in the new format, since trying to add a five-channel effect would be no more successful than the phony stereo that was pushed at the beginning of the stereo age.

Bob Woods: A definite yes. I am not, however, a fan of DVD, at least not as a top-quality audio carrier. □

Don't Forget the Net

While a lot of variables are involved — many more than will be involved in a transition from CDs to Super Audio CD or DVD-Audio — high-quality audio could become easily available over the Internet in the near future. Rather than make a trip to the record store, you could download an album onto your hard drive, make a copy on a CD-R or CD-RW, or even a recordable DVD, and print out the packaging on your color laser printer.

The biggest problem is bandwidth. Real-time audio delivery is possible, but at fairly low fidelity. High fidelity means downloading the signal first, which can take many minutes for a single song and hours for a whole album. (An album would also gobble up hard-drive space.) The solutions are much faster modems, wider-bandwidth pipelines, and much higher-capacity storage media. Ultra-high-speed modems should become available within the next year, but these will help only if you're downloading music through your cable company's interactive services. Anyone using a copper phone line for a download is stuck with the low capacity of that aging technology.

The other big problem is copyright protection. The DVD-Audio pro-

posal is being held up because of an ongoing debate over how to protect the content. Consider the Wild West atmosphere on the Net, and the copyright-protection problem reaches nightmare proportions.

Finally, let's not forget the hardware factor. Most people have some kind of CD player, but a much smaller portion of the population owns personal computers — and an even smaller portion has the equipment and software needed to easily download an album.

The likely future, though, is an interactive system, with home equipment seamlessly integrated with a variety of service providers. Music could come to you through the Internet, your TV cable, or a satellite dish. Since you could audition the album ahead of time and pick only the tracks you want, downloading would offer more flexibility than traditional hard media. That doesn't mean, though, that the audio disc, whether CD or DVD, will become obsolete anytime soon — not as long as there's the thrill of hunting through bin after bin of used CDs, or the pride of ownership that comes with holding a slickly packaged disc in your hand. — *Michael Gaughn*

That's Either/And



When we heard that Frank Sinatra had died on May 14 at the age of 82, we knew we had to consult Will Friedwald for his Top 10 lists of songs and albums — some of which have just been 20-bit remastered (see “Now on CD” in this issue). Friedwald, a contributing writer to *Stereo Review*, is the author of *Sinatra! The Song Is You: A Singer's Art*, the definitive book on The Voice. But, like the newsreel reporters in *Citizen Kane*, we wanted something more. Enter — surprise — *Village Voice* senior editor Robert Christgau, author of “Consumer Guide” album reviews (collected in two *Record Guide* books) and essays on all things rock-and-roll (collected in *Grown Up All Wrong*, due in the fall from Harvard). What does the Dean of American Rock Critics think of the Chairman of the Board? Well — surprise — it seems Friedwald and Christgau hear ear-to-ear. Actually, considering The Voice, we shouldn't be surprised at all. — Ken Richardson

Either/And By Robert Christgau

Hey, folks — Frank Sinatra and rock-and-roll aren't mutually exclusive. Not that Mr. My Way could sing the music he once adjudged “a rancid-smelling aphrodisiac,” as with typical elasticity of principle he eventually tried to. (Remember “The PTA, Mrs. Robinson, won't okay the way you do your thing / Ding ding ding”? How could you for-

get?) And not that his Northern, urban, assimilationist style had any rock-and-roll in it. But it wasn't as antithetical as Rudy Vallee's, Nelson Eddy's, Mario Lanza's, John Raitt's, Eddie Fisher's, or, hell, Tony Bennett's. Like innovators from William Wordsworth to Chuck Berry, Sinatra was driven to intensify formal language by making it more speechlike. Magically, within severe standards of pitch, timbre, and enunciation, his singing is every bit as collo-

quial as Bob Dylan's, Carole King's, or Rakim's — probably more so.

There's a game I like to play where I list my favorite singers of the first century of recorded voices. As it must, the list compounds raw personal taste — my individual somatic response to grain and shape and natural rhythm — with the critical judgment that informs everyone's aesthetic pleasure. There are rockers — Elvis Presley, Dylan, and (a taste call, way up) John Lennon — as well as Aretha Franklin and (way up again) Al Green. Two country singers, George Jones and Lefty Frizzell. But at No. 2 and No. 3 are Louis Armstrong and Billie Holiday. And at the pinnacle is Frank Sinatra.

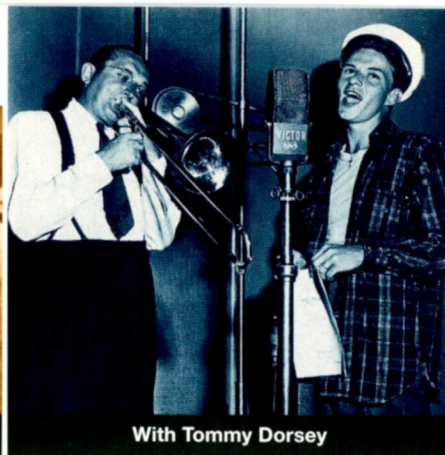
Pop is a cornucopia and a continuum. Either way, singing per se means *bubkes* in some music I adore (Thelonious Monk, Sonic Youth) and the world in other music I adore (Mahlaithini, Peter Stampfel). And, either way, most of the music I adore is rock-and-roll. But not all of it. And none of it excludes any of the rest. So when a savvy young critic praises Sinatra for delivering her from punk's canon of authenticity, I feel sad. When a broadly experienced older critic uses Sinatra's genius to bewail the impersonality of contemporary pop, I pray my arteries hold up. Either/Or is for nostalgic ideologues. I want the world and I want it now.

Many claim they don't identify with Frank Sinatra — they just bask in his artistry. But that's not how singing works. Sinatra the man's gruesome amalgam of confidence and insecurity was configured in his so-called pitch problems — the way every line he sings seems to waver slightly as he

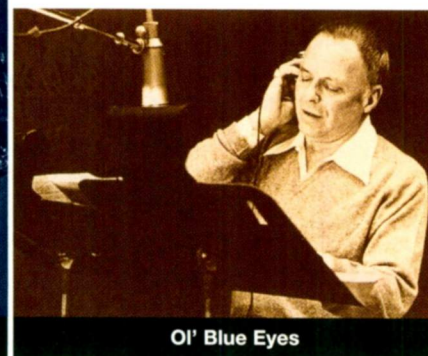




With Nelson Riddle (left)



With Tommy Dorsey



Ol' Blue Eyes

holds it firmly in the grip of his technique. More than anything else, it was the ambivalence built into his certainty that made him the century's quintessential voice for so many of us. And it was the intelligence built into his body that made him just right for any rock-and-roller with a grain of sensibility.

Two Top 10s

By Will Friedwald

ALBUMS

1. **Songs for Swingin' Lovers!**

(Capitol, 1956) The ultimate reconciliation of rhythm and romance. Sinatra and Nelson Riddle's crowning uptempo triumph.

2. **Frank Sinatra Sings for Only the Lonely**

(Capitol, 1958) Of Sinatra and Riddle's downer-ballad albums, this one is the darkest and most devastating.

3. **Close to You**

(Capitol, 1957) The singer at his most intimate, backed by four strings, four rhythm players, and guest soloists — with nary a nuance out of place.

4. **A Swingin' Affair!**

(Capitol, 1957) Sequel to *Swingin' Lovers!* contains 15 more exquisite tracks of Sinatra and Riddle in an irresistibly upbeat mode.

5. **In the Wee Small Hours**

(Capitol, 1955) As Billie Holiday did, Sinatra proves that you don't have to sing fast to sing jazz. Four selections constitute his only mature studio recordings with a jazz-style quartet.

6. **September of My Years**

(Reprise, 1965) A bittersweet contemplation of impending old age, rendered via the appropriately sentimental strings of Gordon Jenkins.

7. **Sinatra-Basie: An Historic Musical First**

(Reprise, 1963) The first of

three team-ups with the preeminent swing orchestra finds the Chairman knuckling down in a straight-ahead groove.

8. **The Best of the Columbia Years**

(Columbia/Legacy, 1993) Highlights of his first decade as a superstar, beautifully remastered on four CDs. The Voice at its most hypnotically romantic.

9. **Francis Albert Sinatra & Antonio Carlos Jobim**

(Reprise, 1967) Sinatra keeps contemporary by addressing the bossa nova, placing his softest vocals ever atop an undulating Brazilian beat.

10. **Trilogy: Past, Present & Future**

(Reprise, 1980) Swinging songs from the past and a few ringers (including "New York, New York") in the present, as well as a pretentious contemplation of the future.

SONGS

1. **I've Got You Under My Skin**

(*Songs for Swingin' Lovers!*) The signature song for swingers. Sinatra, Nelson Riddle, and trombonist build from tender whispers in a lover's ear to primal, orgasmic screams.

2. **One for My Baby** (*Frank Sinatra Sings for Only the Lonely*) The granddaddy of saloon songs. Sinatra's most overwhelming piece of musical acting.

3. **Night and Day** He recorded at least six different versions, from a slow ballad in 1942 (available on RCA's *Love Songs* with the Tommy Dorsey Orchestra) to a swinger-dinger 15 years later (*A Swingin' Affair!*).

4. **Summer Wind** (*Strangers in the Night*, Reprise, 1966) Riddle uses the concept of wind as a leitmotif, and Sinatra's passionate performance reaches hurricane intensity — all to a swingin' beat.

5. **It Was a Very Good Year** (*September of My Years*) Ervin Drake's folk ballad

and Gordon Jenkins's orchestration lead the singer to epic introspection.

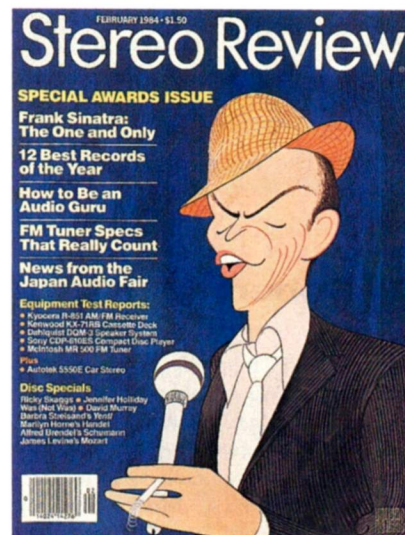
6. **Soliloquy** (*Sinatra Sings Rodgers and Hammerstein*, Columbia, 1946) He may have been the ultimate swinging bachelor, but no one has better expressed the blend of terror and rapture that is parenthood.

7. **Mandalay** (*Come Dance with Me!*, Capitol, 1957) His most whimsical collaboration with Billy May, giving Kipling the hard-swinging treatment.

8. **I'll Never Smile Again** (*Love Songs*) Sinatra's first hit offers the earliest example of his mastery of the long-breath technique that would help make him a legend.

9. **I Fall in Love Too Easily** (*The Best of the Columbia Years*) A definitive love song of the World War II era, with The Voice as a young swain being blown about by passion.

10. **Come Rain or Come Shine** (*Sinatra and Strings*, Reprise, 1961) The earthy aria by Harold Arlen, in Don Costa's durable orchestration, has Sinatra invoking the elements to symbolize the heights and depths of his emotions.



Ian G. Masters Challenges Your

A/V I.Q.

WELCOME to *Stereo Review's* first official A/V I.Q. quiz, devised to help you find out how much you really know about audio and home theater. Below are ten multiple-choice questions; just pick the *best* answer to each question. If more than one answer seems correct, choose the one that's most complete. The answers are on page 95 — no peeking!

1 An integrated amplifier has both

- A. a preamp and a power amp on the same chassis.
- B. a tuner and an amp on the same chassis.
- C. digital and analog circuits.
- D. a power amp and a power supply on the same chassis.

2 A two-way speaker system

- A. radiates sound equally from front and back.
- B. is suitable for playing both pop and classical music.
- C. contains separate high- and low-frequency drivers.
- D. functions as either a sealed or vented enclosure.

3 The key indicators of an FM tuner's performance in an urban area are

- A. frequency response and distortion.
- B. sensitivity and channel separation.
- C. noise and distortion.
- D. selectivity, AM rejection, and capture ratio.

4 A tape-monitor loop

- A. interrupts the signal path between preamp and power amp.
- B. interrupts the signal path between the volume and tone controls.
- C. interrupts the signal path between inputs and control functions.

- D. interrupts other inputs when you want to play a tape.

5 In a Dolby Pro Logic system, the center speaker

- A. is used only for sound effects.
- B. requires much less power than the left/right front speakers.
- C. requires at least as much power as the left/right front speakers.
- D. is used only for dialogue.

6 A compact disc has a nominal capacity of 74 minutes because that's

- A. how much 44.1-kHz/16-bit data will fit given the size and rotational speed of a CD and the wavelength of the laser used to scan it.
- B. twice the length of the average LP.
- C. as much music as the record companies want to provide for the price of a CD.
- D. the length of Beethoven's Ninth Symphony.

7 A powered subwoofer is

- A. a deep-bass speaker powered by a system's main amplifier.
- B. a deep-bass speaker powered by its own built-in amplifier.
- C. the deep-bass portion of a full-range, multiway speaker system.
- D. a deep-bass speaker that really gets down into the bottom octave.

8 A 16:9 aspect ratio describes the screen proportions

- A. of a standard TV; the pan-and-scan version of a video or TV movie is cropped to fit this shape.
- B. of a digital TV (DTV); a letterboxed laserdisc or the widescreen version of a DVD movie fits this shape.
- C. of a widescreen movie made using the Cinemascope or Panavision processes.
- D. of a typical computer monitor used for digital video editing.

9 A VHS Hi-Fi recorder

- A. can produce near-broadcast-quality pictures.
- B. can produce near-digital-quality audio.
- C. requires special high-grade tape.
- D. is compatible with Dolby Digital.

10 Adequate channel separation for conventional (two-channel stereo) imaging is

- A. 20 dB.
- B. 40 dB.
- C. 65 dB.
- D. infinite.

SCORE HOW YOU RATE

- 0-2** Don't go into a discount electronics store alone.
- 3-5** Time to extend your subscription to *Stereo Review*.
- 6-9** I bet your friends ask you to help set up their systems.
- 10** Hey, you buckin' for my job?

A Ton of Fun

BILL BOSCHERT'S LOVE AFFAIR with JBL began back in the Sixties when he bought a pair of L26 Decades. He liked them so much that he bought a couple more, and then he followed up with L100s and L166s. He switched over to JBL's pro speakers — three-way Model 4333B studio monitors with 15-inch woofers — in the early Eighties when the company's consumer speakers shifted away from the bass-rich "West Coast sound" he lived for. After almost 30 years he's still married to JBL, except the family is larger, with the pair of 4333Bs joined by eight other JBL speakers and

speakers, one pair for the front-effect channels and the other for the surrounds.

Boschert and a friend drove across the state to pick up the 752-pound load of speakers at Antech Labs, a pro audio dealer in St. Louis. To power the JBLs, owner Bob Higginbotham recommended 196 pounds of Crest Audio stereo power amplifiers: three FA-601s (120 watts per channel), two FA-901s (225 W/ch), and one FA-1201 (280 W/ch). Boschert stuffed the JBLs and Crests in his Chevy Suburban and crawled back home.

To get the best performance out of the speakers, Boschert triamplified the system, assigning three frequency ranges to different amps. He plugged a JBL M553 three-way crossover between the Yamaha DSP-A3090's preamp-out jacks and the Crest amps. Switches on the back of the 4333B speakers let him bypass their internal active crossovers. He went with the factory crossover settings, 80 and 800 Hz, although the frequencies are variable if he wants to fiddle with them later on. The subwoofers, fed by the FA-1201 amp, cut off at 80 Hz. One FA-901 amp feeds the 80- to 800-Hz range to the big woofers in the 4333Bs, and a FA-601 amp feeds everything above 800 Hz to their

passive crossovers, which direct the appropriate frequencies to each main speaker's midrange horn and tweeter.

The other two FA-601 amplifiers power the front-effect and surround speakers. The second FA-901 amp is devoted to the two center-channel speakers, which are installed side by side below the screen. Although Boschert doesn't make use of the power amps in the Yamaha DSP-A3090, he does like its extensive digital signal processing (DSP) capabilities and extra effect channels, "which add a lot of presence to the front of the room."

Unlike the DSP ambience modes in most surround processors, which simulate different kinds of acoustical environments, the DSP modes in the Yamaha DSP-A3090 are based on actual measurements taken in well-known performance venues. One of Boschert's favorites is the

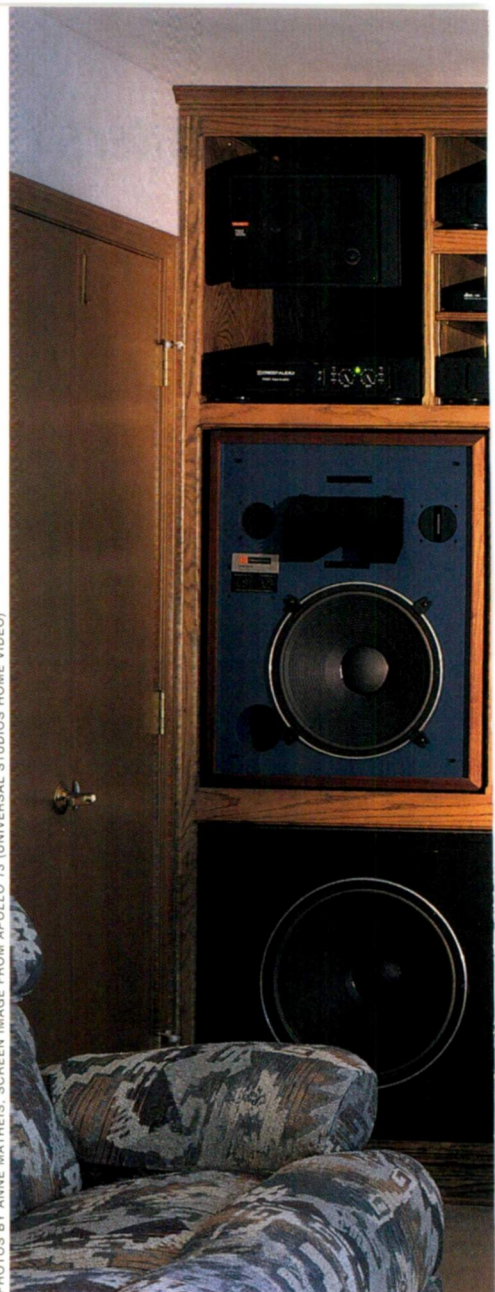
Roxy Theater setting, which he likes to use when he fires up a Hendrix CD. For Dolby Digital action movies he calls Yamaha's AC-3 Adventure mode into action. For concert videos on DVD, he prefers the AC-3 Musical mode, which emphasizes the center channel.

Boschert also turned to Yamaha for much of his source equipment, including a CDC-845 five-disc CD changer, a DVD-1000 DVD player, and a TX-950 AM/FM tuner. Both disc players have optical digital outputs, which he uses to feed the A3090 processor/amp.

A 10-foot Unimesh C-band satellite dish supplies TV signals. Boschert recently upgraded his General Instrument satellite receiver to the digital 4DTV model so that he could reap the benefits of an electronic program guide and another 200 channels, including a number of music-



PHOTOS BY ANNE MATHEIS; SCREEN IMAGE FROM APOLLO 13 (UNIVERSAL STUDIOS HOME VIDEO)



half a ton of other equipment in his 24 x 12-foot home theater.

"I like booming bass," Boschert explains. "JBL has always given me tight bass and a lot of it." What can you expect from a guy who grew up on the Stones, Zeppelin, Jimi Hendrix, and the Who? "I've always needed to feel the music," says the western-Missouri rock buff.

With a pair of 18-inch JBL Model 4645 subs pounding out the bass line, Boschert feels the music all right, and the seven channels in his Yamaha DSP-A3090 processor/amp — five standard Dolby Digital channels plus two front-effect channels — add plenty of sizzle to the boom. The 4333Bs reproduce the main front left/right channels, and besides the subs Boschert added two three-way Model 4412As for the center channel and two pairs of Control 5 two-way satellite



only channels. He surfs through the 700 channels on his 40-inch Mitsubishi CS-40809 direct-view TV.

Boschert also went with Mitsubishi for his twin HS-U69 S-VHS VCRs. He tries to stick with the same brand for similar components to insure compatibility and to simplify operation, if only by reducing remote-control clutter. He's downsized to the Mitsubishi remote for the VCRs and TV, the satellite remote, and the Yamaha DSP-A3090 learning remote for the rest.

"I designed my equipment cabinet around the 40-inch TV," Boschert explains. But when it came time to actually install the 27-inch-deep set, he had to cut out a portion of the cabinet's back panel to accommodate the extra couple of inches.

That wasn't the only challenge he faced installing eight speakers (all but the surrounds) and associated A/V equipment

in the oak cabinet, which was built by Bruce Talley of B&D Custom Cabinets. Boschert's wife, Dana, tolerated the room full of equipment but put her foot down at knocking out the wall behind the cabinet to make access space for connections. That left Boschert only 4 to 6 inches of room between the back of the cabinet and the wall for the wiring and four Panamax 1000 surge protectors.

He carved rectangles in the back of the cabinet behind each speaker, and behind each electronic component he drilled three 2-inch holes for interconnects and power cords. "Then I had to design some hook-jab-and-pull tools using a yardstick with nuts and bolts on the end, coat hangers, rubber bands, and masking tape. It took me a long time to wire it all up."

Boschert combined the control wires from all four Panamax surge protectors

and connected them to one switched outlet on the Yamaha amp. "I hit one button on the Yamaha remote, and that tells the Panamaxes to go into their delayed start-up sequence so we don't get pops."

One look at Boschert's speaker-filled cabinet, and you know that there's a whole lotta shakin' goin' on. To minimize vibration and make it easier to slide out speakers when necessary, he put a thin layer of carpeting on the bottom of the speakers in the cabinet. The rest of the room is on its own. Boschert and his wife have gotten used to straightening all the pictures on the walls after movie screenings — they're knocked out of position whenever the JBL subs rumble. And then there was the time a *Twister* demo cracked a picture's glass. "I never do anything just enough," Boschert says. "I have to do it all the way."
— Rebecca Day

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Home Theater
June 1999



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Atlantic Technology 355C

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Atlantic Technology 354SR

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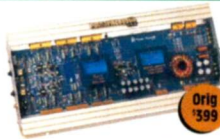
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BEST OF THE MONTH

REVIEWS

OUR CRITICS CHOOSE THE OUTSTANDING CURRENT RELEASES



NEAL PRESTON/GIANT

Wilson: Home of the Wave

The appearance of Brian Wilson's *Imagination*, his first solo album of new material in ten years, is clearly cause for rejoicing for all who have ever been moved by his work, a group of people that should include everyone but the deceased and the deaf. Still, given the man's highly publicized personal problems, and given that the 1988 *Brian Wilson* album had seriously halting moments and was therefore

easier to admire than to love, a not inappropriate question presents itself at the outset. To wit, and to paraphrase Dr. McCoy in *Star Trek IV*: Is Brian Wilson firing on all thrusters? Fortunately, the recorded evidence here says yes.

The opening track, "Your Imagination," is vintage Brian: hooky, confident, quirkily arranged (ah, those clarinets) and yet immediately accessible. Hearing it for the first time, I was seized with the over-

whelming desire to hop in my convertible, hit the road, and blast the song over and over again on the car stereo. And I don't even drive. This is, dare I say it, a potential hit single, a claim that could not have been made about a Wilson composition in close to two decades. That a guy in his mid-50s, let alone someone who has known as much emotional and psychic trauma, could craft a song like this is, frankly, inspirational. And much of the rest of *Imagination* is on the same level.

"South American," for example, with very funny lyrics by Jimmy Buffett, is a glorious margarita-soaked anthem that, among its many virtues (great tune, soaring background vocals), will remind listeners of just how insipid the Beach Boys' similar "Kokomo" was (Wilson had nothing to do with that record). Elsewhere, the lovely ballads "She Says That She Needs Me" and "Where Has Love Been?" feature his characteristically unconventional harmonic structures and remarkable singing. Wilson's trademark falsetto may not be as effortless here as it was back in the 1960s, but it's somehow unravaged — as opposed to the ragged-sounding vocals on the 1988 record — and it remains as poignant as ever. (Wilson sings every note on the new album, incidentally.)

Imagination isn't perfect, of course. Two remakes of relatively unfamiliar 1960s Beach Boys songs — the pleasant but insubstantial "Keep an Eye on Summer," from *Shut Down, Vol. 2*, and the should-be-classic "Let Him Run Wild," from *Summer Days (and Summer Nights)* — don't do much except make you want to hear the originals. But the good stuff, including the "Happy Days" finale, which harks back to the occasional dissonances and fragmented song structures of the *Smile* era, is pretty ear-opening.

Speaking of Wilson in the liner notes to the 1995 soundtrack *I Just Wasn't Made for These Times*, producer Don Was commented: "Far from the catatonic drug burnout the tabloids loved to depict, the guy I got to know was lucid and happening. When we started to mess around in the studio, it became clear that he was capable of making a record every bit as complex and beautiful as *Pet Sounds* whenever he felt like it." I wasn't sure that was true at the time. But *Imagination*, though it isn't *Pet Sounds, Vol. 2*, is an often stunningly melodic and sung album. Even better, it sounds like the work of an extremely happy guy. *Steve Simels*

BRIAN WILSON *Imagination*

Your Imagination; She Says That She Needs Me; South American; Where Has Love Been?; Keep an Eye on Summer; Dream Angel; Cry; Lay Down Burden; Let Him Run Wild; Sunshine; Happy Days (Giant, 39 min)

Bringing Romeo and Juliet to Life

Gounod's setting of Shakespeare's *Romeo and Juliet* is the best operatic version of that great love story, and EMI's new recording of the complete *Roméo et Juliette* makes clear why this tender, beautiful work once rivaled the composer's masterpiece, *Faust*, in popularity. Well suited for the title roles, the celebrated young French-Italian tenor Roberto Alagna and his glamorous wife, the Romanian soprano Angela Gheorghiu, here give their most impressive recorded performances to date. What's more, all three CDs in the set are accompanied by impressive, attractively produced background material that can be accessed by 100-percent multisession-compatible CD-ROM drives in PC or Macintosh computers. Besides a complete libretto (which is also provided in the printed booklet), there are historical photos, explanatory texts (in three languages), biographies of the performers, and sound bites of EMI recordings of other works by Gounod.

For decades Gounod has been neglected by major opera houses. This fine recording, however — and recent revivals of his best works here and in Europe —



Angela Gheorghiu and Roberto Alagna

TERRY O'NEILL/EMI

are welcome signs that he may be coming back into fashion.

Roméo et Juliette is tightly constructed both dramatically and musically, and it exhibits Gounod's gifts for characterization, melody, charm, and lyrical sentiment. Working with a group of mostly French singers and the chorus and orchestra of the Capitole de Toulouse, the French conductor Michel Plasson delivers a fully realized, idiomatic performance of rare stylistic authority.

The real glory of this recording lies in the singing and the way the principal soloists interpret their roles. Alagna and Gheorghiu's fresh voices and passionate

temperaments make them believable as the young lovers, and both are sensitive to the text and project it well. I have rarely heard French so beautifully sung in recent years. Every consonant is clearly articulated but not overemphasized, and every vowel is perfectly formed.

Alagna has drawn criticism as well as praise in his brief stardom. He still has room to grow in terms of polish and finesse, of course, but he proves here that he can indeed sing softly when he wishes, and with subtlety and nuance. Gheorghiu has the more beautiful and cultivated voice, with overtones of mystery that make her Juliet more than just another pretty lyric soprano. The other roles are well cast, particularly the noted Belgian bass-baritone José van Dam, who provides weight and dignity as Friar Lawrence. Even the British baritone Simon Keenlyside, in the role of Mercutio, has a voice of the proper lightness and flexibility to sound French.

All things considered — singing, conducting, recording quality, enhancements — this is the best commercial recording that *Roméo et Juliette* has ever had.

William Livingstone

GOUNOD *Roméo et Juliette*

Alagna, Gheorghiu, Van Dam, Keenlyside, others; Chorus and Orchestra of the Capitole de Toulouse, Michel Plasson cond. (EMI 56123, three enhanced CDs, 180 min)



CAPTAIN BEYOND Sufficiently Breathless

(Capricorn Classics) With this reissue of its second album (from 1973), the band's entire catalog is at last on domestic CD. Rod Evans, Rhino, and Lee Dorman are still aboard here, but Bobby Caldwell is replaced by two percussionists.

CHERI KNIGHT *The Knitter* (ESD) Following the acclaim for Knight's current album, *The Northeast Kingdom* (E-Squared),

ESD offers her previous record (from 1996) as a budget reissue.

FRANK SINATRA

In the Wee Small Hours; Frank Sinatra Sings for Only the Lonely; Come Dance with Me!; Sinatra's Swingin' Session!!! (all Capitol)
Ring-a-Ding Ding!; September of My Years; Sinatra at the Sands; Francis Albert Sinatra & Antonio Carlos Jobim (all Reprise)

The first wave in the two labels' joint "Entertainer of the Century" promotion, announced before his death. All titles are 20-bit remastered and feature restored art and liner notes. Which to buy first? See "That's Frank" in this issue.

CBS: THE FIRST 50 YEARS

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PUCCINI Suor Angelica

Joan Sutherland, Christa Ludwig; National Philharmonic, Richard Bonygne cond. (*London 458 218*) "[Sutherland's] fans will probably enjoy her, [and] the sound is excellent" (May 1980).

RIMSKY-KORSAKOV

Scheherazade

Miriam Solovieff, violin; Vienna State Opera Orchestra, Mario Rossi cond. (*Vanguard SVC-90*) The first stereo album on this label, recorded in May 1956, whose sound *High Fidelity* magazine called "positively glittering."

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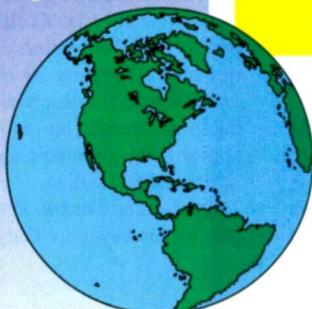
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MARINA CHAVEZ/ATLANTIC

Athenaeum: the travail, the thrall of young love

ATHENAEUM *Radiance*
(Atlantic, 45 min)

★★★

Specializing in not-so-silly love songs, the North Carolina quartet Athenaeum displays a mature sense of popcraft on its major-label debut album. Among the not-so-guilty pleasures are "Flat Tire," with its Byrds-like chorus, and "So Long," a chugging rocker with some fine guitar work counterpointing the vocals and syncopating the beat. Mark Kano's voice has a husky familiarity about it, and the dual guitars of Kano and Grey Brewster create an affable, spacious atmosphere. A lot of *Radiance* comes off like sound advice to the lovelorn, as in the cautionary tale of "Different Situation." While not everyone will readily identify with the sentiments, which may seem callow to those who have forgotten what it feels like to be young, the emotions are genuine. And the bottom line is that Athe-

naeum's well-manicured pop/rock is listless, likable, and ear-catching. *P.P.*

DEEP PURPLE *Made in Japan*
(DCC Compact Classics, 77 min)

★★★

Made in Japan: The Remastered Edition
(EMI import, two CDs, 99 min)

★★★★★

Abandon
(CMC, 56 min)

★★

Return with me now to the Age of the **R**Double Live Album, which flourished from 1971's *Allman Brothers Band at Fillmore East* to 1975's *Frampton Comes Alive!* Back then, artists could be heard reinventing their studio material, often to thrilling effect. And one of the greatest examples was Deep Purple's *Made in Japan*, originally a 1972 import — until so many fans clamored for the set's epic, elastic forays into hard rock that the band's American label, Warner Bros., was forced to release it here.

If you're one of those fans, you likely bought the set again when Warner Bros. reissued it in the early days of CD. But the sound was unremarkable, and the "liner notes" were a single page of simplistic info. Itchin' to upgrade? DCC Compact Classics has a new version, but it gets docked a full

star for merely repeating that single page of notes. The sound, however, is a definite improvement — and, considering that this is one of DCC's gold CDs, it should actually be the last word in sonics, right?

Not this time. Gotta go back overseas, where British EMI, as part of its 25th-anniversary Deep Purple program, has created the ultimate *Made in Japan*. The remastering, supervised by Abbey Road engineers, clearly edges out the DCC transfer in depth and definition, resurrecting a full-bodied resonance and a concert-like soundstage from the original master tapes. You also get Simon Robinson's excellent, lengthy liner notes — not to mention a bonus CD single of red-hot encores ("Black Night," "Speed King," and "Lucille"), which, because it's free, keeps the import price to under \$20 (whereas the DCC title has been stickered at more than \$25).

Meanwhile, the new studio album *Abandon* includes four-fifths of the classic *Japan* lineup, still enjoying a mild revivification begun on 1996's *Purpendicular*. This stuff is just fair not because the missing fifth, guitarist Ritchie Blackmore, is replaced by Steve Morse but because it tends to repeat itself ("Seventh Heaven" and "'69" are basically the same song). It also repeats the past: "Any Fule Kno That" cops a riff from "Bloodsucker," and, er, "Bludsucker" is an unnecessary remake of the entire song from *Deep Purple in Rock*. Ah, *In Rock*. Now that's another story . . . *K.R.*

PETE DROGE *Spacey and Shakin*
(Fifty Seven/Epic, 43 min; enhanced CD)

★★★★★

Pete Droge is turning out to be his generation's Tom Petty, which is both surprising and ironic given that Petty has of late reinvented himself as, in the words of one of my colleagues, a Born Again slacker. Still, the similarities are unmistakable: Droge writes instantly accessible, sort of rootsy pop/rockers that remind you of various Sixties acts (principally out of the Dylan/Byrds axis), and he fronts a band that seems incapable of overplaying and whose members appear to be communicating amongst themselves telepathically.

Spacey and Shakin, Droge's third album, may be his best faux Petty yet; stylistically,

STAR SYSTEM

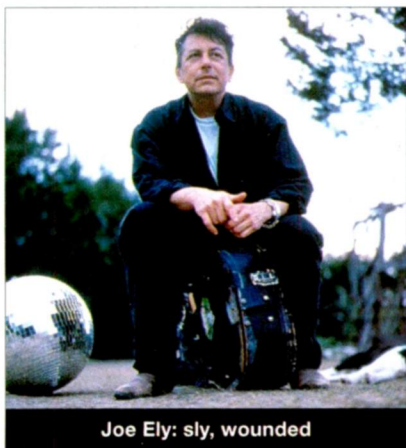
Excellent ★★★★★

Very good ★★★★

Good ★★★

Fair ★★

Poor ★



Joe Ely: sly, wounded

MICHAEL WILSON/MCA NASHVILLE

GARBAGE Version 2.0

(Almo Sounds, 50 min)

★★★

It would be tempting to dismiss Garbage for making pure ear candy, if only the band wasn't so good at it. *Version 2.0*, like the hit debut album, piles on so many cheap thrills that it's hard to resist. The opening "Temptation Waits" sets the pattern with a propulsive rhythm loop, a distorted guitar, and a memorable chorus that could have come from an old Phil Spector record. The production combines electronic trickery with the edgy guitar sound that Garbage-man Butch Vig perfected on Nirvana's *Nevermind*, and the disc's pop hooks match its sonic dazzle. Plus there are some ingenious touches in the arrangements, notably in "Wicked Ways," which builds from ZZ Top boogie to ethereal bridge and back.

Singer Shirley Manson, however, knows only two vocal approaches: sexy and sexier. The lack of lyrical depth also gets to be a problem. When Manson sings, "I think I'm paranoid and complicated," you want to make like an English teacher and shout, "Don't tell me, show me." And the use of borrowed hooks in two songs (the Pretenders' "Talk of the Town" in "Special" and the Beach Boys' "Don't Worry Baby" in "Push It," not to mention the "Taxman" bass line in "Special") is just an overplayed gimmick, when Garbage is more than capable of writing its own hooks. *B.M.*

NANCI GRIFFITH Other Voices, Too (A Trip Back to Bountiful)

(Elektra, 72 min)

★★★

For this sequel to her 1993 album *Other Voices, Other Rooms*, Nanci Griffith invited friends and colleagues — among them Guy Clark, Steve Earle, Jimmie Dale Gilmore, Emmylou Harris, Lyle Lovett, Richard Thompson, Jerry Jeff Walker, and Gillian Welch — to help her explore some of the songs that laid her own musical foundation of country, folk, and rockabilly. Some of the selections ("Wings of a Dove," "Walk Right Back") may seem like odd building blocks, but, more often than not, Griffith and her partners make something special of the material (as in the "Wings" duet with Lucinda Williams).

On her last few albums, Griffith has leaned toward a kind of attitudinal approach to a song, replacing her once-clear tones with a rough, whiskey-bent-and-hell-bound swagger. She does this repeatedly here, perhaps thinking it adds a bit of bluster to her Irish-accented arrangements. But the most moving performance, the Johnny Cash tune "I Still Miss Someone," returns Griffith to her roots, where she's more interested in singing than showing off. When she duets here with Rodney Crowell, whose soulful high tenor is country singing at its best, the

two recall the halcyon days of the Everly Brothers — proof that *Other Voices, Too* holds more than its share of surprises. *A.N.*

SEAN LENNON Into the Sun

(Grand Royal/Capitol, 49 min)

★★★

If there's one thing you don't expect to hear on the first album by John Lennon and Yoko Ono's son, it's a quote from Paul McCartney. But that's what you get in "Mystery Juice," which makes sly but unmistakable references to Macca's "Maybe I'm Amazed." It's a brilliant stroke that deflates all the expectations surrounding the younger Lennon's debut and, along with the album's punning title, suggests he's inherited his dad's sense of humor.

Sean Lennon neither copies his father's style nor goes out of his way to avoid it. There are three blatantly Beatlesque tracks among the thirteen — pretty much the standard total for any new pop artist. Despite the eclectic arrangements, Lennon is more of an old-fashioned singer/songwriter at heart. Working mainly with Cibo Matto, the band of his producer/girlfriend, Yuka Honda, he updates a Seventies troubadour approach with samples and some lounge-jazz touches, but he sounds most at home doing proudly sentimental love ballads that recall, well, McCartney.

Vocally, there's a definite family resemblance — to his half-brother, Julian. And his voice is still too wispy (and his musical instincts too lightweight) to command the spotlight; he needs another album or two to develop. But the blend of distortion and

it's certainly the most varied, with some interesting neopsychedelic flourishes (the title song) leavening the Nineties folk/rock mix. The killer track is "Eyes on the Ceiling," which mates a great circular guitar riff with modified "Sweet Jane" chords, a chorus to die for, a wonderful Beatlesque coda, and lyrics about . . . I'm not exactly sure, but I think I know the feeling anyway. The multimedia of this enhanced CD includes lyrics that illuminate Droge's cheerfully opaque musings in a manner that used to be called Follow the Bouncing Ball. *S.S.*

JOE ELY Twistin' in the Wind

(MCA Nashville, 58 min)

★★★★

With *Letter to Laredo*, his 1996 acoustic-driven paean to Mexico, Joe Ely took what he called "a sharp turn and explored a different world." *Twistin' in the Wind* returns to the same landscape but with a more electric, rocking beat. Here, Ely is a man wounded and crazed by love, tracing all the mistakes that brought him to his emotional precipice. From the plum-out-of-his-mind confusion of "I Will Lose My Life" to the love-and-death story of "Behind the Bamboo Shade," he struggles to regain his consciousness, his *self*.

Besides drawing on the religious imagery and vivid language of Mexico, the album explores other areas of Ely's musical past, including his early Dylanesque period (the title song), his trademark sardonic humor, and the blues. It is a beautifully recorded work with a rich instrumental sound that blends the guitar traditions of his seminal recordings into one, an effect achieved by employing the guitarists who appeared on them: Teye, David Grissom, Jesse Taylor, Lloyd Maines, and Mitch Watkins.

What's missing is the straight-ahead honky-tonk and the hard-driving country-rock/blues that have always defined the bedrock of Ely's live shows. In the meantime, *Twistin' in the Wind* is a tense but unforgettable visit to a blue border town of his sly and fertile imagination. *A.N.*

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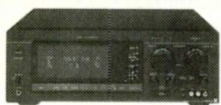


Shirley Manson of Garbage: sexy, sexier

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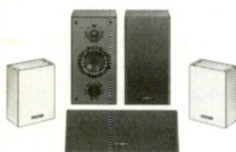
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popularmusic

QUICK FIXES

MITCHELL FROOM *Dopamine*

(Atlantic, 32 min) ★ ★ ★

Producer makes his debut as a solo performer, with support from a variety of folks (Sheryl Crow, wife Suzanne Vega, members of Los Lobos). Sonically, it's what you'd expect: dry and artificial. Musically . . . well, let's just say that songwriting per se is not Froom's major concern. It's all very self-consciously postmodern, but *Dopamine* often makes for fascinating listening. S.S.

ANNIE HASLAM

Live: *Under Brazilian Skies*

(White Dove, 71 min; P.O. Box 92, Nutley, NJ 07110; www.anniehaslam.com)

★ ★ ★ ★

Catch up on Haslam's career as she visits the best of her solo material ("Blessing in Disguise," "After the Oceans Are Gone") and some well-chosen Renaissance chestnuts ("Spare Some Love," "The Captive Heart"). Through it all, the voice remains a marvel. Bulletin: Haslam and former bandmates Michael Dunford, John Tout, and Terry Sullivan (with Roy Wood replacing Jon Camp) are currently recording an album of all-new Dunford-Haslam material. K.R.



LARGO

(Blue Gorilla/Mercury, 70 min) ★ ★ ★ ★

Largo isn't a band, it's a work inspired by the second movement of Dvorak's *New World Symphony*, and it's a wonderful slice of Americana. It's also the culmination of what the Hooters were about, with Rob Hyman, Eric Bazilian, and producer Rick Chertoff among the creators, aided by Joan Osborne, Cyndi Lauper, and Levon Helm. Both a unified piece and a bunch of great tunes, *Largo* is as giddy as a Fourth of July picnic. K.R.

WYNTON MARSALIS *The Midnight*

Blues: *Standard Time Vol. 5*

(Columbia, 76 min) ★ ★

Twelve tunes, mostly standards, are set against a lush but unobtrusive string background. Marsalis seems to be of two minds: he plays in a lyrical, uneventful

pop vein through much of the program but occasionally resorts to grotesque growls and strained effects that strike me as totally out of context. C.A.

OLIVIA NEWTON-JOHN

Back with a Heart

(MCA Nashville, 43 min) ★

Newton-John returns with an embarrassingly wrong-headed attempt at contemporary country-pop. This is terrible stuff: stylistically glommed-together songs, mucked-up production, the works. A.N.

LEANN RIMES

Sittin' on Top of the World

(Curb, 60 min) ★ ★

It's far too early for Rimes to be growing out of country music. Except for the fine "Commitment" and three songs by Deborah Allen (a writer held over from *Blue*), the material here is so formulized and the country traces so slight that her natural twang and youthful charm are smoothed away. Even "Purple Rain" sounds more like a rote classic-rock cover than the shocker it was intended to be. B.M.

THREE BARITONE SAXOPHONE

BAND Plays Mulligan

(Dreyfus Jazz, 61 min) ★ ★ ★

Ronnie Cuber, Nick Brignola, and Gary Smulyan have banded together to honor the man who in many ways put their instrument on the contemporary map. They're joined by bassist Andy McKee and drummer Joe Farnsworth. Yes, their overall sound is a bit raspy, but it's made quite palatable by Cuber's arrangements, and it works well as a backdrop for the solos, some of which test the rigid qualities of the baritone sax. C.A.

BIG LEAGUE BABE *The Christine*

Lavin Tribute Album: Part 1

(1-800-Prime CD, 42 min) ★ ★ ★

Part 2

(1-800-Prime CD, 56 min) ★ ★ ★

Whether you buy these individual CDs for Lavin's songs or for the artists who perform them (Dar Williams, Dave Van Ronk, Sara Hickman), you'll be creating yourself to one of today's most creative (and sometimes zany) singer/songwriters. It's a rare talent who can write lyrics as funny as "Artificial Means" (done on *Part 1* by Julie Gold and Cliff Eberhardt), where a married couple resorts to sex toys, and lyrics as switchblade-sharp as "Victim/Volunteer" (also on *Part 1*), performed to chillbump-raising perfection by Kristina Olsen. A.N.

melody in "Mystery Juice," the whacked-out country sound of "Part One of the Cowboy Trilogy," and the inventive pair of trip-hop instrumentals are enough to prove that Sean Lennon has more going for him than just his genes. *B.M.*

DAVE MATTHEWS BAND

Before These Crowded Streets

(RCA, 71 min)

★★★★

Before *These Crowded Streets* marks the point at which a great jam band becomes a great song band. The depth and complexity of Dave Matthews's songwriting, not to mention the timbre of his voice, call to mind some of the later work of Peter Gabriel. But even Gabriel never went so far as to build a band around violin and saxophone, which allows Matthews and Co. to weave together jazz, pop, Middle Eastern, and African strands into a wholly original tapestry of sound. Laugh if you will, but, taking the word at face value, no one is more "alternative" than Matthews.

The album is a mix of playful tunes about desire and lust and foreboding songs that sound sepulchral alarms. The band's instrumental blend is particularly entrancing in "Rapunzel," where violinist Boyd Tinsley's swirling lines and Leroi Moore's snake-charmer sax work animate Matthews's peppery, seductive vocal. The other side of the coin is his preoccupation with what he calls the "symphony of death" — the blood-red tide loosed by religious and political differences. The music is reflective and bittersweet in "The Dreaming Tree" and "Pig" but assumes a grungy, dissonant cast in "The Last Stop," evoking the endless strife in the Middle East.

All the way around, it's a looser and more organic Dave Matthews Band that approaches these songs of conjugal love and internecine strife with an illuminating, purposeful drive. *P.P.*

STEVIE NICKS Enchanted:

The Enchanted Works of Stevie Nicks

(Atlantic, three CDs, 3 hours, 33 min)

★★

LEGACY: A TRIBUTE TO

FLEETWOOD MAC'S RUMOURS

(Atlantic/Lava, 48 min)

★

Fleetwood Mac's career is starting to repeat itself: we've had the strong group effort, now it's time for the lame offshoots. Stevie Nicks remains a valuable part of the band, but her own three-CD anthology proves she didn't have the depth or the songs to carry off an extended solo career. Avoiding Mac material except for a new piano version of "Rhiannon," *Enchanted* wisely includes most of *Bella Donna* plus a terrific *Buckingham Nicks* track, "Long Distance Winner." But the rest is weighted to-

ward cosmic twaddle like "Street Angel," "Sleeping Angel," and "Desert Angel" — detect a pattern here? Worse, no amount of cosmetic production is able to hide the way her voice deteriorated. By the time of the live "Edge of Seventeen" (chosen over the superior studio version), she was already unable to hit the crucial high notes in the chorus. The recent tracks show a partial recovery, but she turns Tom Petty's "Free Fallin'" into mush.

Legacy, a song-for-song *Rumours* tribute, has all the makings of a bad joke on project producer Mick Fleetwood's part: veteran band strikes back at alternative rock by letting overhyped acts murder its songs. The passable attempts, Tonic's "Second Hand News" and the Goo Goo Dolls' "I Don't Want to Know," stick closest to the originals. The rest are either misfired (Shawn Colvin, who does "The Chain," needs to have her sampler confiscated) or woefully bland (Jewel makes "You Make Loving Fun" un-fun). *B.M.*

PUBLIC ENEMY He Got Game

(Def Jam, 48 min)

★★★

The tracks that Public Enemy recorded for Spike Lee's *He Got Game* comprise the group's first album in four years, and it's an exhilarating muddle. The title cut

and "What You Need Is Jesus" find Chuck D in some of his favorite lyrical territory: basketball and mike warfare. But "Is Your God a Dog" is easily the best thing here, as he makes cogent remarks about the deaths of Tupac Shakur and the Notorious B.I.G., trying to sort out the winners and losers in this now-ancient dispute instead of doing a mere we-miss-you-bad tune. It reminds you how far above most rappers Chuck remains in terms of flow, style, and intelligence.

But there are a lot of moments that leave you scratching your head. "Politics of the Sneaker Pimps" circles some important points but crashes when it should glide. And Flavor Flav, whose role as comic relief to Chuck's deep thoughts used to be an essential part of the PE mystique, doesn't seem up to the challenge here. In fact, his solo turn, "Shake Your Booty," is unnecessary. More than up to the challenge, however, are Hank Shocklee and the rest of the Bomb Squad production team, who provide the jazzy and abstract beats. With hip-hop devolving from witty sampling to straight-out rip-offs, it's a treat to hear Shocklee and pals toss a bit from the Who's "Won't Get Fooled Again" into the PE original "House of the Rising Son."

Then again, more than half the tracks fade quickly, kind of like an old ballplayer who can't admit he's lost a step. Public En-

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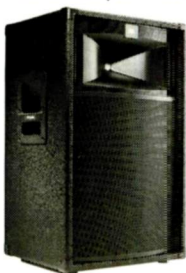
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emy is still wily enough to play, but this disc doesn't find the group at the top of its game.

Claudia Perry

THE SMASHING PUMPKINS Adore

(Virgin, 73 min)

★★★★

Less is definitely more in the case of the Smashing Pumpkins' new CD, a retrenchment from the sprawling, boisterous bigness of *Mellon Collie and the Infinite Sadness*. *Adore* is an album of bittersweet elegies, including the lovely, almost unspeakably touching "For Martha," for Billy Corgan's recently deceased mother. There are also nods to the drug-shrouded death of touring keyboardist Jonathan Melvoïn and the drug-related ejection of drummer Jimmy Chamberlin in "Daphne Descends," with its references to "the sugar sickness" and "pinhole stars into the shadow mind." Another song, "Tear," carries a funereal weight as Corgan sings alone to the ticking of a programmed drum, only to be joined by a dark, hammer-heavy riff.

There are no light moments, no sputtering rages, no loud guitars, nothing to play to the arenas. What's most impressive about *Adore* is the way Corgan fixes his gaze on a difficult subject and sustains it with a calm, unflinching intensity and quietly gorgeous music. It is a ghostly, spectral collection of meditations that whispers rather than shouts, communicating no less forcefully for its lack of amperage. P.P.

SONIC YOUTH A Thousand Leaves

(DGC, 74 min)

★★★★

The deliberately rambling and sometimes aggravating sound of *A Thousand Leaves* makes you wonder just what is left for Sonic Youth to prove — that it can be more outré than any band whose self-marketed disc sells in the dozens? The members of Sonic Youth are now sonic middle-agers whose hunger for the credibility thing may be holding them back from further breakthroughs on the order of *Daydream Nation* and *Dirty*.

The strongest performances here are the lengthy doses of jazzy psychedelia that orbit around discernible centers between cruises into the cosmic ether. "Wildflower Soul" is Sonic Youth's "Dark Star," an audacious aural journey that artfully skirts the fine line between order and chaos, while "Hits of Sunshine (For Allen Ginsberg)" finds guitarists Thurston Moore and Lee Ranaldo engaging in a languid dialogue that recalls the expansive interchange you might have heard in a San Francisco ballroom circa 1966.

The same high praise, alas, cannot be lavished on the songs that appear to be the province of bassist Kim Gordon, who projects little more than petulance and self-

absorption. While braying off-key in broken meter might seem avant-garde to those who don't know better, Gordon couldn't be more obvious in either her politics ("Contre Le Sexisme," "Female Mechanic Now on Duty") or her deliberate pursuit of the unlistenable ("The Ineffable Me"). She seems to be working at cross-purposes with the rest of the band, and her contributions drag down *A Thousand Leaves*. P.P.

JAZZ

LOUIS ARMSTRONG Master of Jazz:

Live in Chicago, 1962

(Mobile Fidelity Sound Lab, 66 min)

★★★★

The sextet on *Live in Chicago, 1962* is not among Louis Armstrong's most memorable bands, but trombonist Trummy Young and pianist Billy Kyle elevate the proceedings considerably. Because Armstrong was recorded frequently during this period, there are no musical surprises here, but the remarkable Satchmo somehow never sounded stale; he could repeat a previous solo with uncanny freshness, and his bigger-than-life personality had a way of eliminating déjà vu. Mobile Fidelity's gold CD contains three tracks that were not on the original Danish Storyville release, and the sound, which was already good, has greater clarity and presence. The bonus tracks are "When I Grow Too Old to Dream," which features Kyle to advantage, "Once in a While," which features Young to disadvantage, and "Basin Street Blues," where Young redeems himself. The rest of the band does a decent job. Meanwhile, Armstrong is Armstrong — and, of course, he sings as only he could do. C.A.

JACKY TERRASSON TRIO Alive

(Blue Note, 61 min)

★★★★

Pianist Jacky Terrasson's style is charmingly unpredictable — sometimes whimsically Monk-like, almost always intensely absorbing. As on his previous two releases, he's joined on *Alive* by bassist Ugonna Okegwo and drummer Leon Parker, this time recorded during a performance at New York's Iridium club last summer. Terrasson points out that he considers the round-robin format of soloing to be tired; his own composition "Cumba's Dance" is a good example of the more collaborative sound he prefers. On the other hand, the piano dominates much of "Sister Cheryl" and "Simple Things," two brooding, somber pieces. The trio's treatment of "Love for Sale" and another household tune, "Things Ain't What They Used to Be," should be enough to convince you of Terrasson's importance as a distinct voice on a scene that fairly teems with clones. C.A.

NEW RECORDINGS REVIEWED BY RICHARD FREED, DAVID HALL, JAMIE JAMES, GEORGE JELLINEK, AND ERIC SALZMAN

BARTOK String Quartets

Takacs Quartet (London 455 297, two CDs, 152 min)

★★★★★

The Takacs Quartet recorded Bartok's six masterpieces for string quartet once before, in 1984 for Hungaroton, and that version is still available on CD. All of the ensembles from Bartok's homeland that have tackled the cycle on disc have tended to stress the lyrical aspects of these works to a greater extent than, say, the Juilliard or Emerson Quartets, and the Takacs is no exception. As a result, this set excels in the first two quartets, which find Bartok making the transition from late Romanticism to his distinctive amalgam of his native folk idiom with late Beethoven. In the mature quartets the Takacs players are most convincing in the ruthlessly compressed Quartet No. 3 and in the ineffably sad and bitter pages of No. 6, finished in 1949, after Bartok had exiled himself and family to the U.S. My major reservation pertains to the opening of the five-movement No. 4, which seems somewhat tentative here, while its very last bars lack a sense of finality.

Along with the generally fine performances we have altogether splendid sound. The recording is very rich in color and inner detail, for example the tang of the snap pizzicatos in No. 4. *D.H.*

BEETHOVEN "Moonlight" Sonata

FRANCK Prelude, Chorale, and Fugue

BRAHMS Paganini Variations

Evgeny Kissin, piano (RCA Victor 68910, 57 min)

★★★★★

Evgeny Kissin has always shown himself to be an elegant pianist, frequently rising to the level of poetry. He does a bit of barnstorming where the music calls for it in the Brahms Paganini Variations, but the elegance is still there. Several of the variations, such as Nos. 1 and 13 in Book I, are

charged with a sassy vitality that is all too seldom realized in full. The spirited irreverence in these sections splendidly takes off from the *diablerie* of Paganini's original, the 24th Caprice. While some of the most respected keyboard giants have tended to pussyfoot around such episodes, Kissin tears

into them with enthusiasm. This is not, after all, a work of philosophical meditation, but a celebration of virtuosity in its best sense, embodying vast intellectual and technical vigor and propelled by a driving spontaneity.

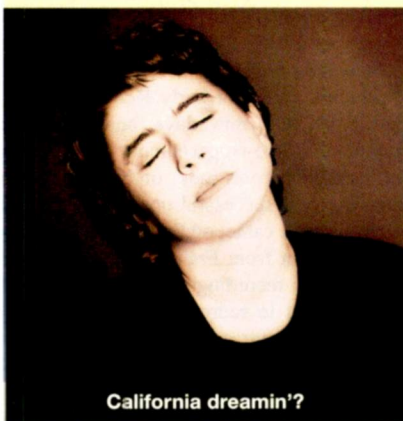
While RCA did well to place this grandly climactic performance last on the disc,

Violin Noir

Violinist Nadja Salerno-Sonnenberg found herself packaged early on as a sultry provocateur. The emotional, nearly unbinged intensity of her playing and the rambunctiousness of her personality only lent credence to the image. The lingering effect forces her, even today, to convince skeptics that she is a serious artist.

ing and reorchestrating favorite violin pieces as well as composing new music, all played in the movie by an unseen 27-year-old Isaac Stern. The result is a giddy confection that delights in superimposing car horns on the Mendelssohn concerto or deflating the prelude to *Tristan und Isolde* by making it a vapid virtuoso vehicle. The preposterous juxtapositions and blasphemous bastardizations suggest that Waxman thoroughly enjoyed mocking his European heritage.

Salerno-Sonnenberg seems right at home in this film-noir landscape. She has mastered a sentimental, deliriously excessive Romantic lyricism, full of emotive swoops and slides and intrusive shifts in tempo, while retaining her brutal, cutting force, which prevents the music from turning into kitsch. Most remarkably, she shows unsuspected skill as an interpreter of pop standards in two songs by Cole Porter and one by George and Ira Gershwin (all with vocalist Judy Blazer). Just listen to the adroitness with which she plays "Embraceable You" (accompanied by pianist Leslie Stifelman). Not only does she unself-consciously embroider the melody, but her tone ranges from a lush "classical" sound to a nasal, acerbic jazz style. These are not the dutiful performances of a stodgy classical musician, but rhapsodic effusions of seeming improvisatory freedom. — *K. Robert Schwarz*



California dreamin'?

HOLLISTER DRU-BRESLIN/NONESUCH

Several of her recent "crossover" releases on Angel undermined that effort, but *Humoresque*, her label debut on Nonesuch, is uncontrived in concept and unmannered in performance. It's a rare attempt to gather the bits and pieces of a classic Hollywood film score and present it as a viable artistic entity independent of the visuals, in this case the tale of a violinist who rises from poverty on New York's Lower East Side to a career filled with glamour and tragedy.

Franz Waxman created the score for the 1947 film *Humoresque* by rearrang-

NADJA SALERNO-SONNENBERG

Humoresque

London Symphony, Andrew Litton cond. (Nonesuch 794642, 60 min)

★★★★★

STAR SYSTEM

Excellent ★★★★★

Very good ★★★★

Good ★★★

Fair ★★

Poor ★



PHOTO: SPINNING

Sylvia McNair: well-chosen Mozart

the renderings of Beethoven's "Moonlight" Sonata and César Franck's *Prélude, Chorale et Fugue* that precede it display a similar vigor and freshness, as well as a certain impatience with a tradition that has tended to smooth over the very elements that give such works their unique character and power. The long-suffering first movement of the sonata is not wrapped in a sentimental haze but is almost stark in Kissin's clear-eyed, unapologetically virile delineation. The tiny minuet has charm to burn, and the finale achieves a superhuman drive without overheating. The Franck, too, gains from the pianist's boldness and directness. His clarifying balance and lack of indulgence not only enhance the music's dramatic sweep but project it in the most ennobling light. And in all three performances Kissin's unflinching regard for tone is superbly conveyed by the exceptionally vivid recording. *R.F.*



GLAZUNOV Violin Concerto
KABALEVSKY Violin Concerto
TCHAIKOVSKY Souvenir d'un lieu cher;
 Valse-Scherzo

Gil Shaham, violin; Russian National Orchestra, Mikhail Pletnev cond. (*Deutsche Grammophon* 457 064, 62 min)

★★★★

Gil Shaham has done it again here, offering interesting and varied programming in performances full of heart and pizzazz. The Glazunov Violin Concerto is an

essentially lyrical work whose brief opening movement serves as a kind of prelude to a slowish central movement. An elaborate accompanied cadenza brings on the festive finale, which has all the violinistic fireworks one could want. In terms of lush tone, Shaham pulls out all the stops from start to finish, with fiddling rivaled only by the 1934 Jascha Heifetz recording.

Dmitri Kabalevsky's Violin Concerto, one of a trio of concertos that he wrote in the mid-1940s with young players (and listeners) in mind, is brilliant, spicy, and zestful, definitely in the "socialist-realist" Soviet mode but not oppressively so. It's good listening and, as in the Glazunov, Shaham and Mikhail Pletnev's Russian National Orchestra give it their all. But in contrast to the Glazunov, Shaham here eschews lush vibrato and lets the music speak for itself, as he does also in the two Tchaikovsky pieces.

Souvenir d'un lieu cher was originally a set of three pieces for violin and piano. Glazunov orchestrated the piano part, to coruscating effect in the scherzo, and the orchestral playing is superb, especially the woodwinds. Shaham winds up the program with the highly balletic and utterly beguiling *Valse-Scherzo*, Op. 34. The recording, made in the spacious Great Hall of the Moscow Conservatory, is just fine. *D.H.*

MASSENET Werther

Hadley, Von Otter, Upshaw, others; Chorus and Orchestra of the Lyons Opera, Kent Nagano cond. (*Erato* 17790, two CDs, 121 min)

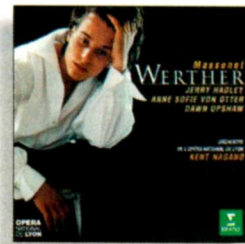
★★★★

Goethe's novel *Werther*, one of the landmark works of early Romanticism, is not much read nowadays, but it was the premier bodice-ripper/handkerchief piece of its day. It took most of the nineteenth century for a successful operatic version to appear, and it came, oddly enough, not from Germany but from France. Modern performances and recordings of Massenet's *Werther* attempt to redress this injustice with international star casts that often lack authenticity in the French style and language. That is somewhat true of this recording, although the results are far better than usual. In the absence of a strong home-grown style, the performance is quite Italianate, which is not entirely wide of the mark considering that Massenet apparently had a strong influence on Puccini.

The most Italianate member of the cast is, not surprisingly, the Werther, tenor Jerry Hadley (his mother is Italian). Werther is, in any case, the strongest personage in the opera, and he has a disproportionate share of the best music. Yet both of the leading women have a more natural command of the language than Hadley (and that is at least 50 percent of style). Mezzo Anne Sofie von Otter almost succeeds in bringing Werther's beloved, Charlotte, to life, and

Dawn Upshaw is chipper and girlish in the light soprano role of Sophie, Charlotte's younger sister.

This is a very shapely *Werther*. Massenet's technique is impeccable, and the or-



chestral music — there is quite a bit of it and it is quite inspired — takes up most of the story's passion and dark coloring, giving Kent Nagano and his French musicians a chance to dig in and show their stuff. *E.S.*

MOZART Arias

Sylvia McNair, soprano; Alfred Brendel, piano; Leila Josefowitz, violin; Academy of St. Martin in the Fields, Neville Marriner cond. (*Philips* 446 712, 59 min)

★★★★

Natalie Dessay, soprano; Lyons Opera Orchestra, Theodor Guschlbauer, cond. (*EMI* 55386, 64 min)

★★★★

If coloratura fireworks and stratospheric high notes are your main interest, Natalie Dessay provides them with utter security and bravura abandon in her collection of concert arias. She negotiates the wide leaps of "*Vorrei spiegarvi, oh Dio*" with pinpoint accuracy, though her performance could use a little more characterization. She is fearless with her high notes, scattering high Es and Fs generously and even ascending to an *altissimo* high G in the lengthy "*Popoli di Tessaglia*." Despite the stunning virtuosity, I would have liked a more distinct articulation of the text.

Sylvia McNair may not be Dessay's acrobatic equal, but her choice of arias is more interesting. She is best in Pamina's "*Ach, ich fühl's*" (*The Magic Flute*) and in the Countess's two arias from *The Marriage of Figaro*: "*Porgi amor*" is touchingly phrased and "*Dove sono*," with an unconventional ending, is exquisitely sung. There is plenty of anger and passion in her "*Martener aller Arten*" (*The Abduction from the Seraglio*) and also accurate passage work. By contrast, the elaborate concert aria "*Ch'io mi scordi di te?*" — in which pianist Alfred Brendel collaborates brilliantly — is emotionally rather restrained. Susanna's "*Deh vieni, non tardar*," also from *Figaro*, is just a bit mannered.

Neville Marriner and the Academy of St. Martin in the Fields accompany McNair admirably. Theodor Guschlbauer and the Lyons Opera Orchestra's support for Dessay is a

bit subdued in comparison. No texts are provided with the Philips disc, and the notes are all about McNair; EMI provides full texts and translations but not a word about Dessay. Curious. *G.J.*

SCHUBERT Piano Sonata in A Major (D. 959); Four Impromptus (D. 935)

Alain Planès, piano (*Harmonia Mundi 901637, 79 min*)

★★★★★

As on his earlier Schubert CD on Harmonia Mundi, Alain Planès here brings an engaging naturalness and spontaneity to the big A Major Sonata. The long, unhurried opening movement is poignant, and that quality comes across more convincingly because the music is not coaxed or pulled out of shape or broken up with unmarked pauses like barely restrained sobs. Planès takes the repeat, but he keeps everything moving so evenly that the music simply seems to assume the proportions it needs for the proper balance of its ambitious design. The slow movement is similarly persuasive in its wistfulness, the scampering scherzo makes no apologies for its playfulness (without masking its darker undercurrents), and the final movement unself-consciously reminds us that Schubert's design for it is bold as well as broad, encompassing a good deal of brilliance as well as his more generally acknowledged warmth of heart.

The same happy impression carries over to the Four Impromptus, which complete the generously filled CD. While it has been suggested more than once that these pieces ought not to be played separately because they amount to a full-fledged sonata, the notion seems particularly cogent in this case. The music and the performances are beautifully served by the lifelike recording. *R.F.*

SCHUMANN: Genoveva

Ziesak, Widmer, Van der Walt, Lipovsek, others; Arnold Schoenberg Choir; Chamber Orchestra of Europe, Nikolaus Harnoncourt cond. (*Teldec 13144, two CDs, 128 min*)

★★★

Schumann was capable of creating powerfully dramatic music with characterizations to match, but in his one opera, based on the legendary medieval figure of Genevieve of Brabant, he came a cropper. There are fine moments in the opera, notably the night scene between the ardent major-domo Golo and the lonely and distraught Genoveva, but except for the pageantry of the choral episodes, the music is generally more akin to Schumann's song cycles than to what we encounter on the operatic stage. It seems no accident that this Teldec recording by Nikolaus Harnoncourt and his forces derives from a concert production, not an operatic one. The lead singers are first-rate. Ruth Ziesak is a properly

unsophisticated Genoveva, with the right reserves of indignation for her big scenes with Golo. As Genoveva's husband, Siegfried, Oliver Widmer is very much the respectable burgher, while Deon van der Walt is a light-voiced but spirited Golo. I especially appreciated Marjana Lipovsek in the mezzo role of Margaretha.

Harnoncourt brings the utmost conviction and fervor to the whole enterprise, and he gets a splendid response from the singers

and players. The well-known overture with its striking horn-call motive comes off beautifully. The live recording is well carried out, with good balances and good use of stage effects. In sum, this set may not be an average operagoer's first choice, but it's a must-have for lovers of Schumann. *D.H.*

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Prime Piazzolla

Four thrilling new CD releases on the Milan label, all comprising live recordings from Argentina made by the composer Astor Piazzolla in his prime, remind us what a master performer and band leader he was, and how important

performance style was to his way of musical life.

For me, the overwhelming revelation was Piazzolla's first quintet, represented here by the *Muerte del Angel* CD, a recording of the ensemble's final appearance, in 1973, in Buenos Aires's now vanished Teatro Odeón. This was actually a reunion of three-fifths of the original quintet with two other long-term collaborators, including the pianist Osvaldo Tarantino, who plays an astonishing improvisation on *Otoño Porteño*. Here are great early tangos in sensational, breathtaking performances.

All the rest of these recordings date from the 1980s, when he put new life into the old tango tradition. *Concierto de Nacar*, recorded in 1983 and featuring his reconstituted Conjunto 9, represents Piazzolla

working with some of the largest forces ever placed at his disposal. The title track is the attractive and rarely performed Concerto for Tango Nonet and Orchestra, perhaps his best concerted work, and, among other things, there is also a Bandoneón

Concerto and a beautifully extended version of *Verano Porteño*.

Libertango, named for one of Piazzolla's greatest tangos, was recorded in 1984. This double album looks both backward and forward. In addition to the title track, it includes the three great *Angel* pieces performed in their proper and powerful sequence as a kind of tango suite or symphony. Finally, the sextet album, *Tres Minutos con la Realidad* ("Three Minutes with Reality"), recorded in 1989, includes some of his most extended compositional efforts, both early and late.

The recordings, all very well edited and restored, have lifelike presence and punch. If you want an introduction to Piazzolla, *Muerte del Angel* makes a good start, but I recommend the entire collection. —Eric Salzman

PIAZZOLLA

Muerte del Angel

Astor Piazzolla, bandoneón; Osvaldo Tarantino, piano; Antonio Agri, violin; Horacio Malvicino, guitar; Kicho Diaz, bass (*Milan/BMG 35841*, 42 min)

Concierto de Nacar

Conjunto 9; Orquesta Filarmónica, Pedro Ignacio Calderón cond. (*Milan/BMG 35842*, 64 min)

Libertango

Astor Piazzolla, bandoneón; Fernando Suárez Paz, violin; Pablo Ziegler, piano; Oscar López Ruiz, electric guitar; Héctor Console, bass (*Milan/BMG 35843*, two CDs, 84 min)

Tres Minutos con la Realidad

Astor Piazzolla, Julio Pane, bandoneón; José Bragato, cello; Gerardo Gandini, piano; Horacio Malvicino, electric guitar; Héctor Console, bass (*Milan/BMG 35844*, 52 min)

★★★★

His wit extends to the titles: *Overnight Mail's* three movements are "Priority," "Standard," and "Saturday Delivery." *Telephone Book* comprises Yellow, White, and, of course, Blue Pages. *Change of Address* is a series of tributes to his last six abodes. The verbal wit is easily matched by the musical spirit, which is fun-filled, controlled, and very expressive without ever seeming tight, sentimental, or nostalgic. E.S.

VERDI Don Carlo

Margison, Gorchakova, Hvorostovsky, Borodina, Scandiuzzi, Lloyd, others; Chorus

and Orchestra of the Royal Opera House, Covent Garden, Bernard Haitink cond. (*Philips 454 463*, three CDs, 208 min)

★★★

Verdi's *Don Carlo* is the grandest of his grand operas, and the most difficult to cast, requiring a dramatic soprano, a sexy mezzo, two powerful basses, a tenor with endurance, and a lyric baritone who can blend well. Inevitably, most casts have weak links, and this recording of an acclaimed production at Covent Garden conducted by Bernard Haitink is no exception. On the plus side, it boasts a brilliant performance by the finest Posa of our time, Dmitri Hvorostovsky. His phrasing is exquisite, his delivery thrillingly eloquent. The death scene glows with a gorgeous color and burnished intensity that take the listener's breath away — but not the singer's. His technique throughout the recording is masterly.

The women, soprano Galina Gorchakova and mezzo Olga Borodina, also Russians, bring heft and intensity to their roles, particularly Borodina as Eboli — her rendition of the Veil Song throbs with dark, erotic passion. Basses Roberto Scandiuzzi and Robert Lloyd, too, are fine, although Scandiuzzi sounds rather too young for King Philip. As Don Carlo, Richard Margison is a competent singer but nothing more. His voice has little color, and his interpretive abilities seem all the more pallid paired with such uncommonly expressive singers as Hvorostovsky and Borodina. The Covent Garden orchestra plays well enough, but Haitink's conducting fails to bring a full measure of Verdian fire to the performance. J.J.

WEILL Songs from Broadway Shows

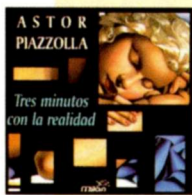
Hampson, Futral, Lehman, Hadley; London Sinfonietta Chorus and Orchestra, John McGlinn cond. (*Angel 55563*, 76 min)

★★★★

Kurt Weill's American theater flops are more interesting today than his hits. The indefatigable John McGlinn, our leading recorded archivist of lost American musicals, has put together almost 40 minutes of *The Firebrand of Florence*, a 1945 megaflop about the Renaissance sculptor and goldsmith Benvenuto Cellini, with lyrics by Ira Gershwin (!), that is quite wonderful.

Even closer to my heart are four excerpts from *Love Life*, with book and lyrics by Alan Jay Lerner, one of the most original and influential musicals ever to be put on the Broadway stage. In 1990, as artistic director of the American Musical Theater Festival, I put on the first performances of this masterpiece in over forty years, and I can testify that those here are solid performances of what ought to be classic material.

The other songs, and the shows they come from, are better known, but even "Westwind" from *One Touch of Venus* and "Johnny's Song" from *Johnny Johnson* are not as



Present Music; Apollo Saxophone Quartet; Michael Torke Band (*Argo 455 684*, 67 min)

★★★★

Michael Torke is a second-generation American minimalist who uses jazz and blues riffs to build up big instrumental sound pieces of great appeal and power. His music is popular in Europe, where he is considerably better known than in his own country. The transatlantic connection makes sense since Torke's work is ultra-American in content but has a lot of wit and a very highly polished technique and structure, which are quite European characteristics.

famous as they might be. Everybody knows "September Song" from *Knickerbocker Holiday*, but the masterpiece of that show is undoubtedly the song offered here instead, "It Never Was You."

McGlenn brings all of this material back to life not only through his solid direction, but also because he has surrounded himself with the best talent: Thomas Hampson, co-stars Elizabeth Futral, Jeanne Lehman, and Jerry Hadley, a good supporting cast, and a first-class London chorus and orchestra. Hampson supplies a rare commodity these days, a superb leading-man lyric baritone, necessary for every one of these shows. Like his colleagues, he is very comfortable with a plummy, somewhat old-fashioned theater style, and his projection of the texts is impeccable. None of his characters here are very deeply developed — these are excerpts, after all — but there is enough personality and charm in his lyric gift to carry it all through. And the strong matching efforts from the other singers, the British musicians, and, of course, McGlenn make this a memorable recording. *E.S.*

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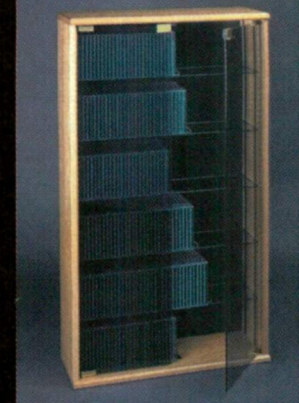
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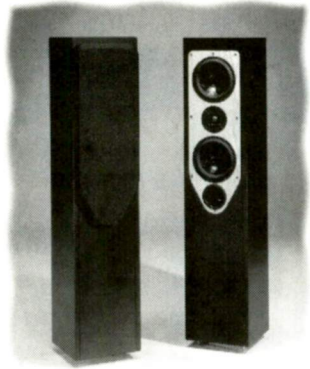
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A/V I.Q.

answers

1 A. "B" is true of receivers. "C" is true of some digital A/V amps and receivers but far from all. "D" is true of almost all popularly priced models; only exotic (usually tube-based) amps have external power supplies.

2 C. It's still a two-way even if it has six tweeters and four woofers; if it has one or more midrange drivers, it's a three-way. "A" is either a bipole or dipole, depending on whether the front and back radiation are in or out of phase, respectively. "B" is true of any good speaker. "D" is pretty rare — the 1950s Fold-o-Flex speaker let you open or close its port, and M&K has a current model with removable vent plugs.

3 D. Because the technology of stereo FM broadcasting sets a 15-kHz upper limit on the bandwidth, frequency response is not a key performance factor. Overall distortion, noise, and channel separation are much less important than how well the signals you want to hear can be received, which is determined above all by selectivity (rejection of nearby signals), capture ratio (rejection of weaker signals on the same frequency), and AM rejection (ability to ignore amplitude changes caused by "multipath"). In rural areas, sensitivity to weak signals becomes important, but in urban areas it's almost always a matter of discriminating between strong signals, including "ghosts" of the signals you're trying to receive that are caused by reflections from tall buildings.

4 C. This allows you to use the volume and tone controls on signals from other inputs that you're routing through the tape deck for recording and also when you're listening to a tape. Pre-out/main-in jacks allow you to do "A," and "D" is accomplished simply by selecting the component's tape position. "B" would serve no useful purpose.

5 C. The center is really the "main" speaker for movie soundtracks because it reproduces the dialogue and any other sounds anchored to the center of the video frame. Most receivers today deliver equal power to all three front channels, and equal power to all the surround channels as well is becoming more common. Equal power all around is desirable for reproducing 5.1-channel Dolby Digital or DTS-encoded material.

6 A. It's possible, however, to squeeze more than 80 minutes onto a CD if you reduce the disc-rotation rate to the CD-standard's lowest limits. "D" recalls the story that a

senior executive at Sony chose 74 minutes as the CD's maximum length so that Herbert von Karajan's recording of the Beethoven Ninth would fit on one disc, but there's no evidence that it is true.

7 B. "A" is a passive subwoofer. "C" is usually just a woofer, though if it goes way down and has its own on-board amp, it may be called a built-in subwoofer. As for "D," the bottom octave (16 to 32 Hz) is lower than many modern-day subwoofers tend to go. In any case, low-end extension is usually determined more by the size of the driver and its enclosure than by whether it has its own amplifier.

8 B. In truth, there's a lot of variation in the recordings available, but 16:9 will be the standard for digital TV (DTV). The aspect ratio for both standard TVs and computer monitors is 4:3, and for widescreen movies in theaters it's usually 1.85:1.

9 B. VHS Hi-Fi soundtracks use audio frequency modulation (AFM), a very high-

quality form of two-channel analog recording, which made the whole field of home theater possible because the stereo signal can be matrix-encoded with Dolby Surround information for Pro Logic decoding. "A" is true for Super VHS but very far off the mark when it comes to conventional VHS. "C" may be true for the video portion of the recording, but VHS Hi-Fi works just fine even with drugstore-grade tape. "D" is false; VHS Hi-Fi VCRs cannot record or play back a discrete 5.1-channel Dolby Digital soundtrack.

10 A. Psychoacoustic experiments have shown 20 dB to be adequate; lots of phono cartridges had no better than 20 dB separation and still produced excellent stereo sound. "B" gives some extra margin in case more than one component in a system has low separation. "C" is a minimum for channels with unrelated material, such as adjacent mono tracks on an open-reel tape. "D" is close to what digital audio can achieve, but it would be overkill if it weren't inherent in digital media. □

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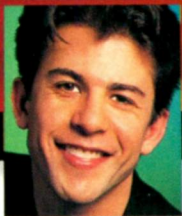


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THE HIGH END

COREY GREENBERG

Bringin' It All Back Home

LIKE SO MANY farewell toasts to days gone by, the phrase "The Eighties are over" means different things to different people. To evil greedheads (anyone who's got more money than I do), it means no more S&L hijinks and other Milkenesque schemes to run on the masses. To Hollywood, it means the most powerful Spelling in show biz has a perky blonde mane instead of a bald head covered with liver spots. To me, "The Eighties are over" means that I'm pretty sure I've tracked down and burned every photo ever taken of me with parachute pants and a mullet (a.k.a. mudflap) from Supercuts.

"The Eighties are over" means something altogether different for high-end audio. It means that, finally, manufacturers aren't afraid to offend the sniffy sensibilities of the archetypal part-time doctor/lawyer, full-time audiophile, whose demand for Gucci-esque hi-fi has kept the industry hamstrung at a time when more people are turning their attention to electronic entertainment in the home than ever before. Some of the most upscale speaker manufacturers have long since trickled their high-tech down to the budget sector, like B&W with its affordably priced Rock Solid line, but it's only very recently that companies on the electronics side of the aisle have begun to follow suit.

It's all about image. There used to be a real fear among high-end manufacturers of losing cachet and customers if they fleshed out their lines with more affordable products. Wilson Audio founder David Wilson once told me that he didn't think his customer base would feel as good about his brand if he came out with an "affordable" loudspeaker — one for, say, \$5,000 a pair! It's this mentality that drove the high end of the Eighties, but today's audiophile manufacturers and hi-fi huts are finally coming around to admitting that their bread-and-butter customer isn't Mr. Howell or even the Professor anymore — it's Gilligan, Mary-Ann, and, yes, even the hammock-snoozing Skipper.

For some manufacturers it's been a hard pill to swallow, but to me it's the best thing that could happen to the specialty audio industry. For a while there I'd written off the bulk of the high end as being so far out of touch with the real world that it risked becoming a self-parody, like

those Society for Creative Anachronism freakazoids who dress up like medieval knights on weekends and pine for the old days when a decent mullet cost a mere handful of grain. But many of high-end audio's leading manufacturers are starting to throw off the ideological shackles of the past twenty years, and with them much of the myth and mysticism that have actually stunted the high end's growth.

Take receivers: I'll be the first to tell you that good separate components are still the way to go if you want the very best sound. But I definitely see a not-too-distant future when technological advances and market pressures give us a new breed of A/V receiver that competes in every way sonically with the best separate components. It's inevitable.

The high end has to move in this direction if it wants to survive as anything big-

that Krell's in this game for the long haul. The receiver is built like a tank, with the circuit guts of a real Krell, and I wouldn't be surprised if it walks all over many separate preamp/amp rigs. Mark my word: give Krell a year or two, and it'll come out with a Dolby Digital receiver. That a company like Krell isn't afraid to alienate its base of owners by coming out with a product clearly aimed at the rest of us (okay, the rest of us who can see dropping three grand on a receiver) is a portent of good things to come not only for Krell but for any high-end company smart enough to follow its lead.

Right now, high-end manufacturers like Krell, Theta, Madrigal, and Meridian are blazing their way into multichannel audio with a vengeance — and steep price tags. The Theta Casablanca that I use as my reference surround preamp costs well over \$5,000 when you add up all the extras like Dolby Digital decoding and 20-bit digital-to-analog converters, and the Krell KAV-500 multichannel amp that it's partnered with costs \$4,500. But

High-end audio companies are starting to throw off the ideological shackles that have stunted their growth.

ger than a dwindling niche market. More and more audiophiles are starting to migrate over to mainstream Sony and Pioneer A/V receivers as they sound better and better with each new product cycle. The home-theater boom, along with Dolby Digital's rapid market acceptance, really lit a fire under the major Japanese manufacturers to improve the performance of their A/V receivers, to the point where \$1,000 today can buy an extremely solid, reliable Dolby Digital receiver with enough clean power to kick a roomful of speakers into high gear. If the high end is going to remain a force to be reckoned with into the next century, it must deliver a competitive experience to the consumer for not *too* much more money.

No wonder, then, that such a legendary company as Krell Industries, as blue-blooded a high-end manufacturer as any in the industry, is coming out with . . . a receiver! Okay, it's an old-school, stereo-only job without surround processing, but it's a step in the right direction and proof

both of these companies are working on lower-priced products that will contain much of the same circuitry and features as their flagship gear, products meant specifically to compete with upscale A/V receivers like those in the Sony ES line and Pioneer's Elite series. There's no reason one of these high-end manufacturers can't produce an outstanding A/V receiver for the same price as any major Japanese company. I'm betting we'll see one, or more, before the Nineties are through.

Ironically, high-end audio took a dim view of the home-theater boom when it first hit, but it looks like home theater is going to save the high end from itself after all. Rising to the challenge of multichannel sound and the ever-narrowing gap between itself and the mass market, high-end audio is both moving away from the elitism and quasi-religious hoo-ha of the Eighties, and evolving toward a smarter, more competitive world-view. Hey, if I can ditch the mullet, there's hope for the high end, too. □

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